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The impact of financial constraints on accounting conservatism

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ABSTRACT

Objective – This study investigates the effects of financial constraints on the conservatism practices of Brazilian firms.

Design/methodology/approach – A sample totaling 1,086 observations of Brazilian publicly traded companies listed on BM&FBovespa was developed from 2000 to 2012. In the sample 106 observations were classified in condition of financially constrained according to the criteria related to lower dividends payout, large amount of cash and equivalents available and investment or capital expenditures (property, plant and equipment). We use Basu (1997) and Ball and Shivakumar (2005) models to investigate the relationship between financial constraints and accounting conservatism.

Findings – The results show financially constrained firms adopt less conditional conservatism practices on their accounting figures. In other words, those firms avoid to disclose losses trying to access more external funds, however, increasing information asymmetry.

Practical implications – The evidence of this study could be used by creditors and regulators to support new financing policies and risk monitoring through firms' financial statements.

Originality/value – We empirically show that conditional conservatism practices are affected by financial constraints. Also, we develop an alternative way to classify companies in terms of financial constraints from a combination of three proxies traditionally applied in the literature such as cash and cash-equivalent, capital expenditure (property, plant and equipment) and dividends payout.

Keywords – Financial constraints; Conditional Conservatism; Information asymmetry; Finance.

1 INTRODUCTION AND MOTIVATION

Research concerning financial constraints was highlighted from the end of the 1980s on, through the work of Fazzari, Hubbard and Peterson (1988), who sought to investigate the sensitivity of investments to cash flow in companies facing financial constraints. These authors demonstrated that companies facing a higher degree of financial constraint had higher investment sensitivity to cash flow, that is, the sum applied to investments increases according to the volume of a company's cash flow.

Based on this study, Kaplan and Zingales (1997), seeking to test the results demonstrated by Fazzari et al. (1988), used the same sample, but reclassifying the financial situation of companies through qualitative and quantitative measures drawn from accounting reports. Using variables such as the ratio of debt by total capital, interest coverage, dividend distribution and the financial slack resulting from the cash level plus the line of credit that was not used, the authors divided five groups of companies according to their level of financial constraint. The results reveal that companies facing greater financial constraint presented lower investment sensitivity to cash flow, contradicting the results of research by Fazzari et al. (1988).

Finance literature concerning the topic increased, and research out relating financial constraints to the sensitivity of the level of investment to cash flow (Almeida, Campello & Weisbasch, 2004; Chen, Huang & Chen, 2009; Cleary, 1999; Pellicani & Kalatzis, 2009) was carried out. However, despite these studies, the effects of financial constraints on accounting numbers is still an infrequent topic in the literature that looks for interactions between accounting and finance – and it is this gap that this research seeks to fill, investigating the relationship between financial constraints and conditional accounting conservatism.

Thus, to understand this relationship, it is necessary to, at first, understand the company's contractual theory, which states that any given company is made up of a set of agreements made among stakeholders – such as managers, shareholders, suppliers and creditors. However, within these contracts, the existence of problems involving information asymmetry, in which internal agents have informational advantage over outsiders (Sunder, 1997), is usually verifiable. Therefore, to mitigate possible problems arising from this asymmetry of information, creditors see in conservatism a form of protection, since, for these users, through timely recognition of bad news, companies would promote better management, with a lower level of information asymmetry (Watts, 2003).

Watts (2003) argues that conservatism leads companies to recognize possible losses in advance (asymmetric recognition between bad and good news, or conditional conservatism), taking on an important role in combating possible opportunistic attitudes by managers – which, if is not properly applied, would undermine the analysis of creditors as to companies' real situation, such as, for example, a delay in registering failed investment.

Therefore, we suggest that timely recognition of bad news (conditional conservatism) increases creditors' perception of the reality of businesses via financial statements. This information that is disclosed to the market reduces the cost of monitoring interested parties (stakeholders), reducing contract costs by enhancing transparency. In this case, timely recognition of losses may enable creditors to exert their contractual rights, either to demand these rights or to monitor managers more efficiently. As a consequence of this increased transparency, creditors could offer more resources to these companies when the losses recognized in advance do not to interfere in covenants, reducing financial constraint.

However, opposing this assertion, Gigler, Kanodia, Sapra and Venugopalan (2009) present an alternative analysis and analytically demonstrate that the decision to close or continue an investment project is different from the perspectives of creditors and shareholders, a fact

which could affect the timely recognition of losses. Thus, considering differences in literature, we observed that there are still uncertainties about this relationship, a fact that motivates the investigation of the effects of financial constraints on accounting conservatism as carried out by this study.

Moreover, managers' behavior considering the debt hypothesis developed by the positive theory of accounting (Watts & Zimmerman, 1990), which provides that the most leveraged firms are more likely to use practices that increase net income, we believe that – by investigating agents' behavior in a financial constraint scenario – this research will contribute to the expansion of literature on the subject, also contributing to creditors', investors' and regulators' understanding of companies with financial constraints' trends when selecting accounting policies.

Thus, this paper poses the following question: What effect do financial constraints have on accounting conservatism? In this way, we establish our main objective: to investigate the effects of financial constraint on accounting conservatism within Brazilian public companies listed by BM&FBovespa.

Literature has pointed out that it is difficult to identify companies facing financial constraints (Fazzari, Hurbard & Peterson, 1988; Kaplan & Zingales, 1997). Thus, one of the main contributions of this research is to develop an alternative way to classify companies in terms of financial constraints, based on proxies traditionally applied in literature, such as cash and cash-equivalents available, degree of investment in fixed assets, and distribution of dividends, which is the combination of the conditions for classifying financial constraint. Thus, to be classified under financial constraint, companies have to simultaneously present a positive variation for cash and cash-equivalents available and negative variations for distribution of dividends and investments in fixed assets.

To investigate the relationship between financial constraints and conditional conservatism, we adapted the models of Basu (1997) and Ball and Shivakumar (2005), in a sample of 1,086 observations of public companies listed on BM&FBovespa from the year 2000 to 2012.

Evidence from this research supports the hypothesis that companies facing financial constraints use less conservative practices in their accounting. In other words, companies facing credit constraints, so as not to lose their borrowing capacity, avoid recognizing losses in order to reduce the volatility of net incomes and present better results, but the latter are artificial and, in the long term, may harm creditors, investors and shareholders. This result can contribute to regulators' work of monitoring companies' financial choices more accurately.

2 THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

2.1 Financial constraints: concept and identification

According to Whited (1992), financial constraints are present when a company finds it difficult to obtain funding from external sources. Kaplan and Zingales (1997) question a common argument in literature that states that a company faces financial constraint problems when it is harder and more expensive to attract external resources, forcing companies to finance their investments internally. To the author, this argument is incomplete and literature disagrees as to this point.

Thus, given the above, in this research the identification of companies facing financial constraints considers a combination of indicators from the literature review that is presented in it.

When studying financial constraint, one of the main difficulties that arise refers to choosing criteria to classify companies that are financially constrained or unconstrained. As such, we will present a few methodologies that were used to identify this condition in companies.

Starting off from the work methodology developed by Farrazi et al. (1988), the authors

investigated the investment-cash flow ratio and financial constraints, analyzing dividend payment policy to identify companies facing financial constraints. To the authors, companies that pay less dividends face a higher degree of financial constraint, based on two assumptions: i) intention to guard against possible unforeseen events; managers prefer to finance with retained earnings, since external fundraising faces asymmetric information problems (Myers & Majluf, 1984); ii) companies that had financial difficulties and major financial constraints would not have sufficient cash flow to pay dividends.

Gilchrist & Himmelberg (1998) identify the degree of financial constraint companies face according to their access to the credit market, and to their risk rating. Survey results revealed that investments respond significantly to financial factors such as Tobin's Q, cash flow and debt. Moreover, the authors state that small businesses and companies with no risk rating for their debt securities responded with greater sensitivity to cash flow, while companies possessing securities with risk ratings presented little or no response.

Kaplan and Zingales (1997), on the other hand, use both qualitative and quantitative measures drawn from accounting reports as an alternative to the study of Fazzari et al. (1988). The authors, using data such as the ratio of debt by total capital, interest coverage, dividend distribution and the financial slack given by the level of cash plus the line of unused credit, classified five groups of companies according to their level of financial constraint. These criteria were also a basis for other surveys such as those by Lamont, Polk and Saá-Requejo (2001), Pellicani and Kalatzis (2009), and Chen et al. (2009).

Almeida, Campello and Weisbach (2004) claim that financial constraint can be identified through the cash volume stored by a company, in which companies facing financial constraints tend to retain a higher amount of cash in order to guard against possible unforeseen events. In a complementary way, Cleary (1999) points out that financially less solid companies tend to avoid applying their own resources to investments, in order to sustain a financial slack and thus reduce the risk of, in the future, if there is a need for resources, being obliged to take on debt capital at high costs.

Expanding on most recent literature, Costa, Paz and Funchal (2008), using the same model by Almeida et al. (2004) to identify the effects of financial constraints on cash reserve policies, used access to international financial markets through American Depositary Receipts (ADRs) to identify companies facing financial constraints. The authors note that companies that issue ADRs meet numerous requirements to do so and, therefore, have easier access to the US financial system, reducing financial constraints.

Analyzing these studies, we observed that the dividend payment policy and cash volume are criteria that are present in almost all papers, even if involving metrics that have faced criticism (Kaplan & Zingales, 1997). Thus, in the same line of reasoning, this research used these two criteria alongside the volume of investment in fixed assets criterion to identify financially constrained companies.

2.2 Accounting conservatism

Basu (1997) and Ball and Shivakumar (2005) define conditional conservatism as the recognition of bad news faster than the recognition of good news. Iudicibus (2010) reports that conservatism is present in situations in which managers, being able to choose between two or more alternatives to recognize a given fact, will favor the option that culminates in a lower asset value or greater liability value.

Dechow, Ge and Schrand (2010) point out that conservatism is an attribute of accounting information quality; Holthausen and Watts (2001) and Watts (2003) reveal, in their research, a positive relationship between conservatism and accounting information quality. The authors state that conservatism restricts possible opportunistic behaviors by managers and, therefore, this strategy is an efficient instrument for the establishment of agreements.

Regarding these agreements, it is essential to emphasize companies' contractual theory and the contribution of conservatism to mitigating potential problems in these contracts. Concerning this theory, Sunder (1997) contributes by stating that companies are made up of a set of formal and informal agreements between stakeholders, such as managers, shareholders, customers, creditors, suppliers, amongst others.

Watts and Zimmerman (1990) corroborate this by stating that companies are made up of agreements between individuals, but there is not always harmony between the goals of the parties involved in this contractual relationship. Lopes (2004), on the other hand, reveals that the harmony of these contracts is usually threatened by problems referring to information asymmetry, in which agents (who manage) have more information than main stakeholders (the ones who invest), and may benefit from privileged information to increase well-being to the detriment of the latter.

In this scenario, Sunder (1997) states that accounting has an important informational role in reducing problems referring to information asymmetry. Watts (2003) argues that company stakeholders prefer accounting conservatism, since it minimizes opportunistic earnings by the management, reducing information asymmetry and conflicts of interest between the company and investors, facilitating debt renegotiation and preventing the company from resorting to bankruptcy to solve financial problems.

Thus, in view of the above, we can observe how important the accounting conservatism attribute is to the management of an organization; as such, in the next section, we will present the relationship between conservatism and financial constraints along with the formulation of the hypothesis of this research.

2.3 Conservatism, financial constraints and hypothesis formulation

As seen in the previous section, conditional conservatism plays a key role in aligning contracts while respecting interests within an organization. In practice, in a contract between a company and a creditor, conditional conservatism is an attribute that represents minimum guarantees to the latter's perception of risk (Paul, 2007). This perspective is based on the fact that, by recognizing economic losses in a timely fashion, results are less optimistic, so that creditors would be in a less uncertain environment as to the company's economic and financial situation.

Authors such as Li (2015), Watts (2003) and Kothari, Shu and Wysocji (2009) also state that conditional conservatism can contribute to reducing the cost of third-party funds borrowed by the company, since this attribute would help in corporate monitoring and governance.

So, it turns out that accounting conservatism helps in reducing companies' financial constraints by minimizing information asymmetry in company contracts. However, through cash retention, we can also observe conservatism's relationship with financial constraint.

Watts (2003) states that conservatism has the power to reduce or postpone expenditures aimed at paying for remuneration based on performance, for dividends and for taxes. Biddle, Ma and Song (2012) used a sample of 4,621 companies listed in NYSE Amex and NASDAQ stock exchanges, over the 1989-2007 period, to see if the risk of bankruptcy influences accounting conservatism. The authors tested two research hypotheses: the first claimed that unconditional conservatism is negatively associated with the risk of subsequent bankruptcy, and the second hypothesis stated that conditional conservatism is negatively associated with the risk of subsequent bankruptcy. The authors' findings confirmed the two research hypotheses.

The assumptions established in the research of Biddle et al. (2012) were based on research by Watts (2003). Thus, although managers obtain greater influence over conditional conservatism, they resist both types of conservatism, since both the conditional and the unconditional restrict their flexibilities to justify expenses and demonstrate better performance.

In order to investigate the relationship between conservatism and financial constraints, using a sample made up of 43,598 US companies per year, over the 1971-2007 period, Lee (2010) investigated the relationship between accounting conservatism and a company's ability to access and restructure its capital at a low cost. To formulate his research hypotheses, the author presented two theories referring to this relationship.

In the first one, the author suggests that conservatism supports the monitoring of capital providers; thus, the latter should be more willing to extend financing at lower rates, increasing companies' access to capital. In the second theory, on the other hand, the author shows that the more timely recognition of losses rather than of gains unreasonably increases companies' leverage ratio, when compared to the actual index, as well as underestimating companies' equity when compared to the actual market value of the same. Thus, facing this increase in leverage ratio and reduction in shareholders' equity, the author argues that companies' ability to raise capital in the future will be reduced, since creditors will fear that they cannot fulfill their contracts. Finally, by testing these hypotheses, the author's findings revealed that, although companies enjoy lower costs in funding raised through conservative practices, they companies would face future difficulties in accessing capital.

Analyzing and comparing the studies presented by Lee (2010) and Biddle et al. (2012) and taking into account that companies declaring bankruptcy often face financial constraints, we observe that the results found by them contradict each other. Lee (2010) showed that accounting conservatism would hinder access to company capital in the future, while Biddle et al. (2012) highlighted that the risk of failure decreases for companies that use conservative practices.

In this context, the research hypothesis of this study is as follows:

> H_1: Companies facing financial constraints do not use conditional conservatism in their accounting figures.

3 METHODOLOGY

This research uses the positive accounting approach, in which Watts and Zimmerman (1990) claim that it can provide useful information to those responsible for making decisions about the accounting policies of companies. The purpose of this research, on the other hand, is to investigate the effects of financial constraints on accounting conservatism in Brazilian companies. To identify companies' financial constraint status, this research uses three criteria: cash and cash-equivalents available, investment in fixed assets and dividend distribution.

To understand the criteria for identifying each financial constraint used in this study, we start off from the claim that companies that face financial constraints tend to accumulate higher balances in cash accounts, in order to avoid using more expensive sources of resources, should unforeseen events occur (Almeida et al., 2004). From this perspective, the cash and cash-equivalents available criterion could be a way to investigate the degree of financial constraint a company is facing.

However, companies that do not face financial constraints may also accumulate cash and cash-equivalents available. For this to be so, all that is necessary is that, that after honoring all its commitments and delivering established investments, its financial result is positive. However, this assumes that a company that chooses to increase its cash availability by retaining resources that would be intended for dividend distribution or for investing in fixed assets suffers greater financial constraints than those which increase their cash and cash-equivalents available through other options, such as taking third-party funds. Thus, to use the variation in cash and cash-equivalents available as a criterion to identify companies with financial constraints, we considered whether the company which increased its cash and cash-equivalents available did so by retaining resources that would be for dividend distribution or for investing in fixed assets.

Therefore, to meet the objectives of this study, using a complementary and alternative way to measure financial constraints, for the company to be classified as facing financial constraint, it must simultaneously present: (i) negative variation of dividend distribution, also considering the interest on own capital, (ii) negative variation in investment in fixed assets, and (iii) positive variation of cash and cash-equivalents available. Table 1 presents the calculation memory and the theoretical framework for each of these criteria.

TABLE 1 – Criteria to identify companies facing financial constraints

Criterion	Description	Rationale
Positive variation of cash and cash-equivalents available	(Cash and cash equivalents + Short-term investment)$_{it}$ - (Cash and cash equivalents + Short-term investment)$_{it-1}$	Following the reasoning of Almeida et al. (2004), companies that present a high degree of financial constraint tend to store larger amounts of cash in order to guard against possible unforeseen events, since, if there is a need for cash, taking from external funding sources would be more expensive.
Negative or null variation of investments in fixed assets	(Fixed + Depreciation)$_{it}$- (Fixed + Depreciation)$_{it - 1}$	According to Cleary (1999), companies facing financial constraints avoid making investments with their own resources, so as not to, out of necessity, be forced to deal with high capital costs.
Negative or null variation of dividend distribution	((dividend distribution + IOE)$_{it}$ / NP$_{it}$)) - ((dividend distribution + IOE)$_{it-1}$/ NP$_{it-1}$)) -	According to the criterion used by Fazzari et al. (1988), companies facing constraints tend to retain a larger share of net income, in order to cover possible unforeseen events, since, to these companies, the cost of equity is less than the cost of external capital.

Note: IOE = Interest on equity; NP$_{it}$ = net income.

To capture the effects of financial constraints on the quality of accounting information, we established a dummy variable called DRF, which will take on the value of 1 for companies classified as with financial constraints, that is, for companies that met all the criteria highlighted in Table 1, and 0 for companies classified as without financial constraints.

In addition, we selected a control sample in order to test the efficiency of the criteria used to classify companies as financially constrained or unconstrained. This selection occurred via the website of the Brazilian Securities Commission (Comissão de Valores Mobiliários/CVM), where we initially selected 25 companies that filed for bankruptcy between years 1997 and 2011; next, we excluded the companies that had a negative cash flow. The remaining 12 companies made up the control sample.

Choosing these companies was appropriate because bankruptcy filing is the last stage of financial insolvency, and, before reaching this situation, it is assumed that the company has gone through a period of financial constraint. Thus, the test applies the financial constraint identification criteria to these companies, two years before the bankruptcy filing thereof, for it is understood that, in the year of bankruptcy and the year before it, the company would already be very close to the state of insolvency, which would not be an

interesting time to evaluate the efficiency of the financial constraint identification criteria. The results of these tests are presented in section 3.1.

In the sample selection, on the other hand, using the Economática® database, we selected all active Brazilian companies listed in BM&FBovespa between 2000 and 2012, with the exception of companies belonging to the financial sector, because of its specificities and specific regulation. From these companies, we excluded the observations with incomplete information and observations that had negative cash flow, since, for the cash and cash-equivalents available to be a valid criterion for identifying companies with financial constraints, they need to have a positive cash flow, so as to save a part of that flow, giving evidence that these companies would protect their own resources for possible unforeseen events. Moreover, we excluded from the sample companies that presented losses, because dividends are distributed based on a company's net income

Also, such as the in work of Basu (1997) and Ball and Shivakumar (2005), in order to reduce the effect of outliers on the result of regressions, we excluded from the sample 1% of the extremes of each variable. Finally, the sample amounted to a total 1,086 observations; 106 observations were classified as with financial constraints.

Next, as shown in section 3.2 models, we used the models of Basu (1997) and Ball and Shivakumar (2005) in a panel, adapted through the insertion of a DRF financial constraint dummy to capture its effect in the practice of conditional conservatism, and of three variables control: *Size* (SIZ) given by the natural logarithm of total assets, Leverage (LEV) given by the ratio of total debt by total assets, and *Growth Opportunity* (GRO) calculated as the change in operating net revenues divided by operating net revenue in t-1.

3.1 Analysis of sensitivity and robustness

To increase the efficiency of the criterion for identification of companies with financial constraints used in this research, as well as the robustness of the results, we selected a sample of 12 companies filing bankruptcy and registered in the CVM.

The three financial constraint criteria were applied to this control sample; results showed that, of the 12 companies analyzed, only three did not meet all the financial constraint criteria and, as such, were classified as unconstrained. All the others met all the classification criteria for companies with financial constraints.

Therefore, assessing the financial constraints classification model used in this research through this analysis, it appears that the criteria represent a 75% accuracy rate.

3.2 Empirical models of conservatism

To investigate companies with financial constraints' conditional conservatism, we will use the model of Basu (1997) and the model of Ball and Shivakumar (2005), but with the inclusion of a dummy variable referring to the financial constraint status in both models.

Thus, the model of Basu (1997) adapted for this research is as follows:

$$LPA_{i,t} = \beta_0 + \beta_1 DR_{i,t} + \beta_2 R_{i,t} + \beta_3 DR_{i,t} * R_{i,t} + \beta_4 DRF_{i,t} + \beta_5 DRF_{i,t} * DR_{i,t} +$$
$$\beta_6 DRF_{i,t} * R_{i,t} + \beta_7 DRF_{i,t} * DR_{i,t} * R_{i,t} + \sum_{n=1}^{k} \omega_n VC_{ni} + \sum_{n=1}^{k} \delta_n ano + \varepsilon_{i,t}$$

In which: LPA_{it} – Net income of firm i in period t scaled by stock price in t-1; DR_{it} – dummy variable referring to negative stock returns, assuming 1 for negative stock returns and 0, otherwise for firm I in period; R_{it} - Stock return of firm I in period t scaled by stock price in t-1;; DRF_{it} – dummy variable assuming 1 for firm I in period t in financial constraint condition and 0, otherwise; VC_{ni} – control variable *n*, in a total of *k* variables, measured for the *i* company; *Year* – Dummy variables for each year; ε_{it} – regression error term.

So as to control the effects of scale and of problems referring to heterocedasticity as Basu (1997) did, variables LPA_{it} and R_{it} were scaled by asset price in t-1. For the hypothesis that companies with financial constraints tend to be less conservative not to be rejected, we expect coefficient β_7 to take on a value that is statistically significant and negative. The negative coefficient demonstrates that the Market recognized losses in a more timely manner than results that were recognized and presented by the company.

On the other hand, the model of Ball and Shivakumar (2005) adapted for this research is:

$$\Delta LL_{i,t}=\alpha_0+\alpha_1 D\Delta LL_{i,t-1}+\alpha_2 \Delta LL_{i,t-1}+\alpha_3 D\Delta LL_{i,t-1}*D\Delta LL_{i,t-1}+\alpha_4 DRF_{i,t}$$
$$+ \alpha_5 DRF_{i,t}*D\Delta LL_{i,t-1}+ \alpha_6 DRF_{i,t}*\Delta LL_{i,t-1}+ \alpha_7 DRF_{i,t}*\Delta LL_{i,t-1}+\sum_{n=1}^{k} \omega_n VC_{ni}+ \sum_{n=1}^{k} \delta_n ano+ \varepsilon_{i,t}$$

In which: ΔLL_{it} – variation of the net accounting net income of company *i* from year *t-1* to year *t* scaled by the total assets of company *i* at the beginning of year *t*; ΔLL_{it-1} - variation of the net accounting net income of company *i* from year *t-2* to year *t-1* deflated by the total assets of company *i* at the beginning of year *t-1*; $D\Delta LL_{it-1}$ - dummy variable with value 1 for negative variations of the net accounting net income of company *i* in year t-1, and 0 otherwise; DRF_{it} – dummy variable assuming 1 for firm I in period t in financial constraint condition and 0, otherwise; VC_{ni} - *n* control variable, for a total *k* variables, measured for the *I* company; Year - Dummy variables for each year; ε_{it} – regression error term.

Considering the hypothesis developed in this research, we expect that the $\alpha 7$ coefficient takes on a positive and statistically significant value, thus confirming that companies with financial constraints do not present the conservatism attribute in their financial statements.

4 RESULTS

4.1 Descriptive statistics results

The descriptive statistics of variables used in the models of conservatism were calculated separately for financially unconstrained and constrained companies; the difference of means test was carried out, as disclosed in Table 2 below:

TABLE 2 – Descriptive statistics of financially constrained and unconstrained companies

Variables	Companies	Obs.	Mean	Standard Deviation	Minimum	Maximum	p-value
LPA_{it}	Unconstrained	980	0.322	0.358	0.035	1.18	0.001
	Constrained	106	0.196	0.162	0.035	0.544	
R_{it}	Unconstrained	980	2.368	3.944	-2.466	10.768	0.039
	Constrained	106	1.674	3.01	-2.88	7.14	
ΔLL_{it}	Unconstrained	980	0.026	0.075	-0.135	0.436	0.0009
	Constrained	106	0.052	0.118	-0.134	0.69	
ΔLL_{it-1}	Unconstrained	980	0.014	0.073	-0.257	0.326	0.151
	Constrained	106	0.006	0.095	-0.433	0.364	
LEV_{it}	Unconstrained	980	0.5382	0.176	0.238	0.801	0.078
	Constrained	106	0.512	0.205	0. 195	0.831	
SIZ_{it}	Unconstrained	980	13.822	1.43	11.492	16.019	0.002
	Constrained	106	13.37	1.844	10.497	16.319	
GRO_{it}	Unconstrained	980	0.135	0.131	-0.064	0.366	0.034
	Constrained	106	0.108	0.015	-0.114	0.373	

Note. Unconstrained = Companies classified as without financial constraints; Constrained = Companies classified as with financial constraints.

Comparing Table 2 information, concerning companies with financial constraints and companies without financial constraints, we can see that both mean net incomes and mean net incomes per asset of companies with financial constraints were lower than the mean values of companies without constraints financial. This may be an indication that less profitable companies deal with higher financial constraints due to the lack of perspective that the market may have about them; in other words, the market prices financial difficulties.

Moreover, confirming the results of research carried out by Devereux and Shiantarelli (1990), which show that the degree of financial constraint is inversely related to the size of the company, we observe that, in the sample analyzed in this study, companies classified as financially constrained are on mean smaller than companies classified without financial constraints.

Finally, analyzing the degree of leverage of the two groups of companies, companies with financial constraints were expected to present, on mean, higher levels of leverage compared to the group of companies classified without financial constraints. However, in the selected sample, the result of the statistical test rejects the hypothesis that there is a difference of means between the degrees of leverage of the groups of analyzed companies.

4.2 Results of Basu's adapted model (1997)

We carried out regression in panel with fixed and random effects, and applied the Hausman test to identify which estimator would be the most appropriate. The test result rejected the null hypothesis that error u_i and explanatory variables are not correlated. Thus, the estimator with fixed effects was the most appropriate one for the model.

To assess whether there is homoscedasticity, the Wald Modified test was used, whose null hypothesis is that variances are equal between observations. The p-value rejected the hypothesis that model residuals are homoscedastic, and there was evidence of heteroscedasticity. So, to fix this, we chose to use the robust errors of White. In Table 3, we present the panel regression with fixed effects estimators.

TABLE 3 – Results of Basu's adapted model (1997)

$$LPA_{it} = \beta_0 + \beta_1 DR_{it} + \beta_2 R_{it} + \beta_3 DR_{it} * R_{it} + \beta_4 DRF_{it} + \beta_5 DRF_{it} * DR_{it} + \beta_6 DRF_{it} * R_{it} + \beta_7 DRF_{it} * DR_{it} * R_{it+}$$

Variables	Original Model		Model without Control Variables		Model with Control Variables	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
DR_{it}	-0.080***	(0.016)	-0.170***	(0.039)	-0.156***	(0.030)
R_{it}	-0.010***	(0.001)	0.0008	(0.002)	0.003	(0.002)
$DR_{it}*R_{it}$	0.051***	(0.008)	-0.0009	(0.005)	0.004	(0.004)
DRF_{it}			-0.074	(0.063)	0.119	(0.094)
$DRF_{it}*DR_{it}$			-0.205*	(0.115)	-0.132	(0.127)
$DRF_{it}*R_{it}$			0.015**	(0.006)	0.012	(0.010)
$DRF_{it}*DR_{it}*R_{it}$			-0.025*	(0.014)	-0.014	(0.011)
SIZ_{it}					-0.049*	(0.027)
LEV_{it}					0.268*	(0.154)
GRO_{it}					0.061	(0.084)
Constant	0.263***	(0.010)	0.592***	(0.060)	0.747	(0.376)
adjusted R^2	9.78%		12.07%		17.32%	
Observations	1,086		1,086		1,086	

Note. LPA_{it} – Net accounting net income per asset of company i in year t, scaled by asset price in t1; DR_{it} – Dummy variable referring to negative net incomes, with 1 for negative net incomes and 0 for positive net incomes for companies i in year t; R_{it} - Net income of assets of company i in year t scaled by asset price in t–1; DRF_{it} – Dummy variable referring to financial constraint, 1 for company i in year t classified as with financial constraints and 0 for the remaining companies; SIZ_{it} – Natural logarithm of the total assets of company i in year t; LEV_{it} – leverage of company i in year t; GRO_{it} growth opportunity of company i in year t; ***, **, *, significant coefficients at 1%, 5%, and 10%, respectively.

The results of the original model of Basu (1997) reveal a positive and significant coefficient for variable drit $DR_{it}*R_{it,}$ (0.051), suggesting more timely recognition of bad news than good news for companies in general. Furthermore, when analyzing the results of models adapted with the financial constraint dummy variable, we observed that the regression without the control variables presented an adjusted R^2 of 12.07%. By adding control variables to the model, on the other hand, the explanatory power of regression was increased to 17.32%.

As for the coefficient of variable $DRF_{it}*DR_{it}*R_{it.,}$ (β_7), which investigates conservatism in companies with financial constraint, we observed that only the model without control variables presented a statistically significant result at 10%, still revealing a negative coefficient of -0.025. Analyzing this result, we can infer that companies with financial constraints do not use conservative practices in their financial statements.

4.3 Results of Ball e Shivakumar's adapted model (2005)

Once again, after carrying out regression with fixed and random effects, and applying the Hausman test to determine which of the effects is most appropriate, the result again rejected the null hypothesis that error u_i and explanatory variables are not correlated. Thus, the estimator with fixed effects was the most appropriate for the model.

To assess whether the model is homoscedastic, the Modified Wald test was applied. The test rejected the hypothesis that the model's residuals are homocedastic. So, to fix this, we chose to use the robust errors of White. Table 4 shows the results of the regression panel, with fixed effect estimators:

Table 4 – Results of Ball e Shivakumar's adapted model (2005)

$$\Delta LL_{it} = \alpha_0 + \alpha_1 D\Delta LL_{it}\text{-}_1 + \alpha_2 \Delta LL_{it-1} + \alpha_3 \Delta LL_{it-1} * D\Delta LL_{it-1} + \alpha_4 DRF_{it} + \alpha_5 DRF_{it} * D\Delta LL_{it-1} + \alpha_6 DRF_{it} * \Delta LL_{it-1} + \alpha_7 DRF_{it} * D\Delta LL_{it-1} * \Delta LL_{it-1} + +$$

Variables	Original Model		Model without Control Variables		Model with Control Variables	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
$D\Delta LL_{it}$	-0.001	(0.006)	-0.003	(0.006)	-0.001	(0.006)
ΔLL_{it-1}	-0.220***	(0.057)	-0.164***	(0.061)	-0.189***	(0.059)
$\Delta LL_{it-1} * D\Delta LL_{it-1}$	-0.220**	(0.098)	-0.353***	(0.101)	-0.212**	(0.102)
DRF_{it}			0.043***	(0.013)	0.034***	(0.013)
$DRF_{it} * D\Delta LL_{it-1}$			-0.002	(0.020)	0.005	(0.020)
$DRF_{it} * \Delta LL_{it-1}$			-0.596***	(0.169)	-0.528***	(0.167)
$DRF_{it} * D\Delta LL_{it-1} * \Delta LL_{it-1}$			1.468***	(0.309)	1.286***	(0.304)
SIZ_{it}					-0.014**	(0.006)
LEV_{it}					0.136***	(0.024)
GRO_{it}					0.077***	(0.012)
Constant	0.038***	(0.098)	0.029***	(0.011)	0.130*	(0.077)
Adjusted R^2	12.63%		11.81%		12.73%	
Observations	1,086		1,086		1,086	

Note. LPAit – Net accounting net income per asset of company i in year t, scaled by asset price in t1; DRit – Dummy variable referring to negative net incomes, with 1 for negative net incomes and 0 for positive net incomes for companies i in year t; Rit - Net income of assets of company i in year t scaled by asset price in t–1; DRFit – Dummy variable referring to financial constraint, 1 for company i in year t classified as with financial constraints and 0 for the remaining companies; SIZit – Natural logarithm of the total assets of company i in year t; LEVit – leverage of company i in year t; GROit growth opportunity of company i in year t; ***, **, *, significant coefficients at 1%, 5%, and 10%, respectively.

Thus, as in the original model of Basu (1997), the result of the original model of Ball and Shivakumar (2005) revealed through analysis of coefficient $\Delta LL_{it-1} * D\Delta LL_{it-1}$ that, in general, the negative results of previous years tend to be reversed in the following year. In other words, these companies use conservative practices.

Now, looking at the results of the adapted models to investigate conservatism in companies with financial constraints, it turns out that the regression without control variables presented an adjusted R^2 of 11.81%, while, by adding them, the explanatory power of the model increased to 12.73%.

Starting from analysis of the model without control variables, we observe a negative coefficient of -0.3535 for variable $\Delta NI_{it-1} * D\Delta NI_{it-1}$ at 1% significance, indicating conservative practices when analyzing the sample as a whole. Coefficient of variable $DRF_{it} * D\Delta LL_{it-1} * \Delta LL_{it-1}$ in the same model, in which there is only evidence of conservatism in companies with financial constraints, the result was also significant at 1%, but with a positive value of 1.468, demonstrating the absence of accounting conservatism in companies with financial constraints.

Analyzing the results of the model with control variables, the coefficient found for the $DRF_{it} * D\Delta LL_{it-1} * \Delta LL_{it-1}$ variable was 1.286, which is statistically significant. This result reinforces the idea that companies with financial constraints do not use conditional conservatism. In Table 5, below, we summarize the findings of this research:

TABLE 5 – Summary of research results

Model	Coefficient that analyzes conservatism	Model without Control Variables		Model with Control Variables	
		Expected sign	Result	Expected sign	Result
Basu (1997)	$DRF_{it}*DR_{it}*R_{it}$	(-)	(-)*	(-)	(-)
Ball e Shivakumar (2005)	$DRF_{it}*D\Delta LL_{it-1}*\Delta LL_{it-1}$	(+)	(+)***	(+)	(+)***

Note. Asterisks represent the significance level of Pearson's coefficients: ***, **, *, significant at 1%, 5%, and 10%, respectively.

We observed that, except for the results from the model of Basu (1997) with control variables, the coefficient was not statistically significant; all other results showed coefficients with statistically significant signs, expected by this research. Therefore, we cannot reject the hypothesis of this research, which proves that companies classified as with financial constraints do not use conditional conservatism in their accounting.

Evidence indicates that companies in financial constraint position do not have the conditional conservatism attribute; in other words, the timely recognition of losses does not occur. This result may also be due to earnings management practices to meet companies' contractual debt covenants.

5 FINAL CONSIDERATIONS

This research investigated accounting conservatism in Brazilian companies with financial constraints. To this end, we used a sample of 1,086 observations of Brazilian companies listed in BM&FBovespa from 2000 to 2012, with 106 observations classified as companies with financial constraint status.

With regard to identification of financial constraints, this research based on studies by Adams *et al.*, (2004), Cleary (1999), Fazzari *et al.* (1988), developed an alternative way to identify this condition by examining the cash and cash-equivalents available, the distribution of dividends and investments in fixed assets. For robustness of results, the same methodology was tested by applying it in a control sample consisting of companies considered in bankruptcy condition, resulting in a degree of 75% accuracy for that criterion. Thus, facing the difficulty that studies on financial constraints found to identify this condition in organizations, we expect that the criteria considered in this paper can be used in future studies. Moreover, the results for that specific sample were qualitatively compliant.

The results presented in this article, in turn, indicate that the companies with financial constraints did not show practical evidence of conditional conservatism in their accounting figures, measured by the models of Basu (1997) and Ball and Shivakumar (2005). In this case, there are indications that companies facing financial constraints avoid reporting economic losses so as to have higher net incomes. This may be motivated by covenants from debt contracts, so that creditors do not exercise their contractual rights if an indicator is breached.

Still, corroborating the arguments presented by Biddle *et al.*, (2012), this research suggests that the negative association between conservatism and financial constraints is related to the fact that, if managers recognize losses in a timely way, access to credit could be reduced by signaling bad news to the market, once again encouraging these companies to retain higher volume of cash.

Moreover, another explanation for this association is that the absence of conservatism in accounting numbers contributes to increased uncertainty about returns on capital borrowed

by creditors, suppliers and investors, since net incomes could be anticipated opportunistically by management, a fact that would contribute to increasing financial constraints over subsequent periods.

Finally, the results of this research contribute to those who use accounting, such as investors, creditors, the government, and suppliers, amongst others, by verifying the possibility of identifying evidence of the financial constraints of a given company from analysis of its financial statements.

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