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Earnings management and managerial ownership in private firms.

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1. Introduction

Do private firms exhibit opportunistic earnings management behaviour and to what extent, if any, does the earnings management behaviour of private firms vary with the degree of managerial ownership? These questions have real economic consequences. Firms may misdirect productive resources by altering their operations to manage earnings. Alternatively, varying accounting practice can distort reported firm performance, constrain market transparency and accumulate problems by shifting earnings through time. Examining these concerns in the context of private firms is pressing in light of private firms' role in the economy¹, uncertain agency costs incurred by private firms (Ang *et al.* 2000, Fleming *et al.* 2005) and the sparse empirical literature examining earnings management within private rather than public firms.

This study addresses these research questions by examining how earnings management, measured as discretionary accruals, varies with the shareholdings of the Managing Director (hereafter MD). We report two major findings. One, private firms exhibit opportunistic earnings management behaviour. Firms with low managerial ownership engage in more earnings management when faced with poor performance compared to firms with intermediate or high levels of managerial ownership. Two, the earnings management behaviour of private firms varies with managerial ownership when firms report income-increasing discretionary accruals and not otherwise. This relationship takes a non-linear U-shaped pattern whereby discretionary accruals are lowest in firms when the MD owns approximately 44% of the equity in the firm.

This study makes two contributions to the earnings management literature. First, it extends the empirical work of Ball and Shivakumar (2005), Burgstahler *et al.* (2006) and others documenting the magnitude of earnings management in private firms. This is achieved through exploring how discretionary accrual use varies with managerial ownership in private firms. Second, we examine whether the earnings management behaviours documented in poorly performing public firms are also observed in private firms (Chung *et al.* 2002, Givoly *et al.* 2010, Hope *et al.* 2013, Peasnell *et al.* 2005). As the results of previous studies undertaken, for example within the USA, have little generalisability to other nations (Givoly

¹ Brav (2009) estimates that 60% of corporate assets in the UK are owned by private firms.

et al. 2010) it is also important to examine these concerns in a UK regulatory environment. Further, we report concentrated ownership, prevalent in private firms, does not appear to function as an effective monitoring mechanism in preventing these behaviours.

The remainder of this paper is organised as follows. Section 2 reviews the relevant literature and presents hypotheses. In section 3 the sample and variables are described and the empirical method is outlined. Section 4 presents descriptive statistics for earnings management, ownership and other variables used in the study. This section also reports the regression estimates, which establish the relationship between managerial ownership and earnings management and tests whether earnings management in a sub-sample of firms is driven by managerial opportunism. A discussion of these results and conclusions are provided in section 5.

2. Literature review and hypothesis development

2.1 Literature and Hypotheses

Earnings management, the “... *use of managerial discretion over (within GAAP) accounting choices, earnings reporting choices, and real economic decisions to influence how underlying economic events are reflected in one or more measures of earnings*” (p. 446, Walker, 2013) is a critical theme within accounting research. Academic literature examining this concern has developed from claims that earnings might be manipulated to signal private information about expected future cash-flows to shareholders or influence third parties such as creditors, suppliers and employees (see Lintner 1956). This process of earnings management has been reported to have real cash-flow effects for different firm stakeholders and is associated with self-serving behaviour by managers, shareholders and other firm actors.

This literature was re-focused after Healy’s (1985) seminal study which reported US managers manipulate earnings to satisfy bonus targets and enhance their compensation. The literature has been advanced by re-testing and extending Healy’s central thesis that managers manipulate earnings to maximise their remuneration, providing evidence of earnings management to maximise managerial compensation internationally (Walker 2013). Developments in this literature have included retesting this proposition internationally, for

different company forms and in distinct institutional settings, through examining (1) the mechanisms by which earnings are opportunistically managed to maximise managerial compensation; (2) how managerial ownership of firms may limit the managerial misuse of earnings management and (3) the linear or non-linear form of this relationship. These studies have focused, nearly exclusively, on discretionary accruals as an accounting measure open to manipulation (Cohen and Zarowin 2010).

Opportunistic earnings management is exercised in both good and poor years whereby earnings are raised or reduced, to achieve certain bonus thresholds or not to exceed these, enabling a CEO to appreciate the benefits of good corporate performance over multiple years (Holthausen *et al.* 1995). This is important if managers' compensation or continued employment is sensitive to firms' accounting performance and managers have the ability, through discretion over the magnitude of accruals, to change the reported accounting performance of the firm. As accruals reverse over time there are also incentives for managers to "bank" good performance for future reporting by managing earnings downwards if they exceed the point which makes dismissal unlikely or a point which maximises compensation or another contractual or informal benchmark. For example, Bergstresser and Philippon (2006) report that the magnitude of discretionary accruals is greater at firms where the CEO's compensation is more sensitive to share price performance and that CEOs exercise unusually high amounts of share options in years where accruals are very high.

If opportunistic earnings management is motivated by managers' efforts to increase their proportion of firm cash-flows at the expense of shareholders, the incentives driving this behaviour may be inversely related to managerial ownership. It is expected that MDs who own relatively little (or no) equity have distinct opportunistic incentives to mask poor firm performance, since they are more vulnerable to dismissal by shareholders. MDs who own a high percentage (or all) of the firm's equity do not have such incentives. Therefore a significant difference is expected in the earnings management behaviour of firms with low and high equity owning MDs, when faced with poor firm performance. This interpretation was originally supported in the literature (Warfield *et al.* 1995, Gul *et al.* 2003). Employing a meta-analysis of corporate governance and earnings management, Garcia-Meca and Sanchez-Ballesta (2009), likewise, concluded that higher board ownership is associated with lower discretionary accruals. This said, consensus on this question has not emerged, with several authors documenting insignificant linear relationships between managerial ownership and earnings management (e.g. Klein 2002, Koh 2003).

This impasse has been addressed by re-examining the relationship between managerial ownership and earnings management and relaxing the assumption that this relationship is linear. A non-linear relationship between managerial ownership and earnings management may arise from different influences. Initially, while increasing managerial ownership may align the incentives of managers with shareholders, once managerial ownership crosses a threshold, managers may become entrenched (Short and Keasey 1999). This implies outside shareholders have a diminished ability to effectively monitor managers and discipline non-value maximising behaviour (Morck *et al.* 1988). Earnings management, by allowing the manager to disguise the underlying economic performance of the firm, may be associated with this behaviour. This entrenchment argument implies that discretionary accruals may be an increasing function of managerial ownership once it crosses a certain threshold.

Evidence of non-linear relationships between earnings management and various aspects of ownership structure and managerial pay has emerged for public firms, internationally. For example a U-shaped relationship between insider ownership and the informativeness of earnings has been observed for East Asian (Fan and Wong 2002) and Singaporean (Yeo *et al.* 2002) firms. Kahn and Mather (2013) also find evidence of a U-shape relationship between earnings quality and managerial ownership for Australian public companies and report that this is driven by income increasing accruals. Despite the scope and dynamism of this literature, equivalent examinations of private firms have been limited in their number.

The incentives facing managers in private firms, and their opportunity to disguise true economic performance through discretionary accruals, may differ systematically from the situation in public firms. The highly concentrated ownership and high degree of insider ownership predominant in private firms (Brav 2009) and the prevalence of long term relationships between private firms and creditors (Vera and Onji 2010) suggest that the role of financial statements in reducing information asymmetries between management and shareholders and between firms and creditors may be less important than in the case in public firms (Peek 2010). Ball and Shivakumar (2005) and Burgstahler *et al.* (2006) report significantly lower earnings quality in UK and European private firms respectively compared to public firms and attribute these findings to differing demands of shareholders and creditors for accounting information in public and private firms. This reduced demand for high quality accounting information by stakeholders may be associated with an increased influence of incentives to manage earnings in private firms. As well as the opportunistic incentive, discussed earlier, private firms may manage earnings to improve the terms of trade

available from suppliers and customers, to avoid breaching debt covenants or to minimise taxation liabilities .

We hypothesise that the opportunistic incentive to manage earnings² implies that discretionary accruals in private firms will be related to managerial ownership. This relationship may be linear or non-linear, there are plausible arguments to support either of these forms and there is empirical evidence indicating a linear and non-linear form of the relationship in public firms. We therefore posit two hypotheses on the relationship between managerial ownership and discretionary accruals.

H1_a Discretionary accruals are negatively related to managerial equity ownership.

H1_b Discretionary accruals and managerial ownership exhibit a U-shaped relationship. As managerial ownership increases, discretionary accruals first decline and then increase.

We examine the interaction between poor firm performance, managerial ownership and discretionary accruals. For this analysis, we focus on the sample of income-increasing discretionary accrual firms only. Engaging in earnings management in the context of poor firm performance does not necessarily indicate managerial opportunism. This behaviour in private firms may be motivated by factors consistent with interests of shareholders, such as minimising taxation liabilities (Karjalainen 2015). Our second hypothesis arises from the opportunistic incentives of MDs who own low shareholdings to manage earnings upwards when firm performance is poor. Kahn and Mahler (2013), examining public firms, report a quadratic relationship between managerial ownership and earnings management however there is little extant evidence on whether such a relationship exists for private firms. The tenure of managers with a low (or no) shareholding may be contingent on accounting performance. Existing evidence also suggests that the relation between managerial compensation and accounting performance in private firms is significantly stronger where

² In the subsequent analysis we assume discretionary accruals are the focus of earnings management. We acknowledge that earning manipulation can emerge through real activities such as discretionary firm spending and can result in a trade-off between both forms of earning management (Cohen and Zarowin 2010, Zang 2012).

managers own a low equity shareholding (Michiels *et al.* 2013), providing a further possible incentives for managers owning a low shareholding to manage earnings.

We posit that a poorly performing firm is incentivised to increase reported earnings using income-increasing accruals if its MD has a low shareholding. Conversely, an MD with a high shareholding has less incentive to disguise poor firm performance through earnings management.

H2 Firms with an MD owning a low shareholding will exhibit a higher degree of income-increasing earnings management compared with firms managed by MDs owning an intermediate or high shareholding, when firm performance is poor.

3. Data and Empirical Method

This section describes the dataset, the sample selection procedures, variable construction and the empirical approach used to test the hypotheses.

3.1 Data, Sample and Variables

The research questions are addressed using a sample of 1,223 private UK firms. The sample is limited to firms classified as large by Companies House, as smaller private firms are exempt from returning complete accounts. Data is collected from the BvD FAME database, which is compiled from Annual Returns and Company Accounts filed with Companies House. Ownership data is from the Annual Return submitted in 2013 and financial and other variables are from the Annual Returns submitted in 2013 and 2014. To construct the managerial ownership variables, the identity of the MD is ascertained from Company Accounts and manually matched to the shareholder data. The fundamental measure of managerial ownership used in the study is the percentage of equity owned by the MD. Further variables are constructed from this to capture high and low levels of managerial ownership (variables defined in Table 1).

While prior empirical research on accruals based earnings management has adopted a variety of measures, we adopt absolute value discretionary accruals as the measure of earnings management. The most common approach is to assume that a firm's total accruals comprise

non-discretionary and discretionary elements, with the former depending on the business activities of the firm and the latter arising from accounting choices or earnings management. Non-discretionary, or ‘normal’ accruals, are most commonly estimated using one of several alternative specifications of the modified Jones Model (Walker 2013), where subtracting the non-discretionary accruals from the firm’s total accruals yields an estimate of discretionary accruals. When estimating the modified Jones Model, we (1) include an intercept (Kothari *et al.* 2005); (2) adjust change in sales for the change in receivables to account for managerial discretion in the recognition of credit sales (Deschow *et al.* 1995); and (3) use a cross sectional industry based sample (Bartov *et al.* 2000). Total accruals are calculated on a balance sheet basis. For firm i in year t :

$$TAC_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - (\Delta CL_{it} - \Delta STD_{it} - \Delta TP_{it}) - DEP_{it} \quad (1)$$

Where for firm i at time t , TAC is total accruals, ΔCA is Change in Current Assets from year $t-1$ to year t , $\Delta Cash$ is Change in Cash from year $t-1$ to year t , ΔCL is Change in Current Liabilities from year $t-1$ to year t , ΔSTD is Change in Short Term Debt and current portion of Long Term Debt included in Current Liabilities from year $t-1$ to year t , ΔTP is Change in Taxes Payable included in Current Liabilities from year $t-1$ to year t and DEP is Depreciation and Amortisation charge for year t .

The relationship between total accruals, discretionary accruals and non-discretionary accruals is:

$$TAC_{it} = NDAC_{it} + DAC_{it} \quad (2)$$

Where for firm i at time t , TAC is total accruals calculated using equation 1, $NDAC$ is Non-discretionary accruals and DAC is discretionary accruals calculated by subtracting $NDAC$ from TAC . The modified Jones model used to estimate $NDAC$, employs the following OLS regression for each group of sample firms in a 2 digit SIC industry sector³, in which there are at least 10 firms:

$$\frac{TAC_{i,t}}{TA_{i,t-1}} = \alpha + \beta_1 \left(\frac{1}{TA_{i,t-1}} \right) + \beta_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} \right) + \beta_3 \left(\frac{PPE_{i,t}}{TA_{i,t-1}} \right) + \varepsilon_{i,t} \quad (3)$$

DAC for firm i in year t , scaled by lagged total assets, is:

³ We amend the sample to provide at least 10 observations per 2-digit SIC code. This results in a reduction of the sample from 1,223 firms to 1,028.

$$\frac{DAC_{i,t}}{TA_{i,t-1}} = \left(\frac{TAC_{i,t}}{TA_{i,t-1}} \right) - (\hat{\alpha} + \hat{\beta}_1 \left(\frac{1}{TA_{i,t-1}} \right) + \hat{\beta}_2 \left(\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} \right) + \hat{\beta}_3 \left(\frac{PPE_{i,t}}{TA_{i,t-1}} \right)) \quad (4)$$

where $\hat{\alpha}$ and $\hat{\beta}$ are the estimated coefficients from equation 3, TA is Total Assets, ΔREV is Change in Revenue from year $t-1$ to year t , ΔREC is Change in Receivables from year $t-1$ to year t , PPE is Gross Property, Plant and Equipment and all other variables are as defined previously. It is assumed positive discretionary accruals arise from income-decreasing earnings management and negative discretionary accruals result from income-increasing earnings management by firms.

As firms may engage in earnings management to avoid reporting a fall in earnings we examine firms' incentives to manage earnings upwards. While pre-managed earnings are generally employed for this purpose and computed by reversing the effect of estimated discretionary accruals on reported profit (Cornett *et al.* 2008) this approach can result in spurious correlations (DeFond and Park 1997, Peasnell *et al.* 2005). We therefore follow the approach of Peasnell *et al.* (2005) and use thresholds based on the Cash Flow from Operating Activities (CF) rather than pre-managed earnings. Specifically, two dummy variables are used to reflect managers' incentives to manage earnings upwards: *CF Fall*, which takes the value of one where $CF_0 < CF_{-1}$ and zero otherwise, and *CF Loss* where $CF_0 < 0$ and zero otherwise. Hypothesis 2 predicts that firms anticipating either a loss (proxied by *CF Loss*) or a fall in reported earnings (proxied by *CF Fall*) engage in income-increasing earnings management through negative accruals. Here we question whether the incentives to do so differ with the degree of MD equity ownership.

Leverage, industry, firm size, growth, firm age and the presence of a non-managing, majority shareholder are included in the regressions as control variables.

Insert Table 1 here

3.2 *Empirical Method*

Two hypotheses are tested using a number of regression models. Reflecting the cross-sectional dataset an OLS estimator is employed throughout. First, we test whether the magnitude of discretionary accruals varies either linearly or non-linearly with the percentage

ownership of the MD. This is tested by regressing discretionary accruals on the percentage ownership of the MD and its quadratic term; this is shown in Equations 5 and 6

$$DAC_i = \partial + \beta_1 MD \%_i + \beta_2 Controls_i + \varepsilon_i \quad (5)$$

$$DAC_i = \partial + \beta_1 MD \%_i + \beta_2 MD \%_i^2 + \beta_3 Controls_i + \varepsilon_i \quad (6)$$

We first estimate equation 5, which includes a linear *MD %* term to determine whether discretionary accruals are a linear function of managerial ownership. We then estimate equation 6, including the quadratic term *MD %*². We predict a negative β_1 when the quadratic ownership term is excluded, and a negative coefficient on β_1 and a positive coefficient on β_2 , when the quadratic term is included, indicating support for a non-linear relationship in that the magnitude of discretionary accruals falls then rises as managerial ownership increases. As results of White's tests (White 1980) indicating heteroskedacity, robust (Huber-White) standard errors are reported.

The second hypothesis examines if firms managed by an MD owning a low percentage of equity will engage in greater income-increasing earnings management when firm performance is poor. This question is based on the expectation that MDs have conservative and opportunistic incentives to increase earnings when they descend below particular thresholds. These incentives may vary inversely with the shareholding of the MD and arise due to contractual relationships with their employer which relate, either explicitly or implicitly, to outcomes such as compensation and tenure to reported financial performance. To test this question we estimate four models including interactions between variables measuring managerial ownership and variables measuring poor firm performance. These models are estimated on the income-increasing sample only. Equations 7 to 10 include combinations of two managerial ownership variables (*MD High* and *MD Low*) and two firm performance variables (*CF Loss* and *CF Fall*).

$$DAC_i = \partial + \beta_1 MD Low_i + \beta_2 CF LOSS_i + \beta_3 MD Low_i * CF LOSS_i + \beta_4 Controls_i + \varepsilon_i \quad (7)$$

$$DAC_i = \partial + \beta_1 MD High_i + \beta_2 CF LOSS_i + \beta_3 MD High_i * CF LOSS_i + \beta_4 Controls_i + \varepsilon_i \quad (8)$$

$$DAC_i = \partial + \beta_1 MD Low_i + \beta_2 CF FALL_i + \beta_3 MD Low_i * CF FALL_i + \beta_4 Controls_i + \varepsilon_i \quad (9)$$

$$DAC_i = \partial + \beta_1 MD High_i + \beta_2 CF FALL_i + \beta_3 MD High_i * CF FALL_i + \beta_4 Controls_i + \varepsilon_i \quad (10)$$

The main variables of interest are the interaction terms (β_3) which indicate if the percentage of MD shareholding moderates the relationship between a cash flow loss/fall and the use of

income-increasing earnings management. A positive coefficient is predicted for β_3 in equation 7, indicating that firms with a low MD's share ownership, engage in more earnings management when firm performance is poor (i.e. when *CF Loss* = 1). Equation 8 is similar to Equation 7 but includes *MD High*, rather than *MD Low*, in which the MD's share ownership is more than one standard deviation greater than the sample mean. A negative coefficient is predicted for β_3 in equation 8. We replicate equations 7 and 8, but include *CF Fall*, rather than *CF Loss*, as a measure of poor firm performance, as detailed in equations 9 and 10; the predictions for the coefficients are the same as those in equations 7 and 8.

4. Results

The descriptive statistics and results of the regression models are outlined in this section. Summary statistics for the full sample, the sample of firms reporting income-increasing *DAC* and the sample of firms reporting income-decreasing *DAC* are presented in Table 2. The characteristics of the subsamples are compared in Table 3 and Table 4 provides correlation statistics. The results of multivariate regressions considering hypothesis 1 are reported in Table 5 (equations 5 and 6). For the second hypothesis, estimates from equations 7 to 10 are provided in Table 6. Lastly, diagnostic and sensitivity tests are reported.

4.1 Descriptive Statistics.

The analysis of the relationship between discretionary accruals and managerial ownership examines the full sample and the income-increasing discretionary accruals sample and income-decreasing discretionary accruals samples separately for hypothesis 1, and the income-increasing discretionary accruals sample only for hypothesis 2. To determine whether there are significant differences between the characteristics of these samples we report summary statistics for each sample separately and parametric and non-parametric test statistics are provided comparing the income-increasing and income-decreasing samples. These statistics are provided in Tables 2 and 3.⁴

⁴ Firms are assigned to the Income-increasing and Income-decreasing discretionary accruals samples based on the sign of the discretionary accruals estimated by using the modified Jones model. For the AWCA measure, the number of firms assigned to the Income-increasing and Income-decreasing samples is based on the sign of the abnormal working capital accruals estimated using the Defond and Park (2001) model.

Table 3 shows a comparison between the income-increasing and income-decreasing samples. The difference between the absolute means of the income-increasing and income-decreasing *DAC* is not statistically significant. Statistically significant differences between the samples are evident with the income-increasing *DAC* sample having lower *ROA*, *Age*, and *Growth* and higher *Leverage* and *CF* than the income-decreasing discretionary accruals sample. There are no significant differences between the samples in respect of firm size or managerial ownership.

As shown in Table 2, the three managerial ownership variables indicate a high level of share ownership by MDs. In the full sample, the mean shareholding of the MD (*MD %*) is 44.2% but with a significant minority (22.8%) of firms managed by an outsider or low shareholding MDs (owning less than 9.96% of equity in the firm). *MD High* and *MD Low* represent the extremes of insider ownership in the sample.

Insert Table 2 here

Insert Table 3 here

Pearson correlation coefficients for the full sample are presented in Table 4. *DAC* is positively correlated with *AWCA*, *ROA* and *Growth* and measures of managerial ownership, *MD %* and *MD High*. *DAC* is also positively related to the measures of poor firm performance, *CF Loss* and *CF Fall*, which indicate current year cash-flow from operations is negative and lower than the previous year, respectively. *Big 4*, *ln Age* and *Leverage* are negatively correlated with *DAC*. The three variables measuring MD ownership, *MD %*, *MD Low* and *MD High*, are highly correlated as each variable is measuring an aspect of the same underlying characteristic. As only one variable appears in any model this result will not give rise to multicollinearity. The correlation coefficients between *ROA* and several other firm characteristics, *ln Turnover*, *Leverage* and *Growth*, *CF Loss* and *CF Fall* are all significant. *Leverage* is correlated with firm age, *Growth* and *Big 4*. The mean (maximum) VIFs for each regression model estimated ranges from is 1.10 to 1.23 (1.26 to 2.30) and indicate that multicollinearity is not a significant concern in this data.

Insert Table 4 here

Figure 1 shows absolute discretionary accruals (scaled by lagged total assets) by MD percentage equity ownership quartile in the sample firms and a U-shape, at this preliminary stage, is apparent. *DAC* are highest in firms in the top quartile of MD ownership, at 8%. *DAC* declines to 6.8% in firms where MD ownership is between 12.5% and 40.5% and is higher (7.3%) for the bottom quartile of firms by MD ownership.

Insert Figure 1 here

4.2 Regression Results

Table 5 provides the results of regressions testing for linear and non-linear relationships between *DAC* and managerial ownership for the full sample, the income-increasing sample and the income-decreasing sample. Hypothesis 1_a predicts a negative sign for the coefficient *MD %* in equation 5, however, the coefficient on *MD %* is not significantly different from zero in the full sample or the subsamples, suggesting there is little evidence of a linear, negative relationship. This is contrary to Gabrielson et al. (2002) who report a linear relationship albeit between information content, rather than discretionary accruals, and managerial ownership.

Hypothesis 1_b predicts a negative coefficient for *MD %* and a positive coefficient for *MD %²* which would provide evidence of a U-shaped relationship. The signs on the coefficients are as predicted, and statistically significant, but only for the income-increasing discretionary accruals sample. This suggests that discretionary accruals fall and then rise as managerial ownership rises. The coefficients on the *MD %* and *MD %²*, for the income-increasing sample, indicate that the lowest discretionary accruals are used by firms with 43.96% MD ownership.

This differs to Yeo et al. (2002) who find a U-shape relationship for public firms but do not distinguish between income-increasing and income-decreasing accruals as they measure

informativeness of earnings. These results, do, however, support Kahn and Mather (2013), who emphasise the importance of considering income-decreasing and income-increasing accruals separately for their analysis of public firms.

Insert Table 5 here

Several of the control variables are also significantly different from zero in the models. *Growth* is positively related to *DAC* in each sample suggesting additional discretionary accruals are more prevalent for growth firms. *Leverage* is negatively related to *DAC*, although this relationship is not significant in the income-increasing sample. *Big 4* auditor status is negatively related to *DAC* only in the income-decreasing sample suggesting such accruals are lower when a Big 4 auditor is employed. Firm age is negatively related to *DAC*, older firms appear to use less discretionary accruals and this relationship is significant in each sample. *ROA* is negatively related to *DAC* in the income-increasing sub-sample and positively related to *DAC* in the income-decreasing sub-sample, providing support for the use of *DAC* to increase profitability for poor performing firms. Monitoring by an outside majority shareholder, as measured by the variable *Outside 50*, does not appear to influence the use of discretionary accruals⁵.

Insert Table 6 here

Table 6 presents the results of regressions including the interaction terms between *CF Loss* and *CF Fall* and managerial ownership which are used to test the second hypothesis. For clarity, given that we predict only firms with poor performance will wish to enhance their accounting earnings, we limit our presentation of the results to the income-increasing sample only⁶.

There appears to be a greater use of income-increasing accruals when managerial ownership is low and cash flow is negative, as evidenced by the significantly positive coefficient for

⁵ For each regression that includes *Outside 50*, we repeat the analysis with dummy variables indicating the presence of a single outside shareholder with 60%, 70% and 80% ownership. In each case the coefficient is not significantly different from zero.

⁶ The analysis was repeated on the income-decreasing sample and there was no evidence of a significant interaction between managerial ownership and poor firm performance. Results of this analysis are available from the authors on request.

the dummy variable *MD Low*CF Loss*. These results are consistent with Hypothesis 2, which predicts that firms managed by MDs owning less than 9.96% of equity (*MD Low* = 1) manage earnings upwards in response to poor firm performance to a greater degree than firms owned by MD's with equity ownership greater than 9.96%. These findings suggest that managers in these firms are motivated to disguise firm poor performance. This conjecture is supported by the insignificant coefficient for the pertinent variables in equation 8.

The second measure of poor firm performance used is a decline in Cash-Flow from Operations. The interpretation of the results is similar to that of equations 7 and 8, although the magnitudes of the coefficients of interest are lower. Consistent with Hypothesis 2, the coefficient on *MD Low * CF Fall*, is positive and significant. This provides further evidence of opportunistic earnings management by MDs who own low or no equity. The *MD High*CF Loss* coefficient is not significantly different from zero suggesting MDs do not tend to use discretionary accruals to improve earnings when a negative cash flow is indicated when they have high ownership.

We perform a number of additional tests to confirm that the results are robust to the exclusion of outliers and influential observations. Each model is re-estimated using unwinsorised variables. In each case the sign, magnitude and significance of coefficients is very similar to that reported here.

Fan (2007), Ball and Shivakumar (2008) and Gounopoulos and Pham (2016) suggest firms engage in income-increasing accruals prior to an initial public offering. Only two firms in our sample completed an IPO within a year of our observations. The analysis was repeated excluding these firms. The results are identical to those presented earlier.

4.3 Alternative measure of discretionary accruals

As a robustness check, we employ an alternative measure to proxy for earnings management. We repeat the analysis described above using abnormal working capital accruals estimated using the Defond and Parks (2001) method. This approach models a firm's expected working capital accruals in the current year using the ratio of its prior years ratio of working capital accruals to sales.

$$AWCA_{it} = WC_{it} - \left[\left(\frac{WC_{it-1}}{S_{t-1}} \right) * S_t \right] \quad (14)$$

where for firm i at time t , AWCA is abnormal working capital accruals, WC is non-cash working capital and S is sales.

The sign of the AWCA is used to partition observations into income-increasing and income-decreasing samples. The absolute AWCA's are scaled by lagged Total Assets and winsorised at the 1st and 99th percentile. Summary statistics for the AWCA's are provided in Table 2⁷.

Table 7 presents the results of re-estimating regressions (5) to (10) with abnormal working capital accruals included as the dependant variable. The results of the analysis, employing AWCA's as a proxy for earnings management, provide limited support for our main findings. AWCA's are positively related to MD ownership in the full sample only. The signs on the MD and MD² coefficients in the income-increasing sample are the same as in Table 5 but the MD coefficient is not significantly different from zero.

Table 8 reports evidence on the interaction between poor firm performance, managerial ownership and AWCA's. The key variables of interest are the interaction terms between MD High or Low and CF Fall or Loss. Hypothesis 2 predicts a negative and significant coefficient on MD Low * CF Loss and MD Low * CF Fall. In both cases the coefficients are negative but not significantly different from zero. These results provide limited support for Hypothesis 2.

5 Discussion and Conclusions

Public and private firms face different demands from shareholders and creditors for accounting information and these distinct demand environments are associated with lower earnings quality in private firms compared to public firms. There is an extensive literature on the relationship between managerial ownership and earnings management in public firms but this question has received little empirical attention in the context of private firms. It is not obvious that empirical findings in public firms will generalise to private firms.

⁷ Seven sample firms are missing a variable required to estimate AWCA using Equation 14. These firms are excluded from this robustness test, leaving a sample of 1,021.

Earnings management, through the use of discretionary accruals, does not, in itself, change the cash-flows of the firm. It does, however, affect the pattern and timing of reported earnings and if contractual outcomes for managers depend on reported profits then earnings management can alter the allocation of firm cash-flows between managers and shareholders. This suggests that managers may behave opportunistically to manage earnings. Incentives to divert firm resources from shareholders appear to only arise where managerial equity ownership falls below a certain level suggesting opportunistic concerns may prevail. This study examines whether discretionary accruals vary with managerial ownership and differs from the existing literature addressing this relationship through focussing on private firms, which differ systematically from public firms in the UK with respect to ownership structure. It also considers whether private firms with low managerial ownership manage earnings differently to firms with intermediate or high levels of managerial ownership when faced with poor firm performance.

The results show that, considering both income-increasing discretionary accruals and income-decreasing discretionary accruals together, there is no statistically significant relationship with managerial ownership. Income-increasing discretionary accruals, considered in isolation, however, are related to managerial ownership in a U-shaped manner. Discretionary accruals fall and then rise as managerial ownership increases, with the relationship appearing to reverse direction where the MD owns 44% of equity in the firm. The results suggest that firms with both high and low levels of managerial ownership engage in more earnings management compared to firms with intermediate levels of managerial ownership. These results are robust when controlling for other firm characteristics that may be correlated with discretionary accruals.

The second question addressed in this study is whether this observed earnings management behaviour is opportunistic. At high levels of managerial ownership it would seem unlikely that this behaviour is opportunistic in the sense of managers diverting firm resources as managers are in most cases the largest shareholder and often the only shareholder. Firms face a range of other incentives to manage earnings including influencing third parties such as trade creditors, lenders, suppliers and tax authorities. We hypothesise that opportunistic earnings management would be indicated if firms with low levels of MD ownership manage earnings upward to a greater extent when faced with poor firm performance than other firms. The results suggest that this is the case. Where managerial ownership is high (greater than 78.48%) there is no significant interaction between poor firm performance and discretionary

accruals. Where managerial ownership is low (below 9.96%) discretionary accruals are higher when firm performance is poor. An implication of this result is that different factors drive earnings management behaviour where managerial ownership is high.

Policy implications of this work suggest that non-managing shareholders in private firms face considerable agency costs, in particular where managerial ownership is very low or very high. Rational investors, anticipating the future impact of agency costs may choose not to invest in these firms or reduce the value placed on the firms' to reflect the expected costs associated with agency conflicts. The finding that discretionary accruals are greater when managerial ownership is high may be particularly problematic for new shareholders who are less likely than existing shareholders to be integrated into the "insider access" model through which information flows from private firms to shareholders (Ball and Shivakumar 2005). As outside investors are more likely to be dependent on financial reports to monitor the firm, agency costs arising both from misalignment of incentives and managerial entrenchment, may both reduce access to external equity and increase the cost of that equity.

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