Cognitive Dissonance or Agency Theory, what Explains the Loss of Impairment of Goodwill?

ABSTRACT
Objective: The purpose of this research is to analyze the impairment loss of goodwill in companies listed in Brasil, Bolsa, Balcão [B]³ from the perspective of Agency Theory and Cognitive Dissonance Theory.
Method: We used a sample composed of Brazilian non-financial publicly traded companies listed in [B]³. The analysis was conducted through the logistic regression, considering an unbalanced panel data set for the period from 2010 to 2016.
Originality/Relevance: This study uses a theory of psychology, the Cognitive Dissonance Theory, to try to explain the occurrence of goodwill impairment loss.
Results: The results point to the Cognitive Dissonance Theory as the theory that explains the goodwill impairment loss, since managers tend to record a goodwill impairment loss in the current year, when there was already a loss recorded in the previous year, as a way to decrease the mental discomfort caused between their cognitions.
Theoretical/Methodological contributions: It contributes to the literature in order to associate the decisions made by managers with a psychological behavioral theory that until now has not received prominence in the attempts to justify the decisions of agents. The gain from this research is also directed to investors, as it allows them to make decisions not only based on what the accounting reports say, but taking into account other aspects, such as managers’ behavior and cognitions.
Keywords: Cognitive Dissonance; Agency Theory; Impairment; Goodwill.

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1 INTRODUCTION

In certain occasions, managers, the main decision-makers of the entities, are responsible for making judgments inherent to some situations that give rise to uncertainties, such as: the choice of the most appropriate depreciation method to the entity’s activities, the option for the inventory costing method and the determination of the entity asset’s fair value. As for the case of fair value measurement, it is understood that, for some types of assets, it can be easily determined, either in the initial or subsequent measurement, since there are active markets and it is possible to use the price traded in those markets for its determination.

Concerning the initial measurement of goodwill, it is relatively direct when the fair values of identifiable net assets are available, but the post-acquisition measurement is inherently subjective because goodwill is not an economically separable asset (Kim & Bay, 2017). Therefore, as highlighted by these authors, such information may be impacted, either intentionally or unconsciously, by personal characteristics of each decision maker. This is because, among other elements to be considered in the asset fair value estimates, are the assumptions about future management actions, including the company's strategy (Filip, Jeanjean, & Paugam, 2015).

Hence, it is understood that the decisions made by the entity’s managers (agents) are the product of the knowledge acquired by these professionals throughout their experiences, the incentives they receive for carrying out their work and also some biases inherent to their own behavior and the welfare of their cognition. In this scenario, the agency relationship between manager and owner of the organization is emphasized, in which the owner delegates functions to the manager, to act on their behalf. It is in this sense that this research investigates the impairment test of goodwill.

Niyama, Rodrigues and Rodrigues (2015) argue that the impairment test is accompanied by professional judgment and discretion in the choice of assets to perform it. Reinforcing this idea, Vogt, Pletsch, Morás and Klann (2016) mention that the use of this test on goodwill increases manager’s discretion and, consequently, also increases his responsibility on the impairment losses recorded on the goodwill value. This is because, to perform the impairment test, it is necessary to compare the book value of goodwill with the recoverable value of the asset (net fair value of sales expenses or value in use, whichever is greater) (CPC 01, 2010).

It is when determining recoverable value and deciding to record an impairment loss that the manager may face a scenario of uncertainty, thus leaving one’s behavior vulnerable to management. Therefore, the manager may act in a way that will benefit him/her. Following the example of the study by Cappellesso, Rodrigues and Prieto (2017), it is assumed that managers may use the discretion allowed by CPC 01 (2010) to decide whether or not to perform the goodwill impairment test and the amount to be recognized as a loss.

Regarding this context, which involves management decisions in organizations, Kim and Bay (2017) argue that since the research of Jensen and Meckling (1976) and Watts and Zimmerman (1986), scholars use the Agency Theory as the main source of theoretical support, which was criticized in the Baiman study (1990) for not providing a more detailed perspective on human behavior. In light of the Agency Theory, managers use the discretion inherent in goodwill to act in an opportunistic manner to maximize their own interests. In view of this, similar to the Kim and Bay (2017) research, we adopted psychology theory, the Cognitive Dissonance Theory, to try to explain the occurrence of impairment loss of goodwill, in an alternative way to the Agency Theory. According to what is established by the Cognitive Dissonance Theory, once exposed to confrontations between their cognition, individuals tend to act in such a way that these cognitive inconsistencies are mitigated or excluded (Festinger, 1957).
In this context, we aim to answer: what theory provides a better explanation to the loss due to goodwill impairment of publicly traded companies in Brazil, Bolsa, Balcão [B]? In order to answer this question, the objective of the research is to analyze the impairment loss of goodwill in [B]’s listed companies from the perspective of the Agency Theory and the Cognitive Dissonance Theory.

Considering the international literature, the research conducted by Abughazaleh, Al-Hares and Roberts (2011), Riedl (2004) and Zang (2008) and, on the Brazilian accounting literature, the studies of Cappellesso et al. (2017) and Vogt et al. (2016) were conducted with the objective of revealing some factors that could explain the loss due to goodwill impairment, however, they did not verify the manager’s behavior regarding the recording of this type of loss, checking whether it was consistent with the Agency Theory or the Cognitive Dissonance Theory, as we propose. Such research is relevant because it allows us to analyze how the actions of managers may be explained when faced with situations that give room for discretion, enabling the advancement of studies about decision-making.

The importance of studying the loss due to goodwill impairment consists in the impact that the recording of a loss may have on the companies’ financial statements, as well as in the influence that such recording may have on the various accounting information users’ decisions, following the example of the accounting standards themselves. In this sense, this study brings contributions to the users of accounting information by promoting a discussion about the explanations that may be attributed to the decisions made by managers within organizations, especially about the recording of impairment losses for goodwill.

The results of this research will allow other accounting users to see how management can use accounting information to achieve results that benefit themselves, rather than the organization. In addition, we contribute theoretically by associating the managers’ decisions with a behavioral psychological theory that has not been highlighted so far in attempts to justify agents’ decisions.

2 THEORETICAL FRAMEWORKS
2.1 Goodwill’s Accounting Record

The goodwill generated from a business combination, according to item 11 of CPC 04 (2010, p. 6), "represents future economic benefits generated by other assets acquired in the business combination, which are not individually identified and separately recognized". Therefore, it is understood that there will be goodwill recorded in the company's accounting records if the company has performed a business combination, a transaction that occurs when the acquirer obtains control of a business. Thus, goodwill arises in the entity's financial statements when the entity carries out a business combination, which generates the obligation for the acquirer to recognize the assets and liabilities of the acquiree, as well as goodwill, if the amount paid is superior than the fair value of the net assets of the acquiree. Such recognition of goodwill means that the acquirer has expectations of future economic benefits from the business combination performed.

As explained in CPC 01 (2010), upon such recognition, the entity must annually perform the impairment test, and consequently the subsequent measurement of this asset. This test is used to ensure that the assets are recorded at amounts that do not exceed their recoverable value (CPC 01, 2010). Therefore, it is understood that a loss should be recorded whenever the asset is recorded in the accounts for an amount greater than its recoverable value. This means that the entity should recognize an impairment loss whenever the book value of an asset exceeds its recoverable amount.
In an asset or a cash-generating unit (CGU), the recoverable amount "is the highest amount when comparing its fair value net of sales expenses and its value in use" (CPC 01, 2010, p. 6). When there is an impairment loss of goodwill, it means that this asset had its value deteriorated and that expectations of future profitability related to it decreased, becoming a loss for the company. In this sense, Kim and Bay (2017) state that the moment of the decision to record an impairment loss and the measurement of this amount have significant levels of subjectivity, allowing any change in the decision to affect the result.

According to Cappellesso et al. (2017), the impairment process displays several points of discretion, which range from the choice of assets to the determination of the value in use, making the UGC goodwill impairment test more discretionary than individual assets. In other words, the subjectivity inherent to the moment of recognition and the measurement of the recoverable value of goodwill are primordial factors for the recognition of impairment loss on this asset.

As for the recognition of the loss, the manager may anticipate or postpone it motivated by self-interests or biases inherent to one’s own behavior and the well-being of one’s cognition, being this the focus of this research. For these reasons, the impairment loss is susceptible to the behavior and intentions of the entity’s manager, making it propitious to verify the occurrence of this loss from the point of view of the Agency Theory (action of the manager to record a loss motivated by obtaining particular benefits) and the Cognitive Dissonance Theory (action of the manager to record a loss to diminish the existing dissonance between his or her cognition), as explained in the next topics of this reference.

2.2 Agency Theory in the Context of Goodwill Impairment Loss

Developed by Jensen and Meckling (1976), the Agency Theory addresses the principal-agent relationship, overseen by a contract in which each of the participants has important roles. The shareholder, in the figure of the principal, enters into a contract with the manager (agent), so the agent acts on his/her behalf and performs functions in the entity with the purpose of maximizing the principal’s interests and, in return, receives the appropriate remuneration for the work. The theory also states that if both parties involved in the contract are utility maximizers, there is enough evidences to believe that the agent will not always act in such a way as to achieve principal’s best interests (Jensen & Meckling, 1976).

It is in this scenario that the earnings management emerges, a practice adopted by managers, so the company's results are adjusted in an opportunistic manner, supplying their intentions of obtaining particular benefits. Regarding the impairment test for goodwill, from the perspective of the Agency Theory, it is likely that managers will explore, in an opportunistic manner, the discretion and subjectivity inherent to the timing of the recognition of impairment loss for goodwill (Kim & Bay, 2017). This implies that managers tend to postpone such losses in order to avoid a reduction in net income in the current period (Ramanna, 2008; Ramanna & Watts, 2012; Watts, 2006) and, therefore, maintain or increase their variable remuneration in the current year. Therefore, when a goodwill impairment loss has already been recorded in the previous year, using the existing discretion in the subsequent measurement of goodwill, managers will tend not to record an impairment loss in the current year (postponing the loss), since this would lead to a reduction in the company’s results and, consequently, its benefits.

Considering this scenario, we propose the following research hypothesis:

Hypothesis 1: Managers are less likely to record an impairment loss for goodwill when there is a loss in the previous year.

Yet, through Agency Theory lens, managers tend to take advantage of the existing discretion in the subsequent measurement of goodwill, which involves performing the
impairment test, in order not to record an impairment loss for goodwill when there is already an impairment loss for this asset in the previous year, as this would decrease the company's net profit and cause a decrease in the financial incentives received by the manager in the current year. This is justified because this theory assumes that managers are motivated by economic incentives and, in due course, will choose to act in a way that maximizes their own interests (Kim & Bay, 2017). In addition, this theory suggests that delaying the recording of a loss for goodwill impairment, as well as other discretionary losses, may be a way for the manager to avoid negative reactions in the stock market.

2.3 Cognitive Dissonance in the Context of Goodwill Impairment Loss

The Theory of Cognitive Dissonance, developed by Festinger (1957), is related to the cognitive aspects of a decision. According to Festinger (1957), cognitive dissonance results simultaneously from the existence of two conflicting cognition related to the decision and motivates psychological work to reduce the inconsistency of cognition. Thus, following the assumptions of this theory, if there is contradiction between the cognition, beliefs and perceptions of an individual, the individual becomes uncomfortable and tends to look for some way to reduce or withdraw this discomfort. This is corroborated by Akerlof and Dickens (1982), when they argue that people become uncomfortable by holding two apparently contradictory ideas.

In this sense, Pirie and Chan (2017), discussing this theory, argue that when people encounter perceptions, opinions or beliefs inconsistent with their own cognition, they experience psychological tension and seek to reduce or remove it. This tension is usually reduced by changing the dissonant elements, or adding new ones, until mental consonance is achieved (Cooper & Carlsmith, 2015). In the context of this study, when the business combination is performed, the acquirer recognizes the assets and liabilities of the acquiree and records goodwill. In the following year, the acquirer will proceed with the subsequent measurement, submitting the goodwill to the impairment test, which will demonstrate whether the acquisition performed continues to generate economic benefits or cause negative results (impairment loss).

In light of the Cognitive Dissonance Theory, in cases of impairment loss, the decision made (business combination) will be reconsidered by the manager, which will cause the so-called “cognitive dissonance”. The manager performed the business combination because s/he believed that the operation would be advantageous for the acquirer, and after the acquisition, the unit generated negative results (loss due to impairment of goodwill), putting in doubt whether the decision was the most coherent, thus causing the mental discomfort called cognitive dissonance. This discomfort consists in the confrontation between the decision to have performed the business combination supposing it was an advantageous operation for the acquirer and the occurrence of the goodwill impairment loss, which represents the decrease in expectations of future benefits of the asset, which may be an indication that the combination performed was not a good decision, since it caused a loss.

Given the existence of cognitive dissonance between the manager's perceptions, the manager would tend to act in such a way that this mental discomfort diminishes or is withdrawn, as predicted by the Cognitive Dissonance Theory.

From this context, we propose following research hypothesis:

Hypothesis 2: Managers are more likely to record a loss due to goodwill impairment when there is a loss in the previous year.

The fact that managers record an impairment loss for goodwill when there is a loss in the previous year may be one of the ways to reduce the mental discomfort (cognitive
dissonance) previously caused by the loss recorded in the previous period. At this time of recording the loss in the current period, managers are adding a further dissonant element (recording goodwill impairment loss) to reduce or remove cognitive dissonance, as supported by Cooper and Carlsmithe (2015). Therefore, once the manager acquires enough evidence the acquired business unit does not meet expectations for future benefits, it becomes more plausible for management to accept the goodwill impairment loss rather than continue to conjecture that the business combination decision was the best choice (Kim & Bay, 2017). For this reason, an impairment loss for goodwill is more likely to occur after an impairment loss in the prior year.

It is in this scenario we propose using of the Cognitive Dissonance Theory as an explanation for the goodwill impairment loss. The option to perform a business combination (acquisition of control of a company) would be the decision made by the company’s manager, which may generate cognitive dissonance, since the goodwill arising from such combination may lead to negative results and generate uncertainties as to the effectiveness of the business. Kim and Bay (2017) concur that cognitive dissonance may arise after the decision has been made, especially if negative consequences occur.

In addition, it is necessary to emphasize that the Cognitive Dissonance Theory seeks to clarify what follows, psychologically, from the decision process (Rodrigues, 1969). And it occurs after the decision, because the positive characteristics of the rejected option and the negative characteristics of the chosen option are inconsistent with what was decided (Harmon-Jones, Harmon-Jones, & Levy, 2015). Rodrigues (1969) explains that, in most cases, when there is a need to choose between two alternatives and after pondering the pros and cons of each one, one is chosen and, from that moment on, all the attractive characteristics of the rejected option, as well as the undesirable elements of the chosen alternative, go into dissonance with the decision taken.

3 RESEARCH DESIGN
3.1 Sample and Data Collection

The initial sample of the study covered the Brazilian non-financial publicly traded companies listed in [B]³, which performed business combination and recorded goodwill on the Balance Sheet in some of the years from 2010 to 2016. We identified 45 companies that performed business combination and recorded goodwill in at least one of the years verified, totaling 204 observations in the company year, according to the data collected at Economatica®.

In order to achieve the research purpose, it was necessary to identify which of the 45 companies recorded goodwill impairment losses in at least one of the years of the sample, totaling 12 companies with goodwill impairment losses in at least one of the analyzed years. Such information was obtained from [B]³’s website, through the conference of all Explanatory Notes to financial statements, which was done manually by the authors, that covered part of the analyzed period. With this, we obtained the number of companies with recorded goodwill and recorded goodwill impairment loss in each of the years, shown in Table 1.

As showed in Table 1, the number of companies that recorded goodwill in each of the years varies from 28 to 32, which is equivalent to less than 10% of the total companies listed in [B]³ (368 companies). This may be an indication that business combinations are not as frequent in the Brazilian capital market. Since the capital market in Brazil is still considered less developed, when compared, for example, with the North American market, the organizations listed in [B]³ may not be so adept at business acquisitions, that is, acquisitions of control of other companies.
Table 1
Amount of companies that recorded goodwill and impairment loss of goodwill - 2010-2016

<table>
<thead>
<tr>
<th>Years</th>
<th>Amount of companies that recorded goodwill</th>
<th>Amount of companies that did not record</th>
<th>Total</th>
<th>Amount of companies that recorded impairment loss of goodwill</th>
<th>Amount of companies that did not record</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>29</td>
<td>16</td>
<td>45</td>
<td>4</td>
<td>41</td>
<td>45</td>
</tr>
<tr>
<td>2011</td>
<td>30</td>
<td>15</td>
<td>45</td>
<td>6</td>
<td>39</td>
<td>45</td>
</tr>
<tr>
<td>2012</td>
<td>32</td>
<td>13</td>
<td>45</td>
<td>5</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>2013</td>
<td>28</td>
<td>17</td>
<td>45</td>
<td>5</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>2014</td>
<td>28</td>
<td>17</td>
<td>45</td>
<td>6</td>
<td>39</td>
<td>45</td>
</tr>
<tr>
<td>2015</td>
<td>29</td>
<td>16</td>
<td>45</td>
<td>5</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>2016</td>
<td>28</td>
<td>17</td>
<td>45</td>
<td>6</td>
<td>39</td>
<td>45</td>
</tr>
<tr>
<td>Total of observations</td>
<td>204</td>
<td>111</td>
<td>315</td>
<td>37</td>
<td>278</td>
<td>315</td>
</tr>
</tbody>
</table>

As showed in Table 1, the number of companies that recorded goodwill in each of the years varies from 28 to 32, which is equivalent to less than 10% of the total companies listed in [B]³ (368 companies). This may be an indication that business combinations are not as frequent in the Brazilian capital market. Since the capital market in Brazil is still considered less developed, when compared, for example, with the North American market, the organizations listed in [B]³ may not be so adept at business acquisitions, that is, acquisitions of control of other companies.

Since most of the companies listed in [B]³ did not perform business combinations and, in turn, have no record of goodwill in their assets, an even smaller number of companies were expected to record goodwill impairment losses, since the recognition of impairment losses occurs only when the recoverable amount of the asset is less than the carrying amount at which the asset was recorded. Using the data contained in Table 1, it is possible to consider that, in total, the number of observations with goodwill impairment loss (37) is around 18.14%, if compared to the total of observations that have goodwill recorded (204). Cappellesso et al. (2017) found a similar percentage (16.48%) of companies that recognized goodwill impairment loss in relation to the number of companies listed in [B]³ that had goodwill from 2009 to 2015.

It is worth mentioning that, initially, the sample was composed by 315 observations (firm year), using as dependent variable a dummy, based on the units that registered and did not register goodwill impairment loss in the analyzed period. It is important to underline that the same company may have recorded goodwill impairment loss in more than one of the years included in the analysis.

Since some of the 315 submissions did not provide all the necessary data each year, it was decided to use an unbalanced panel with the intention not to further decrease the amount of data in the sample. Of the 315 that composed the final sample, 240 observations were obtained when the companies that did not present data for all the variables approached by the study and those that presented outliers with standardized residues outside the range -2 and 2 were excluded.

3.2 Empirical Model

The econometric model used was assembled following the logit specifications, which is used when the dependent variable is a dummy variable. This type of method is used when the intention is to predict the occurrence of a certain event/occurrence and, for this, a binary dependent variable is used, for which the number 1 (one) is adopted for the cases in which the
event occurred and 0 (zero) for the cases of non-occurrence. For this study, the dependent variable assumes value 0 (zero) when goodwill did not incur an impairment loss and 1 (one) when goodwill impairment loss occurred, as in the Kim and Bay study (2017). The following presents the structure of the model, adapted to the variables used in the study:

\[ IG_i = \frac{1}{1 + e^{-(b_0 + b_1 \cdot IMP_{i,t-1} + b_2 \cdot \Delta FCO_{i,t} + b_3 \cdot GDW_{i,t} + b_4 \cdot AROA_{i,t} + b_5 \cdot ALA_{i,t} + b_6 \cdot TUR_{i,t} + b_7 \cdot SMOOTH_{i,t} + b_8 \cdot BIGBATH_{i,t} + b_9 \cdot TAM_{i,t})}} \]  

(1)

Where:
- \( IG_i \) = binary dependent variable, which assumes value 0 (zero) when the company recorded goodwill and did not incur impairment loss and 1 (one) when the company recorded goodwill and the impairment loss of goodwill occurred;
- \( b_0 \) = constant;
- \( b_1 \) to \( b_9 \) = estimated coefficients;
- \( IMP_{i,t-1} \) = binary independent variable, which assumes a value of 0 (zero) when the goodwill did not incur an impairment loss in the previous year (t-1) and 1 (one) when the goodwill impairment loss in the previous year (t-1) occurred;
- \( \Delta FCO_{i,t} \) = control variable, which represents the change in the company's Cash Flow in year t;
- \( GDW_{i,t} \) = control variable, which represents the value of goodwill of the company in year t;
- \( AROA_{i,t} \) = control variable, which represents the variation of the Return on Assets of the company in year t;
- \( ALA_{i,t} \) = control variable, which represents the financial leverage of the company in year t;
- \( TUR_{i,t} \) = control variable, which represents the change of chief executive officer (CEO) in the company in year t;
- \( SMOOTH_{i,t} \) = control variable, which represents the income smoothing in the company in year t;
- \( BIGBATH_{i,t} \) = control variable, which represents the big bath in the company in year t;
- and
- \( TAM_{i,t} \) = control variable, which represents the size of the company in year t.

Additionally to the presentation of the variables that make up the estimation model, it is necessary to inform that, since it is a logistic regression model, it was necessary to verify the existence of multicollinearity among the explanatory variables of the model, since this could distort the coefficients, as stated by Brooks (2008).

3.3 Variables Description

The variables that composed the model are listed in Figure 1, which were chosen from the studies by Abughazaleh et al. (2011), Cappellesso et al. (2017), Kim and Bay (2017), Riedl (2004), Vogt et al. (2016) and Zang (2008), who carried out studies on the determinants of impairment losses of goodwill. It is important to note that the independent variable of this study is \( IMP \), which was included in order to explain the occurrence of goodwill impairment loss from the perspective of the Cognitive Dissonance Theory or the Agency Theory. The other variables are control variables which, according to the literature, have the potential to explain the occurrence of goodwill impairment loss and could not be external to the model, since they are used in several studies.
### Figure 1. Description of the explanatory variables included in the logit model proposed by the research

The variable $IMP_{t-1}$, which represents the loss due to goodwill impairment in the previous year, is used to explain the recording of the loss from the perspective of the Agency Theory or the Cognitive Dissonance Theory, so that the result of this relationship can be significant in a negative or positive manner, respectively. If impairment loss occurred in the previous year and in the current year, the Cognitive Dissonance Theory is considered to explain the goodwill impairment loss; otherwise, the explanation is consistent with the Agency Theory. In Kim and Bay’s (2017) research, which was similar to the present study, the results confirmed that the impairment loss for goodwill is consistent with the Cognitive Dissonance Theory. It should be noted that the research by Kim and Bay (2017) was conducted in the North American context with companies that make up the Compustat/CRSP database and, in addition to the impairment loss, also verified the magnitude of goodwill.

The variation in operating cash flow ($\Delta FCO_{i,t}$), which corresponds to changes in operating flows, represents the performance at the cash related company level (Riedl, 2004). According to Vogt et al. (2016), once the value in use estimates have a relationship with cash flow projections, this variable is expected to be the one that represents the preponderant cause...
to establish the amount of goodwill impairment losses. Therefore, it is considered that the higher the cash flow, the higher the value in use of the asset (goodwill) and, therefore, the lower the chances of recognizing an impairment loss. The results of Abughazaleh et al.’s (2011) paper suggests that this variable presented a significant and negative relationship with goodwill impairment. Therefore, a negative relationship is assumed, since the higher the cash flow, the higher the goodwill and, therefore, the lower the chances of recognizing a loss.

Concerning the variable goodwill ($GDW_{i,t}$), it is understood that a company whose number of assets is greater will cover in its tests a greater number of assets and, therefore, may record greater losses due to impairment of goodwill. Therefore, a positive relationship is expected for the such variable, since the greater the goodwill, the greater the possibility of losses in its recoverability (Vogt et al., 2016).

Regarding the variation of return on assets ($AROA_{i,t}$), it is understood that companies with higher ROAs have higher market value and, as an effect, increased fair value of their assets (Cappellesso et al., 2017). This fact would cause lower impairment losses of goodwill (Francis, Hanna, & Vincent, 1996; Zang, 2008). In his study, Souza (2011) corroborates this idea and argues that companies with higher profitability present lower losses, however, the author justifies such effect from the investors' perspective, since the disclosure of higher losses could affect the value of their securities in the market. If, on the one hand, the cited authors state that the higher the ROA, the lower the loss due to goodwill impairment, on the other hand, Abughazaleh et al. (2011) and Riedl (2004) obtained the same result, but from another perspective. According to the authors, companies with lower changes in ROA tend to present higher impairment losses. Vogt et al. (2016) pointed out in their study that the variation in ROA is significant for determining impairment losses of goodwill.

About financial leverage ($ALA_{i,t}$), it is assumed that highly leveraged companies have less possibility to recognize impairment losses of goodwill (Riedl, 2004; Ramanna & Watts, 2012; Zang, 2008), as the management of a highly leveraged company has more incentive to use accounting methods that increase the results. In addition, if the degree of indebtedness is reduced to restrictive clauses, known as contractual covenants, it will be more expensive for the company to renegotiate the debts after the non-fulfillment of the aforementioned clauses (Dichev & Skinner, 2002). Therefore, the company will tend to avoid estimates that lead to costly breaches of restrictive clauses. In the study by Zang (2008), for example, the data indicates that when the company is highly leveraged, the losses due to goodwill impairment are lower. Therefore, a significant negative relationship is expected between financial leverage and the recognition of impairment losses of goodwill.

With respect the variable CEO Turnover ($TUR_{i,t}$), the study by Vogt et al. (2016) points out that there is a positive relationship between the change of manager and the recognition of losses due to goodwill impairment. Corroborating the results obtained, the research by Francis et al. (1996) and Zang (2008) showed higher impairment losses when a recent change in management succeeded. Such results may be justified by the willingness of new managers to recognize losses in the first years of their management, holding the previous manager responsible for any wrong decision in the company's acquisitions. In addition, it provides the possibility of better profits in the future, since the impairment loss of goodwill was initially recognized in the expense (Stout, Costigan, & Lovata, 2008; Zang, 2008).

Income smoothing ($SMOOTH_{i,t}$) corresponds to the need to disclose a continuous progress in profits, seeking to soften the results by reducing their oscillation over time (Paulo, 2007). Therefore, it is understood that managers would be more likely to disclose a loss when the results obtained were occasionally high, in order to soften them. Studies (Abughazaleh et al., 2011; Francis et al., 1996; Giner & Pardo, 2015) indicate that income smoothing is recognized through the assets write-off in periods whose results before impairment are higher.
than expected. Cappellesso et al. (2017) corroborate that the most considerable losses due to impairment of goodwill were induced by income smoothing, in addition, they were established by a higher value of goodwill and lower Return on Equity. Considering this scenario, a significant and positive relationship is expected between the income smoothing and the decision to recognize an impairment loss for goodwill.

The variable Big Bath Accounting ($BIGBATH_{i,t}$), in turn, is used to manage results in order to decrease current profit, and is expected to increase future profit (Cappellesso et al., 2017). Thus, it is suggested that the loss is registered in periods whose previous results are already lower than the predicted one (Sevin & Schroeder, 2005; Zucca & Campbell, 1992). Herewith, managers may use the big bath in specific periods to signal that better times are to come (Abughazaleh et al., 2011). Therefore, it is expected that there will be a significant positive relationship between companies with poor results before impairment and the recognition of a goodwill impairment loss, as companies with poorer than expected results or negative results would be more inclined to recognize a goodwill loss (Jordan & Clark, 2011).

4 RESULTS

By examining the goodwill impairment loss of the companies in the sample, it was possible to see that few recognized this type of loss in their financial statements, 13.75%, as can be observed by means of the average of the goodwill impairment variable ($IG$), in Table 2. This result is similar to that found by Cappellesso et al. (2017), who presented in their study a percentage of 16.48% for the period from 2009 to 2015. According to Vogt et al. (2016), this can be explained by some factors, such as (a) the companies studied did not actually suffer losses; (b) the complexity of calculating the loss; and (c) the use of discretionary standards by managers for the non-recognition of losses.

It’s noteworthy to emphasize the goodwill variable ($GDW$), since, on average, the value of this asset in the current year represents 10.99% of the total assets in the previous year, similar to what was found by Vogt et al. (2016) in the period from 2011 to 2014, which was 14.4%, showing in both studies the representativeness and importance of the management of this asset.

In general, it can be seen that the data used do not show evidence of discrepant values that could distort the results, since the values that showed outliers with standardized residuals outside the range -2 and 2 were already removed from the sample.

<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive statistics</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable</th>
<th>Average</th>
<th>Standard deviation</th>
<th>Maximum</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>$IG$</td>
<td>0.1375</td>
<td>0.3451</td>
<td>1.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>$IMP$</td>
<td>0.1292</td>
<td>0.3361</td>
<td>1.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>$ΔFCO$</td>
<td>0.0049</td>
<td>0.0770</td>
<td>0.3289</td>
<td>-0.4631</td>
</tr>
<tr>
<td>$GDW$</td>
<td>0.1099</td>
<td>0.1583</td>
<td>0.6597</td>
<td>-0.0006</td>
</tr>
<tr>
<td>$ΔROA$</td>
<td>1.2060</td>
<td>5.2006</td>
<td>67.9254</td>
<td>-18.8374</td>
</tr>
<tr>
<td>$ALA$</td>
<td>0.5590</td>
<td>0.2545</td>
<td>1.8067</td>
<td>0.0003</td>
</tr>
<tr>
<td>$TUR$</td>
<td>0.1917</td>
<td>0.3944</td>
<td>1.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>SMOOTH</td>
<td>0.0251</td>
<td>2.3101</td>
<td>26.2479</td>
<td>-24.1990</td>
</tr>
<tr>
<td>$BIGBATH$</td>
<td>0.5542</td>
<td>0.4981</td>
<td>1.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>$TAM$</td>
<td>15.5876</td>
<td>1.9099</td>
<td>20.6181</td>
<td>10.4254</td>
</tr>
</tbody>
</table>

In order to verify the hypotheses developed for the study, we adopted logistic regression with data in an unbalanced panel, formed from Equation 1 presented in topic 3.2, which was estimated with robust standard errors in order to produce accurate results. Before presenting the
results of the logit model estimation, it is necessary to clarify about the multicollinearity test, which presented a higher value in the variance inflation factor (VIF) test for the variable goodwill (GDW) equivalent to 1.16. This shows that the data do not present multicollinearity problems among the variables, once this value is below 10, maximum value admitted in this test.

It is possible to verify, in Table 3, which are the expected relationships between the dependent variable and each of the explanatory variables, listed from previous studies regarding the recording of impairment losses of goodwill determinants, such as these: Abughazaleh et al. (2011), Cappellesso et al. (2017), Kim and Bay (2017), Riedl (2004), Vogt et al. (2016) and Zang (2008). In addition to this information, the logistic regression results for the sample studied were presented.

### Table 3

**Expected relationships between variables and logistic regression results with unbalanced panel data - 2010-2016**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Expected relationship</th>
<th>β</th>
<th>Odds ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMP_{t-1}</td>
<td>(–) or (+)</td>
<td>3.8284</td>
<td>45.9890</td>
<td>0.0000***</td>
</tr>
<tr>
<td>ΔFCO_{t-1}</td>
<td>(–)</td>
<td>-3.6491</td>
<td>0.0260</td>
<td>0.0931*</td>
</tr>
<tr>
<td>GDW_{t}</td>
<td>(+)</td>
<td>4.3661</td>
<td>78.7341</td>
<td>0.0142**</td>
</tr>
<tr>
<td>ΔROA_{t}</td>
<td>(–)</td>
<td>0.0189</td>
<td>1.0190</td>
<td>0.5347</td>
</tr>
<tr>
<td>ALA_{t}</td>
<td>(–)</td>
<td>0.4776</td>
<td>1.6121</td>
<td>0.6904</td>
</tr>
<tr>
<td>TUR_{t}</td>
<td>(+)</td>
<td>-0.5650</td>
<td>0.5684</td>
<td>0.4981</td>
</tr>
<tr>
<td>SMOOTH_{t}</td>
<td>(+)</td>
<td>1.4953</td>
<td>4.4608</td>
<td>0.5103</td>
</tr>
<tr>
<td>BIGBATH_{t}</td>
<td>(+)</td>
<td>0.1451</td>
<td>1.1561</td>
<td>0.7926</td>
</tr>
<tr>
<td>TAM_{t}</td>
<td>(+)</td>
<td>0.1046</td>
<td>1.1102</td>
<td>0.3182</td>
</tr>
<tr>
<td>Const</td>
<td></td>
<td>-5.5878</td>
<td>0.0037</td>
<td>0.0064***</td>
</tr>
</tbody>
</table>

Log of the verisimilitude -52.9744
R² adjusted 0.3447

* Significant to 10%; ** Significant to 5%; *** Significant to 1%.

The results of Table 3 show that, of the nine variables that are included in the model, there are three that are statistically significant for the recording of impairment losses of goodwill, namely: Goodwill Impairment Loss in t-1 (IMP_{t-1}), Goodwill (GDW_{t}) and Operating Cash Flow Variation (ΔFCO_{t}). We highlight the representativity of the IMP_{t-1} variable in the model, as it was the only one with a significant ratio at the 1% level.

### 5 DISCUSSION

The variable IMP_{t-1} was inserted in the model in order to check which of the theories explains the recording of the loss due to goodwill impairment, regarding Agency Theory and Cognitive Dissonance Theory. The result of the relationship of this variable with the dependent variable was statistically significant at the level of 1%, since the p-value was 0.0000. Moreover, this ratio was detected as positive, since the coefficient was positive at 3.8284 and the odds ratio at 45.9890. This result corroborates Kim and Bay’s (2017) findings, which tested this variable for a sample of North American companies in the period from 2003 to 2011. This ratio means that when goodwill impairment loss is recorded in t-1, the chances of managers recognizing a goodwill impairment loss in the current year increase by 45.99% in order to decrease existing cognitive dissonance. Thus, it is possible to confirm Hypothesis 2 of this
research, which is based on the Cognitive Dissonance Theory and states that managers are more likely to record an impairment loss of goodwill when there is a loss in the previous year.

Concerning the control variables incorporated in the model, it can be observed that two were statistically significant, namely: $GDW_{i,t}$ and $\Delta FCO_{i,t}$. These variables were significantly to the levels of 5% and 10%, respectively. For the variable $GDW_{i,t}$, a positive relationship was expected, since, according to Vogt et al. (2016), the higher the goodwill, the greater the possibility of losses in its recoverability. Therefore, such result is in line with the literature and also with the results of Vogt et al. (2016), who found a positive and significant relation of 1% in a sample of companies listed in BM&FBovespa, current [B]$^3$, in the period from 2011 to 2014. It should be noted that, unlike the study by Vogt et al. (2016), the variable $GDW_{i,t}$ showed a significance level of 5% in this study.

The variable $\Delta FCO_{i,t}$ presented a negative and significant relationship, with a coefficient of -3.6491, meaning that the variation in the operating cash flow has a negative influence on the recognition of a decrease in goodwill. This result matches the expected sign according to the literature and the result of Abughazaleh et al. (2011), which was also significant and negative at the 10% level. This relationship is justified considering that the higher the Operating Cash Flow, the higher the goodwill and, consequently, the lower the chances of recognizing a loss. It is necessary to emphasize that in the studies by Riedl (2004) and Vogt et al. (2016), the variable $\Delta FCO_{i,t}$ did not prove significant for the analyzed samples.

Moreover on the results of the logistic regression, it is possible to notice, through Table 3, that the variables Variation of Return on Assets ($\Delta ROA_{i,t}$), Financial Leverage ($ALA_{i,t}$), CEO Turnover ($TUR_{i,t}$), income smoothing ($SMOOTH_{i,t}$), big bath accounting ($BIGBATH_{i,t}$) and company size ($TAM_{i,t}$) did not present significant relationships with the dependent variable, allowing us to state that statistically they are not determinant for the recording of impairment loss of goodwill of the companies listed in [B]$^3$ in the period from 2010 to 2016. As for the adjustment of the model, it is represented by the adjusted $R^2$, which was 0.3447, which implies that 34.47% of the information is explained by the model. Regarding the power of prediction, it is possible to observe, in Table 4, such information, as described below.

### Table 4
**Prediction percentages of the logit model for company data - 2010-2016**

<table>
<thead>
<tr>
<th>Effective</th>
<th>Did not record</th>
<th>Recorded</th>
<th>Correct percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not record losses due to impairment of goodwill</td>
<td>199</td>
<td>8</td>
<td>96.14%</td>
</tr>
<tr>
<td>Recorded losses due to impairment of goodwill</td>
<td>11</td>
<td>22</td>
<td>66.67%</td>
</tr>
<tr>
<td>Total</td>
<td>210</td>
<td>30</td>
<td>92.10%</td>
</tr>
</tbody>
</table>

In a more detailed way, it may be inferred that, for the companies that actually recorded losses due to impairment of goodwill, the model was right 66.67%, which totals 22 cases. This implies that 11 cases were predicted incorrectly by the model, that is, the companies actually recorded a goodwill impairment loss in that year, but the values of the variables presented in the model were not able to predict a certain situation, classifying such companies in a mistaken way as being companies that did not record goodwill impairment. Regarding those that did not record goodwill impairment loss, the model was able to correctly predict 96.14% of the cases, so only 8 cases were poorly classified by the model.

In addition to the results presented above, it is relevant to emphasize the predictive power of the logit model as a whole, allowing to verify whether the set of variables chosen for its composition was able to predict the situation in which the companies were classified, either of recording goodwill impairment loss or not recording goodwill impairment loss. Therefore,
through Table 4, it is possible to verify that 92.10% of the cases were correctly predicted, meaning that, for the total of 240 cases, the model was able to correctly predict the condition of 221 cases.

6 CONCLUSIONS

In this study we aimed to explain the recording of goodwill impairment losses in [B]’s listed companies from the perspective of the Agency Theory and the Cognitive Dissonance Theory. The sample consist of the publicly traded companies that recorded goodwill in any of the years from 2010 to 2016. The units of analysis were the companies that recorded goodwill impairment losses and those which did not. Through logistic regression, Hypothesis 2 of this paper may be confirmed, which states that managers are more likely to record an impairment loss for goodwill when they recorded a loss in the previous year. This hypothesis is based on the Cognitive Dissonance Theory, developed by Festinger (1957), which endorses that, in the face of conflicting cognition, the human being tends to act in such a way as to decrease or eliminate this mental discomfort.

Besides this finding, the present research verified that Goodwill \( (GDW_{i,t}) \) and Variation in Operating Cash Flow \( (\Delta FCO_{i,t}) \) are also factors used to explain the loss due to goodwill impairment accounting recording, at the level of significance of 5% and 10%, respectively. Regarding the predictive power of the model, it was able to correctly predict 92.10% of the cases, that is, of the 240 cases studied, 221 were correctly predicted, allowing us to infer that the set of variables chosen for the composition of the model was able to predict the situation in which the companies were classified, either of recording goodwill impairment loss or not recording goodwill impairment loss.

Through the evidence, one may conclude that the Cognitive Dissonance Theory help to explain the management's behavior in relation to recording an impairment loss of goodwill in the publicly traded companies listed in current [B]'s, for the period from 2010 to 2016. This implies that managers may be subject to various types of influences, including those related to their own cognition and behavioral biases. In this sense, this research contributes to the users of accounting by providing discussions about which factors may impact the decisions made by managers, especially those subject to the manager’s discretion. To investors, this study is important because it allows them to make decisions related to the company, not only based on what is evidenced in the accounting reports, but taking into consideration other aspects that are not purely related to the accounting standards, such as the behavior and cognition of managers.

Additionally, this research contributes to the literature on the determining factors of impairment loss of goodwill, from the moment it inserts a new variable, which can be explained by the Cognitive Dissonance Theory. This is also considered a contribution, given that it uses as theoretical support a behavioral psychological theory, which has so far been little used in studies in the accounting area. It is also worth pointing out some limitations in the study, such as, for example: (a) the number of companies studied, since few were the companies that recorded goodwill and incurred impairment losses; (b) the non-inclusion of all factors explaining the goodwill impairment loss; and (c) the scarcity of studies involving the Cognitive Dissonance Theory in the scope of recording goodwill impairment losses, so that there was a comparison of results. Finally, we suggest that, in future papers, a comparison of these results with the results of companies listed on other stock exchanges, which operate in developed markets, in order to detect whether cognitive dissonance is also a determining factor for goodwill impairment loss in other economic scenarios.
REFERENCES


RESUMO


Método: Utilizou-se uma amostra composta pelas empresas brasileiras não financeiras de capital aberto listadas na [B]³. O método empregado foi a regressão logística, considerando um conjunto de dados em painel desbalanceado referente ao período de 2010 a 2016.

Originalidade/Relevância: Este estudo recorre a uma teoria da psicologia, a Teoria da Dissonância Cognitiva, para tentar explicar a ocorrência da perda por impairment do goodwill.

Resultados: Os resultados apontam para a Teoria da Dissonância Cognitiva como a teoria que explica a perda por impairment do goodwill, uma vez que os gestores tendem a registrar uma perda por impairment do goodwill no ano atual, quando já houve registro de perda no ano anterior, como forma de diminuir o desconforto mental causado entre suas cognições.

Contribuições teóricas/metodológicas: Contribui-se com a literatura no sentido de associar as decisões que os gestores tomam a uma teoria psicológica comportamental que até o momento não tem recebido destaque nas tentativas de justificar as decisões dos agentes. O ganho com esta pesquisa também se direciona aos investidores, pois permite que eles tomem decisões não apenas com base no que os relatórios contábeis apresentam, mas levando em consideração outros aspectos, como o comportamento e as cognições dos gestores.

Palavras-chave: Dissonância Cognitiva; Teoria da Agência; Impairment; Goodwill.
Cognitive Dissonance or Agency Theory, what Explains the Loss of Impairment of Goodwill?