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Title:

Board Attributes and Earnings Management: Evidence During the Global Financial Crisis in Mexico

Track:

Accounting, Taxation, and Management

Board Attributes and Earnings Management: Evidence During the Global Financial Crisis in Mexico

Abstract

Earnings management deceives stakeholders about the firm's real financial situation. The information asymmetry between shareholders and the firm's management makes it difficult to prevent these practices. In this study, I attempt to answer the following questions: how does the firm's board attributes increase the likelihood of earnings management? Does board attributes have the same effect on earnings management during times of financial crisis? A panel data analysis was conducted with a sample of 53 firms listed in the Mexican Stock Exchange from 2001-2011. Results show that during a financial crisis, some attributes of the board actually increase earnings management.

1. Introduction

An old Mexican saying applies to earnings management: "don't do good things that appear to look bad, and bad things that appear to look good." Some firms manipulate their financial reports for different reasons, some of which could be within the law. However, recent public scandals involving firms, show that the motives behind manipulation may be reprehensible and even illegal. The detection and prevention of this practice in emerging economies with high levels of corruption such as Mexico (Transparency International, 2016), is of special interest for a wide group of stakeholders due to its impact both inside and outside the firm.

Comercial Mexicana, one of the biggest retailers in Mexico, had severe losses related to derivatives trading when the global financial crisis of 2008 hit the country. This situation led the company to file for bankruptcy after it revealed more than US $1 billion in debt to different creditors (Bloomberg - Sentido Común, 2008). An investigation mandated by the Mexican Central Bank found that the board of directors was not aware of these transactions (Bloomberg - Sentido Común, 2009). The firm and some of its top executives received the highest fine at the moment from the government, because the financial information was not disclosed properly according to the accounting norms. In sum, Comercial Mexicana engaged in earnings management and, as a result, it was suspended from the Mexican Stock Exchange (BMV in Spanish) and underwent a restructuring process in order to pay its creditors (Bloomberg - Sentido Común, 2009).

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Earnings management is the manipulation of the firm's financial reports in order to obtain a particular goal (Healy & Wahlen, 1999; Mulford & Comiskey, 2002). The firm's management makes discretionary choices, such as to be more or less conservative with their estimations or adjust their reporting, in order to influence performance and appear better in the eyes of other stakeholders (Chen, Luo, Tang & Tong, 2015). When a firm engages in earnings management, the information asymmetry between the firm and its shareholders' increases. This situation can lead to problems when the desires and goals of some people inside the firm differ from those outside the firm (Jensen & Meckling, 1976; Eisenhardt, 1989). Therefore, it has been in the interest of stockholders to find alternatives to reduce the likelihood of earnings management.

The study of earnings management has been undertaken primarily in the financial and accounting literatures in developed economies. Researchers have investigated the causes of earnings management (Dechow, Sloan & Sweeney, 1996); models for earnings management detection (Dechow, Sloan & Sweeney, 1995; Hribar & Craig Nichols, 2007); and the influence of the corporate governance structure on earnings management (Fields & Keys, 2003; Finkelstein & D'Aveni, 1994; Liu & Lu, 2007; Park & Shin, 2004; Pearce & Zahara, 1992; Xie, Davidson & DaDalt, 2003). More recently, earnings management has been studied from a business ethics perspective by incorporating corporate social responsibility (Hong & Andersen, 2011; Prior, Surroca & Tribó, 2008). However, there has been little research on the impact of an external macroeconomic event such as a financial crisis on earnings management (Cohen, Cornett, Marcus & Tehranian, 2014; Habib, Uddin Bhuiuan & Islam, 2013; Zeidan & Müllner, 2015).

Developing economies such as Mexico offer new opportunities for understanding earnings management and its relation with the board of directors during a financial crisis. For instance, the governance structure of Mexican firms present particularities that are not seen in other countries (Husted & Serrano, 2002), such as the strong presence of family firms even in companies listed in the Mexican Stock Exchange (La Porta, Lopez-de-Silanes & Shleifer, 1999). During the financial crisis of 2008, due to its high dependence on the United States, Mexico was one of the most affected countries in Latin America (Villarreal, 2010). Firms that perceive that the external macroeconomic events can affect their survival can be more inclined to incur in earnings management practices, and boards dominated by personal relationships may not prove to be effective in preventing such activities.

The purpose of this paper is to answer the following research questions: how does the firm's board attributes increase the likelihood of earnings management? Does board attributes have the same effect on earnings management during times of financial crisis? To answer these questions, I conduct an empirical study on board attributes and earnings management. Using a sample of companies listed in the Mexican Stock Exchange, 53 firms were evaluated using panel data analysis during an eleven-year period covering from 2001 to 2011. Results show that during a financial crisis, some attributes of the board

actually increase earnings management. This is an important insight for both firms and the public and shows the relevance of board composition especially during times of instability.

The rest of this study is organized as follows: section 2 will review the extant literature relevant to earnings management. Then section 3 presents the research methodology. Section 4 contains the results of the panel data analysis. Finally, section 5 presents the discussion and directions for further research.

2. Literature review and hypothesis development

Earnings management, which is the manipulation of financial reports, occurs when managers exercise discretion to report the firm's transactions in order to appear better than reality (Healy & Wahlen, 1999). A central concept that makes earnings management possible is how the accounting guidelines are established. Chen et al., (2015, p.19-20) state that: "Unlike cash-based accounting whereby income or expense is recorded at the time of the cash transaction, accrual-based accounting recognizes income when it is earned and expense when it is incurred, regardless of when the actual cash transaction occurs." Since accruals are not attached to a cash exchange between the firm and a third party, managers employ their judgement following a set of guidelines which allow certain flexibility in the accounting choices they take.

One of the main problems faced when studying earnings management is that it is an unobservable problem (Beneish, 2001). Researchers have studied accrual management in order to understand earnings management practices (Beneish, 2001; Dechow et al., 1995; Healy & Wahlen, 1999). Previous research has found that managers engage in earnings management through various mechanisms, generating discretionary accruals (Xu, Taylor & Dugan, 2007).

The effect of board composition on earnings management has also been studied in the accounting and finance literatures (Healy & Wahlen, 1999; Fields & Keys, 2003; Xu et al., 2007). Public companies have a board of directors, whose main function is to serve as representatives of stockholders or firm's owners and supervise the day-to-day functioning of the firm. Boards vary in size, number of independent directors, and in the mechanism by which its members are appointed. Although the board of directors acts as a governing body on behalf of owners, its motivations for taking some decisions may not always be aligned with the interests of stockholders.

Agency theory is concerned with the interactions between agents and principals and the problems resulting when their desires and goals differ (Jensen & Meckling, 1976; Eisenhardt, 1989). In public firms, usually the managers (agents) are not the owners of the firm (principal), a situation which creates the need for having a board of directors for monitoring and aligning the interests of all managers and stockholders (Wowak, Hambrick & Henderson, 2011). Monitoring by the board of directors helps the firm avoid practices that can have a negative effect on performance (Fama & Jensen, 1983; Eisenhardt,

1989). When a firm engages in earnings management, the information asymmetry between the firm and its stockholders increases. The case of Comercial Mexicana is an example of how some managers inside the firm had sensitive information, which could affect the firm, but of which shareholders, analysts, the government, and other stakeholders were unaware. It is therefore in the interest of stockholders to understand the mechanisms that could help reduce the likelihood of earnings management.

Figure 1 presents the theoretical model that guides this research. There is a set of variables that describe the board attributes which have a direct effect on earnings management likelihood. The financial crisis acts as a moderator between the board attributes and earnings management likelihood.

Insert Figure 1 about here

Board attributes and earnings management

As mentioned earlier, one important characteristic of the board is that it acts on behalf of the firm's shareholders (Chen et al., 2015). CEO duality means that power in a firm is concentrated in one person, who is CEO and chair of the board (Saenz González & García-Meca, 2014). When the chair is also the CEO, the chair's main interest might not be the same as the stockholder's, but rather maintaining his or her job by showing outstanding financial results, sometimes by manipulating the firm's financial statements. Previous research on CEO duality shows that firms that have this characteristic have lower performance than those that rely on separate people for each task (Rechner & Dalton, 1991). One of the board's functions is to monitor the CEO and evaluate his or her performance (Weisbach, 1988). However, when CEO duality is present, the board's monitoring function will not be the same, thus creating opportunities for earnings management.

H1 *CEO duality positively affects earnings management.*

It was not until the 1980s, that women began to be part of the board of directors (Burke, 1993). Earlier incorporation of women into the board was in some measure a response to external pressures or legislation to equal opportunities for women in the workplace (Burke, 1993). There has been a tendency in developed economies to increase the number of women members on the board of directors (Farrell & Hersch, 2005). The effects of gender diversity on firm performance are being researched (Burke, 2000; Fields & Keys, 2003). There are findings that show that women tend to be tougher monitors than men (Adams & Ferreira, 2009). Also research shows gender diversity of the board increases governance (Adams & Funk, 2012). Therefore, more women on the board leads to a reduced likelihood of the manipulation of financial statements.

H2 *Board gender diversity negatively affects earnings management.*

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Previous research on corporate governance shows that board independence is considered as a proxy for transparency (Saenz González & García-Meca, 2014). Independent members are part of the board, but do not work for the company or are related to the firm in any way. These outside directors have fewer conflicts of interest than directors inside the firm (Chen et al., 2015). Firms that appoint independent directors have an increase in their value (Rosenstein & Wyatt, 1990). Previous research indicates that independent directors are more effective in their monitoring activities (Klein, 2002; Jaggi, Leung & Gul, 2009). A greater proportion of independent members improves board monitoring of the managers, reducing the possibilities for financial statement manipulation (Chen et al., 2015).

H3 *As independent board members increases, earnings management decreases.*

The size of the board, that is the number of members, is not standard across firms or industries (Pearce & Zahara, 1992). Research on the causes for this variation in size across firms has not received much attention, in part because it is thought that the size is largely dependent on individual CEO preferences (Pearce & Zahara, 1992). As noted by Xie et al. (2003), the relation between board size and performance is not conclusive with some studies calling for smaller and others for larger boards. In a study on earnings management in Latin America, a larger board was related to lower monitoring levels (Saenz González & García-Meca, 2014). A large board is more difficult to control, which reduces its monitoring function and thus increasing financial statement manipulation.

H4 *A larger board size positively affects earnings management.*

Earnings management and the financial crisis

A financial crisis is an unexpected situation that is not controlled by the firm, but that it might put in jeopardy its survival. This macroeconomic event can put additional pressure on the firm's management to appear strong and stable during times of turbulence, thus creating opportunities for financial statement manipulation (Tillman & Indergaard, 2007). In Mexico, during the recent financial crisis, a report by KPMG found that financial statement manipulation was responsible of 70 percent of the economic damage suffered by firms (KPMG, 2010) and it was done basically by abuse of trust. The effect of a financial crisis on board attributes will be two-fold: those attributes that positively affect earnings management will be enhanced, while those that help reduce the likelihood of earnings management will not be as effective.

H5a *A financial crisis strengthens the effect between CEO duality and earnings management.*

H5b *A financial crisis reduces the effect between board gender diversity and earnings management.*

H5c *A financial crisis reduces the effect between board independence and earnings management.*

H5d *A financial crisis strengthens the effect between board size and earnings management.*

3. Methodology

I have presented a series of hypotheses to provide an answer to the research questions regarding board attributes and the likelihood of earnings management and the moderating effect of the financial crisis. This section on methodology will detail how the sample was established, the data collection methods, and the analysis technique used.

3.1 Sample and data collection

Earnings management is a construct that requires collection of data from different periods so results can be properly analyzed (Dechow et al., 1996). The full period covered in this study is from 2001 to 2011. The financial crisis hit Mexico in 2008. Thus, 2008 and 2009 were defined as the period of the financial crisis for the Mexican case.

The sample is composed of firms that were active in the BMV during the mentioned years. As suggested by Ployhart (2010) a minimum of three repeated observations for a firm are required for entering the sample. Bloomberg database provides the information of the firms that were actively trading during this period. After applying the minimum three-year data criteria, the final sample consists of 53 firms trading in the BMV at least for three consecutive years between 2001 and 2011.

3.2 Measures

3.2.1 Dependent variable

Dechow et al., (1995) tested several methods for determining earnings management. In their seminal paper they identified the modified Jones Model as the best method for detecting earnings management. The modified Jones Model is a variation of the model proposed by Jones (1991) which estimates nondiscretionary accruals. As mentioned in section 2, accruals are how firms record their activities in their financial statements. Total accruals can be decomposed into nondiscretionary and discretionary accruals, being the latter a proxy for earnings management (Teoh, Welch & Wong, 1998). This means that earnings management occurs when managers manipulate the discretionary part of the total accruals.

The detection of abnormal discretionary accruals is an indicator of earnings management that will be used in this research. The modified Jones Model has been used in different studies (Choi, Lee & Park, 2013; Saenz González & García-Meca, 2014; Teoh et al., 1998; Xie et al., 2003) to estimate nondiscretionary accruals. In this paper I will use the modified Jones model to calculate the nondiscretionary accruals. This result will then be subtracted from the total accruals to estimate the discretionary accruals, which is the dependent variable.

The information needed to calculate the modified Jones model was obtained from data found in the balance sheet of the firms. Since the sample consists of public firms, the balance sheets and income statements were downloaded for each firm-year from the Bloomberg database.

For calculating earnings management, first the nondiscretionary accruals are estimated following the procedure proposed by Dechow et al. (1995)

$$NDA_\tau = \alpha_1 \left(\frac{1}{A_{\tau-1}}\right) + \alpha_2(\Delta REV_\tau - \Delta REC_\tau) + \alpha_3(PPE_\tau)$$

where

NDA = nondiscretionary accruals in year τ

A = total assets in year τ-1

ΔREV_τ = change in revenue between year τ and year τ-1

ΔREC_τ = change in net receivables between year τ and year τ-1

PPE = gross property, plant, and equipment in year τ

$\alpha_1, \alpha_2, \alpha_3$ = firm-specific parameters

Afterwards the discretionary accruals are estimated following Dechow et al. (1995) using:

$$DAC_\tau = \frac{TAC_\tau}{A_{\tau-1}} - NDA_\tau$$

where

DAC = discretionary accruals in year τ

TAC = total accruals in year τ

A = assets in year τ-1

NDA = nondiscretionary accruals in year τ

The discretionary accruals are then used as an absolute value as a measure of degree of earnings management. Please refer to Appendix A for calculating the firm-specific parameters ($\alpha_1, \alpha_2, \alpha_3$) of the modified Jones model (Dechow et al.,1995). Appendix B shows the list name by which Bloomberg identifies these variables.

3.2.2 Independent variables

CEO duality. This variable indicates whether the CEO holds both the general manager and president of the board positions (Finkelstein & D'Aveni, 1994). The information comes from the annual financial reports of the firms in their websites. The variable is coded 1 if there exists CEO duality and 0 otherwise for each firm-year.

Board gender diversity. This variable indicates the percentage of women in the board (Fields & Keys, 2003). The information comes from the annual financial reports of the firms in their websites. The variable is a percentage between 0 and 100 based on the size of the board for each firm-year.

Board independence. This variable indicates the percentage of independent board members (Weisbach, 1988). The information comes from the annual financial reports of the firms in their websites. The variable is a percentage between 0 and 100 based on the size of the board for each firm-year.

Board size. This variable indicates the number of members that make up the board (Pearce & Zahara, 1992). The information comes from the annual financial reports of the firms in their websites. The variable is a number which indicates the size of the board for each firm-year.

3.2.3 Moderating variable

Financial crisis. The financial crisis was established to be 2008 and 2009. A dummy variable was created, in which 1 represents years 2008 and 2009, while 0 represents the rest of the years from the studied period.

3.2.4 Control variables

Three control variables used previously in empirical papers on earnings management are used in this study (Choi et al., 2013; Park & Shin, 2004).

Debt to assets. This leverage ratio is defined as the total amount of debt relative to assets. It enables comparisons of leverage to be made across different companies. It is measured as a percentage.

ROA. The return on assets is an indicator of how profitable a company is relative to its total assets, in percentage. It gives an idea as to how efficient management is at using its assets to generate earnings.

Total liabilities. This is the sum of both current and non-current liabilities. For the analysis, the number was transformed using the natural logarithm.

3.3 Data analysis

As mentioned earlier, earnings management is best analyzed over time. Recent research has applied the modified Jones model (Choi et al., 2013; Saenz González & García-Meca, 2014) in emerging economies such as South Korea and Latin America, including Argentina, Brazil, Chile, and Mexico. However, the periods of analysis have been from 2002-2008 and 2006-2009 respectively. Since turbulent times have a negative effect on firm's financial results, I propose a longer period for this research, which was a limitation in these prior papers.

Since the sample is composed by a group of firms during a series of years, a panel data analysis will be conducted. Stata version 13 was used to run the panel which is strongly balanced. After performing the Hausman test, the panel required a random effects approach. A log-likelihood heteroscedasticity test was done, and the result showed the data had to be corrected for this condition. Also, a Wooldridge test for serial autocorrelation was done, and results showed data had to be corrected also for this condition. General least squares (GLS) was selected as the estimating method because it helps to correct both

heteroscedasticity and serial autocorrelation. All analyses were performed using the following function in Stata: "xtgls, panel (hetero) corr (psar)".

4. Results

Table 1 presents descriptive statistics and correlations among the variables used in this study. Most correlations were below ±0.4 which is expected and desired. However, five correlations in the table are above the ±0.4 threshold, which could generate a multicollinearity problem.

Insert Table 1 about here

Table 2 presents the GLS model results for the panel data analysis. Six models are presented. In order to prevent a multicollinearity problem due to some high correlations, the interaction terms were not included together in one model. As a solution to this situation, each interaction term was tested separately (models 3, 4, 5, and 6).

Insert Table 2 about here

H1 stated that CEO duality increases the likelihood of earnings management. It can be seen in model 2 that CEO duality is positive and significant ($\beta = 0.074$, $p < 0.05$). The direct effect of CEO duality on earnings management is consistent in all the models, including those with the interaction terms. Results show that CEO duality increases earnings management. However, **H5a** stated that a financial crisis strengthens the effect between CEO duality and earnings management, which proved to be non-significant as seen in model 3.

The effect of board gender diversity was not significant in model 2. This result does not support **H2**, which stated that gender diversity reduces the likelihood for earnings management. Regarding the effect of the financial crisis, **H5b** stated that a financial crisis reduces the effect between board gender diversity and earnings management. This result was significant ($\beta = 0.521$, $p < 0.05$). This result shows that women on the board during times of crisis are not effective in reducing earnings management.

H3 stated that the larger the number of independent board members, the lower the likelihood of earnings management. This hypothesis was not supported in model 2 which measures the direct effect of board independence on earnings management. However, **H5c** stated that a financial crisis reduces the effect between board independence and earnings

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management. The results were significant ($\beta = 0.070$, $p < 0.1$). This result shows that during a financial crisis, independent members of the board are not effective in reducing earnings management.

As it was mentioned earlier, in accordance with previous research done in the region (Saenz González & García-Meca, 2014), the larger the size of the board was expected to increase the likelihood of earnings management (**H4**). The results from the model 2 were significant and show that larger boards increase earnings management ($\beta = 0.005$, $p < 0.01$). This result was consistent in all the models including those with the interaction terms. However, model 6 which tested **H5d** that stated that a financial crisis strengthens the effect between board size and earnings management was found non-significant.

In sum, for the first research question regarding the firm's board structure and earnings management, CEO duality and board size were found to increase the likelihood of earnings management. Board gender diversity and board independence were found to be significant when answering the second research question, regarding the effect of the financial crisis on board attributes.

5. Discussion and Further Research

The information asymmetry between managers and stakeholders may cause earnings management. This asymmetry is a constant that can be reduced, although not eliminated, with a proper board composition. As in the case of Comercial Mexicana, firms that incur in earnings management show outstanding results for some time while giving the impression of a better financial situation. However, turbulent periods among other external causes can reveal this negative practice. Consequences for the firm might go from reputation damage to the financial collapse of the company.

This study researched how does the firm's board attributes increases the likelihood of earnings management and how does the financial crisis can affect these board attributes and increase the likelihood of earnings management. Understanding the mechanisms by which the information asymmetry between the firm and its stakeholders work, both firms and stakeholders can be better prepared in the detection of financial statement manipulation.

Results for Mexico are not consistent with what has been found previously in other countries. The effect of women on the board and independent members showed to be not significant in reducing earnings management. The first situation could be explained by the low number of women present in the sample. Only three firms on the sample have more than 25 percent of women as members of their boards. The firm with the most women (41 percent) is a foreign multinational. Also, reading the names of the members of the board, it can be seen that the majority of the women share last names with other members. This could be that many women that are part of the board are related to the founders and may not have an active role. This shows that gender diversity is still incipient in the Mexican context which would require further research to establish the role of

women in the board of directors in Mexico. The second situation regarding board independence showed that they were also not effective in reducing the likelihood of earnings management. A board member is classified as independent if he or she does not work for the company. However, as it was mentioned earlier, the existence of family ties and friendships between members of the board in many Mexican firms could require a redefinition of independent member that reflects this. Further research using board interlocks and network theory could provide some insights on the true independence of independent board members.

Theoretically this study shows that the direct effects of board attributes in an emerging market such as Mexico do not show the same results as in developed markets or during periods of stability and turbulence. Macroeconomic events such as a financial crisis provide an opportunity for further research. Results also have several implications for managers. First, the importance of maintaining the separation of board and management so that the supervising and monitoring functions can be done properly. It should be discouraged for the CEO to hold a position as president of the board. In the context of countries such as Mexico in which firms and boards are composed of family in a large number of firms, the independence of some members should be sought after. Further research should focus on understanding in more depth board structure effects on earnings management by incorporating other variables such as board ownership, which could be divided into ownership concentration by few individuals, family ownership or institutional ownership.

Earnings management may be seen by some managers as something good since it showcases the firm in a more desirable position. But as the old Mexican saying states, doing bad things that appear to be good can have harmful consequences for the firm, its stakeholders, and society as a whole.

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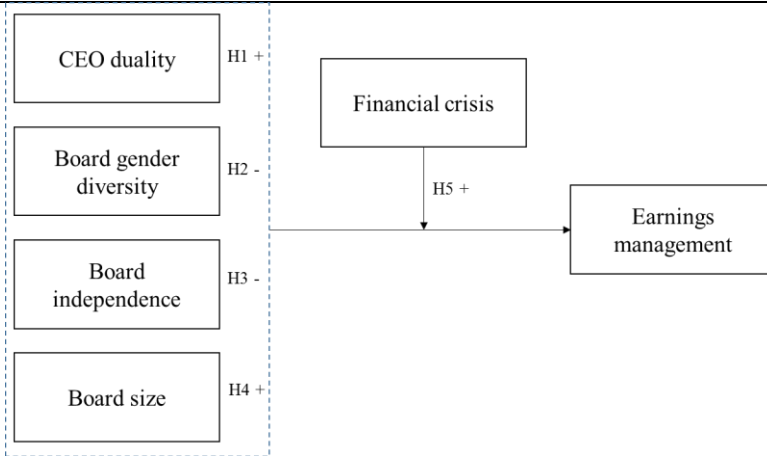
Figure 1 Theoretical Model

CEO duality — H1 +

Board gender diversity — H2 -

Board independence — H3 -

Board size — H4 +

Financial crisis

H5 +

Earnings management

Table 1 Descriptive Statistics and Correlations

	Variable	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	Discretionary accruals[+]	0.482	0.551	1											
(2)	CEO duality	0.507	0.500	0.101	1										
(3)	Board gender diversity	0.036	0.072	-0.060	0.028	1									
(4)	Board independence	0.470	0.172	-0.084	0.118	-0.138	1								
(5)	Board size	18.991	7.708	0.021	-0.002	0.099	0.010	1							
(6)	CEO duality × crisis	0.086	0.281	0.079	0.301	0.038	0.014	0.032	1						
(7)	Board gender diversity × crisis	0.006	0.030	0.044	0.054	0.332	-0.020	0.054	0.399	1					
(8)	Board independence × crisis	0.074	0.185	0.029	0.037	0.004	0.152	0.049	0.672	0.413	1				
(9)	Board size × crisis	3.207	8.014	0.062	0.019	0.020	-0.019	0.221	0.637	0.449	0.838	1			
(10)	Debt to assets	20.262	14.944	0.201	0.033	-0.079	0.035	0.050	-0.029	0.044	-0.017	0.008	1		
(11)	Return on assets (ROA)	4.951	6.613	-0.024	-0.161	0.014	0.059	0.002	-0.071	-0.073	-0.023	-0.055	-0.346	1	
(12)	Total liabilities[++]	6.103	1.733	0.034	-0.204	-0.025	0.099	0.178	-0.080	-0.018	0.010	-0.005	0.380	0.135	1

n= 530

[+] Discretionary accruals are reported as absolute values

[++] Total liabilities were transformed using natural logarithm

Table 2 GLS models

Variables	Predicted sign and Hypothesis	1		2		3		4		5		6	
Debt to assets		0.002**	(0.001)	0.001	(0.001)	0.001	(0.001)	0.001	(0.001)	0.001	(0.001)	0.001	(0.001)
Return on assets (ROA)		0.000	(0.002)	-0.002	(0.001)	-0.002	(0.001)	-0.002	(0.001)	-0.002	(0.001)	-0.002	(0.001)
Total liabilities (Ln)		-0.001	(0.008)	0.001	(0.008)	0.001	(0.008)	0.000	(0.008)	0.003	(0.008)	0.003	(0.009)
CEO duality	H1 +			0.074**	(0.032)	0.083***	(0.031)	0.074**	(0.031)	0.080***	(0.031)	0.081***	(0.031)
Board gender diversity	H2 -			0.012	(0.114)	0.000	(0.113)	-0.072	(0.115)	0.010	(0.113)	0.023	(0.115)
Board independence	H3 -			0.011	(0.075)	-0.008	(0.076)	0.024	(0.075)	-0.013	(0.076)	0.020	(0.076)
Board size	H4 +			0.005***	(0.002)	0.005***	(0.002)	0.005***	(0.002)	0.005***	(0.002)	0.005***	(0.002)
CEO duality × crisis	H5a +					-0.005	(0.029)						
Board gender diversity × crisis	H5b +							0.521**	(0.258)				
Board independence × crisis	H5c +									0.070*	(0.065)		
Board size × crisis	H5d +											0.001	(0.001)
Constant		0.345***	(0.044)	0.235***	(0.057)	0.248***	(0.057)	0.240***	(0.056)	0.237***	(0.057)	0.229***	(0.058)
Number of observations		563		530		530		530		530		530	

Standard errors in parentheses

* $p < .10$

** $p < .05$

*** $p < .01$

Appendix A Discretionary Accruals Calculation

The procedure for calculating the discretionary accruals, which is the variable for earnings management, consists of four stages:

1. Calculation of the total accruals (TA) using this model proposed by Dechow et al., (1995):

$$TA_t = (\Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - Dep_t)/(A_{t-1})$$

where

ΔCA_t = change in current assets

ΔCL_t = change in current liabilities

$\Delta Cash_t$ = change in cash and cash equivalents

ΔSTD_t = change in debt included in current liabilities

Dep_t = depreciation and amortization expenses

A = total assets in year t-1

2. Estimation of the firm specific parameters

$$TA_t = a_1 \left(\frac{1}{A_{t-1}}\right) + a_2(\Delta REV_t) + a_3(PPE_t) + v_t$$

where

TA_t = total accruals

ΔREV_τ = change in revenue in year t minus revenues in year t-1

PPE = gross property, plant, and equipment in year t

$a_1, a_2, a_3 = \alpha_1, \alpha_2, \alpha_3$ = firm-specific parameters

3. The firm-specific parameters obtained in the second step are then introduced into the modified Jones model (Dechow et al., 1995)

$$NDA_\tau = \alpha_1 \left(\frac{1}{A_{\tau-1}}\right) + \alpha_2(\Delta REV_\tau - \Delta REC_\tau) + \alpha_3(PPE_\tau)$$

where

NDA = nondiscretionary accruals in year τ

A = total assets in year τ-1

ΔREV_τ = change in revenue in year τ minus revenues in year τ-1

ΔREC_τ = change in net receivables in year τ minus revenues in year τ-1

PPE = gross property, plant, and equipment in year τ

$\alpha_1, \alpha_2, \alpha_3$ = firm-specific parameters

4. Finally, the discretionary accruals are calculated by subtracting the nondiscretionary accruals calculated in step 3 from the total accruals obtained in step 1. (Dechow et al., 1995) :

$$DAC_\tau = \frac{TAC_\tau}{A_{\tau-1}} - NDA_\tau$$

where

DAC = discretionary accruals in year τ

TAC = total accruals in year τ

A = assets in year τ-

NDA = nondiscretionary accruals in year τ

Appendix B List of Bloomberg fields

Variable	Description	Bloomberg field
CA	Current assets	BS_CUR_ASSET_ REPORT
CL	Current liabilities	BS_CUR_LIAB
Cash	Cash and cash equivalents	BS_CASH_NEAR_CASH_ITEM
STD	Debt included in current liabilities	NON_CUR_LIAB
Dep	Depreciation and amortization expense	CF_DEPR_AMORT
A	Total assets	BS_TOT_ASSET
REV	Revenue	SALES_REV_TURN
REC	Net receivables	BS_ACCT_NOTE_RCV
PPE	Gross property plant and equipment	BS_GROSS_FIX_AASET