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# Does Corporate Governance Affect Earnings Management? Evidence from the US P&C Insurance Industry



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## Abstract

Our study investigates whether corporate governance plays a role in mitigating earnings management in the US Property and Casualty insurance industry. Using a direct measure of managerial bias, our results show the following: first, stock-based components of CEO compensation are associated with reserving practices only when we control for the cross-effect between these components and the presence of a Big4 external auditor; second, independent directors, part of internal company monitoring mechanisms, and the main shareholder, among the external monitoring mechanisms, are effective in mitigating earnings manipulation; and third, the preliminary exercise on the effect of Sarbanes Oxley regulation coming into force reveals that the new regulation on governance has minimal or no impact on the relationship between corporate governance and earnings management in the insurance industry – it has long been heavily regulated for risk and governance.

**Keywords:** Corporate Governance; Reserve Manipulation; P&C Insurers.

**JEL Codes:** G22; G32.

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## 1 Introduction

The effective functioning of corporate governance may have important effects on accounting practises. Many studies have analysed how corporate governance may mitigate earnings management practises. The manipulation of earnings may distort firm valuation issues, and as a consequence, affect the interests of shareholders, investors, clients, and regulators. Despite the importance of these effects, the literature on corporate governance in financial firms is still limited, and it is even more so in relation to the insurance industry. The complexity of the insurance business and the difficulties related to the monitoring of earnings practises used within it may exacerbate the agency problems affecting shareholders' capacity to monitor managers' decisions. Our goal is to shed light

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on the relationship between corporate governance and the earnings management involved in the choice of the earnings management practises that are employed by insurers.

Recent studies (Browne *et al.*, 2003; Eckles *et al.*, 2011) tend to consider a range of factors (executive stock-based compensation and some particular board structures) that are believed to have an effect on earnings management. Using observed outcomes of manager decision-making that are different from the estimates usually used in the finance and accounting literature, Eckles *et al.* (2011) find that managers who receive larger bonuses or stock awards are more prone to managing earnings through reserving practises. Our study aims to extend the existing literature by: *i*) exploring how governance mechanisms work in the insurance industry where earnings management processes are driven by the main risk that is managed by the insurance companies (*i.e.* underwriting risk) and are affected by heavy regulation (*i.e.* regulation on reserving practises, on asset management activities, and on capital requirements to ensure that insurers are financially able to pay claims); *ii*) jointly analysing internal and external monitoring mechanisms that affect earnings management in the US P&C insurance industry, and *iii*) empirically testing the effect of these mechanisms on earnings management practises pre- and post-changes in governance regulation. Our paper aims to provide a comprehensive study of the effect of corporate governance on earnings management practises by the US P&C insurance industry. In fact, using a large sample of US P&C listed insurers over the 1995-2005 period, we find stock-based components of compensation lead CEOs to make earnings-increasing decisions only when we control for the cross-effect between these components and the presence of a Big4 external auditor. However, the manipulation of earnings may be hampered by the actions of «special» directors (*i.e.* independent directors) and of «special» shareholders (*i.e.* majority shareholders). Furthermore, the preliminary analysis of the change in governance regulation (*i.e.* Sarbanes-Oxley Act) shows that the new regulation has minimal or no impact on the relationship between corporate governance and earnings management in the insurance industry because it has long been heavily regulated for risk and governance. Our results have important policy implications for the debate on the desirability of further strengthening the level of governance regulation across different sectors of the economic system and of anticipating the study on the effectiveness of regulation before its enactment and of finding other mechanisms to align CEO interests to those of shareholders.

The remainder of our paper is organised as follows. Section 2 provides a literature review and formulates the research hypotheses. Section 3 describes the data, the sample, and the econometric approach used. Section 4 presents evidence on the relationship between corporate governance and earnings management. It also examines the effect of a major change in governance regulation on earnings management practises, and it discusses endogeneity issues. Section 5 concludes the paper by discussing the implications of our results for the debate on the effectiveness of corporate governance mechanisms and of governance regulation.

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## 2 Literature Review and Research Hypotheses

In this section, we first define the importance of corporate governance within the particular setting of the insurance industry. We next describe how CEO opportunism

may occur. We then discuss the studies that have focused on (both internal and external) governance mechanisms to mitigate manager opportunism. We finally analyse corporate governance reform.

## 2.1 Earnings management and corporate governance in the insurance industry

According to Jensen and Meckling (1976), the relationship between the principal (the owner of the firm) and the agent (the manager of the firm) can be negatively affected by agent opportunism: the agent has an incentive to inflate earnings to maximise his/her compensation<sup>1</sup>. To limit this opportunistic behaviour, the principal is forced to put in place some (costly) monitoring mechanisms, such as an *ad-hoc* compensation packages and through the use of independent directors, external auditors, and rating agencies. The insurance industry is naturally dropped in the research on the relationship between the corporate governance and earnings management (*e.g.* Cohen *et al.*, 2008) as insurance companies are financial firms for which earnings management processes are driven by underwriting risk (*i.e.* main risk that is managed by them). Further, they provide the insurance cover against risks for which the regulation and supervision have always been heavy<sup>2</sup>. Despite these specific features, the insurance industry, particularly property and casualty insurers (P&C hereafter), represents an exceptionally good setting to test the principal-agent problem for two reasons:

*i)* P&C insurers are constrained to disclose the original and updated estimations of the claim loss reserve; in this way, it is easier to separate abnormal accruals from the normal ones (Eckles *et al.*, 2011; Grace and Leverty, 2012); and

*ii)* P&C insurers are constrained to disclose the real amount of the paid losses, *i.e.* the sum of the (actually) paid losses; in this way, it is possible to control for endogeneity issues that could affect the functioning of governance mechanisms (Eckles *et al.*, 2011).

Our paper contributes to a small but growing body of literature on how corporate governance mechanisms work in the insurance industry. Although there is a large strand of literature on corporate governance, there are few papers that have analysed the specificities of the P&C industry (as shown by the review of Boubakri, 2011).

## 2.2 CEO opportunism

Stock-based components of compensation have been well documented in the finance literature as mechanisms that align managers' interests to shareholders' interests (*e.g.* Bergstresser and Philippon, 2006). Many studies suggest separating these components from others, such as salary and bonuses (*e.g.* Holthausen *et al.*, 1995; more recently, Cornett *et al.*, 2008). Furthermore, Eckles *et al.* (2011) argue that some components,

<sup>1</sup> A CEO is more prone to expropriate financial resources from the firm due to his/her short-term horizon, his/her undiversified portfolio, and the lack of control, particularly in firms with a dispersed shareholder structure.

<sup>2</sup> Financial regulation of insurance companies is based on solvency surveillance, that is to say, on reserving practises, on asset management activities, and on capital requirements.

such as exercising options, induce managers to make earnings-increasing decisions (*i.e.* loss reserve underestimation), whereas other components, such as restricted stocks, are associated with earnings-decreasing decisions (*i.e.* loss reserve overestimation) by managers. Browne *et al.* (2009) note the importance of the timing of manipulation to capture the CEO incentive, particularly for stock-based components of compensation. In fact, a CEO is more likely to make an earnings-decreasing decision prior to the assignment of stocks and options: in this way, the overestimation creates the perception of larger losses and consequently reduces current stock prices – that is, the strike price of options granted and the price of stock awarded. By contrast, an earnings-increasing decision is made by a CEO, when he/she already has stocks and options in his/her portfolio, to take advantage of the increase in stock prices on the short-term horizon<sup>3</sup>. Thus, we define the first hypothesis of our study as follows: *Income-increasing earnings management depends on the components of CEO compensation (H1), other things equal*. More specifically, a CEO could make an earnings-increasing decision (*i.e.* underestimation) to obtain:

- 1) a higher salary in the next year (H1a),
- 2) a higher bonus in the current year (H1b),
- 3) a higher value of stocks and options held in his/her portfolio (H1c), other things equal.

Moreover, existing literature on CEO opportunism has used CEO age as a proxy of the level of their expertise. Thus, a CEO with more experience is more likely to behave prudentially. Therefore, we define the second hypothesis of our study as follows: *Income-decreasing earnings management depends on the age of a CEO (H2), other things equal*.

### 2.3 Internal and external governance mechanisms

The corporate governance literature offers evidence on the role of a board of directors as an «internal device» against CEO opportunism (*e.g.* Yermack, 1996; more recently, Adams and Mehran, 2008). The management of a complex business, such as the insurance business, requires a board that efficiently monitors managers but that simultaneously provides them effective and valuable advice. With this aim, the literature also emphasises the distinction between independent directors and directors that are not independent (*e.g.* Klein, 2002)<sup>4</sup>. The independent directors normally play a positive role that may contribute to alleviating the conflicts of interest between CEO and shareholders (*e.g.* Mayers and Smith, 2010, for the mutual insurance companies). In this way, they could encourage the adoption of more prudential behaviour by a CEO. Thus, we define the

<sup>3</sup> In other words, an earnings-increasing decision enhances the value of the stock-based components of compensation prior to the granting of options and stocks, whereas an earnings-decreasing decision subsequently reduces the value of stock-based components.

<sup>4</sup> According to the listing standards of the NYSE, the board of directors of each listed company determines what director is «independent», *i.e.* he/she has no material relationship with the listed company either directly or as a partner, shareholder or officer of an organisation that has a relationship with the company (as set forth in the NYSE's Rule 303A.02).



third hypothesis as follows: *Income-decreasing earnings management depends on the weight of independent directors on the board (H3), other things equal.*

As suggested by the banking literature on governance (e.g. de Andres and Vallelado, 2008), the internal functioning of the board could influence how it plays its advisory role. For example, the greater the number of meetings, the greater the opportunity to discuss the insurers' strategy that is strictly related to loss reserve management. As such, the greater the number of meetings the greater the opportunity there are to detect CEO behaviours that are not in the interest of shareholders. Thus, we define our fourth hypothesis as follows: *Income-decreasing earnings management depends on the number of board meetings (H4), other things equal.*

CEO opportunism may also be hampered by the activity of shareholders and of a wide range of professional «agencies» that can operate in the shareholders' interest, such as external auditors, actuarial firms, and rating agencies. They can be considered «external devices» against CEO opportunism. The literature discusses the role of «special» shareholders, such as institutional investors and major shareholders. In particular, the activity of a major shareholder can lead a CEO to make earnings-decreasing decisions to preserve the value of the insurance company: the greater the weight of the major shareholder the greater the pressure on a CEO for a more conservative earnings distribution policy (i.e. reservation). Thus, the fifth hypothesis of our study is: *Income-decreasing earnings management depends on the weight of the major shareholder (H5), other things equal.*

The reasons stated above lead us to consider that the major shareholder should play the lead role in counteracting CEO opportunism. Thus, we take into account the relationship between the number of shares of the major shareholder and earnings management into our analysis to test whether this relationship is U-shaped<sup>5</sup>.

Some studies, inspired by the seminal work of Beasley and Petroni (1996) amongst others, make reference to the role performed by external auditors to address the monitoring issues within governance structures<sup>6</sup>. These studies reveal divergent results regarding the effect of auditors on accounting estimates because each study makes use of different data on external auditors. However, this does not mean that the role of external auditors should be ignored. More specifically, direct links between the size of the auditor and the quality of its audits may arise from similar inputs in the form of sophisticated risk management practises to detect a material misstatement of earnings and to avoid consequent reputational losses (i.e. DeAngelo, 1981). Hence, the last hypothesis of our study is: *Income-decreasing/increasing earnings management depends on the quality of the auditor (whether it is/is not a Big4 auditor; H6), other things equal.*

Following the above arguments, CEO opportunism might be mitigated by the activities performed by the board of directors as «internal monitoring devices», by the pressure exercised by major shareholders and by the external auditors as «external monitoring devices».

<sup>5</sup> We wish to thank an anonymous reviewer for this suggestion.

<sup>6</sup> In particular, Beasley and Petroni (1996) discuss the conditions under which «Big» auditors should encourage more conservative estimations of the loss reserve for financially troubled insurers, leading the CEO to make earnings-decreasing decisions when the insurer is a client of a «Big» auditor.

## 2.4 Corporate governance reform

The financial scandals at the end of the last century highlighted the great importance of governance mechanisms that function well (*e.g.* Iliev, 2010). To enhance the corporate governance of publicly listed companies, the Sarbanes-Oxley Act of 2002 (SOX hereafter) requires, among other requirements, a significant proportion of independent directors within the executive boards, a set of committees (among others, the corporate governance committee) within the management structure, a code of conduct regarding conflicts of interest and the compliance with law and regulation<sup>7</sup>. Furthermore, SOX identifies the individual responsibility of senior executives when attesting to the accuracy and completeness of the financial reporting<sup>8</sup>. Thus, we take into account the likely effect of the SOX enactment as follows: *Income-decreasing/increasing earnings management depends on the SOX enactment (H7), other things equal.*

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## 3 Sample, Variables, and Econometric Approach

Our sample was selected to meet the following criteria:

- 1) insurers operate in the P&C sector. We omit insurers who are not P&C insurers because data to estimate earnings management are not available<sup>9</sup>;
- 2) P&C insurers are listed on the stock exchange during the period 1995-2005. In fact, data for estimating earnings management are not fully available before 1995 and after 2005; and
- 3) listed P&C insurers are based in the US. We must omit non-US listed P&C insurers because they do not disclose data to estimate earnings management.

In summary, our sample is a balanced panel data of 54 insurers from 1995 through 2010<sup>10</sup>, representing 50% of the net written premiums of the US P&C industry<sup>11</sup>.

Data are collected from various sources:

- 1) Information about loss development, consolidated balance sheets, consolidated statements of income, and consolidated statements of cash flow are obtained from 10-K reports;
- 2) executive compensation data and governance characteristics are obtained from DEF 14A forms; and
- 3) financial market data are taken from Thomson Reuters Datastream.

<sup>7</sup> The audit committee, that consists entirely of independent directors, is directly responsible for the appointment, compensation, and oversight of the work of the auditor.

<sup>8</sup> Sections 302 and 906 of SOX also require the CEO and CFO to certify their firm's SEC filings.

<sup>9</sup> As we will show later, we need to know the gradual settlement of claims over time (the so-called «run-off triangle») to estimate CEO manipulation.

<sup>10</sup> As we will show later, we require data up until 2010 to estimate the earnings management in the last year of our time horizon that comes from 1995 to 2005.

<sup>11</sup> Specifically, insurers in our sample collected US \$217.6 billion of net written premiums in 2005 (*i.e.* 50.1% the overall industry net written premiums according to the data of A.M. Best and Deloitte Analysis (2005)). Data are consistent with the condition that the US P&C insurance market is highly concentrated.

### 3.1 Variables and statistics

We focus on the variables used in our research design. First, we show the dependent variable, *i.e.* the reserve error; second, we describe the variables that should capture CEO opportunism; third, we describe the variables that account for the internal and external monitoring mechanisms; finally, we make reference to the control variables suggested in the literature. Table 1 shows the statistics for these variables and Table 2 makes reference to the correlation matrix.

### 3.2 Estimating earnings management

The reserve error is the measure of earnings management suggested in the literature we use to show whether CEO opportunism and (internal and external) monitoring mechanisms have an effect on the insurer's earnings management. It is calculated following Beaver *et al.* (2003)<sup>12</sup>:

$$(1) \quad Error_{t,t}^j = Developed_{t,t+j} - Original_{t,t}$$

where  $t$  denotes a time period ( $t = 1995, 1996, \dots, 2005$ ),  $j$  denotes the development time horizon ( $j = 5$ ), *Developed* is the developed reserve, *i.e.* the updated estimate, and *Original* is the original reserve, *i.e.* the original estimate<sup>13</sup>. Thus, a positive/negative *Error* represents the output of earnings-increasing/earnings-decreasing decisions made by CEOs. Moreover, *Error* is scaled by total assets to reduce problems of heteroskedasticity.

### 3.3 Measuring CEO opportunism

Over recent years, a large set of components of CEO compensation has been proposed to measure CEO opportunism within the insurance industry (Eckles and Halek, 2010; Eckles *et al.*, 2011). In our study, we resort to three components of CEOs' compensation to capture their opportunism:

1) *S\_ch*, *i.e.* the ratio between the increase/decrease in salary between  $t$  and  $t + 1$  and total compensation, that is not a stock-based component of CEOs' compensation. A CEO could make earnings-increasing decisions in year  $t$  to obtain a higher salary in year  $t + 1$  (*i.e.* the expected sign of *S\_ch* is positive);

2) *BP*, *i.e.* the ratio between the bonus (if any) and total compensation, that is not a stock-based component of CEOs' compensation. A CEO could make earnings-

<sup>12</sup> We wish to thank an anonymous reviewer who suggested reconciling our measure of loss reserve with what is suggested in the literature.

<sup>13</sup> «Comparing the originally reported reserve to the developed reserve indicates the amount by which the originally reported reserve was understated or overstated» (Beaver *et al.*, 2003, p. 375).



increasing decisions in year  $t$  to yield the bonus for this year (*i.e.* the expected sign of  $BP$  is positive);

3)  $St\&Opt$ , *i.e.* the ratio between the sum of the stocks granted and options held by a CEO and total compensation, that is the stock-based component of CEOs' compensation. A CEO could make earnings-increasing decisions in year  $t$  to increase the value of his/her portfolio in a short time period (*i.e.* the expected sign of  $St\&Opt$  is positive). From this point of view, we expect that the stock-based components do not align the CEO interests with those of shareholders.

Furthermore, we introduce the interaction between the stock-based components and the presence of a Big4 external auditor into the analysis (*i.e.*  $St\&Opt*B$ ). In fact, we suspect that a higher compensation in the form of stocks and options (*i.e.* stock-based components) increases the probability to make earnings-increasing decisions (*i.e.* underestimation) accounting for the presence of a «Big4» auditor (*i.e.* the expected sign of  $St\&Opt*B$  is positive).

The reasons stated above lead us to expect that all components of CEO compensation encourage earnings-increasing decisions for different reasons.

To assess CEO opportunism, we also use  $CEO\_age$ , that is, the natural logarithm of  $CEO\_age$  (in years). This measure is directly related to the level of expertise and to the propensity to make prudential estimations (*i.e.* overestimations). Thus, the expected sign of  $CEO\_age$  is negative.

### 3.4 Measures of internal and external monitoring

We also account, in some detail, for the internal monitoring mechanisms of CEO opportunism, which are captured by two explanatory variables:

1)  $Independent$ , *i.e.* the percentage of (total) directors that are independent. According to the NYSE's Rule, an «independent» director has no «material» relationship with the listed company including any consulting, advisory or other compensatory fee paid by the listed company to such director. We expect that the greater the number of independent directors, the greater the probability that the CEO will make earnings-decreasing decisions (*i.e.* the expected sign is negative);

2)  $Dir\_meet$ , *i.e.* the number of meetings (expressed in a natural logarithm) held each year by the board of directors. We suspect the increase of meetings is related to difficulties of estimating the loss reserve, as the discussion on claims and their management drives strategic choices (and the operational policies that derived from them) and dominates the agenda of each meeting; therefore, the greater the number of meetings, the greater the probability that the CEO will assume a prudential behaviour (*i.e.* the expected sign is negative).

Direct measurement of the external monitoring mechanisms to counteract the CEO opportunism is difficult. Therefore, we make reference to a «special» shareholder, that is, the major shareholder that could preserve the value of an insurance company on a long-term horizon. In addition, we include a variable that should capture the presence of the external auditors.

As such,  $L\_sb$  is equal to the ratio between the number of shares of the major shareholder and the total outstanding shares; we expect that the increase of the weight of the major shareholder among shareholders exercises pressure on CEOs to make earnings-decreasing decisions. We also control for the likely existence of a set of thresholds regarding the weight of the major shareholder. In more formal terms, we test whether the relationship between the major shareholder and earnings management practises is U-shaped, taking into consideration the square of the  $L\_sb$  (*i.e.*  $L\_sb^2$ ).

For comparability with previous studies (*i.e.* Beasley and Petroni, 1996), we include  $B$ , which is a dummy variable that takes the value of 1 if the insurer is a client of an auditor that is a «Big» player in the US market<sup>14</sup>, as the explanatory variable<sup>15</sup>. We postulate a direct relationship between the availability of financial resources (*i.e.* the size of the auditor) and the quality of its audit reports as larger auditors have more to lose from a supposed failure in detecting a material misstatement of earnings. However, we acknowledge that  $B$  can reflect both earnings-decreasing decisions, to preserve the auditors' reputation, and earnings-increasing decisions, to relax the control on larger insurers.

Finally,  $SOX$  is a dummy variable that takes the value of 1 for the years after the SOX regulation came into force (*i.e.* the year 2002).

### 3.5 Control variables

Following prior studies (*e.g.* Petroni, 1992; Grace and Lavery, 2012; Eckles *et al.*, 2011), five other variables are included in our research design to control for tax incentives ( $Tax$ ), smoothing incentives ( $ROA$ ), and financial distress incentives ( $Risk$ ), while accounting for insurer's product mix ( $Longtail$ ) and for size ( $P$ ).

Following Grace (1990) and Grace and Lavery (2012), we measure  $Tax$  as follows:

$$(2) \quad Tax_t = \frac{(NI_t + Original_t)}{TA_t}$$

where  $NI$  is the (disclosed) net income,  $Original$  is the original estimate of loss reserve (as reported in the 10-K reports), and  $TA$  is the book value of total assets. This variable expresses the level of taxable income (as a percentage of assets) before the loss reserve is determined. Because earnings-decreasing decisions diminish current taxable income, the original estimate of loss reserve is added back to taxable income to derive the decision variable (*i.e.* the expected sign is negative).

Following the existing literature (*e.g.* Weiss, 1985; Grace, 1990; Grace and Lavery, 2012), we use return on assets (*i.e.*  $ROA$ ) to test the effect of smoothing incentives on earnings management practises. The expected sign of  $ROA$  is positive.

<sup>14</sup> We make reference to the Big Four, *i.e.* Deloitte, PwC, EY, and KPMG.

<sup>15</sup> We wish to thank an anonymous reviewer for this suggestion.

Several papers discuss the earning management practises adopted by financially troubled insurers (Petroni, 1992; Beasley and Petroni, 1996; Gaver and Paterson, 2001; Grace and Leverty, 2012). We measure the insurer's risk as the standard deviation of daily stock returns ( $R_{it}$ ) for each fiscal year (*Risk*). The expected sign of *Risk* is positive.

Following previous research on earnings management we also add the insurer's product mix (*i.e. Longtail*), that is the percentage of net written premiums from longtail lines (*e.g.* workers' compensation) over the total net written premiums, and the insurer's size (*i.e. P*), that is the natural logarithm of the total written premiums at fiscal year-end.

Table 1 presents descriptive statistics for the insurer-specific variables, the dependent variable, variables that should capture CEO behaviour, variables related to internal and external monitoring mechanisms, and the control variables.

The average value of total assets is almost \$32 billion (*Panel A*).

Similar to Eckles *et al.* (2011), we find that the average insurer underestimates reserves; the largest over-reserving error is 13.06% whereas the largest under-reserving error is 29.60% (*Panel B*).

Making reference to variables that are related to CEO behaviour, the average 1-year change in salary (*i.e. S\_ch*) is a 1% increase; the annual bonus mean relative to total compensation (*i.e. BP*) is approximately 20%, whereas the mean and the standard deviation of the sum of stocks awarded and options granted on total compensation (*i.e. St&Opt*) are 32% and 28%, respectively<sup>16</sup>. Moreover, on average the CEO (*i.e. CEO\_age*) is 57 years old (*Panel C*).

Making reference to internal and external monitoring mechanisms, our data show that the median of the ratio between the number of the independent directors and the total number of directors (*i.e. Independent*) is 38.41%, whereas the median number of board meetings (*i.e. Dir\_meet*) is 5, with a minimum of 1 meeting and a maximum of 21 meetings; furthermore, the main shareholder (*i.e. L\_sh*) has 26.40% of the voting rights on average (*Panel D*).

Finally, *Panel E* shows the five control variables.

Table 2 displays the correlation coefficients between all variables used in the model specifications.

Among the explanatory variables, the stock-based components of CEOs' compensation (*i.e. St&Opt*) shows a negative and significant correlation with the main shareholder (*i.e. L\_sh*) as we supposed, while it exhibits a positive and significant correlation with the number of meetings held by the board of directors (*i.e. Dir\_meet*) and the total written premiums at fiscal year-end (*i.e. P*)<sup>17</sup>.

<sup>16</sup> Unfortunately, we do not have data on stocks and options that are as granular as those used by Eckles *et al.* (2011).

<sup>17</sup> The mean of the Variation Inflation Factors is 1.39.

**Table 1:** Descriptive statistics of the sample companies

Variables:	Mean	Standard deviation	Minimum	Median	Maximum	Skewness	Kurtosis	Obs
<i>Panel A: Insurer-specific variable</i>								
<i>TA</i>	31.9	87.7	0.056	4.40	799	5.2262	35.9688	331
<i>Panel B: Dependent variable</i>								
<i>Error</i>	0.0172	0.0647	-0.1306	0.0080	0.2960	1.1388	5.7071	331
<i>Panel C: CEO behaviour</i>								
<i>S_ch</i>	0.0121	0.0580	-0.2817	0.0060	0.4396	0.2039	17.8113	331
<i>BP</i>	0.1903	0.1660	0	0.1720	0.7652	0.6512	2.7412	331
<i>St&amp;Opt</i>	0.3231	0.2804	0	0.2991	1	0.3176	1.8719	331
<i>CEO_age</i>	57.6556	9.2518	40	56	85	0.8001	3.1835	331
<i>Panel D: Internal and external monitoring mechanisms</i>								
<i>Independent</i>	0.3841	0.1016	0.0909	0.3750	0.7500	0.3414	3.9907	331
<i>Dir_meet</i>	5.5952	2.3236	1	5	21	2.1103	12.1457	331
<i>L_sb</i>	0.2640	0.2055	0.0139	0.1641	0.8090	0.8409	2.3796	331
<i>Panel E: Control variables</i>								
<i>Tax</i>	0.2983	0.1427	0.0544	0.2855	0.8366	0.5281	3.3390	331
<i>ROA</i>	0.0344	0.0377	-0.1536	0.0302	0.1800	-0.1822	7.4743	331
<i>Risk</i>	0.0099	0.0062	0.0037	0.0088	0.0856	6.4296	70.6123	331
<i>Longtail</i>	0.6327	0.3314	0	0.7005	1	-0.5863	2.0835	331
<i>P</i>	3.27	5.62	0.016	1.00	40.6	3.0240	14.3418	331

This table presents the distribution of variables by showing mean, standard deviation, minimum, median, maximum, skewness, kurtosis and the number of observations. *TA* is the total asset at fiscal year-end (billions of US dollar). *Error* is the difference between the developed reserve and the original reserve using a 5-years development period. *S\_ch* is the ratio between the forthcoming change in salary and the total compensation. *BP* is the amount of bonus as percentage of total compensation. *St&Opt* is the sum of stock awarded and option granted as percentage of total compensation. *CEO\_age* is the age of the CEO. *Independent* is the percent of independent directors. *Dir\_meet* is the number of meetings held each year by the board of directors. *L\_sb* is the fraction of the insurer's voting rights, if any, owned by its controlling shareholder. *Tax* is the ratio between the sum of net income and the estimated reserve and total assets. *ROA* is the return on assets for the current fiscal year. *Risk* is the natural log of the annualised standard deviation of the daily stock returns. *Longtail* is the percentage of net written premiums from longtail lines. *P* is the total written premiums at fiscal year-end (\$ billions).

**Table 2:** Correlation matrix between explanatory variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
<i>Error</i>	1.0000												
<i>S_cb</i>	-0.0587	1.0000											
<i>BP</i>	-0.1483	0.1086	1.0000										
<i>St&amp;Opt</i>	-0.0121	-0.0765	-0.2495	1.0000									
<i>CEO_age</i>	-0.0132	-0.2077	0.0922	-0.2176	1.0000								
<i>Independent</i>	-0.0558	0.0102	0.1346	0.0134	-0.0273	1.0000							
<i>Dir_meet</i>	-0.0098	0.0383	0.0237	0.2222	-0.2635	0.0380	1.0000						
<i>L_sb</i>	0.0535	0.0686	-0.0600	-0.4073	0.0406	-0.0181	-0.1519	1.0000					
<i>Tax</i>	0.1354	0.0962	-0.0276	-0.0674	-0.1978	-0.0777	0.2703	0.2703	1.0000				
<i>ROA</i>	-0.2968	0.1542	0.3524	0.0280	0.0279	-0.0418	-0.1236	0.0583	0.1298	1.0000			
<i>Risk</i>	0.0468	-0.0102	-0.1967	-0.1051	-0.1616	-0.0002	0.0036	0.1966	0.0218	-0.2619	1.0000		
<i>Longtail</i>	0.0543	0.0422	0.0855	-0.0434	-0.0938	-0.0500	-0.1412	-0.0451	0.2671	-0.0758	0.0859	1.0000	
<i>P</i>	0.0580	-0.1223	0.0417	0.3503	0.2477	-0.0664	0.1820	-0.3910	-0.0734	-0.0275	-0.4154	-0.2110	1.0000

The table shows the Pearson pairs-wise correlation matrix. Bold texts indicate statistically significance at the 1% level or better. *Error* is the difference between the developed reserve and the original reserve using a 5-years development period. *S\_cb* is the ratio between the forthcoming change in salary and the total compensation. *BP* is the amount of bonus as a percentage of total compensation. *St&Opt* is the sum of stock awarded and options granted as a percentage of total compensation. *CEO\_age* is the natural logarithm of CEO age. *Dir\_meet* is the natural logarithm of meetings held each year by the board of directors. *Independent* is the percent of independent directors. *L\_sb* is the fraction of the insurer's voting rights, if any, owned by its controlling shareholder. *Tax* is the ratio between the sum of net income and the estimated reserve and total assets. *ROA* is the return on assets for the current fiscal year. *Risk* is the natural log of the annualised standard deviation of the daily stock returns. *Longtail* is the percentage of net written premiums from longtail returns. *P* is the natural logarithm of the total written premiums at fiscal year-end.



### 3.6 Econometric approach

The regression in Eq. (3) is formulated to empirically test the effect of corporate governance on earnings management controlling for a set of control variables:

$$(3) \quad \begin{aligned} Error_{i,t} = & \alpha + \beta_1 S\_ch_{i,t} + \beta_2 BP_{i,t} + \beta_3 St\&O\&Opt_{i,t} + \beta_4 CEO\_age_{i,t} + \\ & + \beta_5 Independent_{i,t} + \beta_6 Dir\_meet_{i,t} + \beta_7 L\_sh_{i,t} + \beta_8 B_{i,t} + \beta_9 Tax_{i,t} + \\ & + \beta_{10} ROA_{i,t} + \beta_{11} Risk_{i,t} + \beta_{12} Longtail_{i,t} + \beta_{13} P_{i,t} + \varepsilon_{i,t} \end{aligned}$$

where  $i$  denotes an insurer ( $i = 1, 2, \dots, 54$ ),  $t$  denotes the time period ( $t = 1995, 1996, \dots, 2005$ ),  $Error$  is defined as in Eq. (1), and  $\varepsilon$  is the idiosyncratic error term that captures material errors and the effects of unpredictable events. Further, we add to this model specification the following explanatory variables: first, the square of  $L\_sh$  (*i.e.*  $L\_sh^2$ ) to test the existence of a set of thresholds regarding the weight of the major shareholder; then, the cross-effect between the stock-based components of CEOs' compensation and the auditor that is part of the Big4 auditor group (*i.e.*  $St\&O\&Opt*B$ ) to test the existence of another form of moral hazard by CEOs; and finally, we add both  $L\_sh^2$  and  $St\&O\&Opt*B$ . The definition of each variable is illustrated above and is also summarised in Table 2.

The regression in Eq. (4) is formulated to investigate the effect of corporate governance and of change in governance regulation on earnings management by adding a set of cross-effects between  $SOX$  and each of the governance variables to Eq. (3):

$$(4) \quad \begin{aligned} Error_{i,t} = & \alpha + \beta_1 SOX + \beta_2 S\_ch_{i,t} + \beta_3 (SOX*S\_ch_{i,t}) + \beta_4 BP_{i,t} + \\ & + \beta_5 (SOX*BP_{i,t}) + \beta_6 St\&O\&Opt_{i,t} + \beta_7 (SOX*St\&O\&Opt_{i,t}) + \beta_8 CEO\_age + \\ & + \beta_9 (SOX*CEO\_age_{i,t}) + \beta_{10} Independent_{i,t} + \beta_{11} (SOX*Independent_{i,t}) + \\ & + \beta_{12} Dir\_meet_{i,t} + \beta_{13} (SOX*Dir\_meet_{i,t}) + \beta_{14} L\_sh + \beta_{15} (SOX*L\_sh_{i,t}) + \\ & + \beta_{16} B + \beta_{17} Tax_{i,t} + \beta_{18} ROA_{i,t} + \beta_{19} Risk_{i,t} + \beta_{20} Longtail_{i,t} + \beta_{21} P_{i,t} + \varepsilon_{i,t} \end{aligned}$$

The dataset is a panel of 54 listed insurance companies over the 1995-2005 period (594 firm-years). We use firm-level fixed effects models to examine the relationship between corporate governance and earnings management in the insurance industry.

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## 4 Empirical Results

In this section, we present empirical results regarding the effect of corporate governance on earnings management practises by a large sample of US P&C insurers. Basic results, results based on the effect of change in governance regulation, and endogeneity issues are then discussed.

## 4.1 Basic results

We first analyse the corporate governance functioning in the US P&C industry (Table 3 *Columns (1), (2), (3), and (4)*). The aim is to determine whether changes in governance variables affect earnings management for US P&C insurers. Our focus is on the sign of the effects of the governance variables: on one hand, we expect a positive effect of variables that capture CEO behaviour on earnings management, and on the other hand, we expect a negative effect of CEO age and of some monitoring mechanisms on the same practises.

The results show that all components of CEO compensation do not lead CEOs to make earnings-increasing decisions (*Columns (1) and (2)*) whereas CEOs' decisions are driven by the incentives related to the stocks and options held by a CEO when we consider the cross-effect between the stock-based components and the presence of a Big4 external auditor (*i.e.  $St \& Opt * B$* ) (*Columns (3) and (4)*). However, the inflation of earnings may be hampered by the functioning of some monitoring mechanisms that are related to the activity of «special» directors (*i.e. the independent directors*) and of «special» shareholders (*i.e. the major shareholder*).

More in detail, focusing on variables that capture CEO behaviour, all components of CEO compensation show the expected sign, but they are not significant (*Columns (1) and (2)*). Thus, our results do not support the existing literature on this issue, but they have to be re-considered in light of the effect of the external auditor on earnings practises. In fact, the effect of *B* on earnings management displays some interesting conclusions about the role of professional «agencies» in preserving the value of a company: the presence of an external auditor that belongs to the exclusive «Big4» club is associated with CEOs' earnings-increasing decisions (*i.e. underestimation*). This evidence is counterintuitive but seems to suggest another form of moral hazard by CEOs: the presence of a «Big» auditor makes it easier for the CEO to make earnings-increasing decisions that are beneficial for his/her portfolio (as suggested by H1)<sup>18</sup>. We suspect that the choice to enlist the services of a «Big» auditor could enhance the effect of the stock-based compensation on earnings manipulation. In fact, *Columns (3) and (4)* show a positive regression coefficient estimate for *St & Opt \* B*; it suggests that a higher compensation in the form of stocks and options (*i.e. stock-based components*) increases the probability to make earnings-increasing decisions (*i.e. underestimation*) accounting for the presence of a «Big4» auditor.

*CEO\_age* does not display the expected sign and is not significant; that is, expertise does not lead CEOs to adopt more prudential behaviour in earnings management practises.

We also show that some monitoring mechanisms have a direct effect on CEOs' earnings-decreasing decisions (*i.e. overestimation*). The estimated regression coefficient for *Independent* is always negative but significant only in *Columns (2) and (4)*. On the

<sup>18</sup> This result does not support the evidence of Beasley and Petroni (1996), who do not find any systematic differences in loss reserve estimations between insurers that are clients of the Big Eight and ones that are clients of other audit firms. The authors use unconsolidated data in their analysis that could affect their results as they stated (p. 166). By contrast, we use data at the consolidated level. On the other hand, our data do not provide information on actuarial firms that would allow us to compare our results with those of Gaver and Paterson (2001).

Table 3: Basic results

	(1)	(2)	(3)	(4)
	Error	Error	Error	Error
<i>Constant</i>	-0.2488 (-1.24)	-0.1006 (-0.50)	-0.2265 (-1.14)	-0.0859 (-0.43)
<i>S_ch</i>	0.0134 (0.25)	0.0097 (0.18)	0.0038 (0.07)	0.0015 (0.03)
<i>BP</i>	0.0157 (0.58)	0.0047 (0.18)	0.0151 (0.56)	0.0045 (0.17)
<i>St&amp;Opt</i>	0.0245 (1.33)	0.0201 (1.11)	-0.0475 (-1.16)	-0.0424 (-1.06)
<i>CEO_age</i>	0.1168 (1.43)	0.0989 (1.24)	0.1162 (1.43)	0.0990 (1.25)
<i>Independent</i>	-0.0658 (-1.45)	-0.0809* (-1.82)	-0.0581 (-1.28)	-0.0738* (-1.65)
<i>Dir_meet</i>	-0.0035 (-0.13)	0.0135 (0.51)	-0.0032 (-0.12)	0.0133 (0.50)
<i>L_sb</i>	0.0698 (1.10)	-0.3658*** (-2.83)	0.0867 (1.36)	-0.3372** (-2.60)
<i>L_sb</i> <sup>2</sup>		0.6859*** (3.84)		0.6640*** (3.73)
<i>B</i>	0.0348*** (2.60)	0.0294** (2.24)	0.0005 (0.02)	-0.0003 (-0.01)
<i>St&amp;Opt*B</i>			0.0811* (1.97)	0.0706* (1.75)
<i>Tax</i>	-0.2679*** (-4.46)	-0.2726*** (-4.57)	-0.2619*** (-4.30)	-0.2672*** (-4.49)
<i>ROA</i>	-0.1630 (-1.40)	-0.1363 (-1.20)	-0.1276 (-1.09)	-0.1064 (-0.93)
<i>Risk</i>	-0.5073 (-0.80)	-0.5633 (-0.91)	-0.4389 (-0.69)	-0.5020 (-0.81)
<i>Longtail</i>	-0.0216 (-0.98)	-0.0269 (-1.25)	-0.0199 (-0.91)	-0.0252 (-1.17)
<i>P</i>	0.0218 (1.25)	0.0151 (0.88)	0.0205 (1.18)	0.0142 (0.83)
<i>N. obs.</i>	331	331	331	331
<i>R</i> <sup>2</sup>	48.67%	51.27%	49.38%	51.81%
<i>χ</i> <sup>2</sup>	262.60	290.44	269.22	295.67

See Table 2 for variable definition. *t* statistics in parentheses. Superscripts \*, \*\*, \*\*\* indicate statistical significance at the 10%, 5% and 1% levels, respectively.

other hand, the frequency of board meetings (*i.e.* *Dir\_meet*) is not an effective instrument in detecting the inflation of earnings. From this point of view, our results are in line with those of Cornett *et al.* (2008), who highlight the lack of significance of the number of board meetings per year in earnings management practises adopted in the banking industry.

Furthermore, as previously discussed in the description of our hypotheses on external monitoring mechanisms, *L\_sb* was expected to generate more pressure on CEOs to make earning-decreasing decisions, also in the situation when these decisions lead to mitigate CEO benefits. *L\_sb* has a negative effect on earnings management (*i.e.* it supports H5) only when we add *L\_sb*<sup>2</sup> (*Columns* (2) and (4)): other things being equal, the greater weight of the major shareholder is associated with more conservative earning management practises, discouraging CEO opportunism. This effect suggests that the «special» shareholders, such as the major shareholder, matter for the functioning of governance mechanisms: their influence likely works by means of a «pressure» placed on a CEO as

a «shareholder discipline». Furthermore, the sign and the significance of  $L\_sb^2$  confirm the hypothesised U-shaped relationship between the weight of the major shareholder and earnings-decreasing decisions: there is a point at which adding new shares to the shareholding of the major shareholder promotes less conservative earnings management practises. This evidence offers useful insight for the research of an equilibrium between the market for corporate control of the publicly listed companies and the disciplining role of these «special» shareholders.

From the control variables, we see that *Tax* is negatively and significantly related to the earnings-decreasing decisions as suggested by the existing literature (e.g. Grace and Leverty, 2012), whereas the other control variables are not significant.

In summary, *does corporate governance affect earnings management in the insurance industry?* All components of CEO compensation do not affect earnings management practises except for the stock-based components when they interact with the presence of a Big4 external auditor. As such, it matters to control for the presence of an external auditor that is a «Big4» to capture CEO opportunism. In fact, contrary to expectations, the presence of an external auditor that belongs to «Big4» is associated with more speculative earnings management practises as a form of moral hazard by CEOs. However, the independent directors, as an internal monitoring device, and the major shareholder, as an external monitoring device, may counteract CEO opportunism.

## 4.2 Changing regulations on governance

Following Eckles *et al.* (2011), we perform a «natural experiment» to test the effect of new regulation on the insurance industry from 2002 to 2005. Table n. 4 (*Columns (1), (2), (3), and (4)*) shows the results of this «experiment».

The R-squared increases from 49% (*Column (1)* of Table 3) to 55% (*Column (1)* of Table 4), but the results must be interpreted with caution due to the small time span. It seems that the coming into force of SOX does not change how corporate governance mechanisms work in the insurance industry as the cross-effects between SOX and many of the governance variables are not significant<sup>19</sup>. This is probably due to insurer-specific regulation that emphasises how the risks are managed well when they are covered by sufficient capital, disclosed in a transparent manner, and last but not least, supported by an effective corporate governance. As such, corporate governance is a fundamental component of the insurers' risk management<sup>20</sup>. In more detail, among the components of CEO compensation, *St&Opt* has a positive but not significant coefficient (*Columns (1) and (2)*), whereas the interaction with *B* (i.e. *St&Opt\*B*) is positive and significant (*Columns (3) and (4)*), suggesting that stock-based components moderated by the presence of a «Big» auditor lead to earnings-increasing decisions.

<sup>19</sup> We wish to thank an anonymous reviewer who suggested the correct interpretation of the effect of Sarbanes Oxley on governance variables.

<sup>20</sup> From this point of view, we support the complementary hypothesis according to which the regulation on insurance companies is a complement, and not a substitute, of corporate governance (i.e. He *et al.*, 2012).

Table 4: The effect of changing governance regulation

	(1)	(2)	(3)	(4)
	Error	Error	Error	Error
<i>Constant</i>	-0.9420*** (-4.02)	-0.8409*** (-3.60)	-0.9080*** (-3.89)	-0.8153*** (-3.50)
<i>SOX</i>	0.1998 (1.04)	0.2060 (1.10)	0.2043 (1.07)	0.2090 (1.12)
<i>S_ch</i>	0.0534 (0.88)	0.0564 (0.94)	0.0439 (0.72)	0.0483 (0.80)
<i>SOX*S_ch</i>	-0.0114 (-0.10)	-0.0268 (-0.24)	-0.0112 (-0.10)	-0.0272 (-0.24)
<i>BP</i>	0.0400 (1.28)	0.0325 (1.06)	0.0326 (1.04)	0.0267 (0.86)
<i>SOX*BP</i>	-0.0139 (-0.35)	-0.0235 (-0.61)	-0.0050 (-0.12)	-0.0156 (-0.40)
<i>St&amp;Opt</i>	0.0312 (1.56)	0.0299 (1.53)	-0.0623 (-1.41)	-0.0484 (-1.11)
<i>SOX*St&amp;Opt</i>	-0.0016 (-0.06)	-0.0026 (-0.11)	0.0755 (1.08)	0.0574 (0.84)
<i>CEO_age</i>	0.1874** (2.01)	0.2084** (2.27)	0.1877** (2.03)	0.2073** (2.26)
<i>SOX*CEO_age</i>	-0.1596 (-1.60)	-0.1811* (-1.83)	-0.1596 (-1.61)	-0.1787* (-1.81)
<i>Independent</i>	-0.0126 (-0.26)	-0.0409 (-0.85)	-0.0005 (-0.01)	-0.0291 (-0.60)
<i>SOX*Independent</i>	-0.1025 (-1.50)	-0.0627 (-0.91)	-0.1147* (-1.68)	-0.0759 (-1.10)
<i>Dir_meet</i>	-0.0486 (-1.59)	-0.0340 (-1.13)	-0.0457 (-1.51)	-0.0328 (-1.09)
<i>SOX*Dir_meet</i>	0.1148*** (2.99)	0.1272*** (3.36)	0.1174*** (3.07)	0.1291*** (3.42)
<i>L_sb</i>	0.1503** (2.37)	-0.3380** (-2.45)	0.1577** 2.49	-0.3037** (-2.19)
<i>SOX*L_sb</i>	0.0161 (0.51)	0.1400 (1.06)	0.0133 (0.42)	0.1204 (0.90)
<i>L_sb<sup>2</sup></i>		0.7707*** (3.92)		0.7285*** (3.69)
<i>SOX*L_sb<sup>2</sup></i>		-0.1879 (-1.05)		-0.1629 (-0.90)
<i>B</i>	0.0342*** (2.65)	0.0284** (2.23)	-0.0049 (-0.23)	-0.0046 (-0.22)
<i>St&amp;Opt*B</i>			0.1009** (2.35)	0.0852** (2.01)
<i>SOX*St&amp;Opt*B</i>			-0.0866 (-1.21)	-0.0684 (-0.96)
<i>Tax</i>	-0.2541*** (-4.29)	-0.2530*** (-4.36)	-0.2461*** (-4.17)	-0.2463*** (-4.26)
<i>ROA</i>	-0.1568 (-1.37)	-0.1322 (-1.18)	-0.1410 (-1.22)	-0.1182 (-1.04)
<i>Risk</i>	-0.1425 (-0.23)	-0.3101 (-0.51)	-0.1906 (-0.31)	-0.3343 (-0.55)
<i>Longtail</i>	-0.0085 (-0.40)	-0.0132 (-0.64)	-0.0049 (-0.23)	-0.0101 (-0.48)
<i>P</i>	0.0961*** (3.96)	0.0877*** (3.66)	0.0919*** (3.80)	0.0845*** (3.53)
<i>N. Obs.</i>	331	331	331	331
<i>R<sup>2</sup></i>	54.79%	57.79%	55.98%	58.43%
<i>χ<sup>2</sup></i>	339.48	365.49	343.32	372.40

See Table 2 for variable definition. *t* statistics in parentheses. Superscripts \*, \*\*, \*\*\* indicate statistical significance at the 10%, 5% and 1% levels, respectively.

We find unexpected results about the age of CEOs: *CEO\_age* shows a positive and significant coefficient whereas *SOX\*CEO\_age* shows a negative coefficient (that is sig-



nificant only in *Columns (2) and (4)*). In other words, the level of expertise is not able to mitigate the inflation of earnings when governance regulation is enhanced.

The internal monitoring mechanisms (*i.e. Independent* and *Dir\_meet*) display some interesting effects: *Independent* is not significant whereas the interaction between board meetings and SOX (*i.e. SOX\*Dir\_meet*) shows a positive and significant coefficient; that is, the increase of the meetings to discuss claims management is associated with earnings-increasing decisions after the SOX enactment.

From the external monitoring point of view, *L\_sb* shows the expected sign only when we add *L\_sb*<sup>2</sup> to the explanatory variables (*Columns (2) and (4)*).

As such, for the rationale stated above, the change in governance regulation has minimal or no impact on the functioning of P&C insurers' governance because the regulation on insurance companies already promotes a set of effective monitoring mechanisms.

In summary, *does corporate governance affect earnings management in the insurance industry after the SOX enactment?* The results show minimal or no impact of the change in governance regulation on the relationship between earnings management practises and governance mechanisms in the insurance industry; in fact, some governance mechanisms, that are the actions taken by the major shareholder, are effective to counteract the use of the stock-based components of CEO compensation whereas the enlisting of professional «agencies» is contrary to shareholders' interests. These results can be attributable to the regulation on insurance companies that can be considered a complement of corporate governance.

### 4.3 Endogeneity issues<sup>21</sup>

Endogeneity issues may arise with reference to internal monitoring mechanisms (Hermalin and Weisbach, 2003). If earnings management can be considered a fundamental driver of an insurer's performance, earnings management could both be a result of the functioning of internal monitoring mechanisms and itself also a factor that potentially influences how a board performs its advisory role. Thus, to address possible endogeneity of this type in our study, it is necessary to analyse our dependent variable in more detail. Following Beaver *et al.* (2003), we estimate insurers' earnings management comparing the developed reserve, *i.e.* the updated estimation of loss reserve, with the original reserve (as in Eq. (1)). We can rewrite Eq. (1) by adding the sum of the paid losses incurred as follows:

$$(5) \quad Error_{t,t}^j + Cumulative_{t,t+j} = Developed_{t,t+j} - Original_{t,t} + Cumulative_{t,t+j}$$

and then we obtain the following:

$$(6) \quad Error_{t,t}^j = (Developed_{t,t+j} - Cumulative_{t,t+j}) - (Original_{t,t} - Cumulative_{t,t+j})$$

<sup>21</sup> We wish to thank an anonymous reviewer for raising this point.

As such, the first addend is the comparison between the developed reserve and the sum of the paid losses incurred whereas the second addend corresponds to comparison between the original estimate and the sum of the paid losses incurred. That is to say, the dependent variable is also obtained taking into account the sum of the paid losses incurred; this sum is not an estimation as it basically depends on the requests of policyholders. Thus, we can exclude endogeneity issues in the estimation of the relationship between earnings management and internal governance mechanisms in the insurance industry because the sum of the paid losses incurred does not depend on board composition or board meetings.

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## 5 Conclusions

Weak corporate governance has been identified as the leading cause of financial scandals at the end of the last century, but the proper functioning of corporate governance mechanisms remains the focus of the debate on accounting issues. More specifically, earnings management practises may be mitigated by the enhancement of corporate governance mechanisms. To date, there are many studies on corporate governance and earnings management, yet only a few papers discuss this issue for financial institutions explicitly and even fewer discuss it for the insurance industry. Our paper aims to contribute to the debate on the relationship between corporate governance and earnings management by examining a large sample of US P&C insurers between 1995 and 2005. We find that various factors contribute to enhancing the inflation of earnings, whereas other factors contribute to mitigate their manipulation. In addition, the preliminary analysis on the change in governance regulation displays how new regulation was found to have a minimal or no impact on earnings management in the insurance industry; this result probably depends on the existing regulation of insurance companies that already promotes the sound functioning of corporate governance mechanisms. More specifically, we find that components of CEO compensation are not associated with earnings manipulation except for the stock-based components when we control for the cross-effect between these components and the presence of a «Big4» auditor. This provides evidence that the relationship between corporate governance and earnings management within the insurance industry cannot be safely assessed without analysing both how internal monitoring mechanisms work and what external monitoring mechanisms are operating. From this point of view, we find evidence of the effectiveness of some internal monitoring mechanisms, *i.e.* the number of independent directors, and of some external monitoring mechanisms, *i.e.* the presence of «special» shareholders, whereas the presence of the «special» agencies reveals some interesting implications from a regulatory point of view. On the one hand, the role of the major shareholder seems to be crucial in encouraging more conservative earnings distribution policies adopted by CEOs, at least up to a certain point; on the other hand, the presence of an external auditor with a great reputation is associated with the inflation of earnings; it seems to be another behaviour of moral hazard by CEOs.

Furthermore, despite the small period since the SOX came into force to 2005, our results show how the new regulation on governance has a minimal or no impact on the relationship between earnings management and corporate governance in the insurance

industry; in fact, the regulation on insurance companies relies on effective corporate governance. As such, future research on earnings management in the insurance industry should be addressed towards the analysis of the impact of the financial crisis on the earnings practises. From this point of view, it may be interesting to stress the level of «resilience» of the regulation on insurance companies.

Overall, the results of our paper provide valuable insights for the policy debate on financial scandals related to the lack of corporate governance. As is found in our paper, well-functioning governance mechanisms may have a role to play in mitigating earnings management and to align the interests of CEOs with those of shareholders in the insurance industry.

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