

# **Audit Quality, Public Ownership and Firms' Discretionary Accruals Management**

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# Audit Quality, Public Ownership and Firms' Discretionary Accruals Management

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**ABSTRACT:** Francis et al. (1999) and Becker et al. (1998) report evidence that audit quality acts as a constraint on both income-increasing and income-decreasing earnings management in public firms. These results raise several interesting questions. First, are incentives for and constraints on earnings management independent of whether earnings are above or below target? Second, does audit quality also restrain earnings management in private firms as it does in public firms? Third, does public ownership itself act as a constraint on earnings management? One could argue that, relative to private ownership, public ownership increases the scrutiny of a firm's financial statements which may in turn restrain a firm's earnings-management behavior.

Accordingly, we study publicly available financial statements of a matched sample of public and private Belgian firms. Following Francis et al. 1999, DeFond and Subramanyam 1998, Becker et al. 1998, we use discretionary accruals as a measure of earnings management. One finding is that audit quality and public ownership act as constraints on income-*decreasing* earnings management. We also find that, to a large extent, public ownership and auditor type are substitutes: for example, a firm that is both public and big-6-audited typically does not show more restraint in earnings management than a firm that has only one of these characteristics. Lastly, we do not have any evidence that audit quality and public ownership constrain income-*increasing* earnings management.

Thus, our study contributes to the literatures on audit quality differentiation and especially earnings management. First, we provide supportive evidence of audit quality differentiation between Big 6 and non-Big 6 auditors in the *private* clients segment of the audit market. Second, we provide evidence on differences in the level of discretionary accruals between public and private firms.

**Key Words:** *Audit Quality, Discretionary Accruals, Earnings Management, Governance.*

**Data Availability:** *Data are generally available from public sources.*

## 1. Introduction

Stakeholders are interested in the financial performance of the firms they are dealing with and accounting numbers are an important summary statistic of performance. As the magnitude of earnings is affected by accounting decisions, an interesting question is whether firms “manage” earnings through such decisions and what determines earnings management. The vast majority of studies on earnings management focus on incentives for and constraints on earnings management by listed firms. Prior evidence is supportive of the following incentives of earnings management: explicit (such as bonus plans and debt covenants) and implicit contracts<sup>1</sup>, capital markets and need for external financing<sup>2</sup>, the political and regulatory process<sup>3</sup> and some specific circumstances (such as labour union contract negotiations, proxy contests and earnings decreases or losses)<sup>4</sup>. As to constraints of earnings management the evidence is supportive of: managerial and institutional ownership, audit committees, audit quality and internal governance mechanisms such as the size of the board of directors<sup>5</sup>.

In this study we investigate whether audit quality and public ownership are constraints on the level of earnings management and how these constraints interact. As prior studies focused on listed companies, little is known about the impact of public ownership on earnings management, and the incentives for and constraints on earnings management in non-listed companies. We follow Trueman and Titman (1988) and argue that firms avoid deviations in reported earnings to influence stakeholders’ perception of the variability of economic earnings. Therefore we expect and find that income-increasing earnings management occurs in case firms have pre-managed earnings that are lower than prior year reported earnings, and income-decreasing earnings management in the opposite case. Conditional on the direction of the earnings management incentive, we then formulate hypotheses on the impact of audit quality and public ownership on earnings management. Discretionary accruals are used as a measure for earnings management in this study. Our results indicate that both audit quality and public ownership work as constraints

on the level of income-*decreasing* earnings management, but that they have no incremental impact over one another (that is, the interaction between the two constraints is negative). This indicates that the joint impact of both constraints is not larger than the impact of either constraint separately. We do not find evidence supportive of a constraining effect of audit quality and public ownership on the level of income-*increasing* earnings management.

Our paper addresses some interesting questions such as: (1) is there evidence of audit quality differentiation for non-listed firms and does it differ from the existing evidence for listed firms, and (2) what is the impact of public ownership on earnings management? To our knowledge, these questions have not been empirically addressed in prior studies. First we contribute to the literature on audit quality differentiation, as our study provides evidence on the impact of the appointment of a Big 6 auditor on earnings management in non-listed firms. We report evidence of quality differentiation between Big 6 and non Big 6 auditors in non-listed firms when they are confronted with income-*decreasing* earnings management. However, we do not find evidence of audit quality differentiation between both types of auditors when they are confronted with income-*increasing* earnings management, even for listed firms. The latter result contradicts prior evidence of audit quality differentiation in listed companies (see, for example, Francis et al. 1999, and Becker et al. 1998).

Second, we contribute to the earnings management literature as we provide evidence on differences in the level of earnings management between listed and non-listed firms. Prior studies used the results of an experiment (Cloyd, Pratt and Stock 1996) or a questionnaire (Pennon and Simon 1986) and were confined to testing differences in accounting procedure choices. As earnings management through accrual decisions is less visible, it might well be that it is used more extensively than earnings management through accounting procedure choices. Unlike those prior studies we did not use American data, but Belgian data, because financial statement data are not publicly available for non-listed firms in the US, but they are in Belgium<sup>6</sup>. This enables us to study discretionary accruals as a measure of earnings management.

The paper proceeds as follows. In the next section we discuss the hypotheses that are tested in this paper. In the third section, we discuss the sample and the data. In section four we present our empirical models. We discuss our results in section five. In the final section we conclude the paper.

## **2. Research Hypotheses**

We first argue that firms have *incentives* to avoid large variability in reported income numbers and engage in income smoothing irrespective of the fact whether they are publicly or privately held. Then, conditional on whether firms have an incentive to engage in income-increasing or income-decreasing earnings management strategies, we develop hypotheses on two viable *constraints* on earnings management behavior, namely audit quality and public ownership.

### **Avoidance of deviations in reported earnings as an incentive for earnings management**

Due to separation between ownership and control inherent in corporate ownership structure, earnings management opportunism is widely assumed to be applicable to publicly listed companies (see; for example, Francis et al. 1999). The empirical evidence is supportive of accruals management by listed firms in order to smooth income (see, for example, Healy 1985, Gaver et al. 1995, DeFond and Park 1997, Young 1998). We believe that avoidance of large variability in reported income numbers is also a valid incentive for earnings management in non-listed privately held firms. Our belief is based on Trueman and Titman's (1988) argument that firms may avoid deviations in reported earnings to influence stakeholders' perception of the variability of the underlying economic earnings, and so their assessment of the probability of bankruptcy of a firm. This might then influence the terms of trade of a firm with its various stakeholder groups such as customers, suppliers, short-term creditors and employees. Hence, we expect that both listed and non-listed firms have incentives to manage earnings opportunistically

to avoid variability in reported earnings, albeit for (partially) different reasons. In non-listed firms smoothing occurs as an attempt to influence relations with various stakeholders, whereas in listed firms it also, or mainly, happens to influence market value. Our expectation is borne out by the tests performed later on in this paper.

### **The impact of audit quality and public ownership on earnings management**

If firms indeed have incentives to smooth income, they will engage in income-increasing earnings management when pre-managed earnings are below last year's reported earnings, whereas the opposite will occur when pre-managed earnings are above last year's reported earnings.

Monitoring and governance mechanisms may work as constraints on both income-increasing and income-decreasing earnings management. We investigate the impact of two such constraints, namely audit quality and public ownership. Prior studies (see, for example, Becker et al. 1998, Francis et al. 1999) indeed report evidence that is supportive of the constraining impact of audit quality on earnings management, as a lower level of discretionary accruals can be observed for firms that appoint Big 6 auditors. The underlying rationale is that Big 6 auditors are more competent and/or independent<sup>7</sup> as compared to non Big 6 auditors, and therefore are less tolerant vis-à-vis the level of discretionary accruals adopted by firms. As all prior studies are based on samples of publicly listed firms, it is unknown whether audit quality also works as a constraint on earnings management in non-listed firms. Further, it is also unknown whether public ownership affects earnings management behavior and whether it works as a constraint or as an incentive.

Public ownership may work as an incremental *constraint* on earnings management due to increased scrutiny by market participants on the reported income figure. As this may increase the probability of earnings management detection, listed companies can be expected to be more reluctant to manage earnings than non-listed companies. However, public ownership may also provide an additional *incentive* to manage earnings opportunistically. The rationale is that

earnings are managed such that stock market expectations about earnings are fulfilled. Not meeting stock market's expectations may have a negative impact on market value through declines in stock prices, which may in turn increase a firm's cost of capital. Overall, we believe that the impact of public ownership on earnings management differs dependent on whether firms have an incentive to smooth income upwards or downwards. Hence we formulate separate hypotheses for below and above target firms.

### **Hypotheses on constraints on earnings management in *above* target firms**

When pre-managed earnings are above target that is, when they are above prior year's reported earnings, the income-smoothing incentive induces firms (both listed and non-listed) to adopt a negative discretionary accruals strategy<sup>8</sup>. If audit quality indeed works as a constraint on this instance of earnings management, we expect less negative discretionary accruals for above target firms that are audited by a Big 6 auditor, irrespective of whether they are listed or not. However, it is also likely that public ownership in itself constrains negative discretionary accruals strategies, meaning that listed firms will be more reluctant to decrease earnings than non-listed firms (irrespective of audit quality). There are at least two good reasons for this. First, because stock market scrutiny increases the probability that opportunistic earnings management is detected for listed firms. Second, because listed firms may want to avoid that earnings expectations are not met as a result from adopting a negative discretionary accruals strategy. This is not unlikely, as investors tend to expect a certain growth in annual earnings. As a result, we expect that listed firms will engage less in income-decreasing earnings management than non-listed firms.

Our reasoning results in the following two hypotheses about constraints on earnings management for *above* target firms:

**HYPOTHESIS 1A:** *Audit quality is a constraint on earnings management in firms (both listed and non-listed) that have smoothing incentives to adopt a negative discretionary accruals strategy.*

**HYPOTHESIS 1B:** *Public ownership is a constraint on earnings management in firms that have smoothing incentives to adopt a negative discretionary accruals strategy*

### **Hypotheses on constraints on earnings management in *below* target firms**

When pre-managed earnings are below target that is, when they are below prior year's reported earnings, the income smoothing incentive enhances both listed and non-listed firms to adopt a positive discretionary accruals strategy<sup>9</sup>. If audit quality differentiation indeed exists between Big 6 and non Big 6 audit firms, we expect – as in the above target case – that audit quality constrains earnings management irrespective of ownership type. We therefore hypothesize that the audit by a Big 6 auditor will result in less earnings management, and thus for below-target firms in less positive discretionary accruals. The impact of public ownership on earnings management is however not so unambiguous in the below target case. Again, two forces are likely to have an effect – increased scrutiny on earnings numbers by the market *and* the firm's concern to meet stock market expectations – but they seem to result in conflicting predictions as to the earnings management behavior. First, greater scrutiny on the quality of earnings numbers reported by listed companies enlarges the probability of detection of earnings management and the costs that come with it. *Ceteris paribus*, the effect here is that listed firms engage less in positive discretionary accruals strategies than non-listed firms. Second – and on the contrary – listed firms face additional earnings expectations from the stock market which could motivate them to adopt more pronounced positive discretionary accruals strategies as compared to non-listed firms. Since public ownership can work both as an incentive and as a constraint on earnings management in below target firms, we expect that it has no net observable impact.

The above reasoning results in the following two hypotheses about constraints on earnings management for *below* target firms:

**HYPOTHESIS 2A:** *Audit quality is a constraint on earnings management in firms (both listed and non-listed) that have smoothing incentives to adopt a positive discretionary accruals strategy.*

**HYPOTHESIS 2B:** *Public ownership both works as a constraint on and an incentive for earnings management in firms that have smoothing incentives to adopt a positive discretionary accruals strategy, and therefore has no net impact on earnings management.*

### **3. Sample Selection and Data**

#### **Sample Selection**

From the Belfirst<sup>10</sup>, we selected *all* industrial and commercial<sup>11</sup> firms that were listed on the Brussels Stock Exchange and published consolidated financial statements (n=52) (see Table I). This sample was matched on industry (at least two-digit nace) and size (total assets) with a sample of non-listed firms. Thirteen companies were deleted as we could not find a matching firm with consolidated financial statements. For the remaining 39 companies, data of consolidated financial statements were obtained for as many years as possible between 1991 and 1997. For each year included, consolidated financial data had to be available for the listed as well as its matching company. This resulted in a sample of 352 firm-year observations<sup>12</sup>. The number of firm-observations that was used in the tests is reduced to 136 (that is 62 companies), because already three years of observations are needed to compute (1) discretionary accruals and (2) a proxy for the need for external finance in the multiple regression analysis. Table II gives an overview of the number of firm-year observations and companies per industry.

[Insert Table I and Table II about here]

### **Descriptive Statistics**

Table III presents some descriptive statistics on the test and control variables for the full sample and the sub-samples of above and below target firms. Panel A (full sample) shows that pre-managed earnings are above target in about half of the sample firm-years and that, consistent with our research design, half of our sample-firms are listed. About two-thirds of our sample firms (all of which belong to the largest Belgian firms) are audited by Big 6 auditors. Thirty-five percent of our sample firms have a board of optimal size<sup>13</sup>, that is, one that includes at least 8 but not more than 12 directors. In over 78 percent of our firm-years, there was an ex post increase in the sum of financial debt and paid-in-capital. A comparison of debt versus equity financing illustrates that capital raising on debt markets occurs more frequently (72 percent of our firm-years) than on stock markets (only about 19 percent). About 10 percent of our sample companies are operating in durable goods industries. Panel A further shows that operating cash flow amounts to about 9 percent of lagged total assets. Mean (median) total assets are about eight and a half (six) billion BEF. Long-term debt financing is on average 16 percent of total assets, while average short-term debt financing (STCRED) amounts to 10 percent of total assets. As could be expected, non-listed firms are somewhat more levered than listed ones (results are not tabulated). The mean and median cost of employees amounts to 21 percent of sales, while the mean and median amount of purchases of raw materials, commercial goods, supplies and services to sales in a particular year is 71 percent. As could be expected, non-listed firms are somewhat more levered than listed ones (results are not tabulated). Tangible fixed assets increased on average by 7 percent of prior year total assets.

Panel B and panel C of table III parallel the statistics in panel A. In the above target sub-sample somewhat less than 47 percent of the sample firm-years belong to listed firms, and 70 percent of the firm-years are audited by Big 6 auditors. About 33 percent of the firm-years belong

to firms with an optimal number of directors, and in 75 percent of the firm-years there is an increase in the total of paid-in capital and financial debt. As in the full sample, there is a higher incidence of fund raising on debt (71.66%) than on stock markets (15%). On average operating cash flow is somewhat larger, but leverage and firm size are smaller in the above target than in the full sample.

In the below target sub-sample (see panel C of Table III), somewhat over half of the observations stem from listed firms. Further, about 60 percent of the firm-years are audited by Big 6 auditors, and in 38 percent of the cases there is a board of "optimal size", that is the number of directors on the board is at least 8 but not more than 12. In 78.33 percent of the cases there was an increase in the total of capital or debt. Also in this sub-sample, debt raising (71.66%) occurs more frequently than capital raising (20%).

[Insert Table III about here]

#### **4. Model Specification and Variable Measurement**

In Table IV we report the empirical model that we developed to test the hypotheses proposed in Section 2. We argued above that both audit quality and public ownership affect earnings management strategies, conditional on whether pre-managed earnings are above or below target. Therefore, we ran our regression model on either the sub-sample of above-target and below-target firms separately, and will refer to those models as Model 1 and Model 2, respectively. Following prior studies (see, Gaver et al. 1995, Guay et al. 1996, DeFond and Park 1997, Subramanyam 1997, Young 1998) we computed pre-managed earnings as this year's reported earnings minus discretionary accruals<sup>14</sup>. In the remainder of this section, we discuss our measure of earnings management, that is discretionary accruals, and the various test and control variables included in our Models 1 and 2.

[Insert Table IV about here]

### **Earnings Management Measure**

We focus on earnings management through unexpected or discretionary accruals. The total accruals are computed as the change in non-cash working capital, minus depreciation and amortisation (of accrued set-up costs, intangible and tangible assets), provisions, write-offs and losses on asset disposals. Following DeAngelo (1986, 1994), we then calculate unexpected or discretionary accruals as changes in total accruals between the current and the previous year scaled by lagged total assets<sup>15</sup>. That is,

$$DAC_{it} = TAC_{it} - TAC_{it-1} \quad (1),$$

where:

$DAC_{it}$  = Discretionary accruals for firm  $i$  in year  $t$  scaled by lagged total assets

$TAC_{it}$  = Total accruals for firm  $i$  in year  $t$  scaled by lagged total assets.

### **Test and Control Variables**

Table IV reports the test and control variables of our empirical model as well as the expected sign of the parameters. Our empirical model is as follows:

$$DAC_{it} = \beta_0 + \beta_1 TYPE_{it} + \beta_2 AUDIT_{it} + \beta_3 AUDIT_{it} * TYPE_{it} + \beta_4 DIR_{it} + \beta_5 FIN_{it} + \beta_6 CF_{it} + \beta_7 SIZE_{it} + \beta_8 LEV_{it} + \beta_9 INVEST_{it} + \beta_{10} SUP_{it} + \beta_{11} EMPL_{it} + \beta_{12} STCRED_{it} + \beta_{13} DUR_{it} + \epsilon_{it} \quad (2).$$

To capture the impact of audit quality on earnings management and thus test for the validity of hypotheses 1A and 2A, we introduce an indicator variable,  $AUDIT$ , which is equal to one if the firm is audited by a Big 6 auditor, and zero otherwise. Prior studies (see, for example Becker et al. 1998, Francis et al. 1999) report that Big 6 auditors (which are considered to deliver a higher

level of audit quality than non-Big 6 auditors) constrain earnings management through discretionary accruals. We argued that having a Big 6 auditor constrains a firm's attempt to increase as well as decrease earnings. Therefore, we expect a significant positive coefficient on the AUDIT variable in the above target sub-sample (Model 1), while we expect a significant negative coefficient in the below target sub-sample (Model 2).

Next, we introduce an indicator variable (TYPE) to assess the impact of ownership type on earnings management, and thus to test the validity of hypotheses 1B and 2B. TYPE equals one if a firm is listed on the Brussels Stock Exchange, and zero otherwise. We expect a positive coefficient on TYPE in Model 1 (the above target sub-sample). This would indeed be consistent with hypothesis 1A and would mean that public ownership constrains the adoption of negative discretionary accruals strategies, meaning that listed firms forego some benefits associated with the adoption of such strategies<sup>16</sup>. Consistent with hypothesis 2B, we do not expect a significant impact of TYPE in Model 2 (the below target sub-sample), as public ownership may as well constrain as induce a positive discretionary accruals strategy. Should we, however, observe a significant positive coefficient on TYPE in the below-target sub-sample, this would be supportive of the 'incentive' impact of public ownership. On the contrary, observation of a significant negative coefficient would be supportive of the 'constraining' impact of public ownership. Finally, we include the interaction between the variables AUDIT and TYPE (AUDIT\*TYPE) in the model, to allow both constraints to have an incremental effect over one another and to test for this.

We also included various control variables in our empirical model. Following prior studies, we expect an effective board of directors (see for example Dechow et al. 1996, Beasley et al. 1996) to constrain a firm's earnings management behavior. It is argued in the literature that board effectiveness may be influenced by board size. Some argue that a sufficient number of directors is necessary to make a fruitful discussion possible, whereas others argue that too high a number does not improve communication (see for example Jensen 1993). We believe that

earnings management may be related to whether boards include an ‘optimal number’ of directors. Therefore, an indicator variable, DIR, is included to control for the impact of board size on a firms' earnings management behavior. DIR is equal to one in the model if a firm's board is of ‘optimal size’, that is if it consists of at least 8 but no more than 12 directors<sup>17</sup>, and zero otherwise. As we expect that DIR will constrain earnings management strategies, we expect a positive (negative) coefficient when earnings are above (below) target.

Next we introduce a variable to control for earnings management by firms that need additional external financing. Several prior studies suggest that income-increasing earnings management is induced by the need for additional external financing (Dechow et al. 1996) or external funds from stock markets (see, for example Shivakumar 1998, Rangan 1998, Teoh et al. 1998, Friedlan 1994, Aharony et al. 1993). To control for this (potential) impact we include an indicator variable, FIN. We examine the impact of increases in both bank loans and equity financing, since bank loans are an important source of finance for Belgian firms. FIN takes a value equal to one if there is an increase in external finance (equity and/or bank loans) the year subsequent to the year in which earnings are reported (and potentially manipulated); it takes the value zero otherwise<sup>18</sup>. We expect a positive sign on this coefficient in both sub-samples.

The next control variable we introduce is a performance measure. Dechow et al. (1995) and Young (1999) report that the existing accrual expectation models may yield measurement error in the discretionary accruals proxy, and hence misspecified tests of earnings management for firms with extreme financial performance. We include cash flow from operations (CF) to control for this potential misspecification. As in the above mentioned studies, we expect to find a negative coefficient on this variable.

The political cost (size) hypothesis suggests that larger firms (that is, firms with more political visibility) prefer income-decreasing accounting choices. The variable SIZE is included to control for this effect. This variable is measured as the natural logarithm of total assets<sup>19,20</sup>.

Theory suggests the coefficient on this variable be negative.

The next control variable we introduce is the leverage of the firm. We include leverage (LEV) to control for discretionary accruals management in highly levered firms and motivate this as follows. First, Becker et al. (1998) suggest that leverage can be a proxy for potential income-decreasing accruals management in firms suffering from financial distress. Second, the debt-equity hypothesis (Watts and Zimmerman 1986) suggests that high leverage works as an incentive for income-increasing earnings management. Since these two references stipulate a different relationship between discretionary accruals and leverage, we do not propose an expected sign on the coefficient of leverage.

Investments can result in more negative total accruals due to the associated increase in depreciation expense. To control for this impact we included a variable, INVEST, that is measured by the level of investment in tangible fixed assets in the year under study (year t) scaled by total assets at the beginning of that year (or, alternative t-1). We predict a negative coefficient on this variable.

In Section 2 we argued that theory (Trueman and Titman 1988) suggests that firms have incentives to *smooth* income to influence terms of trade with various stakeholders such as customers, suppliers, employees and short term creditors. Given that firms will avoid changes in reported earnings, we also believe that the incentives for (income-increasing and income-decreasing) earnings management could be enhanced by the extent to which firms depend on implicit contracts with stakeholders. Following Bowen et al. (1995) we include a number of variables to control for the impact of various stakeholder relations on earnings management. First, we include the ratio of the cost of commercial goods, raw materials, supplies and services to sales<sup>21</sup>, defined as SUP, to proxy for the extent to which firms depend on implicit contracts with their suppliers. The rationale is that implicit contracts with suppliers often concern "timely payment and continuing demand for suppliers products" (Bowen et al. 1995 p. 270). Next, demand for after-sales-services is an example of an implicit contract with stakeholders. This demand is likely to be higher in firms that produce durable goods. Therefore, we include an

indicator variable, DUR, which equals one if firms operate in the durable goods industry, and zero otherwise.<sup>22</sup> Third, we also consider implicit contracts with employees, and believe that firms' dependence on implicit claims with their employees is likely to vary in a firm's labor intensity (Bowen et al. 1995). We include a variable EMPL, that is measured by personnel cost<sup>23</sup> over sales, as a proxy of labor intensity. Finally, we include the variable STCRED, which is the amount of short-term (financial) debt over total assets. This variable serves as a proxy for the extent to which firms depend on implicit contracts with short-term creditors. As we expect that implicit contracts are an *incentive* for firms to engage in earnings management strategies, we predict a positive (negative) sign on the coefficients of the implicit contract variables (EMPL, DUR, SUP, and STCRED) for below- (above-)target firms.

## 5. Discussion of the Results

Table V reports the results of the OLS estimation of Model 1 (above target sub-sample) and Model 2 (below target sub-sample)<sup>24,25,26</sup>. Both models are significant at  $p < 0.01$ , and yield  $R^2$ -values of 0.3006 and 0.2858, respectively. In Figure I we graphically present our results on the impact of audit quality, public ownership and the interaction between these two factors on earnings management for both the above and below target sub-samples.

[Insert Table V about here]

[Insert Figure I about here]

### Results for Above-Target Firms: H1A and H1B

We find a significant positive coefficient on the AUDIT variable (at  $p = 0.0017$ ) for the above-target sub-sample. This implies that Big 6 auditors constrain earnings management more than non-Big 6 auditors when firms have incentives to adopt negative discretionary accruals strategies.

This evidence is supportive of Hypothesis 1A, and also indicates that there is audit quality differentiation between Big 6 and non-Big 6 auditors. Our results further indicate that listed firms decrease earnings less through discretionary accruals than non-listed firms (p-value of TYPE = 0.0046). This confirms our Hypothesis 1B, and suggests that public ownership also works as a constraint on income-decreasing earnings management. The significant negative coefficient (p=0.0288) on the interaction variable, AUDIT\*TYPE, and the magnitude of the coefficients on TYPE (+0.1769), AUDIT (+0.1689) and AUDIT\*TYPE (-0.1698) indicate that audit quality and public ownership have no incremental effect over one another. The results even suggest that a similar magnitude of earnings management occurs in listed companies that are audited by a Big 6 auditor, in listed companies that are audited by a non-Big 6 auditor, and in non-listed companies that are audited by a Big 6 auditor. Only in firms where none of the two constraints is active, that is in non-listed firms audited by a non-Big 6 auditor, is there a higher level of income-decreasing earnings management. Figure II represents the above conclusions.

The fact that we do not find an incremental constraining effect of public ownership over audit quality or vice versa is consistent with either of the following explanations. First, it could be that public ownership works as a deterrent on income-decreasing earnings management strategies, and consequently the remaining level of earnings management is too small for auditors to constrain it even further (that is, it is not material anymore and there is nothing for auditors to constrain). Based on their experiences in listed versus non-listed firms, auditors may even adapt their beliefs (their priors) as to the likelihood of earnings management and as a result also adjust audit effort. Second, it could also be that audit quality works as a primary constraint on income-decreasing earnings management irrespective of ownership type. The audit quality constraint could result from actual adjustments in the accruals dictated by the Big 6 auditor after some income-decreasing earnings management strategy has been uncovered. Another possibility is that the mere appointment of a Big 6 auditor works as a deterrent to aggressive earnings management as detection of earnings management is costly (for example due to increased audit effort as a

result of detection). In case audit quality works as a primary constraint, public ownership only functions as an additional constraint for firms audited by non-Big 6 auditors. Finally, it could also be that the observed level of earnings management in listed companies audited by Big 6 auditors is the joint effect of the above scenarios.

As to the control variables, we only find significant parameter coefficients for the variables CF ( $p = 0.0077$ ), SIZE ( $p = 0.0437$ ), INVEST ( $p=0.0599$ ). However, the results on the SIZE variable contrast the political-visibility hypothesis, as the sign of the variable SIZE is opposite to our expectation. However, it is known that size can measure many other things than political visibility.

[Insert Figure II about here]

### **Results for Below Target Firms: H2A and H2B**

We lack evidence that audit quality functions as a constraint on earnings management when firms have incentives to engage in income-increasing earnings management and do not find evidence supportive of hypothesis 2A. This can be concluded from the insignificant parameter value of the AUDIT variable ( $p=0.7684$ ) in Model 2. This is an interesting result, as there is indication of quality differentiation in the above-target case but not in the below-target case. This indicates that Big 6 and non-Big 6 auditors offer a similar level of audit quality when confronted with income-increasing earnings management strategies. Note that potential losses to financial statement users are usually higher when their decisions are based on overstated earnings as compared to understated earnings. Therefore it is likely that the auditor's business risk is higher in case income-increasing-earnings management remains unconstrained. Consequently our results could indicate that Big 6 and non-Big 6 (in fact second-tier) auditors are generally equally competent at detecting earnings management, but non-Big 6 auditors only constrain when faced with sufficiently large business risk, whereas Big 6 auditors always constrain. This also implies that

non-Big 6 auditors are 'less independent' than their Big 6 counterparts, but only when confronted with income-decreasing earnings management.

The results on TYPE for the below-target sub-sample are consistent with our reasoning in Section 2 that both the 'incentive' and 'constraint' effects of public ownership have an impact of similar size on income-increasing earnings management in below-target firms. We derive this from the insignificant p-value of the variable TYPE ( $p=0.1544$ ) indicating an equal level of earnings management between listed and non-listed companies. Further is there no significant interaction between audit quality and public ownership ( $p, \text{AUDIT}*\text{TYPE}= 0.6338$ )<sup>27</sup>. Overall, the results on TYPE in the below-target sub-sample are supportive of hypothesis 2B.

As to the control variables we find significant results for DIR, FIN and STCRED. However, the result on DIR contrasts existing theory as we find a sign opposite to our prediction. A possible explanation is that in Belgian firms most directors are representatives of the main shareholders who prefer to limit income increases as these may result in additional wage demands<sup>28</sup>. Another interesting result is that income-increasing earnings management is lower in years before firms obtain additional external financing (FIN). This suggests firms rather withhold from managing earnings upward too much as they fear detection of any income-increasing earnings management, which may have an adverse affect on the cost of capital and the ability to raise future funds. This result is orthogonal to prior Anglo-Saxon evidence (Aharony et al. 1993, Friedlan 1994, Dechow et al. 1996, Rangan et al. 1998, Teoh et al. 1998) of income-*increasing* earnings management before firms go public or obtain additional financing on equity markets. A potential explanation is that the majority of additional finance in our sample is raised on *private debt* markets whereas prior studies concentrate on funds from *public stock* markets.

## **6. Summary and discussion**

In this paper, we examined whether audit quality and public ownership are constraints of earnings management and whether there is an incremental constraining effect of the one above the other.

We first argued (and tested) that income smoothing is an important incentive of earnings management, and that the impact of both constraints is conditional upon the level of pre-managed earnings in firms (and hence whether firms have incentives to adopt either an income-decreasing or income-increasing earnings management strategy). We developed hypotheses on the impact of both constraints on income-decreasing and -increasing earnings management.

There is a clear indication that Big 6 auditors constrain income-decreasing earnings management more than non-Big 6 auditors. There is also a clear constraining effect of public ownership for companies audited by non-Big 6 auditors. However, there is no incremental effect of audit quality over public ownership or vice versa, of public ownership over audit quality. We presented a number of explanations for these findings. First, it could be that public ownership reduces earnings management to an acceptable level, so that there is no need for higher quality auditors to constrain earnings management of listed companies even further. Second, Big 6 auditors may constrain income-decreasing earnings management by demanding adjustments or because their appointment works as a deterrent. In this case, public ownership does not provide an incremental constraint. Third, reduction in earnings management can stem from the joint effect of these two constraints.

Contrary to our expectation, we do not find evidence that audit quality works as an incremental constraint on income-increasing earnings management. But as expected, we can not distinguish a (net) constraining impact of public ownership on income-increasing earnings management. We argued that is due to two opposite forces at work in this context. First increased scrutiny from stock market participants may work as a deterrent on income-increasing earnings management. Second, however, the stock market's expectations regarding earnings may work as an incentive for income-increasing earnings management.

Tests of the constraining impact of audit quality on earnings management are also tests of product differentiation in the audit market. We provide some interesting results that are different from but somehow complementary to the existing evidence. First, prior research documents

evidence of quality differentiation in *listed* companies (Becker et al. 1998, Francis et al. 1999), whereas we only find clear evidence of quality differentiation in non-listed companies. We are unable to assess whether lower income-decreasing earnings management in listed companies stems from higher quality audits or public ownership. This result is not so unusual as it may appear. Assuming that stock market incentives are more important for the larger clients of the listed client segment, our results are in line with evidence documented in prior audit fee studies (see, for example, Simunic 1980, Francis and Simon 1987, Palmrose 1986a, Palmrose 1986b, Simon and Francis 1988). These studies report evidence consistent with audit-fee premia for Big 6 auditors in the small-client segment of the audit market. Prior evidence on the existence of audit-fee premia in the large client segment of the audit market is however mixed. This suggests that research on the interaction of the (joint) impact public ownership and audit quality on earnings management is an interesting area for future research.

Further, we also only find evidence of product differentiation between Big 6 and other auditors when auditors are faced with income-*decreasing* earnings management. Prior research reports evidence of product differentiation in both income-increasing as well as income-decreasing earnings management contexts (Francis et al. 1999), or with income-increasing earnings management alone (Becker et al. 1998). We argued that our result may indicate that Big 6 auditors and second tier auditors are equally competent in detecting earnings management, but that non-Big 6 auditors decide not to constrain income-decreasing earnings management strategies as they involve lower business risk. This may imply that in these instances their independence is impaired.

## References

- Aharony, J., Lin, C.-J. and Loeb, M.P. , 1993, Initial Public Offerings, Accounting Choices, and Earnings Management, *Contemporary Accounting Research* 10, 61-81.
- Beasley, M.S. ,1996, An Empirical Analysis of the Relation Between the Board of Director Composition and Financial Statement Fraud, *The Accounting Review* 71, 443-465
- Becker, C. L., DeFond, M. L., Jiambalvo, J. and Subramanyam, K.R.,1998, The Effect of Audit Quality on Earning Management, *Contemporary Accounting Research* 15, 1-24.
- Beurs van Brussel/ Commissie voor het Bank en Financieuzen, 1998, Corporate Governance voor Belgische Beursgenoteerde Vennootschappen.
- Bowen, R.M., DuCharme, L. and Shores, D. , 1995, Stakeholders' implicit claims and accounting method choice, *Journal of Accounting and Economics* 20, 255-295.
- Burgstahler, D. and Dichev, I. , 1997, Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24, 99-126.
- Cloyd, B.C., Pratt, J. and Stock, T., 1996, The Use of Financial Accounting Choice to Support Aggressive Tax Positions: Public and Private Firms, *Journal of Accounting Research* 34, 23-43.
- Daems, H., 1998, De paradox van het Belgische kapitalisme (Lannoo Tielt).
- DeAngelo, L., 1986, Accounting Numbers as Market Valuation Substitutes: A Study of Management Buyouts of Public Stockholders, *The Accounting Review* 61, 400-420.
- DeAngelo, L. E. , 1988, Managerial Competition, Information Costs and Corporate Governance: The Use of Accounting Performance Measures in Proxy Contests, *Journal of Accounting and Economics* 10, 3-36.
- DeAngelo, H., DeAngelo, L. and Skinner, D.J. 1994, Accounting choice in troubled companies, *Journal of Accounting and Economics* 17, 113-143.
- Dechow, P.M., Sloan R.G. and Sweeney, A.P.,1995, Detecting Earnings Management, *The Accounting Review* 70, 193-225.
- Dechow, P.M., Sloan, R.G. and Sweeney, A.P., 1996, Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC, *Contemporary Accounting Research* 13, 1-36.
- DeFond, M.L. and Jiambalvo, J., 1991, Incidence and Circumstances of Accounting Errors, *The Accounting Review* 66, 643-655.
- DeFond, M.L. and Jiambalvo, J., 1993, Factors Related to Auditor-Client Disagreements over Income-Increasing Accounting Methods, *Contemporary Accounting Research* 9, 415-431.

- DeFond, M.L. and Jiambalvo, J., 1994, Debt covenant violation and manipulation of accruals, *Journal of Accounting and Economics* 17, 145-176.
- DeFond, M.L. and Park, C.W., 1997. Smoothing income in anticipation of future earnings. *Journal of Accounting and Economics* 23: 115-139.
- DeFond, M.L. and Subramanyam, K.R., 1998, Auditor Changes and Discretionary accruals, *Journal of Accounting and Economics* 25, 35-68.
- Francis, J.R., Maydew, E.L. and Sparks, H.C. ,1999, The Role of Big Six Auditors in the Credible Reporting of Accruals, *Auditing: A Journal of Practice & Theory* 18: 17-35.
- Francis, J.R. and Simon, D.T., 1987, A Test of Audit Pricing in the Small Client Segment of the U.S. Audit Market, *The Accounting Review* LXII, 145-157. Friedlan, J.M., 1994, Accounting Choices of Issuers of Initial Public Offerings, *Contemporary Accounting Research* 11, 1-31.
- Friedlan, J.M., 1994, Accounting Choices of Issuers of Initial Public Offerings, *Contemporary Accounting Research* 11, 1-31.
- Gaver, J.J., Gaver, K.M. and Austin, J.R., 1995, Additional evidence on bonus plans and income management, *Journal of Accounting and Economics* 19, 3-28.
- Guay, W.R., Kothari, S.P. and Watts, R.L., 1996, A Market Based Evaluation of Discretionary Accrual Models, *Journal of Accounting Research* 34 (Supplement): 83-105.
- Guenther, D.A., 1994, Earnings Management in Response to Corporate Tax Rate Changes: Evidence form the 1986 Tax Reforms Act, *The Accounting Review* 69, 230-243.
- Han, J.C.Y. and Wang, S., 1998, Political Costs and Earnings Management of Oil Companies During the 1990 Persian Gulf Crisis, *The Accounting Review* 73, 103-117.
- Healy, P.M., 1985, The effect of bonus schemes on accounting decisions, *Journal of Accounting and Economics* 7, 85-107.
- Healy, P.M. and Palepu, K.G. , 1993, The Effect of Firms' Financial Disclosure Strategies on Stock Prices, *Accounting Horizons* 7, 1-11.
- Holthausen, R.W., Larcker, D.F. and Sloan, R.G., 1995, Annual bonus schemes and the manipulation of earnings, *Journal of Accounting and Economics* 19, 29-74.
- Hunt, A., Moyer, S.E. and Shevlin, T., 1996, Managing interacting accounting measures to meet multiple objective: A Study of LIFO firms, *Journal of Accounting and Economics* 21, 339-374.
- Jensen, M.C., 1993, Presidential Address: The Modern Industrial Revolution, Exit and the Failure of Internal Control Systems, *Journal of Finance* 48, 830-881.
- Jones, J., 1991, Earnings Management During Import Relief Investigations, *Journal of Accounting Research* 29, 193-228.

- Kasanen, E., Kinnunen, J. and Niskanen, J. , 1996, Dividend-based earnings management: Empirical evidence from Finland, *Journal of Accounting and Economics* 22, 283-312.
- Key, K.G., 1997, Political cost incentives for earnings management in the cable television industry, *Journal of Accounting and Economics* 23, 309-337.
- Liberty, S.E. and Zimmerman, J.L., 1986, Labor Union Contract Negotiations and Accounting Choices, *The Accounting Review* LXI, 600-620.
- Neill, J.D., Pourciau, S.G. and Schaefer, T.F., 1995, Accounting Method Choice and IPO Valuation, *Accounting Horizons* 9, 68-80.
- Palmrose, Z.-V., 1986a, Audit Fees and Auditor Size: Further Evidence, *Journal of Accounting Research* 24, 97-110.
- Palmrose, Z.-V., 1986b, The Effect of Non-Audit Services on the Pricing of Audit Services: Further Evidence, *Journal of Accounting Research* 24, 405-411.
- Peasnell, K.V., Pope, P.F. and Young, S., 1998, Outside Directors, Board Effectiveness, and Earnings Management. *Working Paper, University of Lancaster*.
- Penno, M. and Simon, D.T., 1986, Accounting Choices: public versus private firms, *Journal of Business Finance and Accounting* 13, 561-569.
- Rajgopal, S. and Venkatachalam, M., 1998, The Role of Institutional Investors in Corporate Governance: An Empirical Investigation, *Working paper, University of Washington/Stanford University*.
- Rangan, S., 1998, Earnings management and the performance of seasoned equity offerings, *Journal of Financial Economics* 50, 101-122.
- Shivakumar, L., 1998, Market reaction to seasoned equity offering announcements and earnings management, *Working paper, London Business School*.
- Simon, D.T. and Francis, J.R., 1988, The Effects of Auditor Change on Audit Fees: Tests of Price Cutting and Price Recovery, *The Accounting Review* LXIII, 255-269.
- Simunic, D., 1980, The Pricing of Audit Services: Theory and Evidence. *Journal of Accounting Research* 18, 161-190.
- Subramanyam, K.R., 1996, The pricing of discretionary accruals, *Journal of Accounting and Economics* 22, 249-281.
- Sweeney, A.P., 1994, Debt-covenant violations and managers' accounting responses, *Journal of Accounting and Economics* 17, 281-308.
- Teoh, S. H., Welch, I. and Wong, T.J., 1998, Earnings management and the underperformance of seasoned equity offerings, *Journal of Financial Economics* 50, 63-99.

- Trueman, B. and Titman, S., 1988, An Explanation for Accounting Income Smoothing. *Journal of Accounting Research* 26 Supplement, 127-139.
- Vander Bauwhede, H. and Willekens, M., 2000, Earnings Management and Institutional Differences: Literature Review and Discussion, *Forthcoming in Tijdschrift voor Economie en Management*.
- Warfield, T.D., Wild, J.J. and Wild, K.L., 1995, Managerial ownership, accounting choices, and informativeness of earnings, *Journal of Accounting and Economics* 20, 61-91.
- Watts, R.L. and Zimmerman, J.L., 1986, *Positive Accounting Theory* (Prentice-Hall Inc. Englewood Cliffs New Jersey).
- Young, S., 1998, The Determinants of Managerial Accounting Policy Choice: Further Evidence for the UK, *Accounting and Business Research* 28: 131-143.
- Young, S., 1999, Systematic Measurement Error in the Estimation of Discretionary Accruals: an Evaluation of Alternative Modelling Procedures. *Journal of Business Finance and Accounting* 26: 833-862.

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**Table I Sample selection procedure**

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total number of quoted companies with consolidated financial statements	102
Less	
Holding, financial and insurance companies	50
total number of industrial and commercial companies	52
less	
firms for which there was no match on industry and size with consolidated financial statements	13
total number of industrial and commercial companies in sample	39
matching companies	39
less	
firms for which the listed or its matching one have only 1 or 2 consecutive year(s) of consolidated data	12
firms for which the listed or its matching one have only 3 consecutive years of consolidated data	4
Total number of companies in sample used in main analysis	62
Number of firm-year observations per industry used in main analysis	136

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**Table II number of companies or firm-year observations (used in main analysis) per industry**

1-digit nace code	2-digit nace code	Nace	companies	firm-year observations
2	22	production and preliminary processing of metals	10	22
	24	manufacture of non-metallic mineral products	4	12
	25	chemical industry	8	22
3	31	manufacture of metal articles	2	2
	32	mechanical engineering	2	4
	34	electrical engineering	2	4
4	41	food, drink and tobacco industry	4	8
	43	textile industry	2	4
	47	manufacture of paper and paper products, printing and publishing	2	6
	48	processing of rubber and plastics	2	4
5	50	general building and civil engineering without specialty	2	4
6	61	wholesale distribution	10	20
	63	agents	2	6
8	83	activities to banking, financial and insurance	6	12
	84	renting, leasing and hiring of movables	2	4
9	97	recreational services and other cultural services	2	2
Total			62	136

**Table III Descriptive statistics on the test and control variables for the full sample and the above and below target sub-samples<sup>a</sup>**

Panel A Full sample of listed and non-listed firms (n=136)

*Categorical variables (proportion of dummy=1)*

AUDIT	66.42
TYPE	50.00
DIR	35.07
FIN <sup>c</sup>	78.03
CAP <sup>b,c</sup>	18.94
DEBT <sup>b,c</sup>	71.64
DEBTCAP <sup>b,c</sup>	12.78
DUR	10.45

*Continuous variables*

	mean	st.dev.	min	1st quartile	median	3rd quartile	maximum
DAC <sup>c</sup>	0.0138	0.1526	-0.7840	-0.0494	0.0156	0.0673	0.5207
CF	0.0892	0.0667	-0.059	0.0434	0.0816	0.1281	0.3782
SIZE	15.9404	1.59	13.1516	14.6511	15.6265	17.08	19.63
LEV	0.1605	0.1297	0	0.0423	0.1525	0.2446	0.6176
INVEST	0.0737	0.1027	-0.0666	0.0097	0.0564	0.0983	0.65651
SUP	0.7148	0.1742	0.1450	0.5862	0.7061	0.8245	1.5263
EMPL	0.2007	0.1186	0	0.1195	0.2035	0.2672	0.5687
STCRED	0.0998	0.0998	0	0.0218	0.0619	0.1667	0.5742

**Table III Descriptive statistics on the test and control variables for the full sample and the above and below target sub-samples<sup>a</sup>  
(Cont'd)**

Panel B Above target sub-sample  
(n<sub>1</sub>=60)

*Categorical variables (proportion  
of dummy=1)*

AUDIT	70
TYPE	46.7
DIR	33.3
FIN	75
DEBT <sup>b</sup>	71.66
CAPITAL <sup>b</sup>	15
DEBTCAP <sup>b</sup>	11.67
DUR	15

*Continuous variables*

	Mean	st.dev.	min	1st quartile	median	3rd quartile	maximum
DAC	-0.070	0.1261	-0.7840	-0.1184	-0.0486	-0.01169	0.0767
CF	0.0945	0.0704	-0.0055	0.0477	0.0804	0.1288	0.3782
SIZE	15.9233	1.6737	13.2354	14.6148	15.5274	17.0976	19.6379
LEV	0.1517	0.1369	0	0.0406	0.1326	0.2435	0.6176
INVEST	0.058173	0.077353	-0.06655	0.010264	0.05462	0.083067	0.401296
SUP	0.7046	0.1874	0.3669	0.5770	0.6750	0.8151	1.5263
EMPL	0.2148	0.1274	0.0029	0.1193	0.2068	0.2740	0.5687
STCRED	0.093797	0.084009	0	0.023789	0.069856	0.147201	0.35031

**Table III Descriptive statistics on the test and control variables for the full sample and the above and below target sub-samples<sup>a</sup>  
(Cont'd)**

Panel C Below target sub-sample  
(n<sub>2</sub>=60)

*Categorical variables (proportion  
of dummy=1)*

AUDIT	60
TYPE	53
DIR	38.33
FIN	78.33
DEBT <sup>b</sup>	71.66
CAP <sup>b</sup>	20
DEBTCAP <sup>b</sup>	13.33
DUR	8.33

*Continuous variables*

	mean	St.dev.	min	1st quartile	median	3rd quartile	maximum
DAC	0.1064	0.1169	-0.0562	0.0325	0.0673	0.1459	0.5207
CF	0.0847	0.0641	-0.059	0.0395	0.0911	0.1269	0.2222
SIZE	15.6989	1.4005	13.1516	14.5268	15.5930	16.7302	19.0572
LEV	0.1666	0.1269	0	0.0540	0.1671	0.2512	0.5245
INVEST	0.0920	0.1206	-0.0562	0.0155	0.0671	0.1290	0.6565
SUP	0.7226	0.1397	0.4277	0.6144	0.7180	0.8107	1.0109
EMPL	0.2048	0.0996	0.0028	0.1260	0.2073	0.2679	0.5636
STCRED	0.1034	0.1180	0	0.0130	0.0558	0.1705	0.5742

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<sup>a</sup> For variable definitions, see Table IV

<sup>b</sup> DEBT: dummy which takes the value 1 if a firm had an increase in its long-term financial debt in the year after consideration, zero otherwise.

CAP: dummy which takes the value 1 if a firm had an increase in its equity financing in the year after consideration, zero otherwise.

DEBTCAP: dummy that takes the value 1 if a firm had an increase in its financial debt as well as an increase in its equity financing in the year after consideration, zero otherwise.

<sup>c</sup> number of variables reduced to 120 for DAC and 133 for FIN, DEBT, CAP AND DEBTCAP due to missing values

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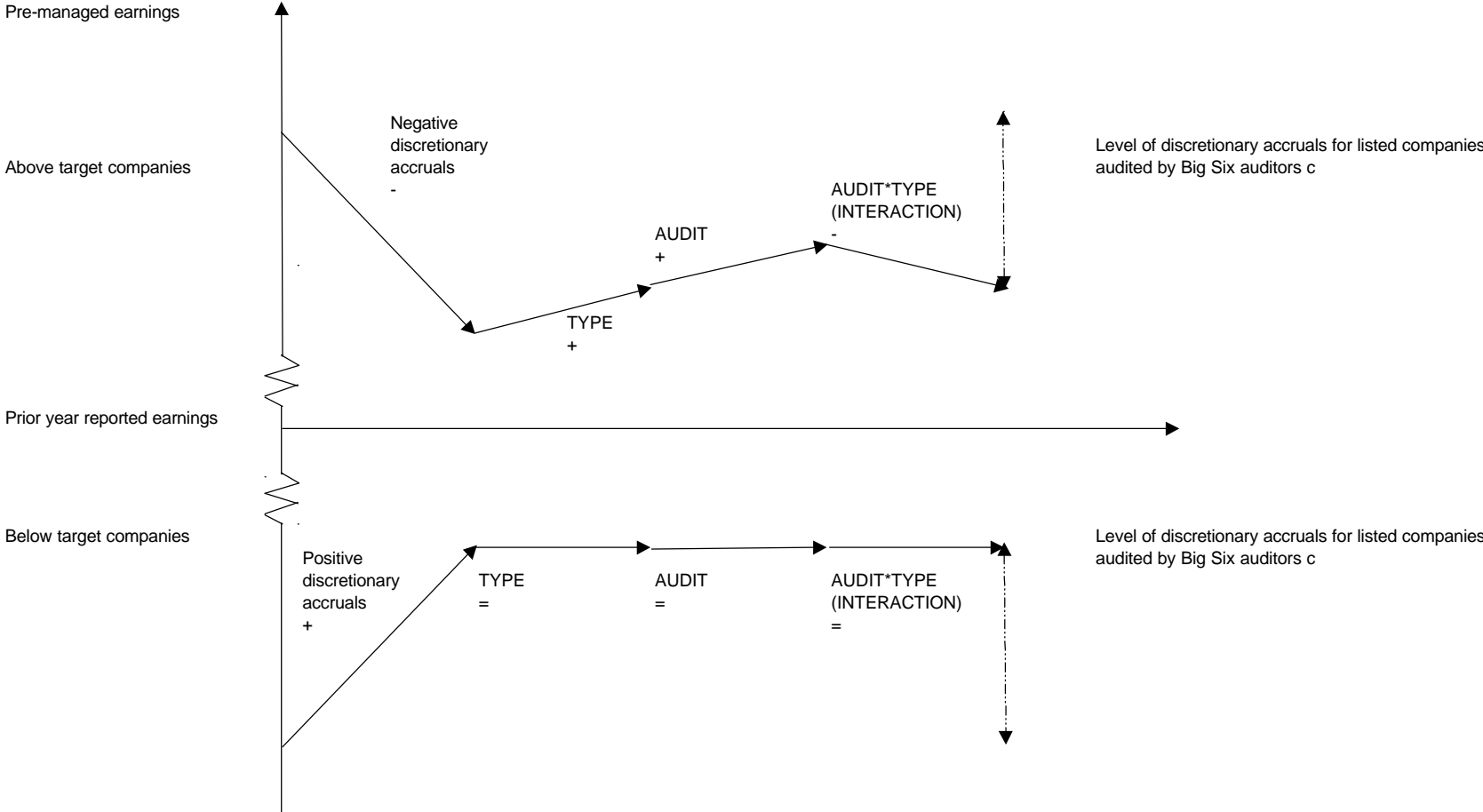
**Table IV Specification of our multiple regression model, variable measurement and predictions as to the sign of the explanatory variables for Model 1 and Model 2**

Variable	Definition	Predicted sign of coefficients in Model 1 (above target sub-sample)	Predicted sign of coefficients in Model 2 (below target sub-sample)
Dependent variable DAC <sub>it</sub>	Discretionary accruals for firm i in year t scaled by lagged total assets = $TAC_{i,t} - TAC_{i,t-1}$		
Independent variables			
Test variables			
AUDIT <sub>it</sub>	Dummy, 1 if firm i has a BigSix auditor, zero otherwise	+	-
TYPE <sub>it</sub>	Dummy, 1 if firm i is listed, zero otherwise	+	+/-
AUDIT <sub>it</sub> *TYPE <sub>it</sub>	The interaction of the dummies TYPE <sub>it</sub> and AUDIT <sub>it</sub> . Takes the value 1 if a firm-year observation is of a listed company that is audited by a Big 6 auditor, zero otherwise	?	?
Control variables			
DIR <sub>it</sub>	Dummy, 1 if for firm i in year t number of directors on board is at least 8 but no more than 12, zero otherwise	+	-
FIN <sub>it</sub>	Dummy, 1 if for firm i in year t the sum of financial debt and paid-in capital increased in the year after the event year, zero otherwise	+	+
CF <sub>it</sub>	Operating cash flow for firm i in year t scaled by lagged total assets	-	-
SIZE <sub>it</sub>	Natural logarithm of total assets for firm i in year t	-	-
LEV <sub>it</sub>	Ratio of long term debt over equity for firm i in year t	+/-	+/-
INVEST <sub>it</sub>	The amount of the increase or decrease in tangible fixed assets for firm i from year t-1 to year t, scaled by lagged total assets.	-	-
SUP <sub>it</sub>	Cost of raw materials, commercial goods, supplies and service purchased over sales for firm i in year t	-	+
EMPL <sub>it</sub>	Cost of personnel over sales for firm i in year t	-	+
STCRED <sub>it</sub>	The amount of short term financial debt over total assets for firm i in year t	-	+
DUR <sub>i</sub>	Dummy=1 when the firm i operates in the durable goods industry	-	+

**Table V Regression of discretionary accruals on test and control variables in above and below target sub-samples**

Variable	<i>Model 1</i>				<i>Model 2</i>			
	<i>Above target sub-sample</i>				<i>Below target sub-sample</i>			
	Predicted sign	Coefficient estimate	t-statistic	p-value	Predicted sign	Coefficient estimate	t-statistic	p-value
Intercept		-0.7379	-3.477	0.0011		0.4470	1.413	0.1643
<i>Test variables</i>								
AUDIT	+	0.1769	3.333	0.0017	-	-0.0127	-0.296	0.7684
TYPE	+	0.1689	2.976	0.0046	+/-	-0.0636	-1.448	0.1544
AUDIT*TYPE	?	-0.1698	-2.257	0.0288	?	0.0305	0.480	0.6338
<i>Control variables</i>								
DIR	+	-0.0227	-0.614	0.5421	-	0.0709	1.744	0.0878
FIN	+	-0.0235	-0.537	0.5940	+	-0.0979	-2.483	0.0167
CF	-	0.8517	2.788	0.0077	-	0.1149	0.376	0.7083
SIZE	-	0.0215	2.074	0.0437	-	-0.0177	-1.329	0.1905
LEV	+/-	0.1734	1.156	0.2536	+/-	-0.1290	-0.962	0.3411
INVEST	-	-0.5039	-1.929	0.0599	-	-0.1685	-1.233	0.2239
EMPL	-	0.1448	0.878	0.3846	+	0.0588	0.243	0.8089
SUP	-	0.1249	1.054	0.2975	+	-0.0043	-0.022	0.9825
STCRED	-	0.0223	0.104	0.9176	+	0.3441	2.274	0.0277
DUR	-	-0.0596	-1.230	0.2251	+	0.0198	0.345	0.7318
R <sub>a</sub> <sup>2</sup>				0.3006				0.2858
F-statistic				2.951				2.817
P-value of F-statistic				0.0034				0.0048

**FIGURE I: Schematic overview of the impact of audit quality (AUDIT) and public ownership (TYPE) on the level of discretionary accruals as suggested by the results of the OLS estimation of our Model 1 and Model 2 (as reported in Table V) a,b**



a Arrows identify the direction of the impact of audit quality (Big Six versus Non-Big Six auditors) and a stock listing on the level of discretionary accruals  
 +: positive impact on the level of discretionary accruals (become more positive or less negative)  
 -: negative impact on the level of discretionary accruals (become more negative or less positive)  
 =: no impact on the level of discretionary accruals

TYPE, AUDIT, AUDIT\*TYPE, as defined in Table IV

b This overview only shows the results for listed companies audited by Big Six auditor. Similar Figures can be drawn for other three categories of companies,

that is: listed companies audited by non-Big Six auditor, non-listed companies audited by Big Six auditors and non-listed companies audited by non-Big Six auditors

c The figure only intends to show the direction of the impact of audit quality and a stock listing on the level of discretionary accruals, and does not intend to make any statements on the final (observed) level of discretionary accruals for those companies, since this is also influenced by various other factors.

**Figure II: The impact of audit quality and public ownership on the level of income-decreasing discretionary accruals as suggested by the results of Model 1**

		OWNERSHIP	
		Public	Private
AUDIT QUALITY	Big Six	relatively lower level of income-decreasing earnings management due to public ownership and/or higher audit quality	relatively lower level of income-decreasing earnings management due to higher audit quality
	Non-Big Six	relatively lower level of income-decreasing earnings management due to public ownership	relatively higher level of income-decreasing earnings management

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<sup>1</sup> See for example Healy 1985, Gaver et al. 1995, Holthausen et al. 1995, Dechow et al. 1996; for bonus plans. DeFond and Jiambalvo 1994, Sweeney 1994, DeAngelo et al. 1994 for debt covenants. Bowen et al. 1995, Kasanen et al. 1996 for implicit contracts.

<sup>2</sup> See Aharony et al. 1993, Friedlan 1994, Neill et al. 1995, Subramanyam 1996, Rangan et al. 1998, Shivakumar et al. 1998, Teoh et al. 1998.

<sup>3</sup> Evidence is reported, for example, in the following studies: Jones 1991, Guenther 1994, Hunt et al. 1996, Key 1997, Han and Wang 1998

<sup>4</sup> Liberty and Zimmerman 1986, DeAngelo 1986, DeAngelo 1988, Burgstahler and Dichev 1997

<sup>5</sup> Warfield et al. 1995, and Rajgopal and Venkatachalem 1998, for the impact of managerial ownership and institutional ownership respectively. Peasnell et al. 1998, Beasley et al. 1996, DeFond and Jiambalvo 1991, DeFond and Jiambalvo 1993, Dechow et al. 1996, Francis et al. 1999, Becker et al. 1998 for the impact of internal and external governance mechanisms.

<sup>6</sup> In Belgium, all firms that meet certain legal form and size criteria are mandated to file financial statements with the Belgian National Bank.

<sup>7</sup> Competence and independence are generally considered as two key dimensions of auditor quality. As they are not directly observable, various proxy measures for auditor quality exist and tolerance vis-à-vis earnings management is one of these.

<sup>8</sup> Tests reported in footnote 24 indeed support this expectation.

<sup>9</sup> Tests reported in footnote 24 indeed support this expectation.

<sup>10</sup> The Belfirst is a database that contains the financial statement data of all Belgian companies that are legally required to file financial statements with the Belgian National Bank.

<sup>11</sup> The total number of listed firms in 1997 was about 130. 102 of them published consolidated financial statements. Holding, financial and insurance companies (50 in total) were deleted as their financial statements differ from those of industrial and commercial companies. Classification into

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industrial and commercial Vs other companies is based on their NACE-code. The NACE-code is an industry classification chart, which is comparable to the US SIC.

<sup>12</sup> Data on board size, auditor type and some items of the consolidated financial statements were not available in machine-readable form and so manually collected from the hard copies of the firms' consolidated financial statements.

<sup>13</sup> Daems (1998) notes that Belgian boards are often too small or too large. Further, the Belgian Commission on Corporate Governance recommends board should not include more than 12 directors.

<sup>14</sup> In our sample there is 60 out of 120 firm-year observations with pre-managed earnings above prior year reported earnings (above target sub-sample). Likewise, there is 60 observations with pre-managed earnings below prior year reported earnings (below target sub-sample).

<sup>15</sup> Discretionary accrual models have been criticized in the literature (see for example Dechow et al. 1995). The early models (Healy 1985 and DeAngelo 1986) do, for example, not control for changes in accruals that are due to changes in the firm's economic condition. This can result in measurement error in the discretionary accruals proxy. More refined models (for example the Jones and modified Jones model) take this into account, but could not be used in this study due to data limitations. In particular, time series data are too limited for Belgian firms, which were only obliged to submit consolidated financial statements from 1991 onwards. Likewise, the number of observations per industry is too small as only about 370 Belgian firms are required to submit consolidated financial statements. We control for any potential measurement error by including a measure of firm performance in the multiple regression analysis.

<sup>16</sup> Examples of benefits foregone include amongst others: 1) lower probability of demand for higher wages and working conditions, 2) building accounting reserves that enhance the ability for earnings management through accounting decisions, and 3) avoiding future earnings declines.

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<sup>17</sup> We acknowledge that the cut-offs of this measure are somewhat arbitrary. However, the results on the test variables presented in Section 5 of the paper are insensitive to widening or tightening the range of the "optimal" number of directors. Neither are the results sensitive to including the number of directors as a continuous measure.

<sup>18</sup> Alternatively we included separate dummy-variables for whether firms have 1) only an ex post increase in debt financing (ODEBT=1) or not (ODEBT=0), 2) only an ex post increase in equity financing (OCAP=1) or not (OCAP=0) or 3) an ex post increase in equity as well as debt financing (DEBTCAP=1) or not (DEBTCAP=0). Results on the test variables are similar to those reported in the body of the text.

<sup>19</sup> We preferred the natural logarithm of total assets over raw total assets, for plots of discretionary accruals against total assets suggest a non-linear relationship between discretionary accruals and total assets.

<sup>20</sup> Alternatively, size was measured as the natural logarithm of sales. The results reported in Section 5 of the paper are qualitatively similar when the size variable is replaced by this alternative measure.

<sup>21</sup> Bowen et al. (1995) use the ratio of a firm's cost of goods sold to total assets. This measure also includes depreciation, amortization and labour expenses. The format of Belgian profit and loss accounts differs from the American format, in that operating costs are reported categorized by the *nature* of the costs (costs of purchases of commercial goods, raw material and supplies, costs of services purchased, costs of personnel, depreciation and amortization). This format allows us to use a less biased proxy for dependence on implicit contracts with suppliers. That is, our measure only includes costs related to suppliers.

<sup>22</sup> To identify durable goods industries, we used a similar approach as reported in Bowen et al. (1995). In particular, the following industries were classified as durable goods industries: Manufacture of chemicals and allied products, manufacture of metal articles, mechanical

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engineering, manufacture of office machinery and data processing machinery, electrical engineering, manufacture of motor vehicles, manufacture of other means of transport, instruments engineering, manufacture of floor covering, timber work, wooden furniture, building and civil engineering.

<sup>23</sup> Again, it is the difference in format of the Belgian versus American profit and loss accounts that allows us to use the cost of personnel as a proxy for labour intensity. This contrasts the rather indirect measure used by Bowen et al. (1995), that is, 1 minus the ratio of tangible fixed assets to total assets.

<sup>24</sup> We argued that we expect firms with pre-managed earnings above prior year reported earnings to decrease, whereas firms with pre-managed earnings below prior-year reported earnings to increase earnings. Further we expect that the impact of a stock listing or of audit quality will depend on whether firms face incentives to increase or decrease reported earnings. Since this can be considered a precondition to our further analysis we performed some univariate tests to examine whether our expectations as to the direction of earnings management by firms with pre-managed earnings above (below) prior year reported earnings indeed holds. First, we examined and found that mean and median discretionary accruals are significantly positive (negative) in the sub-sample of firm-years with pre-managed earnings below (above) prior year reported earnings, that is the below (above)-target sub-sample. Further, a chi-square test for independence indicates that the proportion of positive (negative) discretionary accruals is significantly higher in the below (above) target sub-sample. Third, a t-test for differences in means and Wilcoxon rank sum test for differences in medians indicates that mean and median discretionary accruals are significantly lower in the above than in the below target sub-samples.

A similar research design was followed by DeFond and Park (1997) and Gaver et al. (1995). As pointed out in those studies, selection bias may be a concern. Following DeFond and Park (1997) we tested the sensitivity of our results to this potential mis-specification by partitioning our

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sample based on proxies for above and below target firms, which are not influenced by our estimate of discretionary accruals. First, we used the change in post-managed (that is reported) earnings to partition firms in above and below target companies. Second, we used the change in operating cash flow to distinguish firms that have incentives to increase income to avoid decreases in reported income from firms that have incentives to decrease income to avoid increases in reported income. Results of a Chi-square test of independence of our partitioning variable and the sign of discretionary accruals confirm these predictions.

<sup>25</sup> Alternatively we ran a pooled regression on the firm-year observations with pre-managed earnings above and below prior year reported earnings, in which we allowed the intercept as well as the coefficients of the explanatory variables to differ between the above and below target sub-samples. We included a dummy variable (SMOOTH) that indicates whether firms have pre-managed earnings *above* prior year reported earnings (SMOOTH=1) or pre-managed earnings *below* prior year reported earnings (SMOOTH=0). Further, we allowed different coefficients between above and below target firm-year observations by multiplying each explanatory variable with two dummy variables. That is, first each explanatory variables was multiplied by a dummy (ABOVE) that takes the value 1 if pre-managed earnings were *above* prior year reported earnings, and zero otherwise. Next, each explanatory variable was also multiplied by an indicator variable (BELOW) that takes the value 1 when pre-managed earnings are *below* prior year reported earnings, zero otherwise. This way, we allowed different coefficients on each explanatory variable in our model for the above and below target sub-samples. Results of this pooled regression are qualitative similar to those reported in the body of the text.

We also ran a pooled regression with the inclusion of SMOOTH and all interactions between the explanatory variables and SMOOTH. Results indicate that the coefficients on the explanatory variables generally differ between the above and below target sub-samples.

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<sup>26</sup> Examination of the Variance Inflation Factors (VIF's) of Model 1 and Model 2, suggests our results are NOT distorted by multicollinearity.

<sup>27</sup> Recall that two thirds of our full sample firms are audited by Big 6 auditors. This holds also for the sub-samples of listed and non-listed companies respectively. That is, there is no higher incidence of being audited by a Big 6 audit firm for listed as compared to non-listed companies. (p-value of chi-square for independence = 0.855).

<sup>28</sup> Anglo-Saxon studies focus on the role of the board in mitigating the conflict of interest between owners and shareholders. In Anglo-Saxon countries a major concern is then also that management potentially overrides the board, and so reduces its effectiveness. Agency conflicts between owners and managers are less of a concern in Belgian companies where ownership is more concentrated. In those companies board of directors should rather mitigate a potential agency conflict between majority and minority shareholders. The concern is then also a potential override of the board by majority shareholders. To this end, corporate governance rules recommend boards should include a sufficient number of independent directors. Firms are not obliged to disclose in the financial statements information about the number of majority shareholders or independent directors on the board. We were so not able to directly assess whether our results on the board size variable directly result from (1) boards lacking a sufficient number of independent directors and so (2) majority shareholders overriding the board.