Avoiding Reporting Losses: An Empirical Study of Earnings Management via Operating Decisions

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ABSTRACT

The aim of this paper is to verify whether Brazilian companies listed on the BM&FBOVESPA used earnings management via operating decisions, when faced with reporting unfavourable results, in order to avoid disclosing losses. Using panel data covering years from 2008 to 2013 in estimated regression models, the paper focuses on three ways of manipulating financial results through operational decisions: by manipulating sales; by reducing selling, general and administrative expenses (SG&A); and by increasing production to report lower costs of goods sold. The results show that the companies did use SG&A to avoid reporting losses, but did not manipulate sales or levels of production for such purposes. The evidence presented suggests that in Brazil managers are only able to manipulate operational activities by reducing operating expenses (SG&A), probably due a lack of flexibility in the production process and the cash flow constraints faced by Brazilian companies. From a users' perspective, this paper finds that companies do use earnings management via operating decisions to avoid disclosing losses to capital markets, which is consistent with the Prospect Theory.

Keywords: earnings management, operating decisions, panel data.

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1   INTRODUCTION

The accounting information disclosed by companies by way of financial statements is the main way for management to communicate with the various stakeholders who are interested in their economic and financial conditions. This information is taken as indicators of company performance and is of great importance to those who use it, some of whom include: shareholders measuring management performance; creditors resolving restrictive clauses in debt covenants; clients evaluating a company's ability to supply goods and services; suppliers analyzing whether a company can fulfill its commitments; and employees predicting future outlook and job stability, among others (Goncharov, 2005).

Therefore, managers, experts in their business, can use their knowledge to disclose information which reflects the economic reality of the company, thus potentially increasing the credibility of financial accounts as a means of communication with those using them. However, managers engaging in the use of their own judgement creates opportunities for Earnings Management, in which they make discretionary accounting choices that do not adequately reflect the economic and financial reality of the company (Healy & Wahlen, 1999).

The use of discretion by managers and their engaging in earnings management derives from the existence of different, but equally accepted, accounting methods used to treat recognition, measurement and disclosure of company economic events. These are not objective but instead depend on managers' judgements and estimations, such as when making bad debt provisions and contingencies (Goulart, 2007), known in academic management literature as accruals. Research has increasingly come to focus, however, on other forms of earnings management, known as operational, in which decisions taken by management have been considered more damaging to companies and market participants because they affect cash flow and not only profit (Roychowdhury, 2006). Moreover, earnings management via accruals is easier for the market, auditors and regulators to detect, compared with earnings management via operating decisions, which could thus encourage companies to use this strategy (Graham, Harvey, & Rajgopal, 2005; Cohen & Zarowin, 2010).

This paper therefore focuses on the decisions managers take in order to manage particular financial results, or, in other words, management activity that alters the accounting figures disclosed.

Healy and Walhen (1999) argue that motivations for earnings management could lie in offsetting contracts, present in the principal-agent relationship, but could also be due to capital markets. Degeorge, Patel, and Zeckhauser (1999) argue that one of the motives

for managers to report manipulated results to the market is in order to announce some profit, no matter how low. In other words, the level of profit reported would be just above zero.

When interviewing 401 executives, Graham et al. (2005) found consistent evidence of the importance of achieving or exceeding a target result. 86.3% of those interviewed believed that achieving a particular benchmark resulted in credibility within the capital market and more than 80% agreed that this helped to maintain or increase a company's market value. In other words, managers believe that achieving a target level of profit conveys the prospect of future growth to investors (Graham et al., 2005).

Therefore, given the incentives companies have to achieve positive results as a way of satisfying capital market expectations and the possibility of managers using operating decisions in order to achieve this, the question this paper intends to address is: faced with reporting negative results, do publicly traded Brazilian companies tend to engage in earnings management via operating decisions, in order to avoid disclosing losses?

More specifically, this study, covering the years from 2008 to 2013, aims to verify whether, when faced with reporting negative results, Brazilian companies listed on the BM&FBOVESPA used earnings management via operating decisions in order to avoid disclosing losses.

As Matinez (2009) notes, although this issue is widley discussed in international literature, there are still only a limited number of studies (Martinez & Cardoso, 2009; Verhagem, Santos, & Bezerra, 2011; Rey, 2012; Cupertino, 2013; Reis, Cunha, & Ribeiro, 2014) that have been conducted in order to understand the specific circumstances that could motivate Brazilian companies to manipulate financial results by way of operating decisions. "The majority of scientific studies still concentrate on the management of results via accruals, whereas research into the use of operating decisions as a way of managing results is weak" (Martinez, 2013, p. 5).

Thus, this study contributes academically in attempting to understand how Brazilian companies engage in earnings management by way of operating decisions, especially when there is the specific aim to not disclose financial losses. It is important to mention, however, that one form of earnings management via operating decisions involves price discounts in order to sell more and thus increase profit. However, the tax rules to which Brazilian companies are subject differ to those, for example, for North American companies. Because of this, the results found when looking at Brazil may differ from those found in international studies.

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2 THEORETICAL FRAMEWORK

A number of theories can be used to explain managers deciding to engage in earnings management. The agency theory, for example, in describing the conflicts of interests that exist between shareholders and managers, offers good reasons to believe that managers do not always act in accordance with the interests of shareholders, by infringing contractual rules or excerting a degree of effort that is more in their own (the agent's) interests than in that of the principal.

Thus, assuming that managers are maximizers of their efforts, they would have sufficient motives to make accounting choices that would ultimately benefit themselves. They would be expected to manage financial results in order to improve the level of renumeration offered to them by the principal as a way of aligning all of their interests. Therefore, given that companies are a nexus of contracts, where agent relationships are established in which the pursuit to maximize individual objectives can prevail, and given the role of accounting information in bonus contracts drawn up in order to bypass agency status, there do exist incentives to manage earnings (Baptista, 2008), using the freedom allowed within the law to pursue private interests (Nardi & Nakao, 2009).

With a view towards the capital market, Burgstahler and Dichev (1997) argue that a possible explanation for companies reporting profit, even if it is small, could lie in the prospect theory, which assumes market agents having an absolute and relative aversion to losses. This theory assumes that individuals determine the value of a choice by comparing it with a point of reference, such as zero profit. Therefore, supposing that the cost of managing earnings in order to achieve a particular target figure is roughly constant and that managers manipulate measurements of profit in order to alter the value assigned by shareholders and other interested parties, management behaviour that aims to raise earnings above a particular point of reference can be expected. Here this would be zero-level profits (Burgstahler & Dichev, 1997).

Managers manipulating financial results, with the aim of avoiding disclosing losses, is documented in a number of international studies. Hayn (1995), for example, studies the presentation of financial results in a way that avoids disclosing losses, by analyzing data for American companies covering the years from 1962 to 1990. What is found is a concentration of earnings per share that was just right of zero. In other words, the companies reported small but positive results, resulting in a discontinuity in the histogram used to verify such practices and suggesting that these companies manipulated financial results in order to avoid reporting losses.

In light of the evidence presented by Hayn (1995), Burgstahler and Dichev (1997) analyse earnings management in order to avoid reporting losses between 1976 and 1994. They document evidence that two components of profit, cash flow from operations and changes in working capital, were used to manage results. Their findings show an increase in the level of cash flow from operations close to the zero-profit reference and a correlation between working capital accumulation and profits. One of the explanations that the researchers offer is that managers avoid reporting losses because there is an absolute and relative aversion to losses among capital market agents, just as the prospect theory suggests (Burgstahler & Dichev, 1997).

Dechow, Richardson, and Tuna (2003), following on from the results of Burgstahler and Dichev (1997), aim to reexamine whether earnings management provides a partial or complete explanation for the discontinuity of earnings per share close to the zero-profit reference point. The evidence presented by the writers indicates that those firms with small profits had high levels of discretionary accruals compared with the rest. This is consistent with the idea that companies engage in earnings management, however it is not enough to explain the discontinuity around zero profit.

Comparing firms with small profits with firms with small losses, the researchers found high discretionary accruals for both groups and a similar share of companies with positive discretionary accruals. Therefore, if companies with small losses had on average positive discretionary accruals, this would suggest that they too were faced with an incentive to raise profits, even when they reported losses (Dechow et al., 2003).

In conclusion, they suggest that, for North American companies between 1988 and 2000, one of the causes of the discontinuity close to zero, detected using the frequency distribution method and net profit divided by market value, could lie in the real actions taken by managers in order to avoid reporting losses, and not only in discretionary accruals.

Martinez (2001) had already argued that earnings management does not derive exclusively from the formal manipulation of financial accounts. In some cases, earnings management may derive from concrete decisions and actions, with implications for company cash flow. Paulo (2007) divided the manipulation of results into: (i) earnings management via accounting choices; (ii) earnings manage-

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ment via operating decisions; and (iii) manipulating classifications within accounting statements. In the opinion of Gunny (2010), earnings management can be divided into two categories: Accruals Earnings Management (AEM), or manipulation of accruals; and Real Earnings Management (REM), involving real operational activities.

Accruals are all amounts in financial results that affect profit calculations, but that do not necessarily involve movements in cash flow (Martinez 2001). Roychowdhury (2006) documents that the manipulation of accounting accruals does not directly affect a company's cash flow, and is simply a result of the accrual basis of accounting, in which accounting transactions are posted within the period in which they are carried out. Thus, revenue is recognized in accordance with achievement and set against those expenses associated with such achievement (Martinez, 2001).

Real earnings management (REM), unlike accruals, occurs when managers alter a company's operating activities in an effort to increase or reduce the current period's results (Gunny, 2010). Roychowdhury (2006) defines the manipulation of real activities as management activites that deviate from what are considered normal business practices, with the aim of meeting certain earnings constraints. In other words, the manipulation of real activities is considered a departure from operating practices, and is motivated by managers' desire to deceive certain stakeholders, who believe that particular targets in financial reports have been achieved during a company's normal operating activities (Roychowdhury, 2006).

Decisions that affect cash flow are documented in national and international literature and include: (i) increases in sales revenue due to an acceleration in the sales process and/or unsustainable sales generation via an increase in (temporary) discounts in prices or an easing of restrictions to credit for clients; (ii) the timing of delivery of goods to clients; (iii) a reduction in the cost of goods sold via an increase in production levels (economies of scale), thus improving the financial results for the period; (iv) a reduction in research and development, staff training, factory maintenance, and sales, marketing and administrative expenses; and (v) the timing of making investments (Fields, Lyz, & Vincent, 2001; Martinez, 2001; Goncharov, 2005; Roychowdhury, 2006; Paulo, 2007; Martinez & Cardoso, 2009; Gunny, 2010; Zang, 2012).

Roychowdhury (2006) developed tests in order to investigate whether there is evidence of abnormal real activities among companies that post small annual profits. Using information covering the years 1987 to 2001 for all of the companies in the COMPUSTAT database, where there was sufficient data to calculate the necessary variables,

but excluding financial companies and regulated industries with accounting characteristics that differed from the rest, and employing the statistical models developed by Dechow, Kothari, and Watts (1998), it was shown that those companies that disclosed a positive profit margin close to zero, reported, on average, abnormally low operating cash flow, 2% lower, in terms of total assets, than that of the other companies in the sample. This suggests that the managers manipulated sales and/or engaged in overproduction in order to improve the financial results for the period, but at the same time decreased operating cash flow. From this result the first hypothesis of this study can be extracted:

Hypothesis 1: Those companies that disclosed positive profit margins, close to zero, had abnormally lower operating cash flow compared with the other Brazilian companies.

Gunny (2010) used a sample from between 1988 and 2002 of non-financial North American companies to examine the consequences of earnings management via operating decisions, in order to achieve zero profit or the same profit as the previous year. He found that earnings management via operating decisions was positively related with firms that achieved these benchmarks (Gunny, 2010). Specifically, they had 0.99% lower selling, general and administrative expenses (SG&A) than the other companies in the study. This result is consistent with the findings of Roychowdhury (2006), who documents that those companies committed to not reporting losses had 5.91% lower SG&A than the other companies examined. In other words, the companies decreased their expenses in order to avoid disclosing losses.

Hypothesis 2: Those companies that disclosed positive profit margins close to zero had abnormally lower SG&A compared with the other Brazilian companies.

Evidence that those companies that reported positive profit margins close to zero had abnormally high volumes of production, can be found in the works of Roychowdhury (2006), Gunny (2010) and Zang (2012). They show, respectively, that those companies that avoided disclosing losses had abnormally higher production levels of, on average, 4.97%, 4.80% and 2.49%, compared with the other companies in the sample. In other words, they raised production levels, thus lowering fixed costs per unit, in order to lower the costs of goods sold, and in doing so increased profits for the period in question. These findings lead to the following hypothesis:

Hypothesis 3: Those companies that disclosed positive profit margins close to zero had abnormally high levels of production, in order to report lower costs of goods sold, compared to the other Brazilian companies.

Gunny (2010) stresses that managers can engage in more than one type of REM simultaneously, due to the number of motivations they face. Furthermore, one strategy can be more or less aggressive and the effect of one form of management can cancel the effect of the other. He found that those companies with positive profit margins close to zero generally engaged in more significant earnings management via operating decisions than the other companies. They reported abnormal levels of REM of, on average, 4.40% lower that those of the other companies in the sample. Hence, a new hypothesis can be outlined:

Hypothesis 4: Those companies that disclosed positive profit margins close to zero engaged in an abnormal amount of Real Earnings Management compared with the other Brazilian companies.

In Brazil, some studies that focus on earnings management via operating decisions have started to appear. Martinez & Cardoso (2009) in a study covering the years 1998 to 2004, analyse non-financial companies listed on the BM&FBOVESPA and find significant evidence of general SG&A management, as well as level of production management.

Verhagem et al. (2011), in a study covering the years 2005 to 2009, look for evidence of financial statement management via operating decisions in Steel and Metallurgy firms listed on the BM&FBOVESPA, as well as analysing whether the corporate governance at these companies provided an incentive or not for such management practices. Adopting the econometric models proposed by Anderson, Banker, and Janakiraman (2003) and Rowchowdhury (2006), they verify that the companies examined a priori managed their financial statements via operating decisions. Moreover, they find that corporate governance provided a counterincentive to earnings management via operating decisions, in terms of SG&A. However, when looking at production levels in the companies analysed, it is found that corporate governance did provide an incentive for earnings management. The conflicting results in this study may be due to the proxy chosen to represent corporate governance, since the mechanisms involved should stifle any type of accounts manipulation.

Rey (2012) assesses the impact of Sarbanes-Oxley (SOX) on earnings management, via both operating decisions and accounting choices, using information covering 1997 to 2002, for Brazilian companies that issued Level 2 and Level 3 American Depositary Receipts (ADRs). His findings do not lead to the conclusion that the implementation of SOX has had an impact on earnings management practices among these particular Brazilian companies. It is even found that the companies used earnings management via accounting choices and via operating decisions in a way in which they complimented each other.

Cupertino (2013) also analyses earnings management via operating decisions in the Brazilian capital market. He uses data covering the years 1989 to 2012 for companies listed on the BM&FBOVESPA, but excludes financial companies, funds and specifically regulated sectors. He also finds evidence of financial statement manipulation via operating decisions in the Brazilian capital market. However, although he understands the consequences of manipulation via a reduction in discretionary expenses, he fails to evaluate the effects of cost of production management, as well as the effects on cash flow of manipulating sales.

Reis, Cunha, and Ribeiro (2014) analyse financial statements covering the years 2007 to 2011 for 100 companies listed on the Índice Brasil –IBrX, using models implemented by Rowchowdhury (2006) and panel data estimates, with the aim of verifying to what extent companies manipulated their financial statements by means of operating decisions. The statistical evidence suggests that the companies on the IBrX did not use sales volumes or production levels in order to improve or lower financial results. The researchers state that accruals manipulation may have been preferred to such operating decisions, since they are not normally reflecting in cash flow and do not influence the operational structure of companies.

Studies on this subject carried out in Brazil, with the exception of Cupertino (2013), have focused on earnings management via operating decisions in a general way and on some of the incentives and disincentives for such practices. However, papers that analyse the operating decisions taken by managers in order to avoid disclosing losses are not found in the main Brazilian journals. Therefore, in addressing this subject, this paper contributes in developing research into the subject in Brazil, with the aim of bringing new elements to the academic debate about earnings management, which has been more widely discussed on an international level.

3 METHODOLOGY

3.1 Defining the Type of Study and the Sample

This paper aims to be descriptive and takes a documentary and quantitive approach (Vergara, 2003; Martins, 2007; Richardson, 2012). The information used is taken

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from the financial statements of companies available in Economatica®. The quantitative approach involves using statistical procedures such as descriptive data analysis, as well as regression models using unbalanced panel datasets.

In order to carry out such a study into earnings management, a number of publicly-traded companies listed on the BM&FBOVESPA were chosen, as shown in Table 1, since they are key to discussions about the possible manipulation of the accounting information presented to market participants, particularly investors.

Table 1 *Sample Definition*

Criteria for defining the sample	Quant.
Companies listed on BM&FBOVESPA, in September 2013.	**689**
(-) Companies with listings on the BM&FBOVESPA cancelled, in September 2013.	319
Compares with active listing on the BM&FBOVESPA, in September 2013.	**370**
(-) Financial sector companies excluded from the sample.	36
(-) Companies excluded from the sample due to lack of information.	45
Total companies used in this study	**289**

Source: Economatica® 2013

The data comes from the financial statements of 289 companies listed on the BM&FBOVESPA, collected quarterly between the 1st quarter of 2008 and the 2nd quarter of 2013. This period was chosen since information from Cash Flow Statements was required and this report only became compulsory from then on. Also, in order to obtain the number of companies used in this study, those from the financial and funds sector were excluded, since information on sales revenue and cost of goods sold was not available for companies from this sector. Also excluded was information that was considered to contain discrepancies compared to the variable average, taken as three deviations below and above the average, a common methodology in empirically investigative studies in this area, such as Cupertino (2013).

It should be noted that, since working with unbalanced panel datsets, only the figures considered outliers and not the companies themselves were excluded. However, in cases where exclusion of data resulted in total loss of information for the period, companies were excluded. This methodology led to the exclusion of six companies among the 45 excluded from the sample due to lack of information.

3.2 Econometric Models for Testing the Paper's Hypotheses

In order to test the hypotheses presented in this paper, the proxies of earnings management via operating decisions had to be identified. Therefore, based on Roychowdhury (2006), normal values for the variables Cash Flow from Operations (CFO), Sales, General and Administrative Expenses (SG&A) and Level of Production (PROD) were estimated via Equations 1, 2 and 3. The estimates were calculated using panel datesets, taking into account random effects among companies. The advantage of using random effects is that it takes individual effects into account, captured by the interception of each company. This should provide a better approximation to the error term for each company, than the estimates for sectors used by Roychowdhury (2006), Martinez and Cardoso (2009), Gunny (2010) and Zang (2012), considered insufficient in dealing with the problem of high performing companies within the same sector (Siriviriyakul, 2013).

$$\frac{CFO_{it}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{NR_{it}}{A_{i,t-1}} + \beta_3 \frac{\Delta NR_{it}}{A_{i,t-1}} + c_i + \varepsilon_{it} \qquad \boxed{1}$$

$$\frac{SG\&A_{it}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{NR_{it-1}}{A_{i,t-1}} + c_i + \varepsilon_{it} \qquad \boxed{2}$$

$$\frac{PROD_{it}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{NR_{it}}{A_{i,t-1}} + \beta_3 \frac{\Delta NR_{it}}{A_{i,t-1}} + \beta_4 \frac{\Delta NR_{it-1}}{A_{i,t-1}} + c_i + \varepsilon_{it} \qquad \boxed{3}$$

In which:

CFO_{it} = Cash Flow from Operations of company i in period t;

$SG\&A_{it}$ = Sales, General and Administrative Expenses of company i in period t;

$PROD_{it}$ = Cost of Good Sold + Variation in Stock of company i in period t;

Ai_{t-1} = Total Assets of company i in period t – 1;

NR_{it} = Net Revenue of company i in period t;

ΔNR_{it} = Variation in Net Revenue of company i in period t in relation to t -1;

ΔNR_{it-1} = Variation in Net Revenue of company i in period t – 1 in relation to t – 2;

β_0, β_1, β_2, β_3 e β_4 = Coeficient Estimates in the Model;

$c_i + \varepsilon_{it}$ are the error terms in the model;

c_i is the component that indicates the non-observable specific individual effect, that differs between units, and is unchanging over time;

ε_{it} is the component that varies with the units and with time, known as the "usual" regression error, with an average of zero, not inter-correlated, not correlated with x, and homoscedastic;

t = quarter.

These models take into consideration some of the accounting variables that, in a sense, represent a company's operating activity levels. The proxies for REM are obtained taking the difference between the values observed for the variables CFO, SG&A and PROD and the values calculated for them using Equations 1, 2 and 3, thus providing the abnormal levels known here as ACFO, ASG&A and APROD. These variables are used as dependants in Equations 4, 5, 6 and 7, in order to test the hypotheses in this paper.

In order to identify the companies suspected of earnings management and achieve the aim of this study, the frequency distribution (histogram) methodology, already adopted by a number of researchers such as Hayn (1995), Burgstahler and Dichev (1997), Martinez (2001), Dechow, Richardson, and Tuna (2003), Roychowdhury (2006), Paulo, Martins, and Corrar (2007), Gunny (2010), and Zang (2012), is used.

Companies suspected of manipulating financial results were those that reported profit margins between 0% and 1%, since with them there was the possibility of decision making that constituted earnings management, as shown in Figure 1. It should be noted that this measure of between 0% and 1% is the same one used by Roychowdhury (2006), Gunny (2010) and Zang (2012).
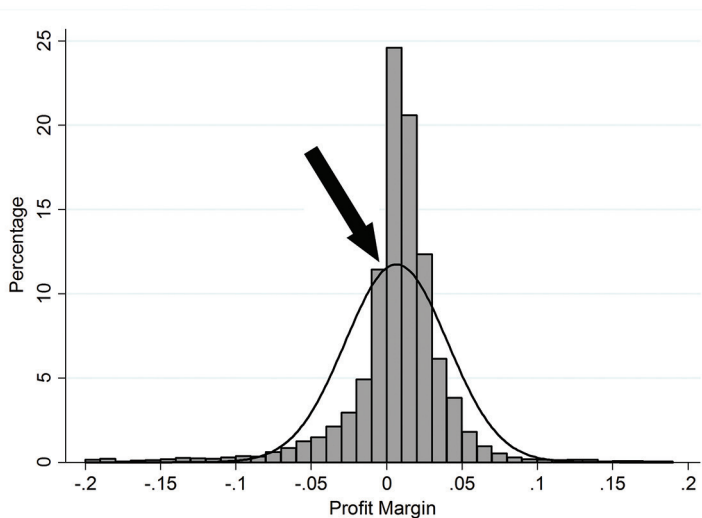

Figure 1 *Frequency distribution of quarterly profit margin between 2008 and 2013.*
Source: Developed by the authors.

As can be seen in Figure 1, there is a greater concentration of information on the positive side, suggesting that, between 2008 and 2013, Brazilian companies listed on the BM&FBOVESPA more often reported positive profit margins. It should be noted, however, that the route from the negative to the positive part of the graphic cannot be considered normal, given that there is a leap in profit margin at zero, thus suggesting that the companies just above zero used some trick in order to move from a negative to a small, positive result close to zero.

In order to test the hypotheses of this paper, the following models, also adopted by Roychowdhury (2006), Gunny (2010), Zang (2012) and Cupertino (2013), were used:

$$ACFO_{it} = \gamma_0 + \gamma_1 D_{1it} + \gamma_2 SIZE_{it} + \gamma_3 MTB_{it} + \gamma_4 ROA_{it} + c_i + \varepsilon_{it} \qquad \boxed{4}$$

$$ASG\&A_{it} = \gamma_0 + \gamma_1 D_{1it} + \gamma_2 SIZE_{it} + \gamma_3 MTB_{it} + \gamma_3 MTB_{it} + \gamma_4 ROA_{it} + c_i + \varepsilon_{it} \quad \boxed{5}$$

$$APROD_{it} = \gamma_0 + \gamma_1 D_{1it} + \gamma_2 SIZE_{it} + \gamma_3 MTB_{it} + \gamma_4 ROA_{it} + c_i + \varepsilon_{it} \quad \boxed{6}$$

$$REM_{it} = \gamma_0 + \gamma_1 D_{1it} + \gamma_2 SIZE_{it} + \gamma_3 MTB_{it} + TB_{it} + \gamma_4 ROA_{it} + c_i + \varepsilon_{it} \quad \boxed{7}$$

In which:

$ACFO_{it}$ = Abnormal level of CFO in company i in period t;

$ASG\&A_{it}$ = Abnormal level of SG&A in company i in period t:

$APROD_{it}$ = Abnormal level of PROD in company i in period t;

REM_{it} = Aggregate measure (Equation 8) for company i in period t;

D_{1it} = Dummy variable, assumed as 1 for suspected companies (positive profit margin close to zero) and 0 otherwise, for company i in period t;

$SIZE_{it}$ = Natural logarithm of the total assets of company i in period t;

MTB_{it} = The market value of capital divided by the net equity of company i in period t;

ROA_{it} = Net profit divided by the total assets of company i in period t;

$\gamma_0, \gamma_1, \gamma_2, \gamma_3$ e γ_4 = estimated coefficients in the model;

t = quarter.

Similarly to the studies by Roychowdhury (2006) and Gunny (2010) we use SIZE, MTB and ROA as control variables that represent, respectively, the size of the companies, the opportunities for growth and the performance. For these researchers, these variables can influence in the extent of earnings management in a general way. Management at larger companies can, at any given time, more easily take decisions such as to produce more, in order to increase stock,

for example. The variable linked to the capital market, MTB, is related to the outlook shareholders have for a company, and can influence in the form of earnings management. Return on Assets is linked to profit, in that positive profit leads to a positive ROA.

Interpreting the coefficients, the γ_1 in Equations 4, 5, 6 and 7, tests, respectively, hypotheses 1, 2, 3 and 4, related with earnings management via operating decisions, in order to avoid reporting losses. This coefficient should be negative in Equations 4 and 5 and positive in Equation 6, since companies that manipulate financial results in order to improve them and thus avoid reporting losses will probably have abnormally low ACFO and/or ASG&A (Roychowdhury, 2006; Cohen, Dey, & Lys, 2008; Martinez & Cardoso, 2009; Cohen & Zarowin, 2010; Gunny, 2010; Zang, 2012; Cupertino, 2013). For Equation 7, consistent with Gunny (2010), an aggregate measure for the three REM proxies is constructed, and is shown in Equation 8. Here, the coefficient γ_1 should be negative.

Worth noting is that the dummy, present in Equations 4, 5, 6, and 7, varies between the companies and over time, since a company may or may not be suspected of earnings managemet via operating decisions, and even be suspected in one quarter, but not in another and so on.

To summarize, what this paper attempts to verify is whether the coefficient related to the dummy variable is significant and whether it contributes to improving financial results in order to avoid reporting losses.

$$REM_{it} = (ACFO_{it} + ASG\&A_{it} + ((APROD_{it}) * (-1)) \quad \boxed{8}$$

4 PRESENTATION AND ANALYSIS OF RESULTS

4.1 Descriptive Statistics

To begin, Table 2 presents the correlations betwe-en the variables that are used in the models to estimate normal levels of CFO, PROD and SG&A.

| Table 2 | | | | | Correlation between the variables | | | |

Variables	$1/A_{i,t-1}$	$NR_{it}/A_{i,t-1}$	$NR_{it-1}/A_{i,t-1}$	$\Delta NR_{it}/A_{i,t-1}$	$\Delta NR_{it-1}/A_{i,t-1}$	$SG\&A_{it}/A_{i,t-1}$	$PROD_{it}/A_{i,t-1}$	$CFO_{it}/A_{i,t-1}$
$1/A_{i,t-1}$	1.000							
$NR_{it}/A_{i,t-1}$	0.038	1.000						
$NR_{it-1}/A_{i,t-1}$	0.031	0.928	1.000					
$\Delta NR_{it}/A_{i,t-1}$	-0.022	0.251	-0.075	1.000				
$\Delta NR_{it-1}/A_{i,t-1}$	-0.031	0.079	0.227	-0.257	1.000			
$SG\&A_{it}/A_{i,t-1}$	0.150	0.625	0.591	0.114	0.042	1.000		
$PROD_{it}/A_{i,t-1}$	-0.002	0.911	0.848	0.214	0.059	0.433	1.000	
$CFO_{it}/A_{i,t-1}$	-0.038	0.110	0.092	0.032	0.005	0.060	0.006	1.000

Note: NR = Net Revenue; ΔNR = Variation in Net Revenue; SG&A = Sales, General and Admin Expenses; PROD = CGS+ΔStocks; CFO = Cash Flow from Operations; A = Assets.
Source: Developed by the authors.

The variable SG&A is highly correlated with Net Revenues in the current period (0.625) and with Net Revenues from the former period (0.591). This relationship can be considered normal, since an increase in a company's revenues can lead to higher selling expenses, such as commissions paid to salespeople and administrative expenses.

It can also be observed that the variable PROD has a strong correlation with Net Revenues in the current period (0.911) and with Net Revenues in the former period (0.848). This means that an increase in a company's sales is accompanied by an increase in production levels, since companies, in increasing sales, must produce more in order to meet demand, thus incurring higher costs of production. On the other hand, a very weak or almost inexis-tent correlation can be observed between Cash Flow from Operations, Net Revenue and Variations in Net Revenue. This phenomenon may be due to the timing difference between the recognition of sales via the accrual basis of accounting and the moment of receipt from sales. Despite these variables having a strong correlation, they will not be used as independent in one same equation. Therefore, there is no potential for multicolinearity between these variable.

Using the estimations of Equations 1, 2 and 3, the normal levels for the dependent variables can be calculated and the dependent variables can be compared with the values found, providing the abnormal levels ACFO, ASG&A and APROD, as shown in Table 3.

| Table 3 | | Coefficients in equations 1, 2 and 3 | |

Variables	Equation 1[1]	Equation 2[2]	Equation 3[2]
Intercept	0. 0133	0.0318	-0.0010
$1/A_{it-1}$	-65.7651	502.4189*	-7.9545*
NR_{it-1}/A_{it-1}	0.0986*		0.7031*
$\Delta NR_{it}/A_{it-1}$	0.0028		-0.0418*
$\Delta NR_{it-1}/A_{it-1}$		0.0248*	-0.0069
Chow Test	F(288. 4845) = 3.85	F(288. 5468) = 67.53	F(288. 5284) = 19.49
	(0.0000)	(0.0000)	(0.0000)
Breusch Pagan Test	X²(1) = 675.41	X²(1) = 26,121.56	X²(1) = 10,700.36
	(0.0000)	(0.0000)	(0.0000)
Hausman Test	X²(2) = 33.27	X²(2) = 127.09	X²(2) = 4.39
	(0.0000)	(0.0000)	(0.1116)
Wooldridge Test (Self-correlation)	F(1. 288) = 2.90	F(1. 286) = 5.11	F(1. 287) = 5.46
	(0.0895)	(0.0245)	(0.0201)
LR Heteroscedasticity Test	X²(289) = 5.3e+08	X²(289) = 4.6e+06	X²(288) = 6,392.41
	(0.0000)	(0.0000)	(0.0000)
Wald Test (Similar to Test F)	X²(291) = 8,100.25	X²(290) = 67,857.15	X²(292) = 409,071.87
	(0.0000)	(0.0000)	(0.0000)
Number of Observations	5137	5759	5577
Min. no. of observations per group	6	5	3

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Table 3		*Continuation*	
Number of groups	289	289	289
Dependent Variable	CFO	SG&A	PROD

Notes: * Significant to 1%, ** Significant to 5%. – Value of Probability given in brackets
CFO = Cash Flow from Operations; SG&A = Sales, General and Admin Expenses; PROD = Cost of Good Sold + Variation in Stocks, NR = Net Revenue; A = Assets; ΔNR = Variation in Net Revenue
[1]Model Estimated by General Least Squares robust in Heteroscedasticity
[2]Model Estimated by General Least Squares robust in Heteroscedasticity and Autocorrelation
Source: Developed by the authors

The model validation tests presented in Table 3, especially the Wald Test (similar to the F Test), show coefficients that are significantly different to zero, and thus the abnormal levels used to analyse and interpret earnings management via operating decisions can be reliably obtained.

The coefficient associated with the net revenue variable, in Equation 1, is positive at 0.0986 and significant to a degree of 1%. On the other hand, the variation in net revenue does not have a significant coefficient. This means that a positive variation in sales does not imply a positive variation in Cash Flow from Operations in the current period, which is an unexpected result, in the presence of earnings management. These results are consistent with Roychowdhury (2006) and Cupertino (2013), whose respective research has similar findings.

In Equation 2, the coefficient associated with the net revenue variable is positive at 0.0248 and significant to a degree of 1%, from which it can be concluded that an increase in net revenue in a unit positively reflects by 0.0248 in the SG&A of the companies in the sample. The results are consistent with those found by Roychowdhury (2006), Zang (2012), Rey (2012) and Cupertino (2013).

This means, from an accounting point of view, that SG&A accompanies the companies' volume of sales, suggesting that the costs of obtaining revenues are recognized in the same period as they are incurred, as is laid out by the principle of ownership.

This reinforces the reliability of the accounting figures for their users, since, in showing that companies follow accounting principles in recognizing expenses and revenues, accounting information from different companies can be reliably compared.

In relation to Equation 3, the coefficient of the net revenue variable is positive at 0.7031 and significant to a degree of 1%. In other words, an increase in net revenue in a unit is positively reflected by 0.7031 in the levels of production of the companies in the sample. These results are consistent with those found by Roychowdhury (2006), Martinez and Cardoso (2009),

Gunny (2010), Verhagem, Santos, and Bezerra (2011), Zang (2012), Rey (2012) and Cupertino (2013).

The coefficient associated with the variation in net revenue in the current period is negative by -0.0418 and significant to a degree of 1%. This means that a positive variation in this variable reflects negatively in the production levels of the companies listed on the BM&FBOVESPA, from 2008 to 2013. In other words, when the sales of these companies increase, production levels fall. The opposite should happen, since, as sales rise, there is a tendency to increase production in order to meet demand. There appears to thus be evidence that companies use operating decisions related to production volumes in order to improve financial results, since, from an accounting point of view, in the same period a company produces more than necessary, thus reducing fixed costs per unit, the values stored in stock arising from overproduction will reflect negatively in the costs of goods sold in the following period, potentially improving the financial results.

The analyses presented up to here apply to companies in a general sense. In the next section, analyses related to the hypotheses outlined in this paper are presented, or, in other words, the relationship between earnings management via operating decisions and avoiding reporting losses in financial statements. In order to do so, a degree of signifance of 5% is used to accept or reject the hypotheses made regarding the coefficients and the model validation tests.

4.2 Hypotheses Analysis

Table 4 shows the coefficients for Equations 4, 5, 6 and 7 that aim to test the hypotheses outlined in this paper. As well as the coefficients, validation tests for the estimatated models using panel datasets are presented. Random effects are fit into the four models and should be corrected by taking heteroscendasticity and/or autocorrelation into account. The coefficients for Equations 4, 5, 6 and 7 were estimated using the Stata® software and Generalized Least Squares (GLS), robust when faced with the problem of heteroscedasticity and/or autocorrelation.

Table 4		*Coefficients for Equations 4, 5, 6 and 7 – Tests for hypotheses 1 to 4*	

Variables	**Equation 4**[1]	**Equation 5**[2]	**Equation 6**[3]	Equation 7[4]
Intercept	-0. 00007	0.00090	0.000009	0.00530
D$_{1it}$	0.00062**	-0.00040*	0.000006	-0.00414*
SIZE$_{it}$	0.00001	-0.00006**	-0.000000	-0.00026

	Table 4	Continuation		
MTB$_{it}$	-0.00024**	0.00003	0.000000	-0.00025
ROA$_{it}$	0.00537	0.00336*	-0.000000	0.00130
Chow Test	$F_{(275, 4305)} = 0.51$ (1.0000)	$F_{(275, 4819)} = 1.10$ (0.1261)	$F_{(275, 4668)} = 0.21$ (1.0000)	$F_{(275, 4137)} = 0.53$ (1.0000)
Breusch Pagan Test	$X^2(1) = 85.33$ (0.0000)	$X^2(1) = 75.23$ (0.0000)	$X^2(1) = 111.32$ (0.0000)	$X^2(1) = 73.84$ (0.0000)
Wooldridge Test (Autocorrelation)	$F_{(1, 266)} = 0.32$ (0.5733)	$F_{(1, 268)} = 5.98$ (0.0150)	$F_{(1, 268)} = 5.99$ (0.0150)	$F_{(1, 262)} = 1.35$ (0.2470)
LR Test (Heteroscedasticity)	$X^2(275) = 4,818.69$ (0.0000)	$X^2(276) = 6,530.29$ (0.0000)	$X^2(275) = 6,440.85$ (0.0000)	$X^2(275) = 3,383.01$ (0.0000)
Wald Test (Similar to F Test)	$X^2(5) = 11.01$ (0.0264)	$X^2(4) = 48.34$ (0.0000)	$X^2(5) = 0.50$ (0.9733)	$X^2(5) = 26.04$ (0.0000)
Number of Observations	4585	5098	4947	4417
Min. Number of observations per Group	1	2	2	2
Number of Groups	276	275	275	276
Dependent Variable	ACFO	ASG&A	APROD	REM

D1 = Dummy variable, taken as 1 for suspected companies (positive profit margin, between 0 and 1%), or otherwise 0.
SIZE = Size variable represented by the natural logarithm of total assets.
MTB = Market value of capital divided by net equity.
ROA = Net profit divided by total assets.
ACFO = Abnormal value of Cash Flow from Operations.
ASG&A = Abnormal value of Sales, General and Admin Expenses.
APROD = Abnormal value of production level.
REM = ACFO + ASG&A + (APROD*-1).

Notes: * Significant to 1%, ** Significant to 5%. – Level of Probability given in brackets.
[1]Estimated Model for Generalized Least Squares robust in Heteroscedsticity.
[2] Estimated Model for Generalized Least Squares robust in Heteroscedsticity and Autocorrelation.
[3] Estimated Model for Generalized Least Squares robust in Heteroscedsticity and Autocorrelation.
[4] Estimated Model for Generalized Least Squares robust in Heteroscedsticity.
Source: Developed by the authors.

Analysing the coefficients for Equation 4, it can be verified that abnormal levels of Cash Flow from Operations are not related with the companies' Size or Return on Assets, for a 5% degree of significance. Unlike these two variables, the Market to Book index contributes in increasing earnings management through cash flow from operations in order to improve financial results. This result may be related to managers having motives for manipulating financial statements, in order to increase capital market valuation for their company, and thus possibly raise their own renumerations and/or uphold their reputations among shareholders. This variable presents a negative coefficient of 0.00024 and a 5% degree of significance, thus contributing to a negative ACFO.

The coefficient that contributes to addressing the first hypothesis, dummy 1, is shown to be statistically significant to a degree of 5%, but with a positive sign, in contrast to what is expected following on from research by Rodchowdhury (2006) and Cupertino (2013). From this it can be concluded that those companies that reported profit margins between 0% and 1% had an abnormally higher level of cash flow from operations than the other companies in the sample.

Despite the results of Roychowdhury (2006) going against those found in this study, it should be noted that in Brazil there may be particular circumstances, such as the tax environment, that differ to those of the North American market, and which might discourage such a strategy. Companies may be discouraged from offering sales price discounts in order to raise cash flow, since such a strategy could increase volumes sold and, consequently, sales revenues and taxes would follow in line.

Thus, the first hypothesis, which states that those companies which reported positive profit margins close to zero had abnormally lower operating cash flow in relation to other Brazilian companies, should be rejected, as the evidence found contradicts this.

In the coefficients from Equation 5 aiming to test the second hypothesis, it can be seen that abnormal levels of SG&A are not related with the Market to Book index. This is in contrast to the results documented by Roychowdhury (2006), Gunny (2010) and Zang (2012), in which all of the variables are significant, however is consistent with Cupertino (2013), in which the Market to Book index is not significant.

The ROA variable appears to be statistically significant to a degree of 1%, thus contributing to a positive ASG&A and, consequently, reducing the extent of results management. This may be related to the fact that, the higher company returns are, the lower managers' intentions to manipulate financial statements using this strategy. This result is similar to those found by Roychowdhury (2006), Zang (2012) and Cupertino (2013).

Furthermore, the size of the companies contributes to an increase in earnings management using SG&A. This variable has a negative coefficient with a 5% degree of significance, contributing to a negativeASGAE. This result is probably related to the ability of larger companies to better manage the workforce, reduce admin expenses and pay sales staff and representatives lower commissions, among using other such strategies to their advantage. In other words, in order to achieve profit targets, the results suggest that managers more easily make decisions related to lowering SG&A, thus avoiding reporting losses. This result is similar to that of Gunny (2010) and in contrast to Roychowdhury (2006), Zang (2012) and Cupertino (2013) in terms of the sign of the variable.

The coefficient which contributes to addressing the second hypothesis, dummy 1, was shown to be below zero, by -0.00040, and statistically significant by a degree of 1%. It can thus be concluded that those companies that reported profit margins between 0% and 1% reduced SG&A for their assets by 0.040% more than the other companies in the study. This result reveals the viability of improving financial results using SG&A, given that this involves day to day decision making that is intrinsic to management, such as managing the workforce and reducing superfluous expenses, among others.

These results are consistent with those found by Roychowdhury (2006), Gunny (2010) and Zang (2012) and contrary to Cupertino (2013). Therefore, given the statistical evidence found, the second hypothesis in this paper, which states that those companies which disclosed positive profit margins close to zero reported abnormally lower SG&A, compared to the other Brazilian companies, should not be disregarded.

The coefficients for Equation 6, which aim to test the third hypothesis, which states that those companies suspected of managing earnings by using levelsof production do so more significantly than the other companies, do not turn out to be statistically different from zero. The Wild test, similar to the F test, calculates that the estimated coefficients are all statistically equal to zero. In other words, neither the coefficient to the interest variable, which addresses the hypotheses of this paper, nor the control variables, turn out to be significant.

Similarly, the coefficient which contributes to addressing the third hypothesis, dummy 1, does notturn out to be significant either, in contrast to the findings of Roychowdhury (2006), Gunny (2010), Zang (2012) and Cupertino (2013). That is, there is no relationship between avoiding disclosing losses and earnings management through raising productions levels.

The different results for Brazilian companies, compared to American ones, may be due to the particular circumatances under which they operate, since, in order to engage in earnings management by means of production levels, more would need to be produced during one particular period, in order to take advantage of economies of scale, and stock would have to be adjusted in another period. Such a strategy can be used more regularly in a market with a tendency for consumption such as the North American one.

It is also worth noting that, in order to use this strategy and in doing so improve financial results, it would, for example, be necessary to increase investment in order to achieve economies of scale. Such decisions normally require board or owner approval, alleviating the agency problem present in organizations, thus potentially discouraging the use of this strategy.

Therefore, the third hypothesis in this paper, which states that those companies that reported positive profit margins close to zero, disclosed abnormally high costs of production in relation to the other Brazilian companies, should be disregarded.

With relation to Equation 7, which aims to test the fourth hypothesis, and, consequently, verify whether those companies suspected of manipulating financial statements engaged in Real Earnings Management on an abnormal level compared to the other Brazilian companies, the coefficients for the control variables were not significant to a degree of 5%, thus preventing any statistical inference.

The coefficient which contributes to addressing the fourth hypothesis, dummy 1, turns out to be below zero, at -0.00414, and statistically significant to a degree of 1%, from which it can be concluded that those companies that disclosed profit margins between 0% and 1%, engaged in REM by 0.414% of assets more than the other companies studied. These results are consistent with those of Gunny (2010), Zang (2012) and Cupertino (2013). Therefore, the fourth hypothesis in this paper, which states that those companies that disclosed positive profit margins close to zero, engaged in Real Earnings Management, on a greater scale than the other Brazilian companies, should not be disregarded.

The results for the hypotheses concerned with avoiding disclosing losses could suggest that users of accounting information, especially those in capital markets, attribute importance to profit margins, thus making it worthwhile for companies not to disclose negative results. Furthermore, the possible mechanisms in place for dealing with agency problems do not succeed in overcoming them in a way that avoids earnings management.

5   FINAL CONCLUSIONS

The aim of this paper was to analyse data covering the years from 2008 to 2013 and verify whether, when faced with reporting negative results, Brazilian companies listed on the BM&FBOVESPA used earnings management via operating decisions, in order to avoid disclosing losses. Accounting data for 289 companies was used in order to achieve this aim.

The hypotheses developed centred on three types of financial statement manipulation by means of operating decisions that is consolidated in international literature: manipulation of sales; overproduction; and the manipulation of SG&A.

The results show that, in contrast to what is found in international literature, those companies that disclosed profit margins between 0% and 1% reported higher cash flow from operations than the other companies in the sample. This may be due to the different conditions Brazilian companies are subject to compared to others internationally, such as the tax environment and the consumer market, and may have contributed to the divergence in results.

With relation to levels of production, those companies that reported profit margins between 0% and 1% did not use this strategy to raise or lower accounting results. This form of management may be difficult to execute because of its complexity, since managers would have to be faced with a combination of levels of sales, levels and variation of stocks, and macroeconomic circumstances, among others, in order to carry it out.

However, the results suggest that those companies that reported profit margins between 0% and 1% did use SG&A in order to improve financial results and avoid disclosing losses. As has already been pointed out, there are several factors that could favour companies in their implementation of this strategy.

Just as in papers by Gunny (2010), Zang (2012) and Cupertino (2013), by using an aggregate measure of REM, the general strategy of earnings management via operating decisions is verified. The results show that those companies that reported profit margins between 0% and 1% used REM in order to improve financial results and thus avoid disclosing losses. In other words, the companies appear to be concerned with achieving a target profit in the period in which they disclosed their financial statements.

This result may be linked especially to the way in which users of accounting information react to the disclosure of it. A loss might be seen as significant, especially among capital market participants. Managers would therefore be encouraged to engage in earnings management and avoid reporting losses in their financial statements.

Just as has been found for the North American market, earnings management via operating decisions in order to avoid disclosing losses has also been shown to be present in the Brazilian capital market. However, the results of this paper indicate that Brazilian companies only use SG&A in order to obtain this objective. Since this involves management taking less complex day to day decisions, it is believed to be easier for Brazilian companies to decrease or increase SG&A, in line with their interests, than to use strategies such as price discounts and/or increasing levels of production.

As the findings in this paper suggest, managers in Brazil are only able to alter operating activities through decreases in operating expenses (SG&A), due to a lack of flexibility in the production process and the cash flow restrictions faced by Brazilian companies. From a users' standpoint, the evidence suggest that the companies do avoid disclosing losses to the capital market through real earnings management, as outlined by the Prospects Theory. Studies should still be carried out in order to verify the reactions of users to the disclosure of negative information, in order to reinforce future research based on this theory.

Despite these contributions, the statistical models used in this study, as well as in other, particularly international literature, still need to be refined in order to improve the earnings management via operating decisions proxies (Siriviriyakul, 2013).

Future research could be developed taking into account possible variables that are not included in the statistical models used here. The model used to estimate the normal levels of CFO, for example, uses sales revenues as independent variables. Variables that represent cash outflows could be included in this model, since cash flow from operations is, in essence, the net result of cash inflows and outflows from operating activities. A corrected model would thus capture operational management in both cash inflows and outflows. Similarly, in the model that measures company production levels, variables that may influence such levels, such as degree of economic activity and level of investment in production, among others, could be included.

Moreover, the problem of simultaneity between the independent and dependent variables, and the development of a logit model in order to measure the probability of a company engaging in earnings management via operating decisions, could be looked at in future research.

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