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ORIGINAL ARTICLE

Long- and short-term corporate debt and economic policy uncertainty in Brazil

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ABSTRACT

This article aimed to investigate the relationship between economic policy uncertainty (EPU) and long- and short-term debt of Brazilian firms traded on the Brasil, Bolsa, Balcão (B3) stock exchange. The discrepancy in previous results raises questions about the current understanding of the relationship between debt and EPU. Separate analyses of long- and short-term debt provide different insights into how corporate decisions are affected. This discrepancy challenges our existing understanding of the complex dynamics between debt and EPU. The research sample consists of 163 Brazilian firms listed on the B3 between 2010 and 2019 on a quarterly basis. The baseline models considered long- and short-term debt as endogenous, taking into account firm and country characteristics. We employed a two-stage system generalized method of moments (GMM-sys) panel approach to deal with potential endogeneity in the estimates. As the debt market plays a crucial role in corporate valuation and performance, it is increasingly important to study the dynamics of long- and short-term corporate debt amidst the challenges triggered by the spread of EPU in the business environment. Clarifying how both long- and short-term debt perform under such pressure is particularly relevant since it reinforces already observed and potential implications for corporate adaptability in the use of external funds. The impact of this study lies in revealing the coexistence of firms' cautious decisions in seeking representative funds and the conservative position for corporate investments regarding uncertainties that surround economic policy. The findings suggest that higher levels of EPU are associated with a decrease in the use of long-term debt and an increase in short-term debt. In response to increased EPU, companies tend to rely less on long-term debt and instead opt for increased use of short-term debt. These results hold consistently across different proposed specifications.

Keywords: capital structure, long-term corporate debt, short-term corporate debt, economic policy uncertainty.

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Dívida corporativa de longo e curto prazo e incerteza da política econômica no Brasil

RESUMO

Este artigo teve como objetivo investigar a relação entre a incerteza da política econômica e a dívida de longo e curto prazo das empresas brasileiras negociadas na bolsa de valores Brasil, Bolsa, Balcão (B3). A discrepância entre os resultados anteriores levanta questões sobre o entendimento atual da relação entre a dívida e a incerteza da política econômica. Análises separadas de dívidas de longo e curto prazo fornecem insights diferentes sobre como as decisões corporativas são afetadas. Essa discrepância desafia nosso entendimento atual da complexa dinâmica entre a dívida e a incerteza da política econômica. A amostra da pesquisa consiste em 163 empresas brasileiras listadas na B3 entre 2010 e 2019, com periodicidade trimestral. Os modelos de linha de base consideraram a dívida de longo e curto prazo como endógena, levando em conta as características da empresa e do país. Empregamos uma abordagem de painel de dois estágios do método dos momentos generalizado sistêmico (generalized method of moments – GMM-sys) para lidar com a possível endogeneidade nas estimativas. Como o mercado de dívida desempenha um papel crucial na avaliação e no desempenho das empresas, é cada vez mais importante estudar a dinâmica da dívida corporativa de longo e curto prazo em meio aos desafios desencadeados pela disseminação da incerteza da política econômica no ambiente de negócios. Esclarecer como as dívidas de longo e curto prazo se comportam sob essa pressão é particularmente relevante, pois reforça as implicações já observadas e potenciais para a adaptabilidade corporativa no uso de fundos externos. O impacto deste estudo está em revelar a coexistência das decisões cautelosas das empresas na busca de fundos representativos e a posição conservadora dos investimentos corporativos em relação às incertezas que cercam a política econômica. Os resultados sugerem que níveis mais altos de incerteza da política econômica estão associados a uma diminuição no uso de dívidas de longo prazo e a um aumento nas dívidas de curto prazo. Em resposta a um aumento da incerteza da política econômica, as empresas tendem a depender menos da dívida de longo prazo e, em vez disso, optam por aumentar o uso da dívida de curto prazo. Esses resultados se mantêm consistentes em diferentes especificações propostas.

Palavras-chave: *estrutura de capital, dívida corporativa de longo prazo, dívida corporativa de curto prazo, incerteza da política econômica.*

1. INTRODUCTION

Changes in taxes, regulations, and monetary policies affect investors' perceptions in different magnitudes and time horizons (Marschner & Ceretta, 2021), leading them to a state of uncertainty (Aizenman & Marion, 1993; Demir & Ersan, 2017; Guiso & Parigi, 1999; Hassett & Metcalf, 1999). Macroeconomic policy shifts provide substantial influence on current and future plans of corporate investments, due to their intrinsic irreversibility and uncertainty (Bernanke, 1983; Brennan & Schwartz, 1985; Rodrik, 1991; Dixit & Pindick, 1994). Fluctuations in economic policy trigger adjustments in corporate debt policies as firms resort to market debt to finance at least part of their investments (Albanez & Valle, 2009; Narayan et al., 2021; Tarantin & Valle, 2015). In this context, the government is a source of economic policy uncertainty (EPU) (Baker et al., 2016; Buthelezi, 2023; Demir & Ersan, 2017; Faniband & Jadhav, 2023; Kang et al., 2014).

In contrast to the persistent negative relationship between EPU and investment (Gulen & Ion, 2016; Kang et al., 2014; Wang et al., 2014; Chen et al., 2019; Chen et al., 2020; Caixe, 2022), the relationship between debt and economic uncertainty remains puzzling. While the majority of studies show a negative relationship (Asimakopoulos et al., 2023; Almustafa et al., 2023; Athari & Bahreini, 2023; Cao et al., 2013; Çolak et al., 2018; Datta et al., 2019; Granville et al., 2019; Im et al., 2020; Le et al., 2021; Li & Qiu, 2018; Li & Qiu, 2021; Liu & Zhang, 2020; Lv & Bai, 2019; Subhani et al., 2021; Teng et al., 2018; Zhang et al., 2015), there is also evidence of irrelevance and a positive association (Bajaj et al., 2021; Kotcharin & Maneenop, 2018; Lee et al., 2017; Makololo & Seetharam, 2020; Schwarz & Dalmácio, 2021). This is the case of Brazil and the gap that we intend to explore.

Makololo and Seetharam (2020) found that EPU is not a relevant factor in explaining total, long-term, and short-term corporate debt. They claim that the lack of relevance is due to the fact that Brazilian companies engage in political and policymaking processes. Given the importance of capital structure for business valuation and performance (Bastos & Nakamura, 2009), these findings weaken the results of previous research on the relevance of EPU shocks to economic activity (Costa Filho, 2015; Oreiro, 2017), including country-level investment

(Barbosa & Zilberman, 2018), firm-level investment (Caixe, 2022), mergers and acquisitions markets (Batista et al., 2023), performance and valuation (Formiga et al., 2019), and the influence of macroeconomic variables on corporate capital structure (Cardoso & Pinheiro, 2020). Notably, Schwartz and Dalmácio (2021) proposed a positive impact of EPU on total debt. They argue that increased policy uncertainty adversely affects equity market financing, prompting firms to increase their reliance on debt. Despite the use of a broader sample, it must be noted that the analysis did not account for the distinction between long-term and short-term debt. It is crucial to address these categories, considering corporate debt as a source of funds for managing an important variety of current and long-term assets. Split debt can deepen our understanding of the relationship between debt and uncertainty.

This study investigates the relationship between EPU, proxied by the EPU index (Baker et al., 2016), and long- and short-term debt of Brazilian companies from 2010 to 2019. The research sample consists of 163 non-financial firms. We employed the system generalized method of moments (GMM-sys) regressions to deal with potential endogeneity. We performed further tests to verify the robustness of our findings, such as the forward effect of uncertainty, shifting the economic policy proxy from the EPU index to a Brazilian index, and by applying a proxy for residual EPU. Finally, we conducted an additional analysis considering corporate capital expenditures as endogenous.

Brazil represents an interesting environment to study this relationship for the following reasons. First, between 2014 and 2018, the Brazilian government faced a series of corruption scandals involving influential businessmen, public servants, and politicians associated with the presidency, which affected the government's influence in implementing economic policies (Standard & Poor's Global Ratings, 2015). This period covers the loss of the investment grade of the Brazilian sovereign rating obtained in 2008 (Oxford Analitica, 2015). Second, Brazil has an expressive capital market, with publicly traded companies holding US$ 367.35 billion worth of debt in 2021 (Refinitiv, 2022). This makes Brazil a relevant country to study, since investors should be interested in empirically observing the economic policy environment in which corporate decisions have been made. Finally, in 2019, Brazil received the highest amount of foreign direct investment among the emerging countries of the Americas, at more than US$ 65 billion (UN, 2023). Brazil has become an important destination for risk investments, so it is important for investors to understand the nuances surrounding the local financing market.

For academic purposes, this research analyzes the critical role played by accounting information in the evaluation of corporate decisions already made, particularly those that involve the management of the debt portfolio. For firms, given the fluctuating nature and inherent costs of economic uncertainty, it helps to perceive the complex relationship between the debt-equity mix and the value of postponing or undertaking investment plans. This paper is useful for regulators since it shows that the force applied to shape economic policy toward what the government understands as critical for economic growth can push companies beyond what can be accepted as feasible.

2. THEORETICAL APPROACHES TO DEBT AND EPU

2.1 Demand and Supply Effect

In their 2015 paper, Zhang et al. argued that EPU has a dual impact on debt, operating through both demand and supply channels. The demand channel operates as follows: when EPU increases, firms tend to reduce their debt requirements and adopt a conservative wait-and-see approach before investing (Bernanke, 1983). On the other hand, the supply channel suggests that when uncertainty increases, lenders become less confident about expanding the supply of credit and may tighten the rules for granting loans. The propensity for volatility related to cash flow expectations increases (Cao et al., 2013). Since firms face constraints, a deterioration of the financing market environment can be observed. Consequently, both demand and supply channels lead to a negative relationship between uncertainty and debt.

Both perspectives postulate that firms face a shortage of financial resources. Zhang et al. (2015) noted that it is not easy to identify the dominant effect of EPU on corporate debt. However, given that debt is a source of financial resources, it would be coherent to argue that these resources have specific destinations, such as current and long-term assets that aim to increase revenues and cash flows. In turn, an evaluation of related aspects in the constitution of corporate assets, such as

capital expenditures, would confirm the demand channel (Almustafa et al., 2023).

The demand and supply channels for financial resources in the context of EPU are compatible with what Bloom (2014) argues is the first channel through which uncertainty impacts economic activity, known as the real option effect. This channel suggests that companies become more cautious when decisions are costly to reverse, delaying hiring and investments while they wait for more information about the current economic environment. Although debt is less irreversible than, for example, capital expenditures, it is often used to finance long-term productive investments. This perspective is supported by relevant literature such as that of Bernanke (1983), Rodrik (1991), and Dixit and Pindyck (1994). Despite the mixed literature on the relationship between debt and EPU, the relationship with corporate investments is persistently negative across countries (Caixe, 2022; Gulen & Ion, 2016; Kang et al., 2014; Oliver, 2020; Wang et al., 2014).

2.2 Trade-Off Approach

The trade-off approach deals with firm decisions related to the benefits and costs of debt, such as tax deductibility of interest and bankruptcy costs (Fama & French, 2002). With taxes, companies have incentives to take on debt, and debt can increase firm value (Frank & Goyal, 2008). With improvements in research, the trade-off approach has been split into static and dynamic versions, and both propose that firms seek a balance between the benefits and costs of debt. They seek debt targets (DeAngelo & Masulis, 1980; Fischer et al., 1989; Strebulaev, 2007; Graham & Leary, 2011). These targets can be sensitive to macroeconomic circumstances and their ability to create frictions (Baum et al., 2008; Gomes & Schmid, 2021; Istiak & Serletis, 2020) that can cause firms to deviate from those targets (Huang & Ritter, 2006; Faulkender et al., 2012; Haddad & Lotfaliei, 2019). These are the strands of the trade-off approach that have supported research on debt and EPU.

2.3 Evidence on Debt and Economic Uncertainty Policy

In different countries, there has been growing interest in investigating whether EPU is a determinant of corporate debt decisions. However, the evidence remains mixed. Zhang et al. (2015) investigated the effect of policy uncertainty on short- and long-term debt in China. They found a negative effect on both, which they attributed to the deterioration of external financing conditions caused by EPU. Similarly, Çolak et al. (2018) found a negative effect on leverage for US companies, arguing that uncertainty significantly impedes access to capital markets and reduces the probability of external capital structure adjustments. Li and Qiu (2018), Im et al. (2020), and Almustafa et al. (2023) also found similar results for US companies. In Russia, Granville et al. (2019) split leverage into short- and long-term and found similar results to Zhang et al. (2015). They highlighted that during periods of uncertainty, companies become cautious about taking on debt due to the difficulty in predicting their liquidity capacity. In turn, they claim that creditors seem less inclined to take risks when granting loans. Le et al. (2021) researched the industrial sector of Vietnamese firms and found a negative impact on debt. Similar findings on the detrimental effect of uncertainty on corporate financing also can be found in other studies, such as those of Asimakopoulos et al. (2023), Athari and Bahreini (2023), Cao et al. (2013), Datta et al. (2019), Liu and Zhang (2020), Lv and Bai (2019), Subhani et al. (2021), and Teng et al. (2018).

Makololo and Seetharam (2020) examined the role of EPU on financing decisions for a number of countries, including Brazil, Russia, India, China, and South Africa, in the presence of herding. They found that firms tend to change their financing structure in response to policy uncertainty, regardless of the presence of herding. Specifically for the Brazilian environment, firms reduce their leverage ratio when there is policy uncertainty in the market and borrow more when the market stabilizes. In the presence of herding, regardless of whether leverage increases or decreases due to herding, EPU remains negatively related to leverage. Without the presence of herding, they fail to detect a significant relationship between forms of debt and EPU.

In contrast, Bajaj et al. (2021) found a positive effect of EPU on total debt in listed Indian companies, arguing that in times of uncertainty, firms opt for external sources of financing due to uncertain expected earnings and debt is a relatively cheaper source of financing. Lee et al. (2017) and Kotcharin and Maneenop (2018) found similar positive effects in studies of the financial sector in India and the shipping industry in Thailand, respectively. However, these studies did not consider the impact of macroeconomic factors such as interest and exchange rates, economic growth, and inflation on debt. Schwarz and Dalmácio (2021) analyzed the Brazilian scenario under the trade-off and market timing theoretical approaches

and found a positive effect of EPU on total debt, consistent with market timing theory.

2.4 Hypothesis Development

Empirical evidence has identified various factors that influence debt decisions in this direction, including those that posit imperfections in the business environment (Brito et al., 2007). One such factor is the friction caused by fluctuations in EPU (Bloom, 2009; Bloom, 2014; Bajaj et al., 2021; Çolak et al., 2017). The demand-side effect suggests that firms reduce their demand for financing when EPU increases, which is consistent with the underlying logic of the trade-off approach. The transmission of uncertainty to businesses does not go unnoticed by credit providers. As uncertainty negatively impacts business profitability and growth (Denlertchaikul et al., 2022; Feng et al., 2021; Iqbal & Nadeem, 2020) and varies with the business cycle (Adjei et al., 2022; Ou et al., 2023), the supply-side effect emphasizes a deterioration in credit supply (Almustafa et al., 2023; Cao et al., 2013; Zhang et al., 2015). When firms take on debt, they also tend to determine the balance between short- and long-term debt (Datta et al., 2019). When firms are exposed to the influence of EPU on the external financing environment and investments, they become cautious and reduce long-term debt, leading to the first hypothesis of the research:

H_1: The relationship between long-term debt and EPU is negative.

Lenders would prefer short-term debt rather than long-term debt as it poses less risk for them (Pan et al., 2019), resulting in an increase in short-term debt during periods of high uncertainty (Tran & Phan, 2021). Although there is strong evidence in favor of the detrimental effect of EPU, it cannot be ignored that this association can also occur in a positive direction (Li & Qiu, 2021). Companies, when accessing the debt market, will do so considering their needs for short- and long-term debt, which have different maturities due to their specific use in maintaining and acquiring operational assets. These arguments lead to the second hypothesis:

H_2: The relationship between short-term debt and EPU is positive.

3. SAMPLE SELECTION, VARIABLES, AND BASELINE MODELS

3.1 Data and Samples

To test the research hypotheses, we conducted the analysis using data from Brazilian companies listed on the *Brasil, Bolsa, Balcão* (B3) stock exchange, with information obtained through Refinitiv Eikon®. We excluded companies in the financial industry and those with negative equity or negative assets. To deal with potential outliers, we applied winsorization (1st and 99th percentiles) to all research variables (Brugni et al., 2021; Hoo et al., 2002; Kwak & Kim, 2017). The final samples consisted of two distinct datasets: an unbalanced panel featuring 163 companies and a balanced panel comprising 142 companies. Our data structuring approach is supported by previous studies such as those of Cao et al. (2013), Zhang et al. (2015), Gulen and Ion (2016), and Schwartz and Dalmácio (2021).

The period considered was the first quarter of 2010 to the fourth quarter of 2019. We chose this period because 2010 was the year Brazil fully adopted the IFRS. To avoid financially distorted data reported to capital markets due to the global financial contagion triggered by the COVID-19 pandemic (Al-Awadhi et al., 2020; Singh et al., 2020; Hsu & Yang, 2022; Chen et al., 2022), we ended the period before the pandemic spread.

3.2 Research Variables

Table 1 presents the research variables. Economic policy uncertainty is identified by EPU. In this study, we used the EPU index, compiled by Baker et al. (2016), to capture policy uncertainty in Brazil. It is measured on the basis of specific conditions obtained from the newspaper *Folha de São Paulo*. The EPU index is published regularly on a monthly basis.

Table 1
Research variables

Variable	Notation	Expected sign	Definition	References
Long-term debt	LTD	N.A	Book value of long-term debt to total assets.	Zhang et al., 2015; Granville et al., 2019; Almustafa et al., 2023
Short-term debt	STD	N.A	Book value of short-term debt to total assets.	Zhang et al., 2015; Granville et al., 2019; Almustafa et al., 2023
Economic policy uncertainty	EPU	-/+	Economic policy uncertainty index proposed by Baker et al. (2016). H_1 expects a negative relationship. H_2 expects a positive relationship.	Bajaj et al., 2021; Schwartz and Dalmácio, 2021; Makololo and Seetharam, 2020
Size	SZE	+	Natural logarithm of total corporate assets at the end of each quarter.	Asimakopoulos et al., 2023; Subhani et al., 2021
Profitability	PFT	+	Ratio of earnings before interest, taxes, depreciation, and amortization (EBITDA) to total corporate assets for each quarter.	Li and Qiu, 2018; Schwartz and Dalmácio, 2021
Tangibility	PPE	+	Ratio of corporate property, plant, and equipment to total assets at the end of each quarter.	Granville et al., 2019; Subhani et al., 2021
Growth opportunities	GRO	-	A variant of Tobin's ratio, measured as the ratio of total debt plus market capitalization to total corporate assets at the end of each quarter.	Bajaj et al., 2021
Taxshields	TSX	-	Ratio of depreciation and amortization to total corporate assets at the end of each quarter.	Bajaj et al., 2021; Granville et al., 2019
Inflation	IPC	-	Quarterly percentage change in the consumer price index at the end of each quarter.	Athari and Bahreini, 2023; Schwartz and Dalmácio, 2021
Economic growth	GDP	+	Quarterly percentage change in gross domestic product for each quarter.	Zhang et al., 2015
Exchange	EXC	-	Quarterly percentage change in dollar value for each quarter.	Bris and Koskinen, 2002; Tong and Wei, 2021
Stock market	STO	-	Quarterly percentage change in the Ibovespa index for each quarter.	Cao et al., 2013

Note: *The EPU index is available monthly for several countries at www.policyuncertainty.com. In our specifications, EPU_t is the current weighted economic policy uncertainty on a quarterly basis. To turn the index into quarters, the following transformation was used: $EPU_t = (3.EPU_m + 2.EPU_{m-1} + 1.EPU_{m-2})/6$, where m represents the EPU index for a given month (Zhang et al., 2015; Gulen & Ion, 2016; Nguyen & Phan, 2017; Schwartz & Dalmácio, 2021).*
Source: *Prepared by the authors.*

The EPU index refers to the economic risk associated with undefined future government policies and regulatory frameworks (Baker et al., 2016). This risk increases the likelihood that companies will delay their spending and investments due to market uncertainty (Al-Thaqeb & Algharabali, 2019). The economic consequences of policy uncertainty have been a topic of growing interest, with both the media and academia highlighting numerous events related to this issue.

3.3 Baseline Model and Estimation Strategy

Our baseline model proposes the following specifications:

$$LTD_{it} = \beta_{0i} + \beta_1 LTD_{it-1} + \beta_2 EPU_{it} + \lambda' VC_{it} + \pi' M_t + \varepsilon_{it} \quad (1)$$

$$STD_{it} = \beta_{0i} + \beta_1 STD_{it-1} + \beta_2 EPU_{it} + \lambda' VC_{it} + \pi' M_t + \varepsilon_{it} \quad (2)$$

The estimated coefficients for the firm and economy level variables (detailed in Table 1) are denoted as λ' and π', respectively. The model residuals are expressed as ε_{it} and the intercept of the models is represented by β_0. According to the first research hypothesis, it is appropriate to expect a one-tail negative relationship between long-term debt (null hypothesis: $\beta 1 \geq 0$; alternative hypothesis: $\beta 1 < 0$). Given theoretical and empirical approaches that support a positive relationship between uncertainty and short-term debt, it is appropriate to expect a one-tail

positive relationship between short-term debt and EPU (null hypothesis: $\beta 1 \leq 0$; alternative hypothesis: $\beta 1 > 0$). Time dummies for quarters were not included in the model because a specific test did not indicate the need for them. In the absence of dummies for quarters, the specifications of all empirical models considered four country-level controls (detailed in Table 1).

The central estimation method used to analyze the developed hypotheses was the system generalized method of moments (GMM-sys), which is well suited for short panels (Roodman, 2009). To examine the sensitivity of our results, we analyzed both balanced and unbalanced panel data sets and tracked the behavior of the coefficients associated with measures of EPU. Compared with other panel data estimation methods, GMM-sys addresses two key issues that affect estimation consistency. First, it tackles endogeneity arising from simultaneity, where variables might be jointly determined (Griliches & Mairesse, 1995). Unlike other methods, it is considered consistent in dealing with endogeneity arising from the correlation between variables conceived as independent and residual terms (Flannery & Hankins, 2013). Second, GMM-sys represents a feasible estimation for dynamic panels, where the dependent variable can be used as exogenous through lagged values (Piva & Vivarelli, 2005). This aligns with our research objective, as debt proxies can be explained by their distributed lags (Forte et al., 2013).

GMM-sys estimation has limitations for validating models, three of which must be highlighted (Bajaj et al., 2021). The first is the use of programming routines that avoid the proliferation of instruments. This cannot exceed the number of individuals (companies) sampled (Roodman, 2009). The second is the non-rejection of the null hypothesis of second-order residual autocorrelation (Arellano & Bond, 1991). Given a low p-value (< 5%), the hypothesis of no autocorrelation would be rejected, making the estimation invalid. The third limitation is the non-rejection of the instrument exogeneity hypothesis (Hansen, 1982). If a low p-value is found, there is evidence that the instruments are not exogenous, leading to the invalidation of the estimates. These tests were carried out in the section that presents the estimates of the baseline models.

3.4 Robustness Verification

In this subsection, we explore potential sources of measurement errors in the EPU index variable. One possible factor contributing to these errors is the presence of macroeconomic variables in the model that can affect the level of policy uncertainty. Specifically, it is important to consider the impact of fluctuations in inflation (IPC), gross domestic product (GDP), exchange rates (EXC), and equity markets (STO) on policy uncertainty. These variables may vary concurrently with changes in policy uncertainty, which could potentially confound our understanding of its true effects. Therefore, it is necessary to account for these variables as potential confounders in our analysis to ensure the accuracy and reliability of our results.

$$EPU_t = \delta_0 + \delta_1 IPC_t + \delta_2 GDP_t + \delta_3 EXC_t + \delta_4 STO_t + \varepsilon_t \quad (3)$$

To address this issue, an auxiliary regression was performed by regressing the EPU variable against the macroeconomic control variables (Model 3). The residual obtained from this auxiliary regression was then used to replace the EPU variable in the baseline model. This approach is consistent with previous studies, including those of Kaviani et al. (2017) and Schwartz and Dalmácio (2021), who suggest that the residual uncertainty derived from this approach can help mitigate the measurement error bias inherent in the EPU variable. Gulen and Ion (2016) also argue that models that aim to estimate residual uncertainty may provide a cleaner version of the EPU index.

4. DATA ANALYSIS

4.1 Summary Statistics

On a quarterly basis, Table 2 summarizes the descriptive statistics and the unit root test for both firm- and country-level variables.

Table 2
Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max	DF
Firm level						
LTD	5,999	0.206	0.147	0.001	0.68	19.45***
STD	6,126	0.102	0.102	0.001	0.669	6.062***
SZE	6,148	21.93	1.73	17.3	26.40	8.370***
PFT	6,147	0.021	0.028	-0.101	0.101	51.79***
PPE	6,148	0.585	0.197	0.153	0.929	13.44***
GRO	6,148	1.01	0.743	0.153	4.259	10.46***
TSX	5,711	0.028	0.082	0.000	0.533	20.12***
Country level						
EPU	40	5.142	0.473	4.28	6.249	-3.063***
EPUR	40	0.006	0.445	-0.783	1.213	-3.790***
IPC	40	0.014	0.008	0.002	0.038	-4.308***
GDP	40	0.003	0.01	-0.024	0.021	-4.476***
EXC	40	0.025	0.078	-0.105	0.264	-6.566***
STO	40	0.018	0.095	-0.162	0.181	-7.022***

Notes: *This table presents descriptive statistics of the variables used in the data analysis. In column DF, we present the panel data unit root test (Dick-Fuller test) for each research variable (H_0: data contain unit root). The research variables are described in Table 1.*
Source: *Prepared by the authors.*

4.2 Baseline model results

At the 1% significance level, columns (1) and (5) of Table 3 show that EPU has a negative effect on long-term debt ($t_{\text{fixed-effect}}$ = -3.33 and $z_{\text{gmm-sys}}$ = -3.97). For short-term debt, the estimates are significant at the 5% and 10% levels, respectively ($t_{\text{fixed-effects}}$ = 2.07; $z_{\text{gmm-sys}}$ = 1.87). Regarding the signs associated with EPU, they remain negative and positive for long- and short-term debt through fixed effects and GMM estimations, respectively. For the purposes of this investigation, the GMM-sys applications represent more complete and robust estimations considering the baseline models. Table 3 shows that the Hansen test does not reject the null hypothesis, which indicates that the instruments are valid. The second-order serial autocorrelation (AR2) test confirms its absence. The number of instruments is lower than the number of sample companies (58). These results support the validity of the GMM-sys estimates. We present the fixed effects, random effects, and GMM-sys estimates together to disclose the directions of the estimates with respect to the EPU index.

Table 3
Effect of EPU on long- and short-term debt

Variables	(1)	(2)	(3)	(4)	(5)	(6)
LTD_{t-1}	0.7848***		0.94121***		0.82474***	
	(0.0228)		(0.01043)		(0.05046)	
STD_{t-1}		0.7879***		0.90062***		0.85874***
		(0.0271)		(0.01756)		(0.04782)
EPU	-0.0050***	0.0040**	-0.00380***	0.00103	-0.00607***	0.00275*
	(0.0015)	(0.0020)	(0.00128)	(0.00151)	(0.00153)	(0.00147)
SZE	0.0084**	-0.0021	0.00207***	-0.00066	0.00659***	0.00012
	(0.0032)	(0.0023)	(0.00059)	(0.00048)	(0.00225)	(0.00070)
PFT	-0.0201	0.0346	0.00018	0.03791	0.06131	0.07781*
	(0.0453)	(0.0601)	(0.03720)	(0.04572)	(0.04188)	(0.04434)

Table 3
Cont.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
PPE	-0.0107	-0.0001	0.00728**	-0.01401***	0.00390	-0.00910
	(0.0127)	(0.0078)	(0.00341)	(0.00410)	(0.00907)	(0.00786)
GRO	-0.0010	-0.0023*	-0.00000	-0.00313***	-0.00381*	-0.00487***
	(0.0027)	(0.0012)	(0.00125)	(0.00086)	(0.00229)	(0.00126)
NDS	-0.0249	-0.0675	0.00440	-0.00353	0.01218	0.00203
	(0.0283)	(0.0427)	(0.00989)	(0.00931)	(0.01629)	(0.01192)
IPC	-0.1257	-0.0020	-0.07411	-0.01260	-0.14342*	-0.01610
	(0.0859)	(0.0898)	(0.08688)	(0.09238)	(0.08009)	(0.05803)
GDP	-0.0907	-0.1682**	-0.08057	-0.14946**	-0.09825	-0.07138
	(0.0779)	(0.0664)	(0.07879)	(0.06586)	(0.07277)	(0.05813)
EXC	-0.0175	-0.0036	-0.01892	-0.01023	-0.02608**	-0.00856
	(0.0110)	(0.0113)	(0.01168)	(0.01136)	(0.01151)	(0.00894)
STO	0.0045	-0.0067	0.00589	-0.01274*	-0.00593	-0.00148
	(0.0094)	(0.0077)	(0.00950)	(0.00759)	(0.00922)	(0.00608)
Constant	-0.1014	0.0519	-0.01536	0.03145**	-0.09911**	-0.00173
	(0.0703)	(0.0452)	(0.01442)	(0.01290)	(0.04797)	(0.01617)
Industry	-	-	-	-	Yes	Yes
Wald test	0,000	0,000	0,000	0,000	0,000	0,000
Instruments	-	-	-	-	58	58
Hansen J	-	-	-	-	0.140	0.813
AR (2)	-	-	-	-	0.406	0.650
Observations	5,419	5,522	5,419	5,522	5,419	5,522
R-squared	0.6307	0.6150	-	-	-	-

Notes: *This table reports the baseline model estimates considering an unbalanced panel (163 companies). Columns (1) and (2) report random effects estimates. Columns (3) and (4) describe fixed effects estimates. In favor of fixed effects, Hausman's robust test shows that it is appropriate. Columns (5) and (6) describe the GMM-sys estimates. All independent variables are lagged by one period. The research variables are described in Table 1.*
, ** and * denote the 10%, 5%, and 1% significance levels of each estimation, respectively.*
Source: *Prepared by the authors.*

The estimates described in column (5) provide empirical support for the first hypothesis (H_1) developed in section 3. Given the negative and economically significant coefficient (*ceteris paribus*) associated with the EPU index (-0.00607***), one standard deviation increase in EPU is associated with a 0.287% (-0.00607 x 0.473) decrease in long-term debt. Although the estimates reported in column (6) reveal a positive influence of EPU on short-term debt, which supports the second research hypothesis (H_2), they are empirically weaker than the estimates provided for long-term debt. With respect to the EPU index estimator (+0.00275*), one standard deviation in EPU is associated with a 0.130% (0.00275 x 0.473) increase in short-term debt.

These results suggest that higher levels of EPU are associated with a decrease in the use of long-term debt and an increase in short-term debt. As EPU increases, firms respond by adjusting their debt structures. This change in debt preferences can also be understood as a response to increased economic uncertainty, reflecting firms' intention to adapt to fluctuations in economic conditions, which is consistent with the predictions of the trade-off approach. Compared to studies that differentiate total debt components, the estimates presented in Table 4 align with the findings of Zhang et al. (2015), Granville et al. (2019), and Almustafa et al. (2023) regarding long-term debt. However, they contradict the results of Zhang et al. (2015) and Granville et al. (2019) for short-term debt. In both cases, the evidence contradicts Makololo and Seetharam (2020), who investigated this relationship in Brazil. The contrasting directions for long- and short-term debt warrant further analysis.

For long-term debt, EPU extends to external sources of financing. This evidence refines how the most representative source of debt in the capital structure responds to macroeconomic circumstances mediated by uncertainty. The negative effect is consistent with the contention that companies may deviate from their debt targets despite economic policy disturbances. This supports the idea that companies rebalance short- and long-term debt (Datta et al., 2019) and reinforces that EPU creates frictions in the debt market, compelling companies to review their external financing plans (Çolak, 2018). Before incurring debt, firms compare the benefits and costs of having it (Fama & French, 2002). The findings of this study allow us to assert that expanding long-term debt is not an attractive business strategy when uncertainty is high. These arguments are supported by the trade-off approach.

Regarding the relevance of long-term debt as an external source, one could argue that firms use it to finance long-term rather than short-term investments. Under the assumption that high EPU can be detrimental to the financing environment, it is reasonable to assume that companies will not opt for external sources or will use them cautiously. Much of the instability in economic policy supports the notion that the spread of uncertainty imposes obstacles on future cash flows of investments. Hence, we argue that firms will attempt to clarify the main directions taken by the government to expand long-term debt. They will wait until substantial uncertainty has dissipated to paint a broader picture of the economy before acquiring more long-term debt (Bloom, 2014; Julio & Yook, 2012; Selmi & Bouoiyour, 2020), similarly following the logic of "wait and see" behavior for corporate investments (Bernanke, 1983; Baker et al., 2016).

On the other hand, Table 3 posits that EPU increases firms' short-term debt. It is reasonable to assume that companies do not usually acquire short-term debt to fund capital expenditures, for example. In this sense, short-term debt is used to maintain companies' operations rather than to expand them. In times of high uncertainty, firms tend to use more short-term financing (Pan et al., 2019) because of the need to protect their working capital.

Bajaj et al. (2021) found that during periods of higher EPU, firms opt for higher debt due to uncertainty about expected profits. Additionally, uncertainty encourages firms to turn to cheaper sources of external financing to reduce equity risk. Although cheaper sources of debt are unclear, financial markets are the most common market used to support debt needs. In times of high uncertainty, we argue that companies seek out and increase cheaper sources of debt. They increase their dependence on short-term debt across financial markets to sustain their operations while policy uncertainty persists.

From the perspective of the propensity of firms to be conservative in incurring more debt in times of uncertainty, it can be argued that this behavior is associated with a shortening rather than an expansion of long-term debt. Therefore, considering the present findings, the estimates suggest that Brazilian companies tend to increase their short-term debt while delaying their long-term debt under the pressure of high uncertainty. This supports the notion that credit-providing institutions may adjust their criteria in response to increased uncertainty, thereby reducing credit availability and favoring shorter-term debt options (Lee et al., 2017). These changes in risk tolerance reflect the impact of growing uncertainty, resulting in a shift toward shorter-term debt preferences.

4.3 Forward Effect of EPU on Long- and Short-Term Debt

In this subsection, we explore the impact of current EPU (t) on both future long- and short-term debt. To examine the future effects of EPU in a manner similar to our previous analyses, we re-estimated the baseline model including both long-term and short-term debt in the current period (t) as independent variables. As a dependent variable, we considered multiple forward periods (t+1, t+2, …, t+n). The control variables remained unchanged.

Table 4
GMM-sys estimations for long- and short-term debt and forward effects of EPU

Panel A: Forward effect on long-term debt												
Variables	**LTD**$_{t+1}$	**LTD**$_{t+2}$	**LTD**$_{t+3}$	**LTD**$_{t+4}$	**LTD**$_{t+5}$	**LTD**$_{t+6}$	**LTD**$_{t+7}$	**LTD**$_{t+8}$	**LTD**$_{t+9}$	**LTD**$_{t+10}$	**LTD**$_{t+11}$	**LTD**$_{t+12}$
LTD	0.8257***	0.5862***	0.2326	0.1213	0.0807	-1439	-0.4192	-0.4543*	-0.1751	-0.2395	-0.3195	-0.2038
	(0.0815)	(0.1578)	(0.2052)	(0.2269)	(0.1875)	(0.2356)	(0.2771)	(0.2381)	(0.2354)	(0.2613)	(0.2199)	(0.3717)
EPU	-0.0038*	-0.0050*	-0.0094**	-0.0088**	-0.0133***	-0.0114***	-0.0072**	-0.0001	0.0101	0.0027	0.0058	0.0035
	(0.0019)	(0.0029)	(0.0041)	(0.0042)	(0.0044)	(0.0042)	(0.0035)	(0.0054)	(0.0062)	(0.0053)	(0.0061)	(0.0077)
CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.0978**	-0.2404**	-0.3832***	-0.5337***	-0.5304***	-0.5664***	-0.8440***	-0.7797***	-0.7568***	-0.7359***	-0.8521***	-0.7739***
	(0.0497)	(0.1001)	(0.1419)	(0.1707)	(0.1845)	(0.2161)	(0.2441)	(0.1776)	(0.2307)	(0.2097)	(0.2212)	(0.2593)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald test	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Instruments	49	48	47	46	45	44	43	42	41	40	39	38
Hansen J	0.113	0.236	0.197	0.208	0.119	0.630	0.183	0.333	0.476	0.915	0.001	0.191
AR (2)	0.572	0.321	0.480	0.427	0.422	0.886	0.656	0.279	0.154	0.169	0.333	0.122
Observations	5,267	5,107	4,948	4,795	4,639	4,488	4,337	4,186	4,034	3,884	3,734	3,590

Panel B: Forward effect on short-term debt							
Variables	**STD**$_{t+1}$	**STD**$_{t+2}$	**STD**$_{t+3}$	**STD**$_{t+4}$	**STD**$_{t+5}$	**STD**$_{t+6}$	**STD**$_{t+7}$
STD	0.9773***	0.5931***	0.6108***	0.3184	0.6479***	0.6432**	0.8313***
	(0.1013)	(0.1250)	(0.1966)	(0.2067)	(0.2159)	(0.2529)	(0.2506)
EPU	-0.0016	0.0006	-0.0033	-0.0019	-0.0047	-0.0033	-0.0046
	(0.0015)	(0.0020)	(0.0027)	(0.0025)	(0.0034)	(0.0031)	(0.0034)
CONTROLS	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.0139	0.0851**	0.1291**	0.1772***	0.1634***	0.1506**	0.1170**
	(0.0240)	(0.0391)	(0.0518)	(0.0603)	(0.0567)	(0.0672)	(0.0581)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald test	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Instruments	49	48	47	46	45	44	43
Hansen J	0.288	0.030	0.071	0.887	0.487	0.814	0.810
AR (2)	0.751	0.002	0.565	0.233	0.278	0.274	0.131
Observations	5,363	5,209	5,058	4,910	4,762	4,616	4,465

Notes: *The control variables employed are the same as those used in previous models. They were suppressed and identified in the "CONTROLS" row. The research variables are described in Table 1.*
, **, and * denote the 10%, 5%, and 1% significance levels of each estimation, respectively.*
Source: *Prepared by the authors.*

Table 4 reveals that the negative effect of the current EPU can persist for up to seven quarters. After that period, EPU is no longer significant. On the other hand, there was no evidence of any distributed effects on short-term debt. Our analysis indicates that the current EPU has a diluted negative effect on future long-term debt financing, which is a crucial component of total corporate debt. It supports the idea that companies tend to behave conservatively during times of high uncertainty. The results suggest that companies tend to rebalance their capital structure in response to disturbances caused by uncertainty, which leads them to reassess their optimal debt equilibrium in terms of long-term debt and, indirectly, equity. Therefore, our results extend the notion that EPU creates friction (Çolak et al., 2018) in the debt market due to the propagation of negative effects in forward quarters. Companies react to this friction by adjusting their debt structures, a behavior that could be described as putting the brakes on in terms of expanding their long-term needs.

The forward effects on short-term debt indicate that fluctuations in the current EPU have no impact on short-term debt. This suggests that short-term financing decisions are largely unaffected by fluctuations in EPU and are mainly focused on maintaining day-to-day business operations. Our results indicate that short-term financing decisions can withstand changes in EPU, both increases and decreases. This reinforces the idea that short-term debt is used for sustaining businesses and is relatively insulated from changes in broader economic conditions.

4.4 Local EPU Indicators

Table 5 presents estimations for three variants of the Brazilian economic uncertainty indicator provided by a local Brazilian institution, the Fundação Getúlio Vargas (FGV), namely the Media Indicator (BMD), Specialists' Expectations (BEX), and General Uncertainty (BGE) regarding long- and short-term debt.

Table 5
Brazilian economic uncertainty indicators and long- and short-term debt

Variables	(1)	(2)	(3)	(4)	(5)	(6)
LTD_{t-1}	0.8364***	0.8391***	0.8380***			
	(0.0571)	(0.0560)	(0.0574)			
STD_{t-1}				0.9186***	0.9430***	0.9358***
				(0.0898)	(0.0984)	(0.0905)
BMD	-0.0118			0.0079		
	(0.0080)			(0.0066)		
BEX		0.0072			-0.0106**	
		(0.0063)			(0.0047)	
BGE			-0.0061			0.0031
			(0.0076)			(0.0061)
SZE	0.0048**	0.0049**	0.0048**	-0.0002	-0.0001	-0.0001
	(0.0021)	(0.0021)	(0.0021)	(0.0005)	(0.0005)	(0.0005)
PFT	0.0554	0.0587	0.0571	0.0744	0.0756	0.0795
	(0.0422)	(0.0421)	(0.0422)	(0.0563)	(0.0599)	(0.0571)
PPE	0.0065	0.0063	0.0066	-0.0144	-0.0120	-0.0126
	(0.0084)	(0.0083)	(0.0084)	(0.0100)	(0.0108)	(0.0101)
GRO	-0.0023	-0.0021	-0.0022	-0.0032***	-0.0031**	-0.0031***
	(0.0025)	(0.0024)	(0.0024)	(0.0012)	(0.0013)	(0.0012)
TSX	0.0115	0.0118	0.0113	-0.0081	-0.0104	-0.0098
	(0.0157)	(0.0159)	(0.0157)	(0.0130)	(0.0127)	(0.0130)
IPC	-0.1037	-0.1082	-0.0931	0.0005	0.0275	-0.0038
	(0.0788)	(0.0815)	(0.0786)	(0.0728)	(0.0730)	(0.0729)
GDP	-0.0253	0.0165	-0.0136	-0.0513	-0.0894	-0.0597
	(0.0720)	(0.0689)	(0.0724)	(0.0662)	(0.0685)	(0.0674)

Table 5
Cont.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
EXC	-0.0156	-0.0143	-0.0146	-0.0017	-0.0019	-0.0023
	(0.0113)	(0.0107)	(0.0112)	(0.0092)	(0.0094)	(0.0093)
STO	0.0002	-0.0001	-0.0000	0.0054	0.0049	0.0054
	(0.0092)	(0.0091)	(0.0092)	(0.0063)	(0.0064)	(0.0064)
Constant	-0.0212	-0.1120**	-0.0478	-0.0149	0.0656*	0.0037
	(0.0527)	(0.0468)	(0.0517)	(0.0373)	(0.0345)	(0.0367)
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Wald test	0,000	0,000	0,000	0,000	0,000	0,000
Instruments	49	49	49	49	49	49
Hansen J	0.176	0.232	0.139	0.459	0.430	0.441
AR (2)	0.139	0.137	0.190	0.827	0.829	0.827
Observations	5,522	5,522	5,522	5,419	5,419	5,419

Notes: *Columns (1) to (3) consider long-term debt as the dependent variable and columns (4) to (6) consider short-term debt. All columns describe GMM-sys estimations. Unbalanced panel (163 companies). All independent variables are lagged by one period. The research variables are described in Table 1.*
, **, and * denote the 10%, 5%, and 1% significance levels of each estimation, respectively.*
Source: *Prepared by the authors.*

Ferreira et al. (2019) proposed these indicators, while Schwartz and Dalmácio employed a single metric (BGE) to investigate its impact on total debt. We extend the analysis by detailing the relationship of each single metric to long- and short-term debt separately. The controls in the estimations remained the same. To ensure comparability across the estimations, the monthly disclosed indicators were calculated based on the EPU proposed by Gulen and Ion (2016) and are presented in Table 2. Overall, the results in Table 6 suggest that the Brazilian economic uncertainty indicator cannot systematically explain long- and short-term debt.

4.5 Robustness Check

In this subsection, we propose two steps to mitigate endogeneity concerns arising from omitted variables and measurement errors. We employed the dynamic panel data GMM-sys, considering the residual EPU (EPUR) obtained from the auxiliary regression presented in subsection 3.5 as an independent variable. We expect the debt proxies to trend negatively and positively for long- and short- term debt, respectively. In the second step, we recalculated the coefficients using a balanced panel sampled from the same period and controls.

Table 6
Long- and short- term debt and residual EPU with GMM-sys approach

Variables	(1)	(2)	(3)	(4)
LTD_{t-1}	0.8337***		0.8823***	
	(0.0503)		(0.0403)	
STD_{t-1}		0.7638***		0.8218***
		(0.0640)		(0.0637)
EPUR	-0.0061***	0.0030**	-0.0043***	0.0038**
	(0.0015)	(0.0014)	(0.0014)	(0.0016)
SZE	0.0063***	-0.0002	0.0037**	-0.0048**
	(0.0022)	(0.0008)	(0.0015)	(0.0019)
PFT	0.0619	0.0323	0.0368	-0.0382
	(0.0415)	(0.0472)	(0.0421)	(0.0694)
PPE	0.0038	-0.0129	-0.0006	-0.0296**
	(0.0091)	(0.0103)	(0.0096)	(0.0141)

Table 6
Cont.

Variables	(1)	(2)	(3)	(4)
GRO	-0.0036	-0.0069***	-0.0013	-0.0017
	(0.0023)	(0.0016)	(0.0022)	(0.0040)
TSX	0.0111	0.0189	0.0005	-0.0178**
	(0.0159)	(0.0176)	(0.0025)	(0.0078)
IPC	-0.1602**	-0.0114	-0.0847	-0.0663
	(0.0807)	(0.0730)	(0.0835)	(0.0793)
GDP	-0.1052	-0.0569	-0.0559	-0.1134
	(0.0713)	(0.0616)	(0.0632)	(0.0711)
EXC	-0.0232**	0.0015	-0.0131	0.0027
	(0.0111)	(0.0090)	(0.0097)	(0.0096)
STO	-0.0042	0.0038	-0.0027	0.0051
	(0.0091)	(0.0070)	(0.0087)	(0.0085)
Constant	-0.1250**	0.0279	-0.0675*	0.1452***
	(0.0487)	(0.0198)	(0.0345)	(0.0538)
Industry	Yes	Yes	Yes	Yes
Wald test	0,000	0,000	0,000	0,000
Instruments	59	59	59	59
Hansen J	0.418	0.290	0.256	0.703
AR (2)	0.143	0.799	0.194	0.313
Observations	5,419	5,522	5,201	5,330

Notes: *Columns (1) and (2) report estimates of long- and short-term debt in an unbalanced panel (163 companies). Columns (3) and (4) describe long- and short-term debt in a balanced panel (142 companies). All columns describe GMM-sys estimations. All independent variables are lagged by one period. The research variables are described in Table 1.*
, **, and * denote the 10%, 5%, and 1% significance levels of each estimation, respectively.*
Source: *Prepared by the authors.*

Table 6 presents the results of the dynamic panel data estimation, which allow us to make the following remarks. First, the calculated χ^2 for Hansen J indicates that the instruments are not endogenous. The results of AR(2) indicate that there is no second-order autocorrelation. In addition, the number of instruments is lower than the number of companies. Second, for both the long- and short-term debt baseline model, columns (1) and (2) confirm the negative and positive effects of EPUR on long- and short-term debt, respectively. Third, as a precaution, we present estimates of the relationship between EPU and proxies for debt considering the same companies over the 40 quarters of the analysis (balanced panel). This evidence indicates that the same coefficient directions are maintained for the debt proxies and EPU. Finally, these findings confirm that under the pressure of EPU, firms tend to rely more on short-term debt and reduce long-term acquisitions, which supports the prudent behavior of firms in seeking more representative funds.

4.6 Additional Analysis: Effect of EPU on Corporate Investment

As shown earlier, long-term debt is the most important source of debt in the corporate capital structure. All estimates of long-term debt in relation to EPU were negative. The supply effect indicates a deterioration of the external financing environment, while the demand effect suggests that firms reduce their financing needs due to policy uncertainty (Cao et al., 2013; Zhang et al., 2015). Thus, the estimated negative effect of EPU on long-term debt is insufficient to determine which approach can clarify the relationship. To shed light on this issue, this subsection examines the relationship between EPU and investment, proxied by the ratio of capital expenditures to total assets. The underlying idea of this examination is that companies provide corporate investment with mixed sources of equity and debt. As previously stated, Bloom (2014) argues that economic policy impacts investment decision-making, making investors more cautious. Gulen and Ion (2016),

Kang et al. (2014), Wang et al. (2014), Chen et al. (2019), Chen et al. (2020), and Caixe (2022) have shown persistent negative effects of EPU on capital expenditures. The real options channel could explain the conservative behavior of investors in reducing investments. External financing is a relevant source of funding for investments through the debt market. Companies first manage investment plans and then seek sources of financing for their projects in the financial market, which raises the idea of balancing the interests of deficit and surplus agents. We argue that a negative relationship between debt and EPU is one of the implications arising from a shrinking environment of corporate financing driven by uncertainty, which is supported by the demand channel approach. The results of the estimations are presented in Table 7.

Table 7
EPU and corporate investment

Variables	(1)	(2)	(3)	(4)
CPX_{t-1}	0.1731***	0.1695***	0.1873***	0.1789***
	(0.0513)	(0.0496)	(0.0485)	(0.0473)
EPU	-0.0017***		-0.0018***	
	(0.0004)		(0.0004)	
EPUR		-0.0027***		-0.0028***
		(0.0005)		(0.0005)
SZE	0.0001	0.0001	0.0000	0.0000
	(0.0004)	(0.0003)	(0.0004)	(0.0004)
PFT	0.0211**	0.0200**	0.0138	0.0127
	(0.0101)	(0.0098)	(0.0112)	(0.0108)
PPE	0.0043	0.0043	0.0035	0.0037
	(0.0032)	(0.0032)	(0.0029)	(0.0029)
GRO	0.0020***	0.0020***	0.0021***	0.0019***
	(0.0007)	(0.0007)	(0.0007)	(0.0007)
TSX	0.0029	0.0032	0.0008	0.0009
	(0.0044)	(0.0042)	(0.0009)	(0.0009)
IPC	0.0650	0.0568	0.1110**	0.1059**
	(0.0528)	(0.0513)	(0.0538)	(0.0507)
GDP	0.0970***	0.1437***	0.0962***	0.1382***
	(0.0337)	(0.0376)	(0.0333)	(0.0383)
EXC	0.0001	-0.0019	0.0002	-0.0019
	(0.0025)	(0.0024)	(0.0024)	(0.0023)
STO	-0.0074**	-0.0107***	-0.0082***	-0.0108***
	(0.0029)	(0.0031)	(0.0026)	(0.0027)
Constant	0.0138	0.0051	0.0166	0.0060
	(0.0105)	(0.0106)	(0.0107)	(0.0107)
Industry	Yes	Yes	Yes	Yes
Wald test	0,000	0,000	0,000	0,000
Instruments	59	59	59	59
Hansen J	0.110	0.135	0.127	0.120
AR (2)	0.282	0.305	0.144	0.132
obs.	5,248	5,248	4,896	4,896

Notes: *This table reports the modified baseline model estimations considering a balanced and unbalanced panel (GMM-sys) to examine the effect of EPU and EPUR on corporate investment. As a dependent variable, corporate investment in t was proxied by the ratio of capital expenditures (CPX) to total assets. Columns (1) and (2) present estimates with an unbalanced panel (163 companies). Columns (3) and (4) report estimates with a balanced panel (142 companies). All columns describe the GMM-sys estimations with the same controls from the previous analysis. The research variables are described in Table 1.*
, **, and * denote the 10%, 5%, and 1% significance levels, respectively.*
Source: *Prepared by the authors.*

The results in Table 7 indicate a negative impact of EPU on corporate investment, with a significance level of 1% in both unbalanced and balanced panel data estimates. The results remain similar when EPUR is used as a proxy for uncertainty. It is noteworthy that the coefficients related to EPU and EPUR, and their robust standard errors, have similar magnitudes across estimations. These findings are consistent with those of previous studies conducted in different countries. These results suggest that the relationship between EPU and corporate investment coexists with that of EPU and long-term debt. This allows us to infer that policy uncertainty can affect corporate decision making both through the real options channel (Bernanke, 1983; Bloom, 2014) by reducing investments and through the demand-supply channel (Zhang et al., 2015) by reducing the incurrence of long-term debt.

5. CONCLUSIONS

It is crucial to understand and characterize the factors that may influence corporate debt decisions. EPU is recognized as an influential factor that impacts firms' trajectories as they deal with obstacles introduced by government economic policies. This study investigated the relationship between EPU and debt, with a specific focus on both long- and short-term debt. We proxied economic uncertainty using the EPU index developed by Baker et al. (2016). The baseline model considered several firm-level and macroeconomic controls. In addition, different alternatives were employed to represent EPU. To deal with potential endogeneity, the GMM-sys approach was used in the inferential analysis. The results obtained highlight the significant role of EPU in shaping debt structures, which confirms the research hypothesis presented.

The contributions of this study are as follows. EPU affects long- and short-term debt differently. We showed that higher levels of EPU tend to reduce the use of long-term debt. This finding is consistent with the logic that costs outweigh benefits when companies consider acquiring long-term debt in times of high EPU. In turn, this reduction in reliance on long-term debt provides evidence for the financial literature through what is proposed by the trade-off approach. Since long-term debt is relevant for corporate purposes in the international capital market environment, the declining reliance presented is consistent with what has been evidenced in several countries where economic uncertainty has been observed as unfavorable for long-term corporate plans. Moreover, there is evidence that the negative effect of the current EPU persists up to seven quarters forward, suggesting a perspective of conservative behavior for managing debt structures when uncertainty is considered to be high. The economic message of these results is to reveal how sensitive an increase in EPU can be in inducing frictions in the debt market. For short-term debt, the relationship was empirically observed to be positive. Despite the significant capacity of short-term debt in explaining future short-term corporate decisions, it was not observed that current EPU has a distributed effect on it. This finding indicates that corporate short-term debt policies are not centered on economic uncertainty spread over time, which corroborates the idea that an increase in short-term debt in the present time prioritizes the continuity of companies' operations.

Additional analysis showed that uncertainty also influences a reduction in capital expenditures, which is consistent with a reduction in long-term debt. Uncertainty about future cash flows for operational maintenance and investments influences the decision-making process regarding debt and investment policies. This finding can be supported by the demand channel approach for accessing financing markets, since companies have become cautious about their need for long-term funds. Finally, our findings are consistent with alternative measures of uncertainty, endogeneity concerns, and a shifting sample to a balanced panel. Since long-term funds are more likely to be used for capital expenditures than current assets, we argue that this study differs from others as it approximates the co-movement of long-term funds with corporate investment. On the one hand, the results are consistent with the trade-off approach for debt and real options for investments. On the other hand, we extend the current understanding of the relationship studied, since we provide evidence that the delineation of the debt structure can play a significant role in understanding the consequences of EPU upsurges.

The limitations of this research are that it considers listed companies. We believe that the investigation would be made deeper by also including non-listed companies in a larger sample. In turn, broader inferences on debt nuances and EPU would be made. It is worth noting that this relationship could continue in different industries, for instance, the impact of uncertainty on different types of loans provided by financial institutions to corporate initiatives. On the other hand, research that advances on the effect of political connections, political risk, and economic policy uncertainty on corporate financing would be relevant in light of evidence that companies may be politically engaged.

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