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HUMBERTO PIGOZZO MARTINS BARINO

ACCOUNTING CONSERVATISM, DEBT CONTRACT AND OPERATING CYCLE

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In memoriam of Ely Stela Pigozzo Martins,
my grandmother, mother of my mother, who
died shortly after I started the master's
degree, because she knew I was following
the right way and soshe could rest in peace,
protecting me in my path.

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Iniciar o mestrado foi o passo mais arriscado que já tomei em minha, até então, breve vida. Saí da menor cidade do Espírito Santo, em extensão territorial, para finalmente morar em Vitória, ilha capital de nosso estado. Larguei um emprego certo pela incerteza do que poderia vir pela frente. Não era certo se seria contemplado com a bolsa ou se conseguiria um emprego que fosse flexível no horário, me permitindo continuar com o meu objetivo.

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Sem pressa.

José Elias Feres de Almeida

(Dita naqueles momentos que, para mim, obviamente eram de pressa).

Who are you and who am I

To say we know the reason why?

Some are born; some men die

Beneath one infinite sky

David Gilmour

ABSTRACT

This study examines how leverage combined with the length of the operating cycle moderate the effect of conditional conservatism.I use a sample of U.S.firms and, alternatively, a sample of Brazilian firms.I estimate regressions with firm and year fixed-effects and show that longer operating cycles in highly leveraged firms reduce conservatism in the financial reporting, while longer operating cycles increase the conservatism in lower leveraged firms. Also, firms with shorter operating cycles increase the conservatism in highly leveraged firms, while lower leveraged firms with shorter operating cycles report less conservatively their accounting figures.My findingssuggest that debt drives the conservatism as in prior findings and show that the length of the operating cycle adds incremental information. Strengthen prior studies, my findings are in accordance with the accounting conservatism literature andextendprior literature that conservatism is a response to idiosyncratic uncertainty and that information quality are determined for firm specific characteristics.

Keywords: Conditional conservatism; Debt contracting; Operating cycle; Uncertainty.

RESUMO

Este estudo examina como o nível de endividamento combinado com o tamanho do ciclo operacional direciona o efeito de conservadorismo condicionalutilizando uma amostra composta por firmas dos Estados Unidos e uma amostra composta por firmas brasileiras.Utilizandoregressões com controle por efeitos fixos por empresa e ano, os resultados indicam que longos ciclos operacionais em firmas altamente endividadas reduz o conservadorismo nas demonstrações financeiras, enquanto aumenta o conservadorismo nas firmas com baixo nível de endividamento. Já ciclos operacionais mais curtos aumenta o conservadorismo em firmas com alto grau de endividamento e reduz o conservadorismo em firmas pouco endividadas. As evidências reforçam estudos anteriores ao demonstrar que o endividamento disciplina a relação com o conservadorismo e que o tamanho do ciclo operacional adiciona informações incrementais.Os resultados dessa dissertação corroboram com estudos anteriores a respeito do conservadorismo contábil e amplia evidências de que o conservadorismo é uma resposta a incerteza de cada firma e que a qualidade da informação contábil é determinada por características específicas das firmas.

Palavras-chave: Conservadorismo; Endividamento; Dívida; Ciclo operacional; Incerteza.

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1 INTRODUCTION

Prior literature has shown that debt contract plays a role on shaping conditional conservatism(see Ball, 2001; Barton &Waymire, 2004; Watts, 2003a; Bharath, Sunder & Sunder, 2008; Armstrong, Guay & Weber, 2010; Shivakumar, 2013; Sunder, Sunder & Zhang, 2018).Moreover,many other factors like auditor, boards (Ball & Shivakumar, 2007), regulatory scrutiny (Ball & Shivakumar, 2005), product market competition (Dhaliwal, Huang,Khurana & Pereira, 2014), litigation (Watts,2003) and so also affect accounting conservatism.This study examines the impact of firm's length operating cycle onthe demand for conservatism in financial reporting under debt contracts perspective both in US and Brazilian firms. The relation between debt contract and conservatism may be influenced by the higher risk generated by longer operating cycles due to higher uncertainty on the long horizon.

The well-documented relation between conservatism and debt contract needs additional information because the quality of the accounting figuresdepends not only on the benefits firms expect to derive from disclosure or from lender's demand, but also on other firm-specific attributes (Cohen, 2006).

Conservatism is a crucial concept in accounting (Watts, 1993). Conditional conservatism is defined as the asymmetric recognition between good news and bad news[1], where the latter one is anticipated by the market (Basu, 1997). The traditional view of conservatism in GAAP helps to protect creditors (Watts &Zimmerman, 1986).If firms anticipate bad news (economic losses), they are reducing uncertainty(Watts, 2003)ofboth future events and inherent risks of the firm,mainly related to future cash flow(see Donovan, Frankel &Martin, 2015), also more reliable estimates can be obtained(Watts, 2003; LaFond&Watts, 2008).

The role of conservatism on contracts allows a more efficient monitoring of managers and increases the demand for timely information of bad news to protect creditors (Basu, 1997; Donovan et al., 2015). The relation between debt contracting and conservatism is also reflected through the balance sheet channel (Sunder, Sunder & Zhang,2018), demonstrating that conservatism works, in sum, as an efficient contracting mechanism (Watts, 2003).

[1] This concept is also defined in the literature as the timely loss recognition.

Allcontracting provisions (including the accounting polices) are endogenous as stated by Watts andZimmerman (1990).Moreover, creditors expect timely loss recognition to reduce uncertainty (Watts, 2003).

I argue that managers can recognize/anticipate losses in advance looking forward a year ahead to reduce the uncertainty about future events, in order to protect creditors and others firm's stakeholders, as shareholders, for example.

However, firms with long operating cycles may behave differently, since them naturally have higher uncertainty in their operations (Kempf, Keskinocak & Uszoy, 2011), and to reduce uncertainty about future cash flows "accountants, auditors, regulators, and the courts determine the uncertainty to be unacceptably high for stewardship and contracting purposes" (Kothari, Ramanna and Skinner, 2010).Also, the uncertainty on long-horizon is higher for firms with long operating cycle as shown in Dechow and Dichev (2002), whichincreases accruals errors, making them less helpful in predicting future cash flows.

Prior literatureshows that debt contracting play a role on conditional conservatism and earnings quality measures (Watts &Zimmerman, 1986; Ball, 2001; Watts, 2003a; Bharath et al., 2008; Armstrong et al., 2010; Shivakumar, 2013; Sunder et al., 2018), also previousstudiesdocuments the effect of leverage (see Ball, 2001; Barton &Waymire, 2004; Ball &Shivakumar, 2005; Goh &Li, 2011; Shivakumar, 2013; Ge, Seybert &Zhang, 2018) and the length of the operational cycle (see Dechow, 1994; Dechow &Dichev, 2002; Cohen, 2006; Zang, 2012) onfinancial reporting, but how the length of the operating cycle affects the demand for a conservative accountingfigures,is still an open question in the accounting conservatism literature.

Dechow (1994) and Dechow and Dichev (2002) has considered the length of operating cycle as channel through which could map the uncertainty on long-horizon, but no prior study, to the best of my knowledge, has considered how the uncertainty on long-horizon proxied by the length of the operating cycle,impacts the demand for conditionalconservatism underadebt contracting perspective. Studies have shown that there is a positive relationship between accounting information quality and the

quality of accruals[2] (see Dechow& Dichev, 2002) or, in other words, less reliable accruals lead to less reliable information. The accounting information provided by firms with longer operating cycles are less reliable, since the higher uncertainty lead to more estimative errors and lower quality of accruals, reducing the quality of the information in financial reports. Thus, I believe that firms with longer operating cycles have higher demand for report conservatively since creditors expect conservatism in the financial report, in order to reduce uncertainty (Watts, 2003).

Managers of firms with longer operating cycles could have higher incentives and opportunities to manage earnings intentionally (Zang, 2012), which may distort the market view of the firm and reduce the reliability of theaccounting information. The long horizon of time (i.e, long operating cycle) generates uncertainty in the firm's prospects and future cash flows; so, in order to alleviate lenders' skepticism about firms' future prospectsmanagers can choose early recognition of gains rather than losses (Zhang, 2008). Additionally, as uncertainty about future gains (cash flows) increases as the time horizon increases, to avoid problems with creditors, managers of highly leveraged firms with longer operating cycles may report more good news than bad news. Conditional conservatism works as a tool both to reduce these dysfunctional actions (see Watts, 2003) and to constrain earnings management (Guay & Verrecchia, 2007; LaFond & Watts, 2008). Moreover, conservatism fulfill an important role providing information for investors and to capital market (Watts, 2003), which lead me to believe that investors from highly leveraged firms with longer operating cycles have higher demand for a more conservative accounting.

To disentangle this theoretical perspective on how the length of the operating cycle affect the demand for conservatism from investors, lenders and creditors, in highly and lower leveraged firms, I develop four different environments for firms, lower and higher leverage combined with shorter and longer operating cycles. To determinate which firms have longer operating cycle and higher leverage levels, Iestimate operating cycle and leverage quartiles by two-digits SIC-industries and define that firms with longer operating cycle and highly leveraged are those in the upper quartile. In the same way, firms with shorter operating cycles and lower

[2] The channel through which conditional conservatism works is accrual accounting, thus this allows firms to anticipate future economic losses.

leveraged levels are those in the lower quartile of the industry. Then I combine the quartiles in order to create the four environments: HL (high leverage-longer operating cycle), HS (high leverage-shorter operating cycle), LL (low leverage-longer operating cycle) and LS (low leverage-shorter operating cycle).

Highly leverage firms have higher demand from lenders and investors, to report conservatively (Watts,2003a;Barton &Waymire, 2004; Zhang, 2008)because the firms' risk increases with the firms' financial leverage (Cohen, 2006).Barton and Waymire (2004)find that managers' incentives to report high quality financial statements rise with the level of shareholder-debtholder agency conflicts, so I expect that highly leveragedfirms (higher risk) with longer operating cycles (higher uncertainty as stated by Dechow & Dichev, 2002)behave conservatively and that lower leveraged firms with shorter operating cycles are less conservative, due to the lower risk and uncertainty.

However, how leverage and operating cycle combined together affects conservative demand in the environments HS (high leverage-short operating cycle) and LL (low leverage-long operating cycle) is slightly tricky, so I do not make an *ex-ante* prediction as to the direction of the impact. The quadrant below shows the environments where conditional conservatism wouldbehave differently because the length of the operating cycle could influencethe relation between debt contract andtimely loss recognition.

Table1: Predictions for the demand on conditional conservatism in each environment

		Operating cycle	
		Long	Short
Leverage	High	Higher uncertainty: Higher demand for conservatism in financial reporting	Void in theory

Low	Void in theory	Lower uncertainty: Lower demand for conservatism in financial reporting

I adjust the earning-return model (Basu, 1997) by including the environments where each firm is allocated based on the level of leverage and the length of operating cycle. In this case, it is considered the environments, as the group of interest, versus the remaining sample. For example, when HL environment is analyzed (Upper quartile of leverage and upper of operating cycle) the middle and lower quartiles are used as the comparison group. I use firm and year fixed-effects regressions, and find positive coefficients for highly leveraged firms' environments and negative coefficients for lower leveraged firm's environments, either for longer and shorter operating cycles.

I find that the length of theoperating cycle affects differently whether a firm has a higher or lower leveraged level. In the environments where firms are highly leveraged, the coefficients for shorter operating cycles are higher than for firms with longer operating cycles, showing that highly leveraged firms with shorter operating cycles are more conservative than highly leveraged firms with longer operating cycles and that differently than I expected, highly leveraged firms with longer operating cycles are not the most conservative. In opposite way, the lower leverage level environment coefficients for longer operating cycles are higher than those for shorter operating cycles, showing that lower leveraged firms with longer operating cycles report more conservatively than lower leveraged firms with shorter operating cycles.

I believe that this happens because managers have higher incentives and more opportunities to manage earnings intentionally than for report conservatively in the risky environment (Higher level of leverage and longer operating cycle), since avoid debt covenants is a strong motivation for earnings management (Dechow, Sloan &Sweeney, 1996; Beatty &Weber, 2003; Dechow, Ge &Schrand, 2010). On the other side, in the lower leveraged levels, the uncertainty caused by longer cycles increases the risk, and since those firms are in safer environments with lower

incentives to manage earnings intentionally, increase the operating cycle increases the demand for conservatism.

This study contributes to the conservatism literature by showing that the length of the operating cycles adds incremental information together with leverage on conservatism andthe degree of conservatism is different over the four environments developed.My findings also contribute to auditors and investors, who may consider the firm environment to increase scrutiny on the financial reporting process or to better allocate their capital, respectively.

2 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Prior literature shows that debt contracting (see Ball, 2001; Barton &Waymire, 2004; Bharath et al., 2008; Armstrong et al., 2010; Shivakumar, 2013; Sunder et al., 2018) and the length of operating cycle (see Dechow, 1994; Dechow & Dichev, 2002; Zang, 2012) plays a role on conditional conservatism and earning quality measures (Cohen, 2006). Previous studies demonstrate that highly leveraged firms report more conservatively (Watts,2003a; Zhang, 2008; Donelson, Jennings & McInnis2017), but there is noagreement about how the length of the operating cycle impact ondemand for a conservative accounting. In this study, I examine how the length of the operating cycle combined with the firm's leverage level affects the demand for conditional conservatism in financial reports.

Financial reporting is useful under the contracting explanation to reduce agency problems and moral hazard issues (Watts, 2003a), and the accounting conservatism works, in sum, as an efficient contracting mechanism (Watts, 2003). Also, the traditional view of conservatism in GAAP helps to protect creditors (Watts & Zimmerman, 1986). It is important to notice that all the contracting provisions (including the accounting polices) are endogenous as stated by Watts and Zimmerman (1990), and that moral hazard in accounting reports will exist as long the accounting figures are used to measure managers perform.

Conservatism is one of the oldest accounting principles (Ball, 2001) and isa crucial concept in accounting (Watts, 1993), widely used asa measure of "earnings quality" (Dechow, Ge & Schrand, 2010).Conservatism works as one potential mechanismto address the agency problems (LaFond & Watts, 2008).An important

benefit of conservatism is that bad news are recognized more timely than good news[3](Basu, 1997), whichreduces the opportunities for earnings management (Guay & Verrecchia, 2007), makes managers less likely to investand to continue investments they expect to be unprofitable (Ball & Shivakumar, 2005), protect creditors and preserves firm value (Donovan, Frankel & Martin, 2015). Also, timely loss recognition is associated with more effective internal controls (Goh & Li, 2011) and DeFond and Jiambalvo (1994) find evidences that when auditors insist on conservative accounting choices,manipulation of income (i.e, earnings management)are less likely to occur.

Conditional conservatism provides lenders more timey signals of default risk (Zhang, 2008) and reduce uncertainty both of future events and inherent risks of the firm, mainly related to future cash flow(see Donovan, et al., 2015). More reliable estimates can be obtained when firm's report more conservative accounting figures (Watts, 2003).Also,by asymmetric recognition between good and bad news, where the latter one is anticipated (Basu, 1997), conditional conservatism reduces manager's incentives and ability to manipulate accounting numbers(LaFond & Watts, 2008).

Kothari et al. (2010) rise the question on GAAP impact on debt contracting efficiency since the use of fair value can reduce the ability of balance sheet and income statement for debt contracting and managerial monitoring purposes. Thus, to reduce uncertainty about future cash flows "accountants, auditors, regulators, and the courts determine the uncertainty to be unacceptably high for stewardship and contracting purposes" (Kothari et al., 2010). Moreover, on creditors perspective, they expect timely loss recognition to reduce uncertainty (Watts, 2003).

I argue that managers can recognize/anticipate losses in advance looking forward a year ahead to reduce the uncertainty about future events, in order to protect creditors. But for firms with longer operating cycles could not reflect the same perspective, since these firms naturally have higher uncertainty in their operations.

The GAAP allows managers in the financial reporting process to recognize, measure and report all events happened during a period of time, by imposing a common set of principles, standards and procedures, improving the communication

[3]Conditional conservatism.

to the market. The accrual processinvolves using forward-looking estimates. For example,revenue from credit sales is recognized before the cash isreceived, a process that involves estimating times, and estimations errors can occur (Dechow & Dichev, 2002).

Each firm has its own period of time (cycle) to buy inventory, produce and sell their products and to collect cash from the sales and the operating cycle captures this information. In such case, the GAAP has its conventions to transform the events information in financial information to financial reporting users. For example, firms with shorter operating cycle can have their operating cycle many times during an accounting period (a month, a quarter or an annual period). However, firms with longer operating cycle, for instance more than one year, mandatorily use GAAP resources to report the financial statements and the operating cycle not necessarily is the same as the accounting period.

For firms with long operating cycles to report bad news in short term could be risky due to the higher uncertainty of future events, in view that managers do not know if they are able to recover these losses, and in one of the uncertainty scenarios, the firm can have more economic losses, which may decrease the reliability of the stakeholders in the manager, leading to his resignation.

Furthermore, since become hard to identify future economic losses, firms can report more good news than bad news to alleviate lenders' skepticism about firms' future prospects. Besides that, firms with longer operating cycle impair the foresight of future earnings then managers of highly leveraged firms with longer operating cycles to avoid problems with their creditors and investors may report more good news than bad news in comparison to firms with low leverage and short operating cycles (even with the higher demand for conservatism given the higher uncertainty), so managers from longer operating cycles have higher incentives and opportunities to manage earnings intentionally, harming the reliability of financial reports.

Conditional conservatism works as a tool to reduce these dysfunctional actions (see Watts, 2003), since timely loss recognition reduces manager's ability to manipulate accounting numbers (Guay & Verrecchia, 2007; LaFond & Watts, 2008).

Firms with longer operating cycles report less reliable accounting numbers and suffer from more information asymmetry and agency problems (Dechow & Dichev, 2002), generating a higher demand for conservatism (Khan & Watts, 2009). I believe that the lower quality of accounting information by firms with longer operating cycle (i.e. higher informational asymmetry) when combined with higher leverage levels increases the demand for conservatism in accounting.

The financial reporting quality is determined by specific firm's characteristics (see Cohen, 2006; Dechow et al., 2010), which is another factor that lead me to believe that the uncertainty contained in long operating cycles affects the demand of lenders for more conservative accounting. Moreover, since some firms operate with operating cycle longer than accounting period, the GAAP conventions requires to them to behave in a conservative way, while firms with shorter operating cycle can recognize economic losses within a year and recover eventual losses over the year increasing sales and increasing net income.

In this research, I argue that if debt contracting increases the demand for conservatism (so highly leveraged firms are more conservative), this could reflect differently whether a firm has longer or shorter operating cycle because the length of the operating cycle can affect creditors and investors ability to monitor debt contracts measured by leverage level since the expectation of future cash flow in the long-run increase uncertainty and that one important motivation for earnings manipulation is the desire to avoid debt covenant restrictions (Dechow, 1996; Beatty & Weber, 2003), also firms with longer operating cycles have less reliable accounting numbers (Dechow & Dichev, 2002), another issue to increase the demand for timely loss recognition during an accounting period (fiscal year).

Managers of firms that have longer operating cycles face different demands from shareholders (e.g LaFond &Roychowdhury, 2008, provide evidence that firm's shareholders also demand for conservatism) and other contracting parties than those who manage firms with shorter cycles, due to the different level of risk, volatility and uncertainty about future cash flows. Then, I posit that highly leveraged firms with longer operating cycle behave differently in terms of conditional conservatism due to the uncertainty on the long horizon.

In highly uncertain scenarios managers have higher demand to report conservatively accounting figures (bad news), or, in other words, to report losses timelier than gains. This conservative approach helps to protect creditors and shareholders (see Donovan et al., 2015) by reducing uncertainty about inherent risks of the firm, mainly related to future cash flows beyond the accounting cycle. Highly leveraged with longer operating cycles are risky than others, due to the uncertainty in their operations (i.e. long-horizon) and to the higher leverage level, thus reporting lower accounting numbers (Cohen, 2006), and in order to protect creditors and shareholders these firms face higher demand for conservative reports (LaFond &Roychowdhury, 2008; LaFond &Watts, 2008).

The channel through which conditional conservatism works is accrual accounting, thus this allows firms to anticipate future economic losses. Dechow and Dichev (2002) stated that accounting information provided by firms with longer operating cycles are less reliable, since the higher uncertainty lead to more estimative errors and lower quality of accruals, harming the accounting information. Additionally, the long duration of accruals of firms with longer operating cycle makes it hard to identify future economic losses, increasing the firm's risk, which lead to a higher demand for conservatism.

Zang (2012) used the length of the operating cycle as a proxy foraccounting flexibility to accrual management, because longer operating cycles have larger accrual accounts and more time (long period) to reverse accruals.

Not only those factors above are already increasing the conservative demand by stakeholders, but also managers have a higher demand to report more conservatively to enhance their credibility, since "More conservative financial reporting can enhance information credibility when investors believe that managers might seek to overstate income and net assets for personal gain" (Barton &Waymire, 2004, p.67).

In addition to the expose by Dechow and Dichev (2002), accounting numbers are made from estimates and are subject to the most diverse uncertainties in the accounting cycle. For example, to recognize the revenue we first have to estimate the production cost of the asset and the selling price, and the longer the operating cycle, the greater estimation errors to which firms are exposed.

We also need to consider the internal uncertainty in the production planning, in addition to above, since firms with longer cycles may not recover from eventual losses over the year, in the current accounting period, which may be a reason to manage earnings intentionally, increasing the demand for a conservative accounting (Lafond &Watts, 2008).

According to Kempf et al. (2011, p. 84) the largest single source of uncertainty is the natural uncertainty on the demand forecast. Forecasts are never perfect, but the longer horizon of longer operating cycles increases the difficulty of an accurate provision. Over-production can harm the profitability and competitivity of a firm as much as the insufficiency to deal with customer demand. Although, with more uncertainty more safety stock is needed, “which results in pressure to increase further planned lead times. This can lead to a so-called vicious cycle” (Kempf et al., 2011), also increasing the demand for conservatism, in order to protect investors' capital.

Ball and Shivakumar (2007) analyzing UK firms, findthat initial public offering (IPO) firms report more conservatively and they attribute this to the higher quality reporting demanded for these firms by financial statement users. In the same direction, Cohen (2006) findevidences of positive association between investors’ demands for firm-specific information and financial reporting quality. Increasing my thoughts that highly leveraged firms with longer operating cycle report more conservatively due to the higher demand.

How the length of the operating cycleaffects the demand for a conservative accounting, under a debt contract perspective, is a gap in the conservatism literature. To disentangle this theoretical perspective, I develop four different environments for firms: Low and high leverage levels combined with short and longer operating cycles, being riskier the scenario where firms are highly leveraged and have longer operating cycles, since leverage increases firm’s risk and that longer operating cycles increases the uncertainty and impair the foresight of future earnings.

Since highly leveraged firms have a higher conservative accounting (confirmed by prior literature and demonstrated in the table 7, I hypothesize that highly leveraged firms with longer operating cycles are more conservative, because the lower quality of accounting information in firms with longer operating cycle and

the uncertainty generated by the long provision horizon are a second motivation for those firms report conservatively, so I expect higher demand for conservatism from lenders, since this demand might get exacerbated by the presence of a long operating cycle. So, I state my first research hypothesis bellow, based on the riskier environment:

H1:Highly leveraged firms with longer operating cycles are more conservative.

Using similar logic, I expect the coefficient for LS (low leverage-short operating cycle) to be negative. A low leverage would usually create a lower demand for conservatism. When the same firm with low leverage also has a short operating cycle (lower uncertainty), I expect the demand for conservatism to reduce even further. On top of that, since LS is the safer and more predictable environment that I developed, my second hypothesis is stated bellow:

H2:Lower leveraged firms with shorter operating cycles are less conservative.

Howleverage and operating cycle combined together affects conservative demand in the environments HS (high leverage-short operating cycle) and LL (low leverage-long operating cycle) is slightly tricky. For instance, for high leverage and short operating cycle, it is not clear if the demand for conservatism arising from higher leverage would get offset by a short operating cycle, or whether lenders would ignore the shorter operating cycle (lower uncertainty) in the presence of high leverage, or if the lenders would actually reduce the demand for conservatism due to lower uncertainty (short operating cycle). Similarly, for LL (low leverage-long operating cycle), it is not very clear whether the low demand for conservatism arising from a low level of leverage, would get negated by the existence of a longer operating cycle (higher uncertainty). As a result, while I make predictions for the HL and LS environments, I am not able to definitively predict the signs on the coefficients for HS and LL, so I do not make an ex-ante prediction as to the direction of the impact. Consequently, I write my third hypothesis in the null form as follows:

H3:The length of the operating cycle combined with the leverage level in HS and LL environments does not affect the demand for conservatism in financial report.

3 RESEARCH DESING

3.1 Sample selection and Measures

The sample isobtained from the intersection of Compustat and CRSP databases. I start with data from Compustat database over the period 1987-2017, resulting in 319,131 firm-year observations in my initial sample.Following prior studies. I exclude firms in the financial sector (SIC codes 60-69) resulting in 244,744 firm-year, I also exclude firm-year observation with total assets, absolute value of shareholders' equity, revenue and market value lower than $1 million. In addition, I remove observations with closing stock price less than $5 as well, resulting in 153,149 observations[4]. Then I merged the Compustat file with CRSP database, in order to obtain stock price and return variables. Following Basu (1997), stock returns are the raw returns from CRSP less CRSP Equal weighted market return. I lose further 53,934 observations in the merge process, resulting in 99,215 firm-year observations. This process is demonstrated in table 2. All accounting variables, measured per share, are deflated by the opening stock price to control for heteroskedasticity, following Basu (1997).

I further delete 31,278 firm-year with missing values for any of the variables used in the estimation of the main model, these filters result in a sample of 67, 937 firm-year observations in the final sample for the main model.

Table 2: Sample composition

(=) Initial sample observations	319,131
(-) Financial sector	(74,387)
(-) Revenue < $1 million	(25,225)

[4] Prior literature has provided evidence of a possible contamination in stock returns arising from small size stocks. For instance, Bernard, Thomas and Wahlen (1997) show that when they exclude the observations with stock price less than $5, the announcement period abnormal returns are reduced by about one-half. Although I don't use abnormal stock returns, I do use stock returns, and delete the small price observations in order to avoid any potential bias similar to the one mentioned here.

(-) Total assets < $1 million	(2,009)
(-) Absolute value of shareholders' equity < $1 million	(6,589)
(-) Market value < 1$ million	(2,040)
(-) Closing price < 5	(55,732)
(=) Observations before merge	153,149
(-) Loss in merge process	(53,934)
(=) Sample after merge	99,215
(-) Exclusion of empty cells	(31,278)
(=) Final sample	67,937
(=) Highly leveraged firms with longer operating cycles sic2	4,011
(=) Highly leveraged firms with shorter operating cycles sic2	4,894
(=) Lower leveraged firms with longer operating cycles sic2	4,903
(=) Lower leveraged firms with shorter operating cycles sic2	3,811

3.1.1Brazilian sample selection and measures

To investigate how leverage combined with the length of the operating cycle moderate the effect of conditional conservatismin the Brazilian setting, I use the accounting data from a sample of companies listed on the São Paulo Stock Exchange (BM&FBovespa)over the period 2010-2017 obtained from Comdinheiro, resulting in 3,186 firm-year observations in my initial sample. Following prior studies. I exclude firms in the financial sector (SIC codes 60-69) resulting in 2,448 firm-year observations. All accounting variables, measured per share, are deflated by the opening stock price to control for heteroskedasticity, following Basu (1997).I also exclude firm-year with missing values for any of the variables used in the estimation of the main model and I also exclude observations falling in the top or bottom 1% of the variables used in the main model, as in Basu (1997),which results in a sample of 1,327 firm-year observations in the final sample for the main model.

3.2 Empirical models

I estimate conditional conservatism based on Basu (1997) model that captures the asymmetric recognition between good and bad news, or the timely loss recognition:

$$EPS_{i,t} = \beta_0 + \beta_1 DR_{i,t} + \beta_2 RET_{i,t} + \beta_3 DR_{i,t} * R_{i,t} + \varepsilon_{i,t}$$

Where EPS is the earnings per share of firm i in the year t. Di,t is an indicator variable equal to 1 if the firm's stock return during the year is negative (Ri,t < 0), and 0 otherwise. Ri,t is the stock return of firm i in yeart, calculated from 9 months before fiscal year-end t to 3 months after fiscal year-end t. As defined in Basu (1997), I expect β3 to be positive implying presence of conservatism.

My research hypotheses are based on different environments where the length of the operating cycle can influence conditional conservatism under a debt contracting perspective. To test my hypotheses, I supplement the earning-return model from Basu (1997) by dummy variables representing thefour environments, based on the four intersections of high / low leverage and long / short operating cycle.

To classify the environment of a firm-year observation, I first estimate the length of the operating cycle as in Dechow and Dichev (2002) and leverage as total liabilities divided by total assets. Then I estimate the operating cycle and leverage quartiles by two digits SIC-COD. I classify observations in upper quartile and lower quartileas having long and short operating cycles respectively. Similarly, firms in upper quartile and lower quartile of leverage are classified as having high and low leverage levels respectively.

Table3: Firm-year environmental classification by combining operating cycle and leverage quartiles.

Variable		Operating cycle	
	Firm -year observations quartiles	Upper quartile	Lower quartile
Leverage	Upper quartile	HL (+)	HS (Void in theory)

	Lower quartile	LL (Void in theory)	LS (-)

Notes: Expected signs between parentheses.

To test my hypotheses, my complete main model of conditional conservatism is:

$$EPS_{i,t} = \beta_0 + \beta_1 DR_{i,t} + \beta_2 RET_{i,t} + \beta_3 DR_{i,t} * RET_{i,t} + \beta_4 HL + \beta_5 HL * DR_{i,t} +$$

$$\beta_6 HL * RET_{i,t} + \beta_7 HL * DR_{i,t} * RET_{i,t} + \beta_8 HS + \beta_9 HS * DR_{i,t} + \beta_{10} HS * RET_{i,t} +$$

$$\beta_{11} HS * DR_{i,t} * RET_{i,t} + \beta_{12} LL + \beta_{13} LL * DR_{i,t} + \beta_{14} LL * RET_{i,t} + \beta_{15} LL * DR_{i,t}$$

$$* RET_{i,t} + \beta_{16} LS + \beta_{17} LS * DR_{i,t} + \beta_{18} LS * RET_{i,t} + \beta_{19} LS * DR_{i,t} * RET_{i,t} + \varepsilon_{i,t}$$

Where HL, HS, LL and LS are dummies variables indicating each environment that captures the debt contracting and operating cycle effects on conditional conservatism over years, taking 1 when they belong to that specific environment and 0 otherwise. HL (β_4) for highly leveraged firms with longer operating cycles, HS (β_8) for highly leveraged firms with shorter operating cycles, LL (β_{12}) for lower leveraged firms with longer operating cycles and LS (β_{16}) for lower leveraged firms with shorter operating cycles.

The main analysis in this study addresses a gap in the accounting conservatism by creating and comparing environments based on the length of the operating cycle and the level of leverage. In this case it is considered the group of interest in the environment versus the remaining sample. In such case, when the upper quartile is analyzed, the middle quartile and lower quartileare used as the comparison group and vice-versa.

The β_3(DR*RET) in earnings-return captures the asymmetric timeliness of earnings. A positive coefficient for $\beta_3$indicates that earnings are reflecting bad news in a timelier manner than good news. In other words, a positive coefficient indicates conservative accounting. By interacting environment dummies with β_3 I show the effect of each environment in the context of asymmetric timeliness of earnings

(conservatism). Thus, the effect of the HL environment on the demand for conservatism in the financial report is demonstrate by the β_7 (DR*RET*HL), the effect of HS is demonstrate by the β_{11}(DR*RET*HS), the effect of LL by β_{15}(DR*RET*LL), and β_{19}(DR*RET*LS) demonstrate the effect of the LS environment on the demand for conservatism in accounting.

Existing literature has documented long operating cycles as higher uncertainty in the business. Given this, in the presence of high leverage and long operating cycle, I expect higher conservatism since that the demand for conservatism (high leverage) might get exacerbated by the presence of a long operating cycle (higher uncertainty) because of the higher risk face by these firms, undermining their ability to afford debtand for long term planning. Using similar logic, I expect the coefficient for LS (low leverage-short operating cycle) to be negative. A low leverage would usually create a lower demand for conservatism. When the same firm with low leverage also has a short operating cycle (lower uncertainty), I expect the demand for conservatism to reduce even further.

The signs ofthe other two terms – HS and LL–are slightly tricky. For instance, for high leverage and short operating cycle, it is not clear if the demand for conservatism arising from higher leverage would get offset by a short operating cycle. Or, whether lenders would ignore the shorter operating cycle in the presence of high leverage, or if the lenders would actually reduce the demand for conservatism due to lower uncertainty (short operating cycle). Similarly, for LL, it is not very clear whether the low demand for conservatism arising from a low level of leverage, would get negated by the existence of a longer operating cycle (higher uncertainty). As a result, while I make predictions for the HL (β_4) and LS (β_{16}) environments, I am not able to definitively predict the signs on the coefficients for HS (β_8) and LL (β_{12}).

As an additional analysis, shown in Panel B in Table 6, I estimate the earnings-return model by each environment using sub-samples by environment in each regression. Firms in LL and LS environments can report conservative accounting figures, however, lower than firms highly leveraged where the creditors require more timely loss recognition.

I also estimate high and low leverage and long and short operating cycles by different industries definitions (GICS) as well as leverage measured by total debt to

total assets as robustness analyses to check if the theoretical argument holds in different industry classifications. The results of the robust analyses, shows in the tables 9 and 10, reported in the subsection 4.2, are similar and stronger.I estimate regressions using only either leverage level or length of the operating cycle, to better understand the influence of these variables on the demand for conservatism, and the results are show in the table 7 and 8, reported also in the appendix.

Table 4: Variable definitions of the main models

Variable	Definitions
$EPS_{i,t}$	Earnings per share of firm i in the year t
$DR_{i,t}$	Indicator variable equal to 1 if the firm's stock return during the year is negative ($RET_{i,t}< 0$), and 0 otherwise
$RET_{i,t}$	The stock return (the raw returns from CRSP less CRSP Equal weighted market return) of firm *i* in yeart, calculated from 9 months before fiscal year-end *t* to 3 months after fiscal year-end *t.*
$LEV_{i,t}$	Firm i leverage in year t, measured as total liabilities divided by total assets
$OPC_{i,t}$	Operating cycle of the firm i in the year t measured as 360/(Sales/Average AR) + 360/(Cost of Goods Sold)/(Average Inventory)
$HL_{i,t}$	Indicator variable equal to 1 if the firm-year observations belong to the environment where firms are highly leveraged with longer operating cycles
$HS_{i,t}$	Indicator variable equal to 1 if the firm-year observations belong to the environment where firms are highly leveraged with shorter operating cycles
$LL_{i,t}$	Indicator variable equal to 1 if the firm-year observations belong to the environment where firms are lower leveraged with longer operating cycles
$LS_{i,t}$	Indicator variable equal to 1 if the firm-year observations belong to the environment where firms are lower leveraged with shorter operating cycles

4RESULTS

Table 5 shows the descriptive statistics of the variables used in the analysis and to classify firms' environments. Panel A in table 5 reports the descriptive statistics of the variables in the main tests. In panel A, about 54% of firms' stock returns (DR) in the sample are negative, more than half. The mean of operating cycle (OPCYCLE) is 133.71 days, which indicates that the majority of the firms in the sample have an operating cycleof less than one year while the mean ofthe leverage (LEV) is about 0.50.

Panel B in table 5 is useful to understand how the environment of debt contracting can play a role on conditional conservatism and how operating cycle can moderate this relation previously shown in the literature. The average leverage is almost triple for highly leverage firms, being0.77 in both HL and HS environments and between 0.24 and 0.27 in LL and LS environments, while operating cycle is about three times for firms with long operating cycles, 225.05 and 228.28 days for HL and HS72.15 and 68.51 days for HS and LS, respectively.

The stock return (RET) is substantially lower in the environments where firms have longer operating cycles (HL and LL), having a negative mean in both, -0.018 and -0.011, while stock return mean is positive in both shorter operating cycles environments, 0.03 (HS) and 0.04 (HL). In such case, these groups of firms (with longer operating cycles) have higher uncertainty about future cash flows realization. My firms' characteristics are comparable to prior studies (e.g., Dechow &Dichev, 2002; LaFond &Watts, 2008). To better illustrate, the distribution of operating cycle in the full sample is close to Dechow and Dichev (2002), but my sample has a higher standard deviation. The average leverage is similar to reported in previous studies (Zhang, 2008; Chen, Folsom, Paek & Sami,2014) as well and the difference can be an effect of sample size and different period of years used in my analyses.

As shown in Panel B intable 5, the environments where firms are highly leveraged with longer operating cycles (HL) and where firms have lower levels of leverage with shorter operating cycles (LS) are less numerous, but I am not surprised, since those environments are more extreme, being this second (LS) the one with lowest number of firms. I have more firms in my sample with lower level of leverage and longer operating cycles, which is an indicative that firms with longer operating cycles could be restricted to rise debt due to uncertainty about future cash flows.

Table 5: Descriptive statistics

Panel A – Full Sample

	N	Mean	p25	p50	p75	Sd
EPS	67.937	0.0371	0.01793	0.0496	0.0774	0.08858
DR(NEG)	67.937	0.547	-	-	-	-

RET	67.937	0.0208	-0.2379	-0.0353	0.19164	0.4251
OPCYCLE	67.937	133.71	75.61	115.68	168.79	86.9433
LEV	67.937	0.50458	0.3367	0.51232	0.6534	0.23381
HL	4011	0.0595	-	-	-	-
HS	4894	0.0720	-	-	-	-
LL	4903	0.0721	-	-	-	-
LS	3811	0.0561	-	-	-	-

Panel B – Distribution by Environment

	HL (Mean)	HS (Mean)	LL (Mean)	LS (Mean)
EPS	0.004459	0.026889	0.031828	0.0469
	(0.12730)	(0.11257)	(0.07707)	(0.06837)
DR(RET)	0.5817	0.5178	0.5903	0.5424
	-	-	-	-
RET	-0.01821	0.0392	-0.01109	0.04065
	(0.4363)	(0.4333)	(0.4358)	(0.4645)
OPCYCLE	225.05	72.15	228.28	68.51
	(115.7763)	(32.1410)	(103.465)	(32.3106)
LEV	0.7738	0.7786	0.2457	0.2661
	(0.22582)	(0.2029)	(0.12978)	(0.13758)

Panel C: Mean difference between subset environment samples

Sample:	HL-HS	HL-LL	HL-LS	HS-LL	HS-LS	LL-LS
EPS	-0.02243***	-0.027369***	-0.042441***	-0.004939**	-0.020011***	-0.015072***
	(2.20E-16)	(2.20E-16)	(2.20E-16)	(0.01132)	(2.20E-16)	(2.20E-16)
RET	-0.05741 ***	-0.00712	-0.05886***	0.05029***	-0.00145	-0.05174***
	(6.033e-10)	(0.4432)	(8.247e-09)	(1.05e-08)	(0.8814)	(1.196e-07)
OPCYCLE	152.9***	-3.23	156.54***	-156.13***	3.64***	159.77***
	(2.20E-16)	(0.3423)	(2.20E-16)	(2.20E-16)	(1.73E-07)	(2.20E-16)
LEV	-0.0048	0.5281***	0.57065***	0.329***	0.51245***	-0.02045***
	(0.3026)	(2.20E-16)	(2.20E-16)	(2.20E-16)	(2.20E-16)	(1.891e-12)

*Notes: *p<0.1; **p<0.05; ***p<0.01. Standard deviation between parentheses in panel B. P-value between parentheses in panel C. The Panel shows the distribution by environment and the Panel C shows the mean difference among them. EPS: Earnings per share. DR: dummy indicating negative stock return. RET: is the stock return of firm i from 9 months before fiscal year-end t to 3 months after fiscal year-end t. OPCYCLE: Operating cycle. LEV: Leverage. HL: Highly leveraged firms with longer operating cycles. HS: Highly leveraged firms with shorter operating cycles. LL: Lower leveraged firms with longer operating cycles. LS: Lower leveraged firms with longer operating cycles.*

Panel C in table 5 shows the mean differences over environments. Almost all variables are statistically different across groups, except for stock returns (RET) between environments HL-LL and HS-LS and operating cycle between HL-LL. All mean differences between any short versus long operating cycles and between any high versus low leverage sub-samples are statistically significant (p<0.01), demonstrating' high difference in each environment, and that there is a high mean difference between them, as expected.

Subset sample with lower leveraged firms and / or shorter operating cycle demonstrate lower standard deviation, the opposite to firms with longer operating cycle and / or high leverage level, indicating a more relivable scenario, given that there is a smaller range of values.

Table 6 show my estimates by environments. Columns 1-4 of Panel A in table 6 reports the estimates by environment (using only one environment dummy) and column 5 shows the full model estimation. Panel B intable 6 demonstrate the coefficients estimates by the earnings-return original model by environment. My regressions are firm and year fixed-effects with standard errors clustered at firm-level. The interaction between the dummies environments and the β_3 from the Basu earnings-return original modelthat measures the impact of environments on the demand for conservatism. It is considered the group of interest in the environment versus the remaining sample. In such case, when the upper quartile is analyzed, the middle and lower quartiles are used as the comparison group and vice-versa.

Table 6: Results

Panel A: Environments models

	Dependent variable: EPS

	(HL)	(HS)	(LL)	(LS)	(Main Model)
DR (NEG)	-0.0016	-0.0013	-0.0010	-0.0014	-0.0013
	(0.0010)	(0.0010)	(0.0010)	(0.0010)	(0.0011)
RET	0.0104***	0.0109***	0.0105***	0.0103***	0.0116***
	(0.0018)	(0.0019)	(0.0019)	(0.0019)	(0.0022)
DR*RET	0.0722***	0.0727***	0.0811***	0.0803***	0.0716***
	(0.0041)	(0.0041)	(0.0043)	(0.0042)	(0.0045)
HL	-0.0337***				-0.0338***
	(0.0044)				(0.0044)
DR*HL	-0.0010				-0.0011
	(0.0059)				(0.0059)
RET*HL	0.0015				0.0003
	(0.0093)				(0.0094)
DR*RET*HL	0.0446**				0.0454**
	(0.0182)				(0.0183)
HS		-0.0014			-0.0017
		(0.0034)			(0.0034)
DR*HS		-0.0011			-0.0013
		(0.0049)			(0.0049)
RET*HS		-0.0071			-0.0079
		(0.0070)			(0.0071)
DR*RET*HS		0.0635***			0.0644***
		(0.0182)			(0.0183)
LL			-0.0020		-0.0027
			(0.0028)		(0.0028)

DR*LL			-0.0041		-0.0034
			(0.0031)		(0.0032)
RET*LL			-0.0029		-0.0039
			(0.0049)		(0.0050)
DR*RET*LL			-0.0409***		-0.0318***
			(0.0099)		(0.0100)
LS				0.0099***	0.0102***
				(0.0029)	(0.0028)
DR*LS				0.0027	0.0027
				(0.0034)	(0.0033)
RET*LS				0.0019	0.0009
				(0.0050)	(0.0051)
DR*RET*LS				-0.0500***	-0.0416***
				(0.0115)	(0.0116)
_cons	0.04031	0.03828	0.03836	0.03744	0.03933
	(0.0014)	(0.0016)	(0.0014)	(0.0015)	(0.0015)
Observations	67,924	67,924	67,924	67,924	67,924
Adjusted R^2	0.2770	0.2705	0.2696	0.2710	0.2804
F-statistic	4.304***	4.119***	4.183***	4.207***	4.356***

Panel B: Earnings-Return model original by environment

	Dependent variable: EPS			
	(HL)	(HS)	(LL)	(LS)
DR (NEG)	0.0005	-0.0062	-0.0040	0.0014
	(0.0067)	(0.0055)	(0.0034)	(0.0035)
RET	0.0254**	0.0076	0.0111*	0.0126**

	(0.0116)	(0.0078)	(0.0058)	(0.0059)
DR*RET	0.0612**	0.0939***	0.0282**	0.0356***
	(0.0244)	(0.0228)	(0.0116)	(0.0126)
_cons	0.0403	0.0382	0.0383	0.0374
	(0.0016)	(0.0013)	(0.0016)	(0.0014)
Observations	4,011	4,894	4,903	3,811
Adjusted R^2	0.4417	0.3410	0.5018	0.4996
F-statistic	3.264***	2.838***	4.157***	3.885***

*Note: *p<0.1; **p<0.05; ***p<0.01. Standard deviation between parentheses. EPS: Earnings per share of firm I in the year t. DR: dummy indicating negative stock return. RET: is the stock return of firm i in year t, calculated from 9 months before fiscal year-end t to 3 months after fiscal year-end t. HL: Highly leveraged firms with longer operating cycles. HS: Highly leveraged firms with shorter operating cycles. LL: Lower leveraged firms with longer operating cycles. LS: Lower leveraged firms with longer operating cycles.*

The (β_7) in the columns 1 and 2 in the panel A intable 6 shows positive coefficients for highly leveraged firms, HL and HS, and the coefficients in the main model are showing by(β_7=0.0446,p-value=0.0182) and (β_{11}=0.0635, p-value=0.0182), respectively, being also positive. I predict that highly leveraged firms with longer operating cycles (HL) are more conservative and I do not make any ex-ante prediction about the impact of the length of operating cycles combined with leverage level onthe demand for conservative in financial report when firms are highly leveraged with shorter operating cycles.

Contradicting my first hypothesis, I find that, in fact, firms with high leverage level and short operating cycles behave more conservatively, than firms from different environments, and that both highly leveraged environments report higher conservative numbers than lower leveraged environments. I believe that highly leveraged firms with shorter operating cycles are more conservative because in this risky environment (HL), managers find more attractive the earlier recognition of gains, in cost of a deferral of losses, which helps to disguise firm's risk.

Moreover, in the HL environment, highly risky, report bad news in short term can increase the risk and diminish the shareholders' confidence in managers, due to

the higher uncertainty of future events. Dechow (1996) report that one important motivating force for managers to manipulate earnings is the desire to attract external financing at low cost, and managers could find that in highly leveraged firms earnings manipulation lower the interest rates more than a conservative accounting (Zhang, 2008). Also, the demand for a timelier accounting for decision-making may increase estimation error, harming the quality of information (see Dechow & Dichev, 2002).

I argue in my second hypothesis that firms with lower leveraged level and shorter operating cycles behave less conservatively and my findings prove this hypothesis by showing negative and significant coefficient for LL (lower leverage-long operating cycles). I do not anticipate the coefficients for LS (lower leverage-short operating cycles), but I find that lower leverage firms with shorter operating cycles have lower demand for conservatism than firms from both highly leverage environments and report less conservatively than LL firms. I report the coefficients for LL and LS in the panel A intable 6 (β_7 in the columns 3 and 4, β_{15} and β_{19}, respectively, in the column 5), being the coefficient for LS lower.

In the lower leveraged firm's environments (LL and LS), the longer operating cycle is a factor that increase the demand for conservatism, causing a different effect in this scenario than in the higher leveraged environments. I believe that since lower leveraged firms are not so risky, firm's managers with longer operating cycles are less propense to estimation error and have less incentives to intentionally manage earningsthan for a higher conservative accounting, there will be also, less creditor's concern about future earnings, reducing the "pressure" on managers to have a positive outcome.

Columns 1 and 2 in the panel A inTable 6 demonstrate that firms in the environments HL and HS show β_7 (DR*RET*HL and DR*RET*HS) positive and statistically significant 0.0446** and 0.0635***, respectively. Also, columns 3 and 4 inthe same panel shows a negative and statically significant β_7 (DR*RET*LL and DR*RET*HS), for both environments where firms have a lower level of leverage, -0.0409***(LL) and -0.0500***(LS). This result is in line with prior literature and theoretical argument based on debt contracting demonstrating that highly leveraged firms are more conservative than lower leveraged firms (Watts, 2003a; Khan &Watts, 2003; Barton &Waymire, 2004; Cohen, 2006).Also, I show the impact of the

operating cycle's length on the managers conservative demand from different environments (highly and lower leveraged firms), andthat the length of the operating cycle adds incremental information togetherwith leverage on conservatism in the financial reports.

These results also corroborate in the full model, where HL (β_7) and HS (β_{11}) environments report conservative financial reporting, while firms in the LL(β_{15}) and LS (β_{19}) environments report lower conservative numbers.

In the panel Bin Table 6, β_7 is positive and statistically significant for all environments. This evidence extends the results in panel A, by confirming that firms in LL and LS environments report less bad news than firms in groups HL and HS. My findings prove that the length of operating cycle affects the conservatism in financial reports, also I demonstrate how this impact occur, due to the leverage level of the firm, by showing that, differently from I expected, highly leveraged firms with longer operating cycles are not the most conservative in their financial reports, since that longer operating cycles in highly leveraged firms reduce conservatism in the financial reports, while increase the conservatism in lower leveraged firms. And that shorter operating cycles increase the conservatism in highly leveraged firms, while lower leveraged firms with shorter operating cycles report less conservatively than others environments, as I expected in my research hypotheses. Also, my findingsstrengthenCohen´s (2006), since I present evidences that the financial reporting quality depends not only on the benefits firms expect to derive from disclosure, but also on other firm-specific attributes.

4.1 Brazilian results

The sample composed by Brazilian public companies is very different from the U.S. firm's sample in terms of size (firm-observations). While the U.S. sample has more than 67 thousand observations, Brazilian sample has only 1,327 firm-year observations, of which 65 and 63 belongs to the most extreme environments, HL (riskier environment) and LS (safer environment), respectively. For this reason, I do not estimate the earnings-return model by each environment, as I do for U.S. samples, but Panel B in Table 9 shows the descriptive statistics of the variables in each subsample, which is useful to understand the difference between the Brazilian and the U.S. firm's sample.

Panel A inTable 9 shows the descriptive statistics of the variables used in the main tests and to classify firms' environments. Brazilian firms, in general, has longer operating cycles and higher leverage level, in comparison to U.S. firms. For example, the mean of operating cycle (OPCYCLE) is 133.71 days in U.S. firms and 259.95 days in Brazilian firms, and the mean of the leverage (LEV) is about 0.50 in the US sample and 0.69 in the Brazilian sample, which shows a natural higher leverage level in Brazil.

Furthermore, U.S. firms' operating cycle standard deviation (86.94 days) is about three times lower than standard deviation of Brazilian firms'operating cycle (483.13 days), while leverage standard deviation in the Brazilian sample (0.45) is twice the leverage standard deviation shown by the U.S. firms (0.23). About 48% of firm's stock returns (DR) in the Brazilian sample are negative, which is similar to the reported by U.S. firms.

Table 10: Brazilian sample descriptive statistics

Panel A – Full Sample

	N	Mean	p25	p50	p75	Sd
EPS	1.327	-0.0468	-0.0093	0.0495	0.1345	0.71140
DR(NEG)	1.327	0.4891	-	-	-	-
RET	1.327	0.0705	-0.2366	0.0071	0.2933	0.45963
OPCYCLE	1.327	259.95	77.85	127.44	214;79	483.1349
LEV	1.327	0.6956	0.4673	0.6073	0.7672	0.45464
HL	65	0.0498	-	-	-	-
HS	97	0.0731	-	-	-	-
LL	86	0.0648	-	-	-	-
LS	63	0.0474	-	-	-	-

Panel B – Distribution by Environment

	HL (Mean)	HS (Mean)	LL (Mean)	LS (Mean)
EPS	-0.56298	-0.4541	0.1421	-0.0286
	(1.4101)	(1.2804)	(0.2712)	(0.9511)
DR(RET)	0.7231	0.5876	0. 4884	0.2381

	-	-	-	-
RET	-0.2013	0.0674	0.0909	0.31447
	(0.4671)	(0.53919)	(0.4724)	(0.4684)
OPCYCLE	993.5	68.31	228.28	57.36
	(1208.505)	(32.1410)	(885.83)	(26.3891)
LEV	1.2638	1.1815	0.3396	0.3614
	(0.66275)	(0.2029)	(0.1299)	(0.0811)

Panel C: Mean difference between subset environment samples

Sample:	HL-HS	HL-LL	HL-LS	HS-LL	HS-LS	LL-LS
EPS	-0.1088	-0.7051***	-0.5343***	-0.5962**	-0.4254**	0.1708
	(0.6182)	(2.20E-16)	(1.936E-05)	(0.01132)	(0.0172)	(0.1705)
RET	-0.2617***	-0.0071***	-0.5155***	-0.0301	-0.2537***	-0.2235***
	(0.0012)	(0.0001)	(6.341e-09)	(0.6871)	(0.0019)	(0.0048)
OPCYCLE	925.20***	296.112*	936.155***	-629.08***	10.95**	640.047***
	(5.14E-08)	(0.0985)	(3.85E-08)	(3.601E-09)	(0.0194)	(2.159E-09)
LEV	0.0822	0.9215***	0.9024***	0.8418***	0.8201***	-0.0217
	(0.4105)	(2.20E-16)	(2.20E-16)	(2.20E-16)	(2.20E-16)	(0.2125)

*Notes: *p<0.1; **p<0.05; ***p<0.01. Standard deviation between parentheses in panel B. P-value between parentheses in panel C. The Panel B in table 2 shows the distribution by environment and the Panel C shows the mean difference among them. EPS: Earnings per share. DR: dummy indicating negative stock return. RET: is the stock return of firm i from 9 months before fiscal year-end t to 3 months after fiscal year-end t. OPCYCLE: Operating cycle. LEV: Leverage. HL: Highly leveraged firms with longer operating cycles. HS: Highly leveraged firms with shorter operating cycles. LL: Lower leveraged firms with longer operating cycles. LS: Lower leveraged firms with longer operating cycles.*

Table 11 shows my estimates by environments using the Brazilian sample. As in the Panel A in Table 6, columns 1-4 in table 11 reports the estimates by environment (using only one environment dummy) and column 5 shows the full model estimation.

Table 11: Brazilian data result models with standard errors clustered at firm-level

	Dependent variable: EPS				
	(HL)	(HS)	(LL)	(LS)	(Main Model)

DR (NEG)	-0.0282	-0.0439	-0.0256	-0.0474	-0.0456
	(0.0674)	(0.0637)	(0.0709)	(0.0681)	(0.0674)
RET	0.0911	0.0946	0.1096*	0.1163*	0.0724
	(0.0615)	(0.0576)	(0.0619)	(0.0622)	(0.0698)
DR*RET	-0.2240	-0.2824	-0.3217	-0.4326*	-0.2276
	(0.2178)	(0.2517)	(0.2377)	(0.2249)	(0.2440)
HL	-0.8226				-0.8161
	(0.6178)				(0.6222)
DR*HL	0.0695				0.0540
	(0.5613)				(0.5626)
RET*HL	0.0793				0.0337
	(0.6755)				(0.6749)
DR*RET*HL	-1.3252*				-1.2630***
	(0.7092)				(0.7344)
HS		-0.4942			-0.5219
		(0.3821)			(0.3831)
DR*HS		0.2184			0.2140
		(0.4153)			(0.4147)
RET*HS		0.3344			0.3337
		(0.3591)			(0.3626)
DR*RET*HS		-0.6230			-0.6303
		(0.7325)			(0.7470)
LL			0.0868		0.0646
			(0.1035)		(0.1027)
DR*LL			-0.1266		-0.1095

			(0.1235)		(0.1226)
RET*LL			0.0533		0.0852
			(0.1448)		(0.1431)
DR*RET*LL			-0.3174		-0.3886
			(0.5491)		(0.5504)
LS				-0.0498	-0.0752
				(0.1040)	(0.1009)
DR*LS				1.0875*	1.0846
				(0.6560)	(0.6645)
RET*LS				-0.0835	-0.0479
				(0.1839)	(0.1825)
DR*RET*LS				7.2516*	7.0905*
				(3.8054)	(3.8757)
_cons	-0.21757	-0.24245	-0.28244	-0.27738	-0.18340
	(0.0687)	(0.0651)	(0.0689)	(0.0732)	(0.0782)
Observations	1,327	1,327	1,327	1,327	1,327
Adjusted R^2	0.2776	0.2679	0.2623	0.305	0.3201
F-statistic	3.285***	3.176***	3.115***	3.61***	3.657***

*Note: *p<0.1; **p<0.05; ***p<0.01. Standard deviation between parentheses. EPS: Earnings per share of firm I in the year t. DR: dummy indicating negative stock return. RET: is the stock return of firm i in year t, calculated from 9 months before fiscal year-end t to 3 months after fiscal year-end t. HL: Highly leveraged firms with longer operating cycles. HS: Highly leveraged firms with shorter operating cycles. LL: Lower leveraged firms with longer operating cycles. LS: Lower leveraged firms with longer operating cycles.*

The β_7 in the columns 1 to4 shows the coefficient for the interaction between the dummies indicating the environments and the β_3 from the Basu earnings-return original modelthat measures the impact of the environments (intersection of leverage level and length of the operating cycle) on the demand for conditionalconservatismon the financial reports.

Different from the models using the US data where all the environments are significant at least 5%, only HL (High leverage – Long operating cycle) and LS (Low leverage – Short operating cycle) are significant in the models using Brazilian data. The β_7 in the columns 1 and 4 in the table 11 shows the intersection among HL and LS with the β_3 from the original Basu model, respectively. The coefficients that measures the impact of the environments HL and LS on the demand for accounting conservative in the main model are showing by the$\beta_7$and the β_{19} in the column 5 in the table 11.

Table 11shows very interesting results because while none of the coefficients for HS and LL environments are not significant (neither in the column 2 and 3 nor in column 5), HL (HL*DR*RET) and LS (LS*DR*RET) environments in the Brazilian sample shows the opposite signals than those presented by U.S. public companies, being the HL environment negative and statistically significant β_7 (-1.3252**)and β_7 (-1.263***), in the columns 1 and 5 respectively, and the LS environment positive and statistically significantβ_7(7.2516*) and β_{19}(7.0905*), in the columns 4 and 5, respectively.These results indicate that while theU.S. highly leverage firms with longer operating cycles (HL) has higher demand for report conservative accounting figures and lower leveraged firms with shorter operating cycles (LS) has lower demand for report conservatively, in Brazilian firms occur the opposite, in other words, Brazilian highly leveraged firms with longer operating cycles anticipate gains instead of losses, and that Brazilian lower leveraged firms with shorter operating cycles has higher demand for conservatism in the financial report.There is an alternative explanation to the Brazilian environment. In countries like Brazil, the creditors usually use private channels to monitor the companies, differently from market-oriented countries like the U.S. and the U.K. Then, a consequence is that bank-oriented systems, the demand for high timely loss recognition is suppressed because creditors also add collaterals to their debt-relation with firms.

4.2Additional analysis

In this subsection I examine threealternative analyses:

I) The Impacts of High and Low leverage and long and short operating cycles, separately, on the demand for conservatism in accounting, as shown in tables 7 and 8 respectively.

II) Robustness models, as shown in table 9, where I use different measuresto estimate the leverage level and estimate the quartiles by GICS as well.

III) I use operating cycle and leveraged as continues variables, instead of dummies to classify the environments in the earnings-return model.

Table 7: Impacts of High and Low leverage on the demand for conservatism in accounting

	Dependent variable: EPS			
	(1)	(2)	(3)	(4)
DR (NEG)	-0.0017	-0.0022*	-0.0027**	-0.0018
	(0.0012)	(0.0012)	(0.0013)	(0.0012)
RET	0.0185***	0.0196***	0.0144***	0.0140***
	(0.0025)	(0.0023)	(0.0023)	(0.0021)
DR*RET	0.0515***	0.0456***	0.0548***	0.0532***
	(0.0048)	(0.0048)	(0.0050)	(0.0045)
HLEV	-0.0213***	-0.0209***	-0.0184***	-0.0178***
	(0.0023)	(0.0023)	(0.0022)	(0.0023)
LLEV	0.0094***	0.0122***	0.0085***	0.0111***
	(0.0017)	(0.0018)	(0.0019)	(0.0019)
DR*HLEV	0.0014	0.0013	0.0006	-0.0007
	(0.0029)	(0.0029)	(0.0029)	(0.0029)
RET*HLEV	-0.0178***	-0.0200***	-0.0162***	-0.0170***
	(0.0052)	(0.0051)	(0.0051)	(0.0050)
DR*RET*HLEV	0.0955***	0.0994***	0.0736***	0.0754***
	(0.0101)	(0.0104)	(0.0095)	(0.0094)
DR*LLEV	-0.0027	-0.0025	0.0010	-0.0013

	(0.0019)	(0.0019)	(0.0021)	(0.0022)
RET*LLEV	-0.0069**	-0.0096***	-0.0005	0.0033
	(0.0033)	(0.0034)	(0.0036)	(0.0040)
DR*RET*LLEV	-0.0274***	-0.0134**	-0.0191**	-0.0184**
	(0.0066)	(0.0067)	(0.0078)	(0.0078)
Observations	67,924	67,924	67,845	67,845
Adjusted R^2	0.2919	0.2914	0.2854	0.2850
F-statistic	4.555***	4.546***	4.442***	4.436***

*Note: *p<0.1; **p<0.05; ***p<0.01. Standards deviation between parentheses.EPS: Earnings per share of firm I in the year t. DR: dummy indicating negative stock return. RET: is the stock return of firm i in year t, calculated from 9 months before fiscal year-end t to 3 months after fiscal year-end t. HLEV=Highly leveraged firms. LLEV = Lower leveraged firms. Columns 1 and 2 leverage estimates as: total liabilities/total assets. Columns 3 and 4 leverage estimates as: (short-term debt + long-term debt) /total assets. Columns 1 and 3 leverage quartiles estimated by two-digits SIC, columns 2 and 4 leverage quartiles estimated by GICS.*

Table 7showsleverage estimated by two different ways and the quartile are estimated both by two digits SIC-COD and by GICS. In the four models theβ_8,which shows the intersection between Highly leveraged environments (HLEV) and the β_3 from the Basu model, is positive and significant.In addition, the β_{11}, which shows the intersection between Lowerleveraged environments (LLEV) and the β_3 from the Basu model, is negative and significant. These results demonstrate that the higher leverage, the higher the accounting conservatism, strengthenprior studies and my research hypotheses.

Table 8:Impacts of the long and short operating cycles on the demand for conservatism in accounting

	Dependent variable: EPS	
	(1)	(2)
DR (NEG)	-0.0014	0.0001
	(0.0014)	(0.0013)
RET	0.0085***	0.0121***

	(0.0026)	(0.0023)
DR*RET	0.0791***	0.0781***
	(0.0054)	(0.0053)
L.OPC	-0.0164***	-0.0160***
	(0.0022)	(0.0022)
S.OPC	0.0128***	0.0141***
	(0.0020)	(0.0023)
DR*L.OPC	0.0013	-0.0016
	(0.0025)	(0.0025)
RET*L.OPC	0.0011	-0.0030
	(0.0046)	(0.0045)
DR*RET*L.OPC	0.0003	-0.0019
	(0.0088)	(0.0091)
DR*S.OPC	-0.0001	-0.0035
	(0.0024)	(0.0024)
RET*S.OPC	0.0039	-0.0056
	(0.0041)	(0.0042)
DR*RET*S.OPC	-0.0071	-0.0014
	(0.0094)	(0.0095)
Observations	67,924	67,924
Adjusted R^2	0.2740	0.2731
F-statistic	4.255***	4.241***

*Note:**p<0.1; **p<0.05; ***p<0.01.Standards deviation between parentheses. EPS: Earnings per share of firm I in the year t. DR: dummy indicating negative stock return. RET: is the stock return of firm i in year t, calculated from 9 months before fiscal year-end t to 3 months after fiscal year-end t. L.OPC= Longer operating cycle. S.OPC= Shorter operating cycles. Column 1 quartiles estimated by two-digits SIC. Column 2 quartiles estimated by GICS.

Table 8shows the impacts of long and short operating cycles on the demand for conservatism in accounting and none of the variables of interest are significant, both for long (β_8) and short (β_{11})operating cycles, which not allows any interpretation beyond the fact that only the operating cycles, as industry-estimated quartiles, do not impact the demand for conservative accounting.

Table 9: Robustness models

	Dependent variable: EPS		
	(1)	(2)	(3)
DR (NEG)	-0.0011	-0.0018	-0.0017
	(0.0011)	(0.0011)	(0.0011)
RET	0.0133***	0.0098***	0.0114***
	(0.0020)	(0.0021)	(0.0019)
DR*RET	0.0685***	0.0748***	0.0686***
	(0.0044)	(0.0046)	(0.0042)
HL	-0.0358***	-0.0269***	-0.0326***
	(0.0046)	(0.0040)	(0.0045)
HS	0.0027	-0.0075**	-0.0007
	(0.0037)	(0.0036)	(0.0037)
LL	0.0002	-0.0070**	-0.0001
	(0.0028)	(0.0032)	(0.0035)
LS	0.0087***	0.0113***	0.0104***
	(0.0030)	(0.0031)	(0.0033)
DR*HL	0.0005	-0.0006	0.0044
	(0.0063)	(0.0052)	(0.0057)
RET*HL	-0.0002	-0.0013	0.0026

	(0.0100)	(0.0093)	(0.0089)
DR*RET*HL	0.0474**	0.0319**	0.0386**
	(0.0198)	(0.0159)	(0.0173)
DR*HS	-0.0053	-0.0029	-0.0040
	(0.0047)	(0.0051)	(0.0048)
RET*HS	-0.0217***	-0.0034	-0.0215**
	(0.0081)	(0.0081)	(0.0085)
DR*RET*HS	0.0723***	0.0247	0.0668***
	(0.0174)	(0.0179)	(0.0173)
DR*LL	-0.0043	0.0011	-0.0032
	(0.0031)	(0.0038)	(0.0040)
RET*LL	-0.0078	0.0024	-0.0015
	(0.0055)	(0.0065)	(0.0086)
DR*RET*LL	-0.0257**	-0.0323**	-0.0337**
	(0.0103)	(0.0137)	(0.0140)
DR*LS	0.0008	0.0041	0.0039
	(0.0034)	(0.0038)	(0.0038)
RET*LS	-0.0026	0.0049	0.0122**
	(0.0049)	(0.0058)	(0.0061)
DR*RET*LS	-0.0283**	-0.0344**	-0.0253*
	(0.0117)	(0.0134)	(0.0146)
Observations	67,924	67,845	67,845
Adjusted R^2	0.2793	0.2770	0.2776
F-statistic	4.340***	4.298***	4.309***

*Note: *p<0.1; **p<0.05; ***p<0.01. Standard deviation between parentheses. EPS: Earnings per share. DR: dummy indicating negative stock return. RET: is the stock return of firm i in year t,*

calculated from 9 months before fiscal year-end t to 3 months after fiscal year-end t. HL: Highly leveraged firms with longer operating cycles. HS: Highly leveraged firms with shorter operating cycles. LL: Lower leveraged firms with longer operating cycles. LS: Lower leveraged firms with longer operating cycles. In Column 1 leverage= total liabilities/total assets. Columns 2 and 3 leverage estimates as: (short-term debt + long-term debt) /total assets. Quartiles in column 2 estimated by SIC2, in column 1 and 3 quartiles are estimated by GICS.

I estimate the four environments, HL (High leverage- Long operating cycles), HS (High leverage – Short operating cycles), LL (Low leverage – Long operating cycles and LS (Low leverage – Short operating cycles) in table 9, but using a different measure of leverage and GICS industries division as well, to provide higher robustness to my findings.

In the Column 1in Table 9, I estimate leverage as total liabilities/total assets, just as I did in the main models, but using GICS to estimate the quartiles, both for leverage and for operating cycle. The result shown in this column strengthens the result of my main model, shown in column 5 of Panel A intable 6; being the highly leverage environments, HL (0.0474**) and HS (0.0723***), positive and significant, and the lower leverage environments, LL (-0.0257***) and LS (-0.0283**), negative and significant.

In the Columns 2 and 3 I estimate leverage as: (short-term debt + long-term debt) /total assets, but the quartiles are estimate by two digits SIC-COD in the in column 2, and by GICS in column 3. The principal difference in these alternative models is that in the column 2 the HS (High leverage – Short operating cycle) environment is not significant.

Table 12: Models with continuous variables

	Dependent variable: EPS			
	(1)	(2)	(3)	(4)
DR (NEG)	-0.0009	-0.0070***	-0.0071**	-0.0035
	(0.0019)	(0.0027)	(0.0035)	(0.0051)
RET	0.0110***	0.0207***	0.0215***	0.0409***

	(0.0037)	(0.0040)	(0.0055)	(0.0080)
DR*RET	0.0840***	-0.0353***	-0.0430***	-0.0697***
	(0.0079)	(0.0087)	(0.0121)	(0.0170)
OPC	-0.0002***		-0.0002***	-0.0001***
	(0.00002)		(0.00002)	(0.00003)
DR*OPC	-0.000001		0.00001	-0.00002
	(0.00001)		(0.00001)	(0.00003)
RET*OPC	-0.00001		-0.00001	-0.0002***
	(0.00002)		(0.00002)	(0.00004)
DR*RET*OPC	-0.00005		0.0001	0.0002***
	(0.00005)		(0.00005)	(0.0001)
LEV		-0.1059***	-0.1047***	-0.0868***
		(0.0064)	(0.0065)	(0.0107)
DR*LEV		0.0098*	0.0088	0.0018
		(0.0057)	(0.0058)	(0.0100)
RET*LEV		-0.0155*	-0.0143	-0.0518***
		(0.0093)	(0.0094)	(0.0168)
DR*RET*LEV		0.2048***	0.2043***	0.2558***
		(0.0193)	(0.0197)	(0.0359)
OPC*LEV				-0.0001**
				(0.0001)
DR*OPC*LEV				0.0001
				(0.0001)
RET*OPC*LEV				0.0003***
				(0.0001)

DR*RET*OPC*LEV				-0.0004*
				(0.0002)
Observations	67,937	67,937	67,937	67,937
Adjusted R^2	0.2768	0.3028	0.3101	0.3104
F-statistic	4.302 ***	4.745 ***	4.874 ***	4.878 ***

*Note: *p**p***p<0.01. Standards deviation between parentheses. EPS: Earnings per share of firm I in the year t. DR: dummy indicating negative stock return. RET: is the stock return of firm i in year t, calculated from 9 months before fiscal year-end t to 3 months after fiscal year-end t. OPC:Operating cycle of the firm i in the year t measured as 360/(Sales/Average AR) + 360/(Cost of Goods Sold)/(Average Inventory). LEV: Firm i leverage in year t, measured as total liabilities divided by total assets.*

In the table 12, I show the impact of the operating cycle and of the leverage, as continuous variables, in the demand for a conservative accounting figures. The β_7(OPC*DR*RET) in the columns 1, 3 and 4 in this table reports the effects of the operating cycle. In the column 1, I supplement the earning-return model from Basu (1997) only by the operating cycle; In the column 3 I supplement by both the operating cycle and by the leverage, but only in the column 4 I do the interaction among the operating cycle, the leverage and the $\beta_3$from the earning-return model (Basu, 1997).

Only in the last (fourth) column the β_7 is positive and significant, being not significant in the other columns, which is in accordance with the results shown in the table 7, that only the length of the operating cycle provides no incremental information on the conservatism.

The $\beta_7$in the fourth column shows the interaction between the operating cycle in days and the $\beta_3$from the earnings return model (Basu, 1997) and shows a positive and significant coefficient (0.0002***), demonstrating that the longer the operating cycle, the higher the conservatism in accounting; but only in the model where the operating cycle is interacted with leverage.

The $\beta_7$in the second column and the β_{11} in the third and fourth columns in the Table 12 demonstrate the impact of the leverage, as continuous variable, on the demand for conservatism in accounting. All these variables are significant and

positive in the three models, and have 0.2048 as coefficient in the second column, 0.2043 in the third column, and 0.2558 in the last column in the.

The β_{15}(DR*RET*OPC*LEV) in the column 4 in table 12 demonstrate the interaction among the length operating cycle in days, the leverage level, and the $\beta_3$from the earning return-model (Basu, 1997), being negative and significant (-0.0004*).

5FINAL REMARKS

This research examines the impact of firm's length operating cycle on the conservative demand in the financial reports under debt contracts perspective. My findings suggest that debt drives conservatism, strengthenprior studies, and shows that the length of the operating cycle adds incremental information.

I find that the length of the operating cycle affects differently the demand for report conservatively whether a firm has a higher or lower leveraged level, which I believe that is the reason why there is no agreement in the literature about how the operating cycle affects the demand for conservatism in the financial reports. My findings reinforce Cohen (2006) findings, how present evidences suggesting the financial reporting quality depends not only on the benefits firms expect to derive from disclosure, but also on other firm-specific attributes.

I show that highly leveraged firms with longer operating cycles are not the most conservative firms in terms of financial reports, andthese firms behave less conservatively than highly leveraged firms with shorter operating cycles, while lower leveraged firms with shorter operating cycles have the lower demand for conservatism, reporting less conservatively than the others environments. This difference in the impact (highly leveraged firms with longer operating cycles are less conservative than lower leveraged firms with shorter operating cycles, while lower leveraged firms with longer operating cycles are more conservative than lower leveraged firms with shorter operating cycles) shows that in firms with higher leverage level, longer operating cycle reduces the conservatism in financial reports and in firms with lower leverage level,longer operating cycle increase the

conservatism, which shows that the length of the operating cycle adds incremental information.

Meanwhile, both highly leveraged environments combined either longer and shorter operating cycles, report more conservatively than both lower leveraged environments, combined with the operating cycles length, which reinforce previous studies and shows that debt drives conservatism.

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