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DEBT AND IMPAIRMENT LOSSES: EVIDENCE FROM THE BRAZILIAN HIGH BOOK-TO-MARKET SCENARIO

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1. INTRODUCTION

This paper investigates impairment practices of Brazilian publicly traded firms conditional on market expectations regarding economic losses. Impairment rules are an important mechanism of conditional conservatism (André et al., 2015), as they aim at reducing the level of information asymmetry between firms and market capital providers, through higher quality accounting information (Florou and Kosi, 2015; Leuz and Wysocki, 2016) Under the rules set by IAS 36 – Impairment of Assets, adopted in Brazil since 2010, reporting entities must constantly monitor the recoverable value of their long-lived assets, assuring that no asset is reported in an entity's financial reports when its outstanding value is estimated to be unrecoverable through sale or usage. However, the extant literature on impairment rules show that impairment losses are frequently delayed or avoided, reducing the level of conditional conservatism with potentially negative effects on capital markets (André et al., 2015; Bini and Penman, 2013; Bond et al., 2016; European Security Markets Authority, 2013; Healy, 2016).

While firms are required to disclose information on impairment tests, early evidence after the adoption of IFRS in 2010 shows that Brazilian firms fail to disclose complete information on impairment tests (Uliano et al. 2014; Mazzioni et al. 2014). Due to the low level of impairment disclosure practiced by Brazilian publicly traded companies, market participants are not able to directly observe estimates made by firms on the recoverable value of their assets. Nonetheless, the market value of firms could provide an indirect aggregate estimate of their net recoverable amount. In this sense, we consider the book-to-market ratio (BTM) as a potential impairment indicator, inspired by Ramanna and Watts' (2012) assertion that the market expects impairment losses on firms with book-to-market ratios higher than one for a period of at least two consecutive years. Consequently, our first hypothesis is that firms that present a BTM > 1 for an extended period of time are more likely to recognize an impairment loss.

Our sample of Brazilian publicly traded firms includes 206 unique firms and 7 calendar years, resulting in 1010 firm-year observations. Within this setting, 98 out of 206 firms are in persistently low market-to-book states in at least one period during our sample years. Despite that, there are only 51 firm year observations, regarding only 21 unique firms, in which an impairment loss was recorded. In contrast to the report from Oler (2015), according to whom 19% of the firm-quarter observations between 1990 and 2010 presented high BTMs, our sample from Brazilian firms from 2010 to 2016 has around 30% of firm-years with two-year BTM > 1, a figure more similar to that reported by Bini and Penman (2013) regarding European companies. The analysis of the Brazilian setting adds to the evidence reported by the literature in showing that impairment losses are less frequent than expected by regulators, in a framework of an emerging market with debt provided primarily by banks, in which there are extreme cases of impairment losses such as Petrobras S.A. and Vale S.A., which reported respectively aggregated losses of R$ 113 billion and R$ 60 billion during our period of analysis. At the 2017 closing exchange rate of R$ 3,30 to US$ 1, those amounts were approximately equivalent to US$ 34 billion and US$ 18 billion.

Within the Brazilian context of firms with concentrated ownership (Schiehll et al., 2013), agency motivations for accounting conservatism lead to the expectation of a high frequency of impairment losses, as controlling shareholders typically would prefer to retain earnings (Decourt and Procianoy, 2012). Earnings retention is facilitated by booking an impairment loss. Since the low frequency of recognized impairment losses by Brazilian firms suggest the contrary of agency based expectations, our second hypothesis focus on the relation between

debt and accounting conservatism, while controlling for agency reasons and economic indicators of impairment.

In order to analyze the relation between debt and impairment practices, we rely on the theoretical model of optimal impairment rules, constructed by Göx and Wagenhofer (2009). Their model is motivated by the premise that debt contracting is the most important source of demand for impairment rules, following the Ball, Robin, and Sadka (2008) findings, that report that the level of conditional conservatism is shaped by debt markets in the international settings analyzed by the authors.

Under the standard principal-agent paradigm from agency theory, conditional conservatism can mitigate agency conflicts and facilitate efficient debt contracting (Armstrong et al., 2016). Göx and Wagenhofer (2009) present an analytical solution evidencing that the *ex ante* adoption of an accounting system that recognizes impairment losses in an optimal accounting policy for firms that will approach lenders in search of debt financing, and do not have an excess of pledgeable assets. Göx and Wagenhofer (2009) show that when an accounting system is designed to reports only high asset values, the firm would not obtain financing when reports the original book value of its pleadgeable assets, because a rational lender would take the unadjusted book value as bad news. Contrarily, when the firm is committed *ex ante* to report only lower values of its assets, lender will rationally interpret unadjusted book values as good news. In the same sense, Göx and Wagenhofer (2009) corollary 1 considers that the information content of the assets balance sheet value is dependent on whether an impairment is recognized or not. Corollary 1 states that the book value of an impaired asset provides more precise information about the asset value than the book value of an unimpaired asset, as the book value of the impaired asset carries only the uncertainty about the asset value resulting from the measurement process, whereas the unimpaired book value has a larger uncertainty depending on the size of the set of values for which there is nondisclosure.

Based on Göx and Wagenhofer (2009), we posit that missing impairments could be related to how Brazilian firms utilize debt as a source for financing their projects. The Brazilian debt market is largely dominated by bank credit and with underdeveloped public market for debt. Private lenders (banks) are more likely to have access to private information, to engage in producing information, to monitoring borrowers, and renegotiating debt following initial issuance, relying less on financial statements than the level of reliance expected for public lenders (Florou and Kosi, 2015). We test debt related hypothesis analyzing the statistical relation between the level of unrecognized economic losses and four debt related variables, the debt to equity ratio, the ratio of short term debt to total debt, the presence of bonds in the companies' liabilities and the level of debt financing in the year *t*.

Results found in our sample are weakly favorable to the hypothesis that a persistently high BTM is associated with the recognition of impairment losses, from a statistical significance standpoint. The economic significance of this relation is even weaker, since an impairment loss is booked only in 5% of our firm years, whereas a persistent BTM > 1 is present in 30% of our firm-years, corresponding to 307 observations. Out of these 307 observations, an impairment loss was recognized in only 17 observations. Thus, firms-years with persistent BTM > 1 recognize impairment on 5,5% of the observations. Regarding the 703 firms without the persistent impairment indicator (70% of total sample), an impairment loss was recognized on 34 observations (5% of observations), suggesting that the effect of persistent BTM > 1 affects the likelihood of recognizing an impairment loss weakly.

Focusing on the debt contracting hypothesis regarding the level of unrecognized losses, our results show that there is a negative relation between the debt-to-equity ratio and the level of unrecognized losses, suggesting that contracting reasons create demand for conditionally conservative accounting. Short term debt is positively associated to the level of unrecognized impairment losses, indicating that the constant monitoring managers are subject to when they

have to frequently renegotiate debt substitutes for accounting conservatism. Exploring the possibility of a non-linear relation between debt and the level of unrecognized impairment losses, we report evidence that there is an inverted u-shaped relationship between leverage and the level of unrecognized losses. This result can indicate that the demand for conservatism is larger for more indebted firms.

Our analysis of the Brazilian context makes several contributions to the literature. This study is the first to analyze the relation of market negative expectations, as presented by a persistent BTM >1, and the recognition of impairment losses within the context of a large emerging market, in the period following the adoption of IFRS. While our results show that a persistent BTM >1 is a statistically significant predictor of the booking of impairment losses, this effect results in little practical significance, as impairment recognitions are much rarer than high BTM. This finding should be of interest to regulators and policy makers in the Brazilian context and in international markets, as it highlights that impairment rules are note achieving their objective of faithful representation. In addition to that, we further investigate in depth the effect of debt on the level of unrecognized losses, through various debt related variables that represent different constructs. To the best of our knowledge, our study is the first to empirically show that there is a non-linear relation between debt and the level of unrecognized losses, while confirming the theoretical expectation that short-term debt is a substitute for accounting conservatism, and that firms with larger debt-related financing cash flows have lower levels of unrecognized losses. Our findings highlight the multiple roles that can be played by debt when it comes to understanding the demand for accounting conservatism, which can lead to the development of improved and more generalizable analytical models of accounting conservatism and impairment rules.

The remainder of this paper is organized as follows. In section 2, we present the hypotheses development. In section 3, sample data and research design are detailed. Results are presented in section 4, followed by our concluding remarks in section 5.

2. HYPOTHESES DEVELOPMENT

The timely recognition of asset write-offs, which are expected to be anticipated by markets, can be considered a form of conditional conservatism. In this sense, motivated by anecdotal evidence showing that managers have plenty of discretion to manage the timing of write-offs to take action related to earnings management, Choi (2008) investigates and obtains results suggesting that write-offs are recorded in a less timely manner than other components of earnings. Hence, market prices over the years preceding a write-off takes into account any decline in asset value reflected later in the write-off amount. Ji (2013) presents evidence from the Australian context. Through examining the timing of goodwill impairment decisions of Australian companies during the period 2007 to 2009, the author reports that a non-trivial number of firms did not impair goodwill as called for under the standard governing asset impairment. Therefore, identifying potential economic losses prior to its recognition in a firm's financial statements can allow us to investigate the determinants of unrecognized losses.

The extant literature recognizes the complexity of identifying an economic loss at the firm level, given that impairment losses must be estimated at the cash generating unity level, and firms report at most at the business segment level (Detzen et al., 2016; Guthrie and Pang, 2013; Knauer and Wöhrmann, 2016). The difficulty of this task is amplified by the limited disclosure practiced by firms regarding their impairment practices (Amiraslani et al., 2013; Glaum et al., 2013; Mazzi et al., 2017).

A frequent empirical strategy adopted by the literature for identifying economic losses is to consider indicators of impairment derived from stock prices. Since Ball and Brown (1968), positive capital markets research utilizes the market prices and returns as a tool for measuring

the utility of accounting information to market participants (Kothari, 2001). Kothari (2001) claims that an association between financial performance and market prices is expected in efficient markets. Watts and Zuo (2016) state that for difficult-to-verify information, such as fair value estimates based on Level 2 or Level 3 inputs, conservatism requires a higher verifiability threshold for gains than for losses, and hence a lower of amortized cost or fair value model (similar to the lower of cost or market model for inventories) seems more appropriate than fair value. Based on the premise that market prices aggregate investor's opinions on the company's future cash flows, we argue that a persistent book value higher than the firm's market capitalization presents a situation in which market prices can proxy for an estimate of fair value of the company's net assets. This logic is similar to that presented by Danielson and Press (2003) and Oler (2015), as both papers consider a book-to-market higher than one as a signal of lack of conservatism. Under accounting conservatism, impairment tests should follow persistently high BTM, correcting net asset's reporting value to reflect negative information already assimilated by the markets.

Ramanna and Watts (2012) take the BTM as an indicator of economic impairment, expected by the markets to be recognized in financial reports. When the BTM >1 for a period of at least two years, it is reasonable to expect that the market aggregate opinion is that its assets are not fully recoverable. Even though Ramanna and Watts (2012) studies US publicly traded firms, its principle is also applicable to IFRS. Paugam, Astolfi, and Ramond (2015) emphasize that both US GAAP (SFAS 141R, SFAS 142, SFAS 144) and IFRS (IFRS 3, IAS 36) allow a significant space for managerial discretion, while Knauer and Wöhrmann (2016) report that markets react similarly to impairment losses within US-GAAP and IFRS. This identification strategy is followed by papers such as Mazzi et al. (2017). The BTM ratio is also listed by IAS 36 as an example of external indicators of impairment, along with technological and market change, which must be considered by management in their monitoring of impairment likelihood. These factors are out of the direct control of firms' management. They can indicate lower future cash flows or higher discount rates (Knauer and Wöhrmann, 2016). Riedl (2004) emphasizes that positive differences between market and book values create buffer that can absorb losses in some of the firm's cash generating unities. A BTM > 1 indicates that the firm's buffer has already been exhausted, and the firmi s therefore in a situation of a very likely economic impairment.

In a report issued by KPMG's Global Valuation Institute, Bini e Penman (2013), analyzed a sample of firms in the US and European markets in 2008, 2009 and 2010, reporting a large prevalence of high BTM observations. This prevalence is larger in Europe (with a maximum frequency of 30,9% in 2008) than in the US (20,2% in 2008). Similarly, Knauer and Wöhrmann, (2016) did not find significant differences between capital markets effects deriving from write-down announcements under SFAS 142 and IAS 36.

Jarva (2014) argues that the high BTM identification strategy is reasonable given that analysts face more difficulties in forecasting future firm performance when BTM is high. Oler (2015) considers that firms with persistently high book-to-market ratios, mathematically equivalent to low market-to-book ratios present an anomaly, probably due to aggressive accounting practices. Based on the above discussion, we start by formulating hypothesis on factors that are potential explanatory variables regarding the probability of a given company recognizing an impairment loss. Our first hypothesis is presented as follows (in alternative form):

H1. Firms that have BTM higher than one should be more likely to recognize an impairment loss than firms with BTM lower than one, ceteris paribus.

Given the low frequency of booked impairment losses, we turn our attention to potential explanations regarding the level of firms unrecognized losses, that are taken as inconsistent with conditional conservatism. The existence of accounting conservatism is explained by the

extant literature mostly on contracting considerations, taxes, shareholder litigation risk, political process and regulatory forces (Basu, 1997; Watts, 2003b; Lu and Trabelsi, 2013). The evidence reported by Watts (2003a) suggests the contracting and shareholder litigation explanations are the most relevant, although effects of taxation and regulation play a smaller role. Ball, Robin, and Sadka (2008) analyzed a sample of comprises 78,949 firm-year observations during 1992–2003 from 22 countries, confirming their prediction that the level of conditional conservatism is shaped by debt markets.

The effect of debt contracting on accounting conservatism, and consequently on firm's propensity to recognize impairment losses, can depend on the firm's demand for debt financing. Prior to obtaining debt financing, conservative impairment practices are the optimal policy in order to reduce market uncertainty about firm's collateral, improving the likelihood of raising debt capital (Göx and Wagenhofer, 2009).

Later on, agency problems can lead the firm to the opposite behavior regarding the recognition of impairment losses, given shareholders and managers objective of fulfilling covenants at the debtholders expense. Thus, a possible explanation for persistently high BTM could be managers' resistance to reduce asset values and consequently reduce their collateral (Chalmers and Godfrey, 2006; Filip et al., 2015). Gigler, Kanodia, Sapra, and Venugopalan (2009) go even further, claiming that the systematical recognition of impairment losses can be undesired from a social efficiency perspective, as it improves the cost of false alarms and results in the loss of informative power of conservative accounting.

Khurana and Wang (2015) theorize that the presence of short-term debt can substitute for accounting conservatism as a strategy for mitigating agency costs. This substitution happens because short-term debt subject managers to more frequent monitoring due to debt renewals and renegotiations. The authors present evidence confirming the hypothesis that firms with greater levels of short term debt present less conservative accounting practices.

Giving the ambiguity of the relation between debt and the likelihood of recognizing impairment losses, the following hypotheses are presented in alternative form:

H2a. There is a negative association between debt and unrecognized impairment losses, ceteris paribus.

H2b. Short term debt is positively related to unrecognized impairment losses, *ceteris paribus*.

3. SAMPLE DESCRIPTION AND RESEARCH DESIGN

To test our first hypothesis, we use a sample of firm-years with available data between 2010 (the first year of full IFRS adoption in Brazil) and 2016, We require financial data from Standardized Financial Statements available at CVM (Brazilian Securities and Exchange Commission) and at the Economática database. We exclude firms in the financial services industries because of their different operating, financial and wealth generating structures. We also exclude companies with negative shareholders' equity on the previous year (for which market-to-book ratios are negative), companies with return on assets below -100% and above 100%, and companies with assets lower than one hundred thousand Brazilian Real. With this exclusion criteria, we exclude both firms that are likely to be in near-bankruptcy state and firms that experienced significant changes on their return on assets' generating processes. Finally, we excluded firms with negative debt-to-equity ratios, since the debt-to-equity ratio of these companies is not comparable to the other firms in the sample. As a result, our sample is comprised by 1010 firm-year observations, with 206 unique Brazilian firms with stocks traded at the São Paulo stock exchange (currently denominated B3, formerly BM&FBOVESPA).

Generally, our first hypotheses consider that the existence of a persistently high BTM ratio should result in an increased likelihood of a firm recognizing an impairment loss. Hence, we test our hypothesis through a dummy variables approach. In our first specification, the

dummy variable of interest takes the value 1 when the company has a BTM>1 for years *t* and *t-1*, and zero otherwise, following Ramanna and Watts (2012).

Our first model is defined in the form or Eq.1. We present the definition of our variables of interest in Table 1. We first estimate a set of unbalanced Random Effects Logit models.

$$D\_Impairment_{i,t}=\beta_0 + \beta_1 (\text{Persistent Impairment Indicator}_{i,t})+ \beta_2 (\text{Debt\_to\_equity}_{i,t-1}) + \beta_3 (Debt\_to\_equity_{i,t-1}{}^2)+ \beta_4 (Short\ term\ debt_{i,t}) + \beta_5 (D\_\text{Bonds}_{i,t}) + \beta_6 (\text{Financing Cash Flows}_{i,t}) + \beta_7 (\text{Growth Oportunities}_{i,t})+ \beta_8(\text{Fixed Assets}_{i,t})+\beta_9(\text{Intangibles}_{i,t})+\beta_{10}(\text{Payout}_{i,t}) +\beta_{11}(\text{Ownership}_{i,t}) + \sum_{k=1}^{22}\{\gamma_k \text{Control}_{k,i,t}\} +\nu_{i,t} \quad \text{(Eq. 1)}$$

Table 1 – Definition of variables of interest

Variable	Definition
Dependent Variable	
$D\_Impairment_{i,t}$	dummy variable equals to 1 if the firm *i* recognized an impairment loss in year *t* and zero otherwise.
Independent Variables	
Persistent Impairment $Indicator_{i,t}$	dummy variable that equals 1 if average BTM of the year *t* and *t-1* >1;
Debt to $Equity_{i,t-1}$	D*ebt-to-equity* ratio in year *t-1*, winsorized at the 95% percentile * 100;
Short term $debt_{i,t}$	Short term debt divided by total debt*;*
D_Bonds	dummy variable equals to 1 if the firm *i* has bonds in its liabilities in year *t* and zero otherwise.
Financing Cash $Flows_{i,t}$	Cash flows from financing activities of firm *i* in year *t,* scaled by assets in year t-1
Growth $Opportunities_{i,t}$	Investment Cash Flows scaled by Fixed and Intangible assets of firm *i* in year *t*
Fixed $Assets_{i,t}$	Fixed assets scaled by total assets of firm *i* on period *t*
$Intangibles_{i,t}$	Intangible Assets, except goodwill, scaled by total assets of firm *i* on period *t*
$Payout_{i,t}$	Dividends paid in year *t* divided by net income in year *t-1*
$Ownership_{i,t}$	(%) voting shares held by the largest shareholder of firm *i* in year *t*
$Controls_{k\ i,t}$	Control Variables defined in Table 2

In the specification considered in Eq. 1, in order to mitigate for potential omitted variable bias, we consider other potential explanatory variables of a recognized loss, in addition to the persistent impairment indicator. These variables are as defined in table 2. Debt to Equity, Short Term Debt, D_Bonds and Financing Cash flows are all variables related to the effect between Debt and impairment recognitions, as suggested by the extant literature. Growth Opportunities, Fixed Assets and Intangibles are variables suggested by Göx and Wagenhofer (2009), as their optimal impairment rules' model suggest that these variables are positively related with an accounting system that commits ex ante with recognizing impairment losses.

Growth opportunities, suggested by Göx and Wagenhofer (2009) as a potential predictor of impairment losses booking, are usually proxied by stock price based ratios, such as Tobin's Q (Kogan and Papanikolaou, 2014). However, in the case under analysis, the presence of unrecognized economic losses means that measures of investment opportunities based on the relation between stock prices and value of assets suffer due to the problem of questionable asset measurement. Alternatively, we take the investment cash flow (CAPEX) divided by fixed and intangible assets as a proxy for growth (Adam and Goyal, 2008; Kallapur and Trombley, 1999).

We also consider the payout level and ownership concentration as variables of interest. Szczesny and Valentincic (2013) analyzed private firms, and reported evidence that such firms make the decision to write off, and write off more in terms of total amount, when they are: (i) more profitable, (ii) have more financial debt, and (iii) pay dividends. In their opinion, asset write-offs as viewed as corrections of departures of book values from their underlying economic values, resulting on a potential adjustment on the stream of dividends to shareholders. Even though their study is based on private firms, we understand that firms that pay more dividends

would be economically better by reporting asset write-offs, reducing current levels of dividends and smoothing future dividends (due to effects such as reduced depreciation expense).

Banker, Basu, and Byzalov (2014) argue and report empirical confirmation to the notion that earnings exhibits asymmetric timeliness with respect to multiple signals, including stock return, sales change, and operating cash flow change. Banker, Basu, and Byzalov (2016), based in Basu's (1997) asymmetric timeliness model, modified the original model through the inclusion of changes in sales and operating cash flows, and the substitution of the dependent variable, earnings scaled by the beginning of year market value of the entity, by asset write-downs. The authors predicted and confirmed empirically a complex chain of interactions between indicators of changes in sales and operating cash flows. We take the variables in Banker, Basu, and Byzalov's (2016) including those from Riedl (2004), which are practicable to our analysis of Brazilian data, as control variables in order to build our model. These variables are presented in table 2. It is worthy to emphasize that, despite the criticism to which the Basu's (1997) model has been subject to, Ball, Kothari, and Nikolaev (2013a) confirm its validity of an econometric strategy of identification of conditional conservatism when it is actually present.

Given that the Brazilian stock market is significantly smaller than the American stock market, and that there is significant variance on the Brazilian Companies market capitalization, we also included stock liquidity as a control variable. This inclusion was operationalized through the exchange liquidity index, provided by the Economática database, and calculated as follows:

$$\text{Liquidity} = 100 * p/P * \text{sqrt}(n/N * v/V)$$

where:
p = number of days on which there was at least one trade with the share within the chosen period
P = total number of days in the chosen period
n = number of trades with the share within the chosen period
N = number of trades with all shares within the chosen period
v = volume in cash regarding the share within the chosen period
V = cash volume regarding all shares within the chosen period

As in Banker, Basu, and Byzalov's (2016), we consider interactions between control variables $\Delta CF_{i,t}$ and $DC_{i,t}$, $\Delta SALES_{i,t}$ and $DS_{i,t}$, and $\Delta E_{i,t}$ and $DE_{i,t}$. These interactions should capture the asymmetric timeliness of bad news, measured as negative variation on cash flows, sales and pre-impairment earnings. Results reported by Wrubel, Marassi, and Klann (2015) regarding the Brazilian market show that changes in cash flow, revenue and debt, and income smoothing practices do determine the recognition of impairment losses.

Contrary to Riedl (2004), who uses Tobit regressions given the large number of zero, we take advantage of recent advances on the econometrics literature (Gallani et al., 2015; Papke and Wooldridge, 2008) in which Tobit models are shown to be inappropriate for data in which there is no censoring, but only boundedness, which is the case of impairment losses. Therefore, we analyze the Brazilian context regarding the recognition of an impairment loss first through Random effects logit regressions taking as dependent variable a binary indicator of impairment recognition, represented by variable D_impairment. The choice of this approach considers that in our full sample of 1010 observations, an impairment loss was recognized only on only 51 observations, resulting on a sample bounded at zero. Our Logit regression was estimated with panel data characteristics, following Woolridge (2010).

Given the low frequency of actual recognitions of impairment losses, our second strategy is to focus our analysis on the potential unrecognized impairment loss. This strategy takes as dependent variable the unrecognized economic loss, measured by the inverse of the BTM ratio at year *t* whenever the firm has a BTM>1 for years *t* and *t-1*, and zero otherwise. The two-year period adopted for identification in our tests follows the assertion by Ramanna and Watts (2012) that the market expects losses when there is persistence in the high BTM. The

adoption inverse of the BTM ratio results in unrecognized losses being measured as a percentage of the company's net assets.

Table 2 – Definition of Control Variables

Variable	Definition
$RET_{i,t}$	stock return for the 12-month period of fiscal year *t*;
$DR_{i,t}$	dummy variable that equals 1 if stock return RET_t is negative. zero otherwise;
$\Delta CF_{i,t}$	change in operating cash flow from year *t*–1 to year *t*, scaled by total assets at the beginning of the year;
$DC_{i,t}$	dummy variable that equals 1 if cash flow change ΔCF_t is negative, zero otherwise;
$\Delta SALES_{i,t}$	change in sales from year *t*–1 to year *t*, scaled by total assets at the beginning of the year;
$DS_{i,t}$	dummy variable that equals 1 if sales change $\Delta SALES_t$ is negative, zero otherwise;
$\Delta E_{i,t}$	change in pre-writedown earnings in year *t*, scaled by total assets at the beginning of the year;
$DE_{i,t}$	dummy variable that equals 1 if $\Delta E_t < 0$, zero otherwise;
ΔGDP_t	GDP growth in year t;
$\Delta INDROA_{i,t}$	change in median industry ROA for the industry of the firm in year *t*;
$BATH_{i,t}$	ΔE_t if ΔE_t is below the median of the negative tail of ΔE_t, zero otherwise;
$SMOOTH_{i,t}$	ΔE_t if ΔE_t is above the median of the positive tail of ΔE_t, zero otherwise;
$Liquidity_{i,t}$	Liquidity of the stock *i* in year *t, as previously detailed*.
$\text{Log(assets}_{i,t})$ =	Log of total assets of firm $_i$ in year $_{t-1)}$
D_StockOptions	dummy variable equals to 1 if firm *i* has informed stock options granted to managers in year *t* and zero otherwise.
D_VariableComp	dummy variable equals to 1 if firm *i* has informed variable compensation paid to managers in year *t* and zero otherwise.
$\text{Goodwill}_{i,t}$	Goodwill of firm $_i$ in year *t* scaled by total assets
$\text{Volatility}_{i,t}$	Volatility of quarterly earnings in the past three years of firm $_i$ in year *t* scaled by earnings in year *t*

As previously mentioned, the recent econometrics literature presents an increased critique of the usage of Tobit Models for analyzing dependent variables that are limited from below and above (Gallani et al., 2015; Papke and Wooldridge, 2008). Given that our dependent variable of unrecognized losses represents a fraction of a firm's total assets, we estimate the parameters of the model in Eq.2 through Generalized Estimating Equations approach (GEE). This kind of model is defined by Papke and Wooldridge (2008) as a Fractional Response Model, adequate for dealing with the possible shortcomings of Tobit models for fractional data. Differently from the Logit Model, which takes only a binary variable as dependent variable, the GEE approach allows for a dependent variable which takes variables from 0 to 1, being suitable for proportions and percentages (Liang and Zeger, 1986).

The econometric model designed specifically for testing hypotheses H2, H3 and H4 is presented in the form of Eq. 2, with variables of interest defined in Table 3, and control Variables already defined in Table 2. Again we follow Banker, Basu, and Byzalov (2016), considering interaction terms between control variables $\Delta CF_{i,t}$ and $DC_{i,t}$, $\Delta SALES_{i,t}$ and $DS_{i,t}$, and $\Delta E_{i,t}$ and $DE_{i,t}$..

The parameters of the model described in Eq. (2) are estimated with the full sample of 1010 firm-years. We follow this procedure since we are interested in the reasons some companies do not recognized impairment losses, while others do recognize such losses, controlling for the effect of several variables that are indicative of economic losses, considered in our control variables as defined in Table 2. Through these estimation, we avoid the problem of Conditional-on-positive effects, in which the model effects do not have causal interpretation, due to the kind of selection bias that motivated the development of censored regression models

(Angrist and Pischke, 2009). As Angrist and Pischke (2009). reason, in search of causal effects, $y_i > 0$ is an equation outcome, which cannot therefore be conditioned on, unless the matrix X of covariates have no effect on the likelyhood of y*i* being positive.

$$\text{Unrecognized Loss}_{i,t}=\beta_0+\beta_1\left(\text{Debt\_to\_equity}_{i,t-1}\right)+\beta_2\left(Debt\_to\_equity_{i,t-1}{}^2\right)+\beta_3\left(Short\ term\ debt_{i,t}\right)+\beta_4\left(D\_\text{Bonds}_{i,t}\right)+\beta_5\left(\text{Financing Cash Flows}_{i,t}\right)+\beta_6\left(\text{Growth Oportunities}_{i,t}\right)+\beta_7\left(\text{Fixed Assets}_{i,t}\right)+\beta_8\left(\text{Intangibles}_{i,t}\right)+\beta_9\left(\text{Payout}_{i,t}\right)+\beta_{10}\left(\text{Ownership}_{i,t}\right)+\sum_{k=1}^{22}\{\gamma_k\text{Control}_{k,i,t}\}+\nu_{i,t}\quad\text{(Eq. 2)}$$

Table 3 – Definition of variables of interest

Variable	Definition
Unrecognized $Loss_{i,t}$ (Dependent)	1 – [1 / (BTM ratio)] in year t when the company's BTM is greater than one in year t and t-1, and 0 otherwise, winsorized at the 95% percentile).
Debt to $Equity_{i,t-1}$	D*ebt-to-equity* ratio in year *t-1*, winsorized at the 95% percentile * 100;
Short term $debt_{i,t}$	Short term debt divided by total debt*;*
D_Bonds	Dummy variable equals to 1 if the firm *i* has bonds in its liabilities in year *t* and zero otherwise.
Growth $Opportunities_{i,t}$	Investment Cash Flows / Fixed and Intangible assets.
Fixed $Assets_{i,t}$	Fixed assets scaled by total assets of firm *i* on period *t*
$Intangibles_{i,t}$	Intangible Assets, except goodwill, scaled by total assets of firm *i* on period *t*
$Payout_{i,t}$	Dividends paid in year *t* divided by net income in year *t-1*
Ownership $Concentration_{i,t}$	(%) voting shares held by the largest shareholder of firm *i* in year *t*
$Controls_{k\ i,t}$	Control Variables defined in Table 2

4. RESULTS

Summary statistics of numeric variables are presented in Table 5. The $Impairment_{i,t}$ variable has a mean close to zero, reflecting the small number of observations with impairment losses. Considering only the 51 observations in which an impairment loss was recognized, $Impairment_{i,t}$ has a mean value of 0.0012 with standard deviation of 0.008 and a maximum value of 0.1172. The aggregated level of impairment losses recognized in the period from 2010 to 2016 totals R$ 178 billion, a non-trivial amount for the size of the Brazilian stock market.

Table 5 – Summary Statistics

	mean	min	max	SD	count
Impairment $losses_{i,t}$	.001204	-.0175896	.1172517	.0079993	1010
Unrecognized $losses_{i,t}$	.1490092	0	.7609783	.255752	1010
Debt to $Equity_{i,t-1}$	67.50071	.3774322	147.5399	46.14263	1010
Debt to Equity $_{i,t-1}{}^2$	6683.381	.1424551	21768.02	7614.684	1010
Short term $debt_{i,t}$	.3310778	0	1	.2221949	1010
Financing Cash $Flows_{i,t}$	.0226255	-.2667787	.8786447	.0977389	1010
Fixed $Assets_{i,t}$	.2547734	0	.9035707	.2334367	1010
Intangible $Assets_{i,t}$	.0910361	0	.8558442	.1697702	1010
$Goodwill_{i,t}$	.0095695	-.0004341	.4729233	.0489885	1010
Growth $Opportunities_{i,t}$	1.539265	-179.1707	228.5177	14.35132	1010
$Ownership_{i,t}$	48.19748	.1387751	100	25.85038	1010
$Payout_{i,t}$	.6748205	-11.41567	86.04489	3.942687	1010
$Liquidity_{i,t}$	.2190809	0	3.493432	.4430252	1010
$RET_{i,t}$	-.0177161	-3.264293	3.454046	.5005749	1010
$Volatility_{i,t}$	4.77e-07	-.0000196	.0001192	5.54e-06	1010
$\Delta CF_{i,t}$	.0054498	-.3335005	.2682199	.0695193	1010
$\Delta SALES_{i,t}$	.0571971	-.9946518	1.12066	.1509538	1010
$\Delta E_{i,t}$	-.0022446	-.5248144	.6033603	.0615033	1010
$\Delta GDP_{i,t}$	.0126551	-.0376926	.0752823	.0370442	1010
$\Delta INDROA_{i,t}$	-.5234187	-18.21548	19.06459	2.683812	1010
log(assets) $_{i,t}$	15.31005	11.60924	20.61806	1.443832	1010
Observations	1010				

No pair of variables has correlation coefficient greater than 0.8, which would suggest multicollinearity issues. Impairment losses are correlated with many of the numeric explanatory variables considered in our models, suggesting that there is a statistically significant association between these variables, to be analyzed in depth through the estimation of the parameters of Eq. (1) and (2).

Since we have 7 years of data for 82 of our sample firms, with an average of 4.9 years per firm, the characteristics of our dataset lead us to an unbalanced panel dataset. With this dataset, we estimate Random Effects Logit Models though Stata's (StataCorp, 2015) "xtlogit" function, which is able to handle unbalanced panels. Firms with less than 7 years of data arise mostly because of the exclusion criteria adopted herein. Firm-years in which the shareholders' equity of the previous year became negative, with missing market value or extreme ROA were excluded from our sample.

In Table 6, we report the results of our set of Logit regressions based on Eq.1 with panel data treatment. Through models (1) to (4), we estimate Random Effects Logit Regressions considering specifications without controls (columns (1) and (3) and with controls (Columns (2) and (4), and also specifications without squared debt to equity ratios (columns (1) and (2) and with squared debt to equity ratios, in order to consider the potential non-linear effect between leverage and impairment recognition.

Results show statistical significance for Persistent Impairment Indicator as a predictor of recognized impairment losses only on columns (2), in which we do not account for the possibility of a non-linear effect between debt and impairment losses. Debt to equity is therefore only significant in our simplest model, without the possibility of a non-linear relationship between debt and the recognition of impairment losses. In addition, the squared debt to equity term is not significantly related to the recognition of impairment losses, providing evidence contrary to the hypothesis of a non-linear relation between impairment losses and debt. Variable Short term debt, D_Bonds and Financing Cash Flows are not significant, reinforcing the suggestion that the actual recognition of impairment losses in Brazil is unaffected by debt concerns.

Growth opportunities are negatively related to the recognition of impairment losses in all of our specifications. This result is contrary to the prediction derived from Göx and Wagenhofer (2009) model, that firms with larger growth opportunities will adopt more conservative accounting practices. Since our proxy for growth opportunities is the investment cash flow (CAPEX) divided by fixed and intangible assets (Adam and Goyal, 2008; Kallapur and Trombley, 1999), this negative relation suggests that firms with larger current investment levels are less likely to recognize impairment losses, maintaining all of the other covariates constant.

The firm's payout level is positively related to the recognition of impairment losses, indicating that firms with a larger payout level would be more likely to recognize losses. This result could signal that managers desire to retain earnings. Since impairment losses are recognized as expenses in Profit & Loss, they reduce the level of profits that are basis for the calculation of firm's minimum mandatory dividends. This result is in accordance with results from the survey presented in Decourt and Procianoy (2012).

We emphasize, however, that one should take our results, as reported in Table 6, with considerable caution. As we previously stressed, the recognition of impairment losses can be considered as a rare event in our sample of firm-year observations. Therefore, it is important to consider results reported in Table 6 in combination with results of our second model (Eq.(2)), in which we analyze determinants of the level of unrecognized impairment loss, a more frequent event observed in 30% of our sample. In our second model, we focus on debt related hypotheses H2, H3 and H4, through estimation of Eq.2. Our dependent variable is now the level of unrecognized losses. Given the frequency of firm-year observation with 0 unrecognized losses (70%) and the fact that this variable is by construction bounded at 0 and 1, we estimate the

parameters of Eq. 2 through Generalized Estimating Equation's approach, reporting our results in Table 7.

Table 6 – Random Effects Logit Models

	(1)	(2)	(3)	(4)
Persistent Impairment Indicator	1.55385	**2.22548***	1.40471+	2.82748+
	(0.95393)	(1.08850)	(0.80350)	(1.69445)
Debt to Equity	0.00971	0.00787	0.03195	0.00249
	(0.00603)	(0.01188)	(0.03098)	(0.06175)
Debt to equity ^2			-0.00014	0.00006
			(0.00017)	(0.00031)
D_Bonds	0.58711	0.60864	0.69029	0.62253
	(1.16191)	(1.33851)	(0.83286)	(2.21670)
Financing Cash Flows	1.62850	2.43038	1.23716	3.24840
	(3.54733)	(3.99001)	(3.34560)	(5.28178)
Short term debt	0.55709	-0.44900	0.66896	-0.81733
	(2.15237)	(2.10041)	(1.88621)	(2.90776)
Fixed Assets	1.64277	2.50050	1.89773	3.32305
	(2.25478)	(2.74555)	(1.77865)	(6.23008)
Intangible Assets	-1.83454	-2.21628	-1.61860	-3.37259
	(4.72815)	(5.26974)	(3.56527)	(10.96202)
Growth Opportunities	**-0.02192****	**-0.03305****	**-0.01943****	**-0.04431****
	(0.00717)	**(0.01250)**	**(0.00626)**	**(0.01694)**
Ownership	-0.03125	-0.03975	-0.03280+	-0.05695
	(0.03224)	(0.02540)	(0.01861)	(0.06196)
Payout	**0.03424****	**0.05848****	**0.03274****	**0.06231***
	(0.01303)	**(0.01986)**	**(0.01223)**	**(0.02480)**
Constant	-8.93087***	-11.03738+	-8.37342***	-15.86330+
	(1.91927)	(6.68364)	(2.05999)	(9.07420)
Controls	No	Yes	No	Yes
Wald chi2	35.359	401.506	44.127	478.205
p-value	0.000	0.000	0.000	0.000
Observations	1010	1010	1010	1010

Standard errors in parentheses. Control variables omitted for brevity.
+ p<0.1 * p<0.05, ** p<0.01, *** p<0.001

The negative coefficient of the Debt to equity variable (significant at the 1% level) in column (2) supports the argument that debt is negatively related to unrecognized losses, when this relation is specified as linear. This results is compatible with debt contracting as a source of demand for conservative accounting practices, providing evidence in favor of Watts (2003a) and Gök and Wagenhofer (2009), whereas firms with increased levels of debt are on average less prone to have unrecognized losses. Results presented in Table 7, columns (3) and (4), show a statistically significant coefficient (1%) for the variable Debt to Equity squared, indicating that there is a non-linear relationship between debt to equity and the level of unrecognized losses. This non-linear relationship, combined with the negative coefficient for Debt to Equity squared, results in an inverted u-shaped function, which shows that the level of unrecognized loss increases at decreasing rates for moderate increases of leverage. For larger levels of financial leverage, the level of unrecognized losses decreases at increasing rates.

The non-linear relation between debt and unrecognized losses is compatible with the notion that when debt becomes a more significant source of financing for the firms in our sample, the level of unrecognized losses decreases. This result may be derived from an increased reliance on balance sheet information by lenders when leverage levels are high. Theoretically, this could result on increased usage of collateral backing up debt external financing, which in turn might result in increased demand for accounting conditional conservatism. The use of collateral on financing arrangements is particularly important in the Brazilian market, where firms' access to debt financing is difficult. Zani and Procianoy (2007)

reported that Brazilian publicly traded firms depend on collateral for debt financing regardless of their level of financial constrainedness, possibly as a function of the significant dependency on bank loans and the high volatility of the local economy.

Table 7 – Generalized Estimating Equations - Logit Models

	(1)	(2)	(3)	(4)
Debt to Equity	-0.00341^{+}	**-0.00613****	**0.02328****	**0.01523***
	(0.00200)	(0.00189)	(0.00747)	(0.00701)
Debt to equity ^2			**-0.00017*****	**-0.00014****
			(0.00004)	(0.00004)
D_Bonds	-0.23086	-0.24484	-0.25451	-0.28329
	(0.20999)	(0.19956)	(0.21339)	(0.20041)
Short term debt	**1.34217*****	**0.94990***	**1.59704*****	**1.15850****
	(0.35465)	(0.38077)	(0.37220)	(0.40121)
Financing Cash Flows	**-4.88977*****	**-3.27951*****	**-4.98597*****	**-3.47861*****
	(0.83947)	(0.74396)	(0.81335)	(0.72857)
Fixed Assets	-0.44980	-0.18522	-0.37543	-0.05117
	(0.42802)	(0.43406)	(0.42865)	(0.43406)
Intangible Assets	-0.70177	**-1.54313***	-0.72589	**-1.58019***
	(0.51523)	(0.67744)	(0.51099)	(0.65164)
Growth Opportunities	**-0.01057*****	**-0.00856*****	**-0.00858*****	**-0.00726*****
	(0.00231)	(0.00188)	(0.00187)	(0.00170)
Ownership	0.00709^{+}	0.00450	0.00812*	0.00508
	(0.00387)	(0.00393)	(0.00399)	(0.00393)
Payout	-0.01879	-0.00809	-0.01357	-0.00795
	(0.01561)	(0.00932)	(0.01336)	(0.00893)
Constant	-2.08887***	-3.76583*	-2.89533***	-4.74829**
	(0.28864)	(1.54716)	(0.39311)	(1.51410)
Controls	No	Yes	No	Yes
Wald chi2	97.352	442.929	113.928	446.854
p-value	0.000	0.000	0.000	0.000
Observations	1010	1010	1010	1010

Standard errors in parentheses. Control variables omitted for brevity.
$^{+}$ p<0.1 * p<0.05, ** p<0.01, *** p<0.001

The negative coefficient regarding Financing Cash Flows suggests that firms with higher amounts of debt issuance in year *t* have lower levels of unrecognized losses, after controlling for the effects of Short term debt and D_Bonds variables. Firms that have a higher level of cash flows from debt in year *t* are less likely to have unrecognized impairment losses. This finding adds support for the debt contracting explanations for accounting conservatism.

The positive and statistically significant (1% level) coefficient of the Short Term Debt variable, after controlling for other debt related variables such as financing cash flows and debt to equity, indicates that short term debt can substitute for accounting conservatism in mitigating agency costs, as suggested by Khurana and Wang (2015). The effects of variable D Bonds are not statistically significant, *ceteris paribus*, neither on the likelihood of recognizing an impairment loss (as estimated through Eq. 1) nor on the level of unrecognized losses (as estimated through Eq. 2). This result should be taken with caution, since there is evidence that a reasonable percentage of bond issued by Brazilian companies since 2010 are purchased by banks that coordinate the offering efforts (Carvalho, 2017). There is a theoretical difference on the level of accounting conservatism required by banks and by debt markets through a public issue. Private lenders experience lower monitoring costs and have renegotiation advantages when compared with public debtholders (Florou and Kosi, 2015), and are usually able to access proprietary information not available to investors in public bond issues (Shivakumar, 2013). These characteristics can reduce the reliance banks place on balance sheet information. In a

market in which bank credit is the primary source of bank financing, we expect debt to have a smaller effect on accounting conservatism.

Results reported in Table 7 regarding the effect of growth opportunities on the level of unrecognized losses show a negative association in all of our specifications of Eq. (2). This result is contrary to the results found in Table 8. There is also a negative effect of intangible assets on the level of unrecognized losses reported in column (4). These reported negative associations are supportive of Göx and Wagenhofer (2009) prediction, as firms with larger growth opportunities and a larger percentage of intangible assets would have a lower level of unrecognized losses.

Finally, the effects of ownership concentration and payout are not statistically significant in any of our specifications of Eq. (2). This result suggest that ownership concentration and payout concerns are dominated by other aspects that influence the level of unrecognized losses.

5. CONCLUSION

The persistent observation of Brazilian firms with high BTM contrasted with the low frequency of impairment losses recognition is puzzling. As of December 31st, 2016, approximately 47% of the unique publicly traded firms in our sample had at least one observation with persistent BTM >1, while only 21 unique firms effectively recognize losses. Although our study is performed on a large number of firm-year observations, our sample do suffer from a small number of impairment recognizing firms. Considering this caveat, our results show a statistically significant relation between the persistent impairment indicator (high BTM) and the recognition of impairment losses, which suggests that some firms do consider market signals in the context of their impairment practices. This result is similar to the findings of Ramanna and Watts (2012) in the US market and specifically regarding impairment of goodwill.

We test and find significant evidence that debt contracting plays a complex role in explaining the level of unrecognized impairment losses. First, we find that short term debt is positively related to unrecognized losses, suggesting that short term debt in fact substitutes for accounting conservatism, as theorized by Khurana and Wang (2015). Second, we find an ambiguous relation between a firm's leverage and its level of unrecognized losses. In our linear specification debt to equity is negatively related to the level of unrecognized losses, suggesting that more indebted the firm, the more conservative its accounting practices are. However, when we consider the possibility of a non-linear relation, we find evidence that there is an inverted u-shaped relation between debt and the level of unrecognized losses. For smaller levels of leverage, increases in debt are associated with an increase in the level of unrecognized losses, whereas for more indebted firms, increases in leverage reduce the level of unrecognized losses, suggesting that demand for accounting conservatism is significantly greater for financially constrained firms. That could be a particular feature of the Brazilian market, in which many firms are subject of severe financial constraints.

An important avenue for future research lies in exploring nuances of the relation between debt and impairment losses. Considering the kind of debt issued, whether the debt is specifically bank originated, privately issued or publicly traded, or whether it is issued within the company's home country or abroad, could contribute further to the extant literature on accounting conservatism and debt contracting. Separating the sample of firms in financially constrained and unconstrained firms can also constitute an interesting research contribution.

As the period of IFRS adoption in Brazil grows, we will be able to collect further data in order to increase the number of observations in which a firm has effectively recognized an impairment loss. We expect an increase in sample size to result in a significant increase of the explanatory power of econometric tests. In addition to that possibility, researchers will be able

to test whether the puzzling lack of impairments can be attributed to a difficult learning curve of IFRS faced by Brazilian firms. The impairment related policies of these firms could also be compared with the corresponding policies of firms from other IFRS countries, in order to investigate the role played by different institutional settings in the phenomenon we observe in Brazil.

The widespread presence of the high BTM firms in the Brazilian stock market may indicate that firms are not conservative enough regarding their impairment-related practices. We believe that there is a fertile avenue for future research on the level of disclosure of impairment tests, its methodology, and its subjectivity. In this sense, firms with persistently high BTM should consider providing detailed and convincing disclosure of the reason their net assets are stated by amounts not supported by the market view of the firms' future cash flows. An approach with multiple case-studies, including the analysis of the disclosure of impairment tests of firms on variable BTM states should contribute further to the understanding of the complex phenomenon of impairment losses recognition.

6. REFERENCES

Adam, T., Goyal, V.K., 2008. The investment opportunity set and its proxy variables. J. Financ. Res. 31, 41–63. doi:10.1111/j.1475-6803.2008.00231.x

Amiraslani, H., Iatridis, G.E., Pope, P.F., 2013. Accounting for Asset Impairment : A Test for IFRS Compliance Across Europe.

André, P., Filip, A., Paugam, L., 2015. The Effect of Mandatory IFRS Adoption on Conditional Conservatism in Europe. J. Bus. Financ. Account. 42, 482–514. doi:10.1111/jbfa.12105

Angrist, J.D., Pischke, J.S., 2009. Mostly Harmless Econometrics : An Empiricist ' s Companion. Massachusettts I nstitute Technol. London Sch. Econ. 290. doi:10.1017/CBO9781107415324.004

Armstrong, C.S., Taylor, D.J., Verrecchia, R.E., 2016. Asymmetric Reporting. J. Financ. Report. 1, 33–35. doi:10.2308/jfir-51353

Ball, R., Brown, P., 1968. An Empirical Evaluation of Accounting Income Numbers. J. Account. Res. 6, 159–178.

Ball, R., Kothari, S.P., Nikolaev, V. V., 2013. Econometrics of the basu asymmetric timeliness coefficient and accounting conservatism. J. Account. Res. 51, 1071–1097. doi:10.1111/1475-679X.12026

Ball, R., Robin, A., Sadka, G., 2008. Is financial reporting shaped by equity markets or debt markets? An international study of timeliness and conservatism. Rev. Account. Stud. 13, 168–205. doi:DOI 10.1007/s11142-007-9064-x

Banker, R., Basu, S., Byzalov, D., 2014. The Role of Multiple Impairment Indicators in Conditional Conservatism. SSRN Work. Pap. 1–50. doi:10.2139/ssrn.2400812

Banker, R.D., Basu, S., Byzalov, D., 2016. Implications of impairment decisions and assets' cash-flow horizons for conservatism research. Account. Rev. forthcomin, 1–49.

Basu, S., 1997. The conservatism principle and the asymmetric timeliness of earnings: An event-based approach. J. Account. Econ. 3–37. doi:10.1111/j.1911-3846.2011.01151.x

Bini, M., Penman, S., 2013. Companies with market value below book value are more common in Europe than in the US: evidence, explanations and implications.

Bond, D., Govendir, B., Wells, P., 2016. An evaluation of asset impairments by Australian firms and whether they were impacted by AASB 136. Account. Financ. 56, 259–288. doi:10.1111/acfi.12194

Carvalho, P.S. De, 2017. Perfil e Determinantes do Mercado de Debêntures no Brasil no Período 2004-2014. Universidade Federal do Rio de Janeiro.

Chalmers, K., Godfrey, J., 2006. INTANGIBLE ASSETS : DIVERSITY IMPACTS. Aust. Account. Rev. 16, 60–71.
Choi, T.H., 2008. Asset Write-offs: An Empirical Investigation of Timeliness. Asia-Pacific J. Account. Econ. 15, 11–27. doi:10.1080/16081625.2008.9720806
Danielson, M.G., Press, E., 2003. Accounting Returns Revisited : Evidence of their Usefulness in Estimating Economic Returns. Rev. Account. Stud. 8, 493–530.
Decourt, R.F., Procianoy, J.L., 2012. O Processo Decisorio sobre a Distribuicao de Lucros das Empresas Listadas na BM&FBOVESPA: Survey com CFOs. Rev. Bras. Financ. 10, 461–498.
Detzen, D., Wersborg, T.S. genannt, Zulch, H., 2016. Impairment of Goodwill and Deferred Taxes Under IFRS. Aust. Account. Rev. 26, 301–311. doi:10.1111/auar.12112
European Security Markets Authority, 2013. European enforcers review of impairment of goodwill and other intangible assets in the IFRS financial statements.
Filip, A., Jeanjean, T., Paugam, L., 2015. Using Real Activities to Avoid Goodwill Impairment Losses: Evidence and Effect on Future Performance. J. Bus. Financ. Account. 42, 515–554. doi:10.1111/jbfa.12107
Florou, A., Kosi, U., 2015. Does mandatory IFRS adoption facilitate debt financing? Rev. Account. Stud. 20, 1407–1456. doi:10.1007/s11142-015-9325-z
Gallani, S., Krishnan, R., Wooldridge, J.M., 2015. Applications of fractional response model to the study of bounded dependent variables in accounting research. Harvard Bus. Sch. Work. Pap. 16–016, 1–57.
Gigler, F., Kanodia, C., Sapra, H., Venugopalan, R., 2009. Accounting conservatism and the efficiency of debt contracts. J. Account. Res. 47, 767–797. doi:10.1111/j.1475-679X.2009.00336.x
Glaum, M., Schmidt, P., Street, D.L., Vogel, S., 2013. Compliance with IFRS 3-and IAS 36-required disclosures across 17 European countries: Company-and country-level determinants. Account. Bus. Res. 43, 163–204. doi:10.1080/00014788.2012.711131
Göx, R.F., Wagenhofer, A., 2009. Optimal impairment rules. J. Account. Econ. 48, 2–16. doi:10.1016/j.jacceco.2009.04.004
Guthrie, J., Pang, T.T., 2013. Disclosure of goodwill impairment under aasb 136 from 2005-2010. Aust. Account. Rev. 23, 216–231. doi:10.1111/j.1835-2561.2013.00204.x
Healy, P.M., 2016. Reflections on M&A accounting from AOL's acquisition of Time Warner. Account. Bus. Res. 46, 528–541. doi:10.1080/00014788.2016.1182709
Jarva, H., 2014. Economic consequences of SFAS 142 goodwill write-offs. Account. Financ. 54, 211–235. doi:10.1111/j.1467-629X.2012.00495.x
Ji, K., 2013. Better late than never, the timing of goodwill impairment testing in Australia. Aust. Account. Rev. 23, 369–379. doi:10.1111/auar.12036
Kallapur, S., Trombley, M.A., 1999. The association between investment opportunity set proxies and realized growth. J. Bus. Financ. Account. 26, 505–519. doi:10.1111/1468-5957.00264
Khurana, I.K., Wang, C., 2015. Debt maturity structure and accounting conservatism. J. Bus. Financ. Account. 42, 167–203. doi:10.1111/jbfa.12104
Knauer, T., Wöhrmann, A., 2016. Market Reaction to Goodwill Impairments. Eur. Account. Rev. 25, 421–449. doi:10.1080/09638180.2015.1042888
Kogan, L., Papanikolaou, D., 2014. Growth opportunities, technology shocks, and asset prices. J. Finance 69, 675–718. doi:10.1111/jofi.12136
Kothari, S.., 2001. Capital markets research in accounting. J. Account. Econ. 31, 105–231. doi:10.1016/S0165-4101(01)00030-1
Leuz, C., Wysocki, P.D., 2016. The Economics of Disclosure and Financial Reporting Regulation: Evidence and Suggestions for Future Research. J. Account. Res. 54, 525–

622. doi:10.1111/1475-679X.12115
Liang, K.-Y., Zeger, S.L., 1986. Longitudinal data analysis using generalized linear models. Biometrika Trust 73, 13–22. doi:10.1093/biomet/73.1.13
Lu, C., Trabelsi, S., 2013. Information Asymmetry and Accounting Conservatism under IFRS Adoption. SSRN Work. Pap. doi:10.1017/CBO9781107415324.004
Mazzi, F., André, P., Dionysiou, D., Tsalavoutas, I., 2017. Compliance with goodwill-related mandatory disclosure requirements and the cost of equity capital. Account. Bus. Res. 47, 268–312. doi:10.1080/00014788.2016.1254593
Mazzioni, S., Politelo, L., Moreira, W.J., Klann, R.C., 2014. Fatores Determinantes Na Evidenciação Da Re Dução Ao Valor Recuperável De Ativos (Impairment Test) Em Empresas Listadas Na Bm&Fbovespa. BASE - Rev. Adm. e Contab. da Unisinos 11, 276–291. doi:10.4013/base.2014.114.01
Oler, M., 2015. Determinants of the length of time a firm ' s book-to-market ratio is greater than one. Rev. Quant. Financ. Account. 45, 509–539. doi:10.1007/s11156-014-0445-5
Papke, L.E., Wooldridge, J.M., 2008. Panel data methods for fractional response variables with an application to test pass rates. J. Econom. 145, 121–133. doi:10.1016/j.jeconom.2008.05.009
Paugam, L., Astolfi, P., Ramond, O., 2015. Accounting for business combinations: Do purchase price allocations matter? J. Account. Public Policy 34, 362–391. doi:10.1016/j.jaccpubpol.2015.04.003
Ramanna, K., Watts, R.L., 2012. Evidence on the use of unverifiable estimates in required goodwill impairment. Rev. Account. Stud. 17, 749–780. doi:10.1007/s11142-012-9188-5
Riedl, E.J., 2004. An Examination of Long-Lived Asset Impairments. Account. Rev. 79, 823–852.
Schiehll, E., Terra, P.R.S., Victor, F.G., 2013. Determinants of voluntary executive stock option disclosure in Brazil. J. Manag. Gov. 17, 331–361. doi:10.1007/s10997-011-9179-0
Shivakumar, L., 2013. The role of financial reporting in debt contracting and in stewardship. Account. Bus. Res. 43, 362–383. doi:10.1080/00014788.2013.785683
StataCorp, 2015. Stata Statistical Software: Release 14.
Szczesny, A., Valentincic, A., 2013. Asset Write-offs in Private Firms - The Case of German SMEs. J. Bus. Financ. Account. 40, 285–317. doi:10.1111/jbfa.12017
Uliano, A.L.P., Doná, A.L., Gonçalves, M.N., 2014. Disclusore of loss by the impairment applied to fixed assets: analysis of the IBrX-50 companies. Enfoque: Reflexão Contábil 33, 1–18. doi:10.4025/enfoque.v33i1.21557
Watts, R.L., 2003a. Conservatism in accounting part I: Explanations and implications. Account. Horizons 17, 207–221. doi:10.2308/acch.2003.17.3.207
Watts, R.L., 2003b. Conservatism in Accounting. Part II: Evidence and Research Opportunities. Account. Horizons 17, 287–301.
Watts, R.L., Zuo, L., 2016. Understanding Practice and Institutions: A Historical Perspective. Account. Horizons 30, acch-51498. doi:10.2308/acch-51498
Wooldridge, J.M., 2010. Econometric Analysis of Cross Section and Panel Data, second. ed. Massachussets Institute of Technology.
Wrubel, F., Marassi, R.B., Klann, R.C., 2015. DETERMINANTES DO RECONHECIMENTO DE PERDAS. RACEF – Rev. Adm. Contab. e Econ. da Fund. 6, 112–128.
Zani, J., Procianoy, J.L., 2007. Restrição Financeira e a Dependência de Colateral para o Endividamento das Firmas Brasileiras., in: XXXI Encontro Da ANPAD. pp. 1–16.