ACCRUAL-BASED EARNINGS MANAGEMENT AND REAL ACTIVITIES MANIPULATION TO AVOID LOSSES: EVIDENCE FROM UNLISTED PUBLIC COMPANIES IN VIETNAM

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Abstract - The main aim of this study is to examine whether managers are willing to engage in earnings management to avoid reporting annual losses. We concentrate on firm-years that have net income scaled by total assets just above zero in the period 2012-2017. Consistent with previous articles, we find evidence suggesting income increase by accrual-based earnings management, price discounts to boost sales temporarily and reduction of discretionary expenditures to improve reported margins in these companies. This is the first evidence of earnings management to avoid losses in unlisted public companies in Vietnam. Besides, the results also show that managers may have reduced production costs to deal with a difficult business situation, which is not considered manipulation in real activities.

Key words - accrual-based earnings management; avoid losses; real activities manipulation; unlisted public companies

1. Introduction

Earnings management can be implemented through accounting choice within generally accepted accounting principles. In this way, income increase or decrease in the current period is only the transition between periods instead of creating real earnings. In contrast, real activities manipulation occurs when managers undertake actions that change the timing or structuring of an operation investment, and/or financing transaction that impacts real earnings on the financial statement. Both types of earnings management can increase or decrease earnings in the current period; however, one type affects real activities and the other has no effects. While most of previous studies focused on accrual management, there has recently been a growing body of manipulation in real activities.

Financial statements play an important role in periodically summarizing information about an enterprise's financial performance, in which earnings are the first target when measuring the enterprise's performance [1]. Therefore, managers are willing to engage in earnings management to avoid negative earnings. One of the first evidence from Burgstahler and Dichev [2] showed discontinuity in the frequency of firm-years around zero earnings. Although Roychowdhury [3] found evidence of real activities manipulation to avoid losses, academics have no new further document evidence after that, especially in Vietnam. For example, Han and Hung [4] used the same method as Burgstahler and Dichev [2], but the results can be affected by the high or low normal level of earnings. Besides, it also does not show the manager incentives to achieve specific benchmarks.

Vietnam hosts two large stock exchanges which are the Ho Chi Minh City Stock (HOSE) and the Hanoi Stock Exchange (HNX). The third exchange, UPCoM (Unlisted Public Company Market) is the market at HNX for public companies which still remain unlisted. Listed companies are often placed under high management and supervision. As a result, financial statement information is often transparent and truthful. In contrast, UPCOM companies are often small-scale companies with a limited requirement for information disclosure, which leads to favourable conditions for earnings management. But in terms of earnings management motives, both groups of companies are similar [5]. Most of the current earnings management studies in Vietnam are targeted at listed companies, including the loss avoidance study by Han and Hung [4]. Therefore, the research gap for earnings management to avoid losses in unlisted companies. Besides, it is necessary to research measuring earnings management variables instead of the earnings distribution approach (EDA).

Based on the above contents, the objective of this study is to find evidence of accrual-based earnings management and real activities manipulation avoid losses in unlisted public companies in Vietnam. We use the panel data estimation approach with data collected during the period 2012-2017. Our evidence contributes to the finance and accounting literature by showing firms trying to avoid losses by accrual-based earnings management, offering price discounts to temporarily increase sales and reducing discretionary expenditures. The rest of the article is as follows. Section 2 discusses previous studies and our hypotheses. In section 3, we show our data, how to select firms that are likely to engage in earnings management and the regression model to test our hypotheses. We present model parameters for normal levels and our main results in section 4. Finally, we discuss the implications of the evidence and some limitations in section 5.

2. Literature review and hypothesis development

Earnings are the result of business operations and function as an important measure of business performance. The Positive Accounting Theory by Watts and Zimmerman [6] describes that managers are motivated to keep earnings above zero. This may come from attaching earnings as the target for the managerial bonus (the bonus plan hypothesis) or prevailing when negotiating a debt agreement (the debt hypothesis). Studies in the world follow two directions to evaluate earnings management to avoid losses include EDA and measure earnings management variables.

The first evidence is provided by the study of Burgstahler and Dichev [2]. They hypothesize that managers are highly motivated to increase-earnings for companies with profit just below zero. This study uses EDA by plotting the 25th, 50th and 75th percentiles of unscaled cash flowing from operations (CFO) for each earnings interval and finds that the distribution of CFO shifts upward in the first interval to

the right of zero. Han and Hung [4] employed the same method for 295 listed companies on the Vietnamese stock market. Their evidence suggests that the firms manage earnings to avoid losses which are approximately from 4.88% to 13.76% of the 2.950 firm-years and accounts from 49.6% to 73.6% of firms have negative earnings. However, EDA has limitations when preliminary evidence neither conclusively indicates accrual-based earnings management or real activities manipulation nor yields any insight into the activities underlying the patterns in CFO.

Roychowdhury [3] approached the problem by measuring the variables of earnings management across cross-sectional data. He classified a full sample into thirty earnings intervals and selected 503 suspect firm-years with net income scaled by total assets that are greater than or equal to zero but less than 0.005. Focusing on models to measure real activities manipulation, he found out evidence suggesting price discounts to temporarily increase sales, overproduction to report the lower cost of goods sold and reduction of discretionary expenditures to improve reported margins. This approach leads to a more complete understanding of how managers perform to meet earnings targets.

Consistent with previous studies, we predict that managers are always eager to avoid losses in the current period. Therefore, the suspect firm-years are the firms report earnings just above zero in the current year. Managers are willing to use accrual-based earnings management and real activities manipulation to increase income. For this reason, we propose the following hypothesis about accrual-based earnings management to avoid losses:

Hypothesis 1: Suspect firm-years exhibit evidence of high discretionary accrual.

Conversely, we expect that the abnormal CFO and abnormal discretionary expenses should be negative, whereas abnormal production costs should be positive when managers manipulate real activities. Therefore, we propose to test the following hypotheses:

Hypothesis 2A: Suspect firm-years exhibit evidence of unusually low cash flow from the operation.

Hypothesis 2B: suspect firm-years exhibit evidence of unusually low discretionary expenses.

Hypothesis 2C: suspect firm-years exhibit evidence of unusually high production costs.

3. Data and methodology

3.1. Data

The initial sample covers all the companies indexed on Unlisted Public Company Market (UPCoM) which belong to different sectors, excluding financial and insurance companies during the period of six years from 2012 to 2017. We also eliminated observations if they do not have sufficient data to construct accrual or real earnings management measures. Finally, we eliminated firms with less than 6 observations throughout the years. As a result, the final sample size was 1818 non-financial firm-years from 303 firms with level-one ICB (Industry Classification Benchmark) including: Basic Materials – 192 obs (11%); Industrials – 870 obs (48%); Consumer Goods – 330 obs (18%); Health Care – 108 obs (6%); Consumer Services – 144 obs (8%); Telecommunications – 18 obs (1%); Utilities – 132 obs (7%); Technology – 24 obs (1%).

3.2. Selection of suspect firm-years

Consistent with Roychowdhury [3], we grouped firm-years into intervals based on net income scaled by the beginning of total assets (ROA). The whole sample (1818 firm-years) was classified into earnings intervals with a width of 0.005 for the range -0.075 to +0.075. The figure was truncated at the two ends and includes 625 firm-years. To test our hypothesis, we concentrated on firm-years in the earnings interval which was greater than or equal to zero and below 0.005 (the suspect firm-years). Finally, there were 161 suspect firm-years from our entire sample (interval 16 in Figure 1).

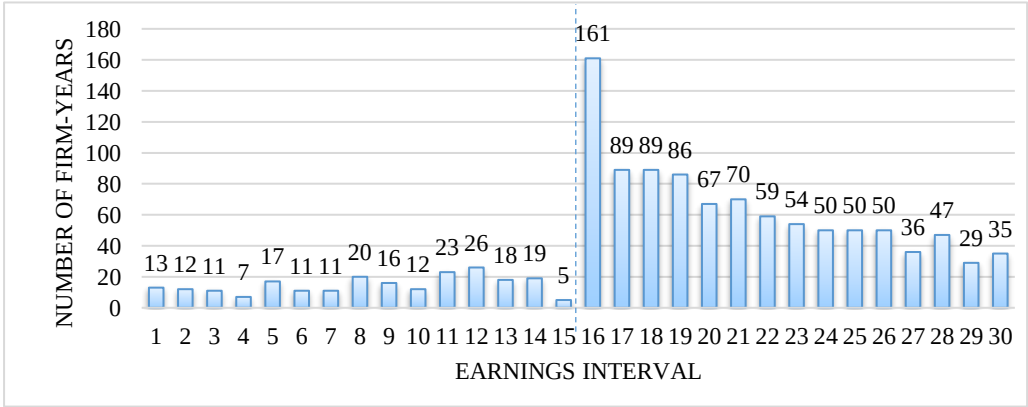

Figure 1. *Number of firm-years by earnings interval*

3.3. Regression model

Consistent with Roychowdhury [3], we estimate the following regression to test our hypothesis that managers are willing to engage accrual-based earnings management and/or real activities manipulation to avoid losses in the current year:

$$Y_{it} = \alpha + \beta_1 Suspect_{it} + \beta_2 Lev_{it} + \beta_3 Size_{it-1} + \beta_4 ROA_{it} + \varepsilon_{it} \quad (1)$$

In this case, Y_{it} is the dependent variable, which is given by discretionary accruals and abnormal levels of CFO, discretionary expenses and production costs, respectively from model 2, 3, 4 and 5. The regression

includes three control variables: Lev_{it} is total debt, scaled by total assets; $Size_{it-1}$ is the logarithm of total assets at the beginning of the year; ROA_{it} is the return on assets. The coefficients of regression are estimated in the panel data approach, along with the corresponding t-statistics [7] is similar to Roychowdhury [3].

Consistent with our hypothesis, the coefficient on Suspect will be positive and significant when the suspect firm-years have increasing-earnings by accrual-based earnings management, in the same way overproducing inventory to decrease the cost of goods sold. On the other hand, the coefficient on Suspect will be negative and significant when the suspect firm-years manipulate sales or cut discretionary expenses.

3.4. Measurement of accrual-based earnings management

Consistent with previous studies, discretionary accruals are used to identify accrual-based earnings management. Total accruals (TA) can be broken down into a discretionary accrual (DA) and non-discretionary accrual (NDA). Indeed, most prior studies have calculated DA using ordinary-least-squares regression (OLS) for each industry and year. Nevertheless, we have time observations for each firm, a panel-regression for each industry is more accurate. Hsiao [8] shows that a panel data set for economic research possesses several major advantages over conventional cross-sectional or time-series data sets. Therefore, we use Jones [9]'s model with a panel approach to calculating non-discretionary accrual:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \beta_1 \frac{\Delta REV_{it}}{A_{it-1}} + \beta_2 \frac{PPE_{it}}{A_{it-1}} + u_{it} + \varepsilon_{it} \quad (2)$$

where *i*: indicate firm; *t*: presents the year of analysis; TA_{it}: total accruals, we consider the Hribar and Collins [10] model based on an income-statement, measured as follows:$TA_{it} = Net\ income_{it} - Operative\ cash\ flow_{it}$; A_{it-1}: the beginning of total assets; ΔREV_{it}: change in sales revenues; PPE_{it}: gross property, plant and equipment; u_{it}: the fixed or random effect component (=0 if we consider a Pooled-OLS regression); ε_{it}: denotes unspecified random factors. All model variables are standardized by lagged total assets (A_{it-1}) to reduce the problem of heteroscedasticity.

3.5. Measurement of real activities manipulation

Following Roychowdhury [3], we examine the following manipulation of real earnings management: increasing current period earnings by accelerating the timing of sales through increased price discounts or more lenient credit terms, decreases in advertising, selling, general, and administrative expenses, and reporting lower cost of goods sold by overproducing inventory. We also use a panel approach to calculate the normal levels of CFO, production costs and discretionary expenses using the model developed by Roychowdhury [3].

Abnormal CFO is actual CFO minus the normal level of CFO calculated using the estimated coefficients from (3):

$$\frac{CFO_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \beta_1 \frac{REV_{it}}{A_{it-1}} + \beta_2 \frac{\Delta REV_{it}}{A_{it-1}} + u_{it} + \varepsilon_{it} \quad (3)$$

Abnormal discretionary expenses are actual discretionary expenses minus the normal level of discretionary expenses calculated using the estimated coefficients from (4):

$$\frac{DISX_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \beta \frac{REV_{it-1}}{A_{it-1}} + u_{it} + \varepsilon_{it} \quad (4)$$

Abnormal production costs are actual production costs minus the normal level of production costs calculated using the estimated coefficients from (5):

$$\frac{PROD_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{it-1}} + \beta_1 \frac{REV_{it}}{A_{it-1}} + \beta_2 \frac{\Delta REV_{it}}{A_{it-1}} + \beta_3 \frac{\Delta REV_{it-1}}{A_{it-1}} + u_{it} + \varepsilon_{it} \quad (5)$$

where *i*: indicate firm; *t*: presents the year of analysis; A_{it}: the beginning of total assets; REV_{it}: sales revenues; ΔREV_{it}: change in sales revenues; $DISX_{it}$: advertising, selling, general, and administrative expenses; CFO_{it}: operative cash flow; $PROD_{it}$: the sum of production costs and the change in inventory; u_{it}: the fixed or random effect component (=0 if we consider a Pooled-OLS regression); ε_{it}: denotes unspecified random factors.

4. Results

4.1. Descriptive statistics of firm characteristics

Table 1 presents descriptive statistics comparing the suspect firm-years to the full sample. The number in parentheses is t-statistics from t-tests for the differences in means and z-statistics from Wilcoxon tests for the differences in medians. The first four items between the two groups only show a significant difference in the mean net income. Although the mean sales of suspect firm-years, at around 1.500 billion VND, is larger than the full sample (1.070 billion VND), their mean net income (4 billion VND) is smaller compared to 29 billion VND from the full sample. Based on my first hypothesis, the mean-scaled total accrual of suspect firm-years is -2.19%, versus -4.04% for the full sample, which can be a sign that firms may increase earnings to avoid losses. Similarly, the mean-scaled CFO and discretionary expenses are significantly different from the whole sample support for our second hypothesis. Even so, the mean-scaled production costs of suspect firm-years are only 72.13%, which are significantly smaller than the full sample (117.22%), showing that overproduction inventory may not be implemented.

4.2. Estimation model

Table 2 reports the regression coefficients for model 1, 2, 3 and 4 used to estimate non-discretionary accruals, normal levels of CFO, production costs and discretionary expenses. We estimate these models using the entire sample of 1.818 firm-years. Based on results from the F test and Hausman test, we estimate model 1. 3 and 4 with fixed-effect, but use random-effect on model 2. Finally, we apply Driscoll-Kraay standard errors for the coefficients estimated. Besides being heteroskedasticity consistent, these standard error estimates are robust to general forms of cross-sectional and temporal dependence [11]. The explanatory power of these models is the difference between model 1. 2 and model

3. 4. Although the adjusted R^2 is quite low for non-discretionary accruals (9.28%) and normal CFO (12.11%), it is extremely high for normal discretionary expenses (87.48%) and normal production costs (99.43%).

Table 1. *Descriptive statistics*

	Suspect firm-years		Full sample		Difference in	
	Mean	Median	Mean	Median	Mean (t-stat)	Median (z-stat)
Full sample of 1818 firm-years with 161 suspect firm-years						
Total assets (billion VND)	1720	387	1150	249	570 (-1.02)	138*** (-3.29)
Sales (billion VND)	1500	205	1070	261	430 (-0.77)	-56 (1.19)
Net income (billion VND)	4	1	29	6	-24*** (4.44)	-5*** (8.07)
CFO (billion VND)	74	3	74	9	1 (-0.01)	-6*** (3.31)
ROA (%)	0.20%	0.19%	2.46%	2.47%	-2.26%*** (8.64)	-2.28%*** (10.34)
Total accrual/A (%)	-2.19%	-1.44%	-4.04%	-3.42%	1.85%** (-2.32)	1.98%** (-2.22)
CFO/A (%)	2.39%	1.56%	6.51%	4.48%	-4.11%*** (5.24)	-2.93%*** (4.61)
DISX/A (%)	6.26%	4.31%	13.60%	9.05%	-7.33%*** (14.60)	-4.73%*** (8.74)
PROD/A (%)	72.13%	57.21%	117.22%	82.76%	-45.08%*** (7.76)	-25.55%*** (5.60)

Note. *; ** and *** indicate significance at the 0.1; 0.05 and 0.01 levels, respectively.

Table 2. *Model parameters*

Model	$\frac{TA_{it}}{A_{it-1}}$	$\frac{CFO_{it}}{A_{it-1}}$	$\frac{DISX_{it}}{A_{it-1}}$	$\frac{PROD_{it}}{A_{it-1}}$
Intercept	0.0174 (0.36)	0.0469*** (8.91)	0.0851*** (22.82)	-0.129*** (-7.30)
$\frac{1}{A_{it-1}}$	-0.0210* (-2.44)	0.00764** (2.57)	0.0535*** (7.45)	-0.0273 (-1.80)
$\frac{REV_{it}}{A_{it-1}}$		0.00928** (3.13)		0.977*** (156.23)
$\frac{REV_{it-1}}{A_{it-1}}$			0.00864*** (4.25)	
$\frac{\Delta REV_{it}}{A_{it-1}}$	0.0266*** (8.38)	-0.0138* (-2.09)		0.0147** (2.68)
$\frac{\Delta REV_{it-1}}{A_{it-1}}$				0.000575 (0.25)
$\frac{PPE_{it}}{A_{it-1}}$	-0.0721 (-0.96)			
F test	1.41***	1.78***	9.60***	29.99***
Hausman test	33.20***	5.81	36.67***	52.43***
Wooldridge test	0.150	0.655	15.565***	62.023***
Breusch and Pagan Lagrangian multiplier test		57.19***		
Modified Wald test	3.5e+05***		6.4e+05***	1.2e+08***
Pesaran test	1.164	2.932***	4.230***	5.195***
Number of obj.	1.818	1.818	1.818	1.818
Adj R-squared	9.28%	12.11%	87.48%	99.43%

Note. *; ** and *** indicate significance at the 0.1; 0.05 and 0.01 levels, respectively;
The t-statistics is presented in parentheses.

4.3. Univariate correlations

Table 3 presents the correlations between various variables. Consistent with prior studies, total accruals and CFO exhibit a strong negative correlation, with a correlation coefficient of -98% (p-value = 0.00). the net income (ROA) is negatively correlated with discretionary accruals (-5%) but positively correlated with abnormal CFO (9%), abnormal discretionary expenses (5%) and abnormal production costs (13%). The correlations between the total and abnormal levels of various variables are usually positive and significant. The correlations between discretionary accruals and abnormal levels of CFO and discretionary expenses are strongly negative. This is probably because managers engage in accrual-based earnings management and real activities manipulation at the same time, and some manipulation methods, for example, the choice accounting method to decrease fixed asset depreciation for sales and firm's management has a positive effect on discretionary accruals and a negative effect on abnormal discretionary expenses. Besides, the correlations between discretionary accruals and abnormal production costs are insignificant. This is probably because managers have not engaged in activities leading to abnormal high production costs.

Table 3. *Correlation table*

	REV/A	ROA	TA/A	CFO/A	DISX/A	PROD/A	DA	AbCFO	AbDISX
ROA	0.01								
TA/A	0.12***	0.00							
CFO/A	0.07***	0.00	-0.98***						
DISX/A	0.99***	0.00	0.12***	0.07***					
PROD/A	0.96***	0.00	0.12***	0.06***	0.95***				
DA	-0.03	-0.05**	0.14***	-0.20***	-0.22***	-0.01			
AbCFO	0.80***	0.09***	0.00	0.10***	0.50***	0.78***	-0.41***		
AbDISX	0.32***	0.05*	-0.01	0.07***	0.39***	0.30***	-0.62***	0.71***	
AbPROD	1.00***	0.13***	0.08***	0.08***	0.47***	0.99***	-0.02	0.78***	0.31***

Note. *; ** and *** indicate significance at the 0.1; 0.05 and 0.01 levels, respectively.

4.4. Comparison of suspect firm-years with the rest of the sample

Table 4 presents the estimation results used to support our hypothesis. The regression result on the first column in Table 4 provides evidence on the first hypothesis, which discretionary accrual in the suspect firm-years is unusually high compared to the rest of the sample. Indeed, the coefficient on Suspect is positive (0.0126) and significant at the 1% level (with t-statistics = 4.39). In other words, the suspect firm-years has increased earnings that are higher on average 1.3% of assets to avoid losses. Consequently, we accept hypothesis **H1**, this result shows that managers are willing to increase income by accrual-based earnings management to avoid earnings down to the bottom of the "zero earnings" for the year.

Table 4. *Comparison of the suspect firm-years with the rest of the sample*

	(1)	(2)	(3)	(4)
	Discretionary accrual	Abnormal CFO	Abnormal discretionary expenses	Abnormal production costs
Intercept	-0.459***	0.226***	0.959***	5.694***
	(-26.24)	(81.75)	(53.20)	(10.22)
Suspect	**0.0126*** **	**-0.00417*** **	**-0.00923** **	**-0.450*** **
	(4.39)	**(-7.81)**	**(-2.90)**	**(-9.10)**
Lev	0.00116	0.00413	-0.00236	0.374*
	(0.22)	(1.31)	(-1.41)	(3.95)
Size	0.0363***	-0.0141***	-0.0717***	-0.412***
	(24.87)	(-56.65)	(-45.86)	(-8.36)
ROA	-0.00883	0.0204***	0.00977	4.051***
	(-0.80)	(7.96)	(0.83)	(10.02)
Adj. R-squared	26.65%	27.45%	57.16%	11.60%

Note. *; ** and *** indicate significance at the 0.1; 0.05 and 0.01 levels, respectively;
The t-statistics is presented in parentheses.

To test the hypothesis for real activities manipulation, we replace the dependent variable by abnormal levels of CFO, discretionary expenses and production costs. Consistent with our second hypothesis, the coefficient on Suspect is negative (-0.00417) and significant at the 1% level (with t-statistics = -7.81) when the dependent variable is abnormal CFO. The suspect firm-years have abnormal CFO that is lower on average by 0.4% of assets than the rest of the

sample. This difference is economically large, given that the median CFO across all firm-years is 4.5% of total assets at the beginning of the year (see Table 1). Similarly, when abnormal discretionary expenses are the dependent variable, the coefficient on Suspect is negative (-0.00923) and significant at the 5% level (with t-statistics = -2.90). Consistent with our third hypothesis, the suspect firm-years have abnormal discretionary expenses that are lower on average by 0.9% of total assets than the rest of the sample. This seems economically significant, with median discretionary expenses across all firm-years at 9.1% of total assets at the beginning of the year (see Table 1). Thus, we accept the hypothesis **H2A** and **H2B** for the application of sales policies and cut discretionary expenses to avoid losses.

We re-estimate regression and set the dependent variable equal to abnormal production costs to test hypothesis 2C. However, the result indicates that firm-years just right of zero have unusually low production costs as a percentage of sales levels. The coefficient on Suspect is negative (-0.450) and significant at the 1% level (with t-statistics = -9.10). As a result, the mean abnormal production costs of that firms are smaller by 45% of total assets than the mean across the rest of the sample. This is an economically significant amount, given that median production costs as a percentage of total assets for the entire sample are around 83% (see Table 1). This result also rejected our hypothesis **H2C** for unusually high production costs on the suspect firm-years. This result may be due to managers narrowing production to not increasing costs, so this action is not considered manipulation in real activities.

5. Conclusion

In this study, we examined hypothesizes that managers are willing to engage in increasing earnings above the zero earnings to avoid losses by accrual-based earnings management and/or real activities manipulation. Many prior studies used the distribution of the frequency of firm-years to argue that managers manage earnings up to avoid reporting losses. Our article provides additional evidence that firms reporting small positive earnings and manage through combine accrual-based earnings with real activities. The three main contributions are: (a) how managers choose between real activities manipulation versus accrual-based earnings management when they have the flexibility to engage in both; (b) what real activities method is chosen by managers when they want to avoid reporting losses on the financial statement; (c) our study is aimed at unlisted public companies in Vietnam, which have not been previously studied. Indeed, the results show that managers have accelerated the timing of sales in a bad year through price discounts and cut discretionary expenses such as advertising, selling, general and administrative expenses. Besides, managers have an incentive to engage in accrual-based earnings management if the real earnings at the end of the year are still negative. Although our study has contributions, it still has some limitations. First, we have not measured the opportunistic behaviour of managers directly but just estimated it through the creation of accruals and abnormal levels of various variables. Like many similar previous studies, our measures are subject to measurement errors. Second, we have not considered the determinants of managerial discretion such as managerial ownership, external directors, and audit committee structure.

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