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The value of executive director share ownership and discretionary accruals

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Abstract
Purpose – The purpose of this paper is to investigate the relation between the value of executive director share ownership and discretionary accruals.
Design/methodology/approach – This study uses a dataset of 1,173 firm-year observations drawn from 188 Australian listed companies for the period 2000-2006. The analysis is based on multivariate regression analysis and ordinary least square models were used to investigate the relation between the value of managerial ownership and discretionary accruals. The issue of potential endogeneity is addressed by using a simultaneous equation system.
Findings – A negative relation is found between value of managerial share ownership and discretionary accruals at lower levels of value of ownership, which is consistent with the theorised incentive alignment that as the managers commit more resources to their firms, stakeholders impose less contractual constraints specified in terms of accounting numbers and managers make lower accrual adjustments. After a certain level of value of ownership is attained, a positive relations seen, consistent with increased discretionary accrual adjustments associated with stakeholders anticipating managerial entrenchment. Also, it is found that these results are driven by firms with income increasing, as opposed to income decreasing, discretionary accruals.
Practical implications – Shares and options are forming an increasing proportion of executive remuneration that continues to be the subject of much debate amongst regulators and in the media. Showing that the value of share ownership may be an effective internal governance mechanism to help align incentives adds to the debate and has policy implications.
Originality/value – The paper’s primary contribution is finding that the value (as opposed to proportion) of share ownership, typically representing a sizeable proportion of managers’ undiversified wealth, is a potentially direct driver of theorised incentive alignment and entrenchment effects associated with share ownership.
Keywords Directors, Chief executives, Shares, Value of executive director share ownership, Discretionary accruals, Incentive alignment, Entrenchment
Paper type Research paper

1. Introduction
This paper examines the relation between the value of managerial ownership and discretionary accruals in Australia during the period 2000-2006. The separation of ownership and control in publicly listed firms is argued to result in information asymmetries between managers (agents) and shareholders (principals) that give rise to agency problems (Jensen and Meckling, 1976). Increased levels of managerial share ownership in a firm helps to align the interests of owners and managers and mitigate agency problems (Jensen and Meckling, 1976)[1]. Arguing that such incentive alignment has contracting implications, Warfield et al. (1995), posit that corporate stakeholders impose more restrictive contractual constraints denominated in accounting numbers as managerial ownership and therefore, incentive alignment, declines. The presence of accounting-based
constraints in turn provides managers with incentives to use accounting discretion to help alleviate these constraints. An alternative theoretical argument, not considered by Warfield et al. (1995), is that increasing levels of managerial ownership may result in managerial entrenchment (Demsetz, 1983; Fama and Jensen, 1983). The argument is that the extra voting power enables them to secure their position in the firm thereby insulating them from certain disciplining mechanisms which in turn creates agency problems. If stakeholders anticipate such entrenchment, increasing levels of managerial ownership may also have contracting implications.

Strong growth in executive remuneration from the 1990s to 2007, that is often not commensurate with corporate performance, has caused concern in the community about the need to control such compensation (Productivity Commission, 2009). Accordingly, executive remuneration in Australia continues to be the subject of much debate amongst regulators and in the media. As an example, the government’s current proposed legislation to compel firms to disclose the take-home pay of senior executives and to claw back remuneration in the event of material financial misstatements is facing a backlash from the business community. The Business Council of Australia President, Tony Shepherd, states “jumping to add further complexity and an increased burden to the significant regulatory requirements already faced by Australia’s boards” (Hepworth, 2012).

Related to the above, long term incentives such as shares and options form an increasing proportion of executive remuneration. An analysis of executive remuneration in the top 300 ASX listed companies shows that the proportion of non-CEO executive remuneration made up by long term incentives in 2005-2007 was 23 per cent compared to 10 per cent in 2003-2004. Similarly, the proportion of CEO remuneration made up by long term incentives in 2005-2007 was 26 per cent compared to 11 per cent in 2003-2004 (Productivity Commission, 2009). Accordingly, understanding the incentive effects associated with managerial share ownership is an important issue that potentially impacts a wider policy debate.

Extant research suggests that managers have incentives to manage earnings to avoid reporting earnings decreases and losses since various contracts are based on accounting numbers (see for example, Healy and Wahlen, 1999 for a survey of this literature). Warfield et al. (1995) argue that firms with low managerial ownership are subject to more accounting based contractual constraints providing incentives for managers to use accrual adjustments to circumvent such constraints. As posited they find that managerial ownership in the USA and the magnitude of discretionary accruals are inversely related [2]. Yeo et al. (2002) also show an increase in discretionary accruals at higher levels of ownership consistent with an entrenchment effect in Singapore. In a related study, Gabrielsen et al. (2002) using a sample of Danish firms fail to find any significant relation between managerial share ownership and discretionary accruals. In an Australian context Gul et al. (2003) investigate the relation between discretionary accruals, managerial share ownership and audit fees. Consistent with the alignment argument, they show that managerial ownership negatively affects the positive relation between discretionary accruals and audit fees. In sum, notwithstanding the elegant theories, the empirical evidence on the relation between managerial share ownership and discretionary accruals is unsettled.

The prior empirical literature uses share ownership by all directors (Yeo et al., 2002) or wider definitions as a proxy for managerial ownership (Warfield et al., 1995; Gabrielsen et al., 2002; Gul et al., 2003). We argue that it is the executive directors with operational responsibilities who are in a direct position to manage earnings. Moreover, given the independent directors’ monitoring role and the associated reputation effects, it is considered unlikely that they will be associated with earnings management (Fama and Jensen, 1983). We therefore argue that the wealth of the executive directors as opposed to the wealth of all directors is an appropriate and less “noisy” proxy to consider the impact on discretionary accruals. Accordingly, we use ownership by executive directors in this study [3]. The prior research measures the incentives associated with managerial ownership in terms of control rights or the proportion of shares they own in their firm. A manager who has an increasing amount of personal resources invested in their firm is more likely to bear the consequences of managerial actions. Such shares often represent a sizeable proportion of the
managers’ wealth that is inherently undiversified. Hence, we argue that the value of the managerial share ownership is potentially a more direct driver of incentive alignment and/or entrenchment than the proportion of ownership. There can be a relative disjoint between value of managerial share ownership and proportion of managerial share ownership and information relating to managerial ownership of shares in two of our sample companies illustrates the distinction. In June 2006 BHP Ltd’s managerial share ownership was only 0.017 per cent whilst value of managerial share ownership was $30 million. Conversely at the same date, in Southern Dental Industries Limited (SDI), managerial share ownership and value of managerial share ownership were 44 per cent and $32.6 million, respectively. Accordingly, we use the dollar value of executive director share ownership (VESO) as our measure in this study[4].

Our initial tests show a non-monotonic, convex relation between VESO and the absolute value of discretionary accruals. Specifically, we find a negative relation between VESO and discretionary accruals at lower levels of dollar value of ownership which is consistent with the argument that as the managers commit more resources to their firms, stakeholders impose less contractual constraints denominated in accounting numbers and managers make lower accrual adjustments. After a certain level of dollar value of ownership is attained, we see a positive relation consistent with increased discretionary accrual adjustments associated with stakeholders anticipating managerial entrenchment. We also find that these results are driven by firms with income increasing, as opposed to income decreasing, discretionary accruals. When we use a simultaneous equation system to address the issue of endogeneity, we do not find evidence that the VESCO-discretionary accruals relation is co-deterministic. Our results are robust to the alternative estimates of discretionary accruals, as well as concerns for autocorrelation, heteroskedasticity and multicollinearity.

We contribute to the literature by positing and finding that the value of managerial share ownership is a more direct driver of the incentives associated with managerial share ownership than the proportion of the stake. We also argue that it is the executive directors with operational responsibilities who are in a direct position to manage earnings and, in contrast to the prior literature, focus on executive director ownership. Further analysis shows that, unlike executive director ownership, non-executive director ownership has no relation with discretionary accruals, which may reflect the non-executive directors’ inability to operationally manage earnings or that they may be immune to the theorised incentive alignment or entrenchment effects associated with share ownership.

The paper is structured as follows: Section 2 provides a review of literature and theoretical background. Section 3 describes the research design, while Section 4 reports the main results. Section 5 summarises and draws conclusions.

2. Literature review and theoretical background

2.1 Literature review

Managerial share ownership, one of the internal governance mechanisms to address agency problems, can inversely affect the magnitude of discretionary accruals due to the incentive alignment (Warfield et al., 1995). Warfield et al. (1995) argue that because of separation of ownership and control between owners and managers, contracts often contain accounting-based constraints to restrict the managers from engaging in value-reducing behaviour. The presence of accounting-based constraints in turn provides managers with incentives to use accounting discretion to help circumvent these constraints. They contend that when ownership is low, the increased demand for accounting-based constraints may motivate the managers to choose the accounting policies to mitigate the accounting-based contractual restrictions. Consistent with their hypothesis, they find a negative relationship between managerial share ownership and the magnitude of discretionary accruals in the USA.

Gabrielsen et al. (2002) examine the same relationship for a sample of Danish firms, to extend the findings of Warfield et al. (1995) in a different institutional setting. They fail to find any statistically
significant relationship between managerial share ownership and discretionary accruals (absolute value), and argue that their results are likely attributable to different institutional arrangements that exist in the USA and Denmark.

Warfield et al. (1995) posit that corporate stakeholders impose more restrictive contractual constraints denominated in accounting numbers as managerial share ownership and therefore, incentive alignment declines. An alternative theoretical argument, not considered by Warfield et al. (1995), is that high level of ownership may result in managerial entrenchment (Demsetz, 1983; Fama and Jensen, 1983). The combination of incentive alignment and entrenchment may suggest a nonlinear relationship between managerial share ownership and discretionary accruals. Accordingly Yeo et al. (2002) examine the nonlinear relationship between managerial share ownership and income increasing discretionary accruals for firms listed on the Singapore stock exchange. They find that at low levels of ownership, the level of income increasing discretionary accruals has a negative relationship with the management ownership, consistent with the incentive alignment argument. However, at higher levels of managerial ownership the relationship reverses, suggesting that the entrenchment effect might have set in.

Gul et al. (2003) investigate the relation between discretionary accruals, managerial share ownership and audit fees using a sample of 648 Australian firms for the year 1993. They find a positive relation between discretionary accruals and audit fees. They also find that managerial ownership negatively affects the positive relation between discretionary accruals and audit fees. Thus, their findings are consistent with the alignment argument.

There is also an extensive literature on executive remuneration (see for example, Murphy (1999) for a survey of this literature). A subset of these studies has focused on the relation between the equity incentives of the executives and earnings management. For example, Bergstresser and Philippon (2006) show that CEOs’ equity incentives can explain the accruals management of firms. Similarly, Burns and Kedia (2004) find that earnings restatements are more common at firms where CEOs have larger options portfolios. Collectively, the findings of previous studies suggest that executives such as CEOs tend to manipulate reported earnings through discretionary accruals when their compensation is closely related to the value of their share and option holdings.

2.2 Theoretical background
Managerial ownership results in a manager who owns a fraction of a firm’s issued shares directly assuming the consequences of their actions, thus aligning their incentives with other shareholders (Jensen and Meckling, 1976). Hence, managers owning shares in their employing firm are likely to strive to make better investment decisions and thereby maximize value.

As shown in Figure 1, managerial share ownership has contractual implication as well. It is argued that stakeholders, for example board remuneration committees and lenders, impose more restrictive contractual constraints denominated in accounting numbers as managerial ownership and therefore, incentive alignment, declines (Warfield et al., 1995). It is also argued that firms with low managerial ownership are subject to more accounting based contractual constraints as stakeholders perceive a lack of incentive alignment (Warfield et al., 1995). This is done to limit their managers’ opportunistic behaviour and to monitor their actions. These contractual provisions in turn provide incentives for managers to use accrual adjustments to circumvent such constraints. Conversely, as managerial ownership increases, it is also less likely that the managers will engage in opportunistic behaviour hence, the demand for accounting based contractual constraints will decline (Warfield et al., 1995).

Some of the behaviour identified by Jensen and Meckling (1976) as benefiting managers at the expense of shareholders include perquisite-taking, shirking, and the pursuit of non-value maximizing objectives such as empire building. As the proportion of managers’ shares increase, it is argued that managers bear an increasing proportion of these costs which helps align incentives. Thus, the theoretical arguments view the aforementioned incentives associated with managerial ownership or
in terms of control rights in the managed firm. On the other hand we argue that such shares often represent a sizeable proportion of the managers’ wealth that is inherently undiversified. Hence, the VESO is potentially a more direct driver of incentive alignment in the case of some of these behaviours such as the pursuit of non-value maximising objectives [5].

Figure 1. The relation between separation of ownership and control and incentives to manage earnings

The extra voting power that accrues as the ownership stake increases is theorised to increase the potential for costs associated with entrenchment as it insulates managers from certain disciplining mechanisms such as the managerial labour market and the market for corporate control (Demsetz, 1983). If stakeholders anticipate such entrenchment increasing levels of managerial ownership may have similar contracting implications. Once again, the priorempirical literature is premised on the assumption that such effects are likely to be associated with managerial ownership, representing the proportion of shares or control rights in the firm (Yeo et al., 2002; Gabrielsen et al., 2002). On the other hand, ceteris paribus, rational managers should prefer to hold a diversified portfolio of assets but as VESO increases they become increasingly exposed to firm-specific risk. Such high VESO is likely to make a manager more risk averse as their decisions will have a potentially costly impact on a relatively high proportion of their personal wealth.

Notwithstanding the limited empirical work yielding unsettled conclusions, theory suggests that the pattern of the VESO-discretionary accruals relation is likely to be consistent with initial incentive alignment followed by entrenchment effects. Hence we propose the following hypothesis:

H1. There is a non-monotonic convex relation between VESO and discretionary accruals.

3. Research design

3.1 Data
We initially identified the top 300 Australian companies by market capitalisation at 30 June 1999. Consistent with the prior literature, we exclude banks, financial institutions, trusts and utility firms (49 firms) which have different disclosure requirements and/or different corporate governance structures. We exclude another 63 firms due to missing information. The final sample comprises of the remaining firms with a total of 1,173 firm-year observations over the seven year period 2000-2006[6], [7]. As evident in Table I, the sample firms belong to 21 Global Industrial Classification Standard Sectors (GICS) Industry Groups. We collect the required accounting information from Aspect Fin Analysis and Connect 4 databases. The ownership and other corporate governance data was hand collected from the corporate governance disclosures, shareholding information and directors’ report contained in annual reports.
3.2 Measuring discretionary accruals

Our primary test to measure discretionary accruals relies on a research design used by Warfield et al. (1995). In particular, discretionary accruals (DACC) are defined as current period total accruals (ACC) less expected normal accruals (E(ACC)), standardised by prior period total assets (ASST):

\[
DACC_{it} = \frac{ACC_{it} - E(ACC)_{it}}{ASST_{it-1}}
\]  

(1)

Consistent with previous research (Warfield et al., 1995; Yeo et al., 2002) we estimate total accruals as below.

Total accruals (ACC) = \( \Delta CA - \Delta CL - DEP \) where \( \Delta CA \) is the change in non-cash current assets (change in current assets less change in cash), \( \Delta CL \) is the change in current liabilities excluding short term debt (change in current liabilities less the change in debt included in current liabilities and minus the changes in income tax payable) and DEP is depreciation and amortization. Expected normal accruals (E(ACC)) are estimated by using a five year firm specific average of prior periods’ accounting accruals (ACC\(_{i, t-1}, \ldots, ACC\(_{i, t-5}\)).

As an alternative measure we use the more data intensive time series version of the modified Jones model. Under this model, the level of discretionary accruals [8] for a particular firm is calculated as the difference between the firm’s total accruals and its non-discretionary accruals (NDAC), as estimated with the following equation:

\[
NDAC_{it} = a_0 + a_1 \frac{\Delta REV_i - \Delta AR_i}{TA_{i-1}} + a_2 \frac{PPE_i}{TA_{i-1}}
\]  

(2)

where:

- \( NDAC_t \) = non-discretionary accruals in year t.
- \( TA_{i-1} \) = total assets in year \( t-1 \).
- \( \Delta REV_i \) = change in revenue of firm i in year t.
- \( \Delta AR_i \) = change in accounts receivable of firm i in year t.
- \( PPE_i \) = property, plant and equipment for firm i in year t.
3.3 Model specification
We use the following equation to examine the relation between VESO and discretionary accruals using an OLS regression technique:

\[
DACC = \beta_0 + \beta_1(VESO) + \beta_2(VESO)^2 + \beta_3(USUBSP) + \beta_4(LEV) + \beta_5(BIND) + \beta_6(AUD) + \beta_7(MB) + \beta_8(LTACC) + \beta_9(LOSS) + \beta_{10}(ASST) + \beta_{11}(GICS\ Sectoral\ dummies) + \beta_{12}(Year\ dummies) + \epsilon
\]

where:
DACC – absolute value of discretionary accruals.
VESO – log of dollar value of share ownership by the executive directors.
USUBSP – unaffiliated substantial share ownership.
LEV – leverage.
BIND – board independence.
AUD – auditor dummy variable.
MB – market to book.
LTACC – lagged total accruals.
LOSS – loss dummy variable.
ASST – firm size proxied by the book value of assets.
MVEQ – market value of equity.
VOL – volatility of earnings.
LIQ – liquidity.
INV – investment.

Table II summarises the definitions of all the variables employed in this paper. As we anticipate a non-monotonic relation between VESO and discretionary accruals, we use a quadratic specification of the VESO variable (see for example, the treatment of MSO in Yeo et al., 2002). The control variables used in this study include strength of unaffiliated substantial shareholdings, leverage, level of board independence, employment of a Big 4 auditor, the market to book ratio, lagged total accruals, incurrence of loss, and size of the firm. We also control for the GICS industrial sector and the observation’s year [9].

We include ownership by the unaffiliated substantial shareholders to control for a monitoring effect (Peasnell et al., 2005). Unaffiliated shareholdings are measured by taking the percentage of share ownership by the unaffiliated substantial shareholders (other than directors). Managers have incentives to use accounting discretion when they are close to a debt covenant violation and leverage may capture such incentives (Klein, 2002). We measure leverage by the ratio of book value of debt to book value of total assets. The monitoring role of independent boards may constrain discretionary accruals (Peasnell et al., 2005)[10]. The proportion of independent directors is a proxy for board independence. Previous research suggests that large audit firms (Big 4) are considered to be more effective monitors of the financial reporting process compared to smaller firms (Francis and Krishnan, 1999). Therefore, a dummy variable is used to control for the effect of auditor type on the level of discretionary accruals. Following previous studies we take market to book ratio as one of our control variables and measured as market value of equity divided by the book value of shareholders’ equity (Klein, 2002). Accruals are mean reverting, with the majority of the mean reversion occurring within a year (Dechow et al., 1995). A high level of lagged total accruals will probably reduce managers’ ability to manage current period reported earnings upward and vice versa. Therefore, we control for the total accruals of the previous period (Koh, 2003). Firms with negative earnings are associated with greater discretionary accruals (Wang, 2006). Hence we use a dummy variable when a firm has negative earnings in a particular year. Finally we follow previous studies and control for firm size by taking a natural log of book value of assets (Klein, 2002; Wang, 2006).
4. Results
4.1 Descriptive statistics
Panel A of Table III reports the descriptive statistics of some key variables. It shows that the average DACC using Warfield et al. (1995) (modified Jones) is 0.065 (0.058), the average managerial ownership is 6.29 per cent and that unaffiliated substantial shareholders, on average, hold 37.15 per cent of total shares outstanding[11]. The average VESO (logged value) is 5.134[12].
Panel B of Table III presents the Pearson correlation matrix [13]. DACC using both Warfield et al. (1995) and modified Jones is negatively and significantly correlated with VESO. VESO is negatively and significantly correlated with BIND (board independence) suggesting that firms with high VESO are less likely to have independent boards. VESO is positively and significantly correlated with market value of equity. Firm size is negatively correlated with MSO (managerial ownership), suggesting that executive directors’ equity interests decrease as firm size (measured by LASST) increases. The positive correlation between firm size (LASST) and leverage (LEV) suggests that large firms have high leverage and larger firms are also more likely to have Big 4 auditors. A negative correlation between VESO and the auditor variable indicates that directors have greater equity interests in firms audited by non-Big 4 firms which is likely to be driven by firm size.

4.2 Managerial share ownership and discretionary accruals
Table IV presents the results of the OLS regression estimation. The first regression result relates to VESO and discretionary accruals (Panel A). We find significant p-values for the coefficients of VESO (0.022) and VESO2 (0.027). The signs of VESO and VESO2 are negative and positive, respectively. In other words, we find a negative relation between VESO and discretionary accruals up to a certain point followed by a positive relation. It implies a non-monotonic, convex relation between VESO and the absolute value of discretionary accruals. The negative relation between VESO and discretionary

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### Table II. Definition of variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Detailed explanation</th>
<th>Expected sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>VESO</td>
<td>Dollar value of managerial share ownership</td>
<td>Log of dollar value of share ownership by the executive directors</td>
<td>?</td>
</tr>
<tr>
<td>USUBSP</td>
<td>Unaffiliated substantial share ownership</td>
<td>Percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders</td>
<td>–</td>
</tr>
<tr>
<td>LEV</td>
<td>Leverage</td>
<td>Ratio of book value of debt and book value of total assets</td>
<td>+</td>
</tr>
<tr>
<td>BIND</td>
<td>Board independence</td>
<td>The number of independent directors scaled by the size of the board</td>
<td>–</td>
</tr>
<tr>
<td>AUD</td>
<td>Auditor dummy variable</td>
<td>A dummy variable 1 if the firm is audited by a Big 4 auditor and otherwise 0</td>
<td>–</td>
</tr>
<tr>
<td>MB</td>
<td>Market to book ratio</td>
<td>Market value of equity divided by the book value of shareholders’ equity</td>
<td>?</td>
</tr>
<tr>
<td>LTACC</td>
<td>Lagged total accruals</td>
<td>Prior year total accruals scaled by the prior year total assets</td>
<td>–</td>
</tr>
<tr>
<td>LOSS</td>
<td>Loss dummy variable</td>
<td>A dummy variable 1 if the firm has negative earnings and otherwise 0</td>
<td>+</td>
</tr>
<tr>
<td>ASST</td>
<td>Size</td>
<td>Natural log of book value of assets</td>
<td>?</td>
</tr>
<tr>
<td>MVEQ</td>
<td>Market value of equity</td>
<td>Natural log of market value of equity</td>
<td>±</td>
</tr>
<tr>
<td>LIQ</td>
<td>Liquidity</td>
<td>Net operating cash flow scaled by the book value of assets</td>
<td>+</td>
</tr>
<tr>
<td>INV</td>
<td>Investment</td>
<td>Capital expenditure scaled by the book value of assets</td>
<td>+</td>
</tr>
</tbody>
</table>
accruals up to a certain point is consistent with the hypothesis that as VESO increases, the board and/or stakeholders imposes less contractual restrictions denominated in accounting numbers and managers have less of a need to make accrual adjustments to alleviate these restrictions. However, at a higher level of VESO the results are consistent with the hypothesis that stakeholders anticipate the managers to be entrenched and impose more contractual constraints which in turn motivate the managers to make more accrual adjustments. The estimated point at which the negative VESO and discretionary accruals relation turns positive is where VESO is AUD 6.8 million. We find that 198 firm-year observations have VESO (in AUD) in excess of the estimated turning point, which corresponds to 17 per cent of the total number of observations.

Table III. Descriptive statistics
Table IV. Relation between VESO and discretionary accruals (Warfield et al., modified Jones models)

<table>
<thead>
<tr>
<th>Panel</th>
<th>DaCC</th>
<th>DaCC adj**</th>
<th>DaCC adj***</th>
</tr>
</thead>
<tbody>
<tr>
<td>VISO</td>
<td>-0.418 (0.029)</td>
<td>-0.093 (0.078)</td>
<td>-0.057 (0.846)</td>
</tr>
<tr>
<td>VISO2</td>
<td>0.050 (0.051)</td>
<td>0.007 (0.028)</td>
<td>0.007 (0.078)</td>
</tr>
<tr>
<td>LEV</td>
<td>0.005 (0.067)</td>
<td>0.006 (0.075)</td>
<td>0.006 (0.073)</td>
</tr>
<tr>
<td>USRSP</td>
<td>-0.001 (0.000)</td>
<td>-0.000 (0.000)</td>
<td>-0.000 (0.000)</td>
</tr>
<tr>
<td>RIND</td>
<td>0.000 (0.000)</td>
<td>0.000 (0.000)</td>
<td>0.000 (0.000)</td>
</tr>
<tr>
<td>AUS</td>
<td>0.001 (0.000)</td>
<td>0.000 (0.000)</td>
<td>0.000 (0.000)</td>
</tr>
<tr>
<td>MB</td>
<td>0.001 (0.002)</td>
<td>0.000 (0.000)</td>
<td>0.000 (0.000)</td>
</tr>
<tr>
<td>LTAC</td>
<td>-0.002 (0.004)</td>
<td>-0.000 (0.000)</td>
<td>-0.000 (0.000)</td>
</tr>
<tr>
<td>LOSD</td>
<td>0.004 (0.006)</td>
<td>0.004 (0.000)</td>
<td>0.004 (0.000)</td>
</tr>
<tr>
<td>ASRT</td>
<td>-0.003 (0.000)</td>
<td>-0.000 (0.000)</td>
<td>-0.000 (0.000)</td>
</tr>
<tr>
<td>Interest</td>
<td>0.000 (0.000)</td>
<td>0.000 (0.000)</td>
<td>0.000 (0.000)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.964</td>
<td>0.985</td>
<td>0.985</td>
</tr>
<tr>
<td>n</td>
<td>831</td>
<td>579</td>
<td>282</td>
</tr>
</tbody>
</table>

Notes: Significant at 10%, *5%, **. Per cent level: this table reports the descriptive statistics for different relations used in the above models. VESO = value of book value of equity multiplied by the percentage of share ownership by the executive directors. USRSP = board directorships divided by the number of independent directors. MB = market to book ratio (modified Jones model). RIND = board independence calculated as the number of independent directors divided by the size of the board. LEV = leverage, calculated as the ratio of book value of debt to book value of total assets. ASSRT = a dummy variable for the firm has negative earnings. DaCC = of discretionary accruals, estimated based on modified Jones model. DaCC adj = of discretionary accruals, estimated based on DaCC model. DaCC adj*** = of discretionary accruals, estimated based on DaCC adj model.
Notes: This table reports the regression results relating to VESO and discretionary accruals; different notations used in the table are defined as follows: DACC – in Panel A absolute value of discretionary accruals estimated according to Warfield et al. (1995) model and in Panel B absolute value of discretionary accruals estimated according to modified Jones model; DACC_{+ve} – absolute value of income increasing discretionary accruals; DACC_{-ve} – absolute value of income decreasing discretionary accruals; VESO – logged value of market value of equity multiplied by the percentage of share ownership by the executive directors; ESO – percentage of ordinary shares owned by the executive directors of the board; USUBSP – percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV – leverage, calculated as the ratio of book value of debt and book value of total assets; BIND – board independence calculated as the number of independent directors scaled by the size of the board; AUD – dummy variable 1 if the firm is audited by Big 4 auditors; MB – market to book ratio; LTACC – lagged total accruals; LOSS – loss dummy variable; ASST – natural log of book value of assets; year and industry dummies are not reported; the reported results are heteroskedasticity and autocorrelation consistent; figures in the parentheses are p-values.

The fact that the coefficients of some other control variables are statistically significant suggests that discretionary accruals are also influenced by other factors. Specifically, discretionary accruals are positively related to loss (LOSS) and negatively related to board independence (BIND) and firm size (ASST). All other control variables are insignificant. A positive significant coefficient for loss (LOSS) is consistent with the findings of Wang (2006) and implies that firms with negative earnings are associated with greater discretionary accruals. The negative, significant coefficient for board independence (BIND) is consistent with prior literature suggesting that independent director monitoring constrains the use of discretionary accruals (Peasnell et al., 2005). The negative, significant coefficient for firm size (ASST) is also consistent with Wang (2006). We also document a number of insignificant coefficients including unaffiliated shareholdings (USUBSP), Big 4 auditor and leverage (LEV). The insignificant coefficient for substantial shareholders (USUBSP) implies passive monitoring by Australian block holders (Dignam and Galanis, 2004). An insignificant coefficient for the auditor (AUD) variable suggests that Big 4 auditors do not have any significant relation with discretionary accruals in our dataset. This is also consistent with Peasnell et al. (2005).

The sample firm-years are divided into two sub-samples according to the sign of discretionary accruals, and we repeat the regression analysis for each sub-sample. The results are presented in the second and third regression estimation results in Table IV, Panel A. Observations with positive (negative) discretionary accruals are consistent with income-increasing (income-decreasing) accrual adjustments and DACC_{+ve} (DACC_{-ve}) indicates the absolute value for positive (negative) discretionary accruals, respectively. For the DACC_{+ve} regression, all coefficients for the VESO variables are statistically significant with the expected signs, that is, consistent with the main regression. For the DACC_{-ve} regression, all coefficients of the VESO variables have the expected signs, but, they are not statistically significant. Taken together, this suggests that VESO is significantly associated with income-increasing but not income-decreasing accrual adjustments. The difference in relations is consistent with the contracting argument posited in this paper.

One of the most commonly used models to estimate discretionary accruals is the modified Jones model and we use the time series version of the model to measure discretionary accruals. The time series version requires extensive data which was unavailable for some of the sample companies. Therefore, our sample firms reduce to 141 with a total of 811 firm-year observations. We present the results in Panel B of Table IV.

The first regression shows a significant coefficient for VESO (p = 0.075) and a significant coefficient for VESO2 (p = 0.036). The signs of VESO and VESO2 are negative and positive, respectively, which implies a non-monotonic relation between VESO and discretionary accruals, consistent with the earlier findings. We also find that discretionary accruals are related to several control variables (LOSS, BIND, and ASST) that were significant in the earlier analysis using the Warfield et al. model. Additionally, discretionary accruals are negatively related to lagged total accruals (LTACC). The negative, significant coefficient for lagged total accruals (LTACC) implies that a high level of lagged
total accruals will probably reduce managers’ ability to manage discretionary accruals upward and vice versa (Koh, 2003).

Once again, the sample is divided into two sub-samples according to the sign of the discretionary accruals, and we repeat the regression analysis for each sub-sample. The results are reported in the second and third regressions in Table IV, Panel B. For the \( \text{DACC}_{1,\text{ve}} \) regression we find that all the coefficients of VESO variables are statistically significant, consistent with the results for DACC as a whole. However, the coefficients for the VESO variables in the \( \text{DACC}_{\text{ve}} \) regression are not significant. The results of control variables in these two sub-samples do not show any qualitative difference from results presented in the first regression. Thus, we once again find that VESO is associated with income-increasing but not income-decreasing accruals.

4.3 Robustness checks
Endogeneity of VESO. A theoretical possibility not considered by the prior studies is that the levels of VESO may be endogenously determined as part of the firm’s broader operating and financing arrangements (Demsetz, 1983) [14]. The arguments supporting incentive alignment and/or managerial entrenchment essentially take the view that elements of corporate governance such as managerial ownership as well as value of managerial ownership may develop independently and may be unrelated to the firm’s broader operating and financing arrangements. An alternative view is that some or all of the corporate governance characteristics, including VESO, may be endogenously determined as part of the firm’s broader operating and financing arrangements (Demsetz, 1983). In this view, firms with greater difficulty in monitoring management performance due to factors such as longer operating cycles, more uncertain future cash flows, and higher propensity to make losses (Dechow and Dichev, 2002) may be more likely to adopt particular corporate governance arrangements (for example, higher managerial ownership). Increases in accruals and the propensity for discretion in such accruals may be more likely to arise from greater timing and matching problems in firms that have longer business cycles and/or more volatile business fundamentals. In turn, these characteristics may also be related to VESO because higher VESO is likely to make for more efficient contracting, due to information asymmetries and the increased difficulty in monitoring management performance (Demsetz, 1983). Accordingly, we use a simultaneous equations system (3 SLS) to address the endogeneity of VESO. We introduce the following equation in addition to our original equation to address the potential endogeneity of VESO:

\[
\text{VESO} = \delta_0 + \delta_1(\text{DACC}) + \delta_2(\text{MVEQ}) + \delta_3(\text{LEV}) + \delta_4(\text{VOL}) + \delta_5(\text{LIQ}) + \delta_6(\text{INV}) + \delta_{7:12}(\text{Industry dummies}) + \delta_{13:18}(\text{Year dummies}) + \varepsilon
\] (4)

The control variables used in this equation are leverage, volatility, market value of equity, investment and liquidity. Holderness et al. (1999) report that the market value of equity negatively influences the proportion of total managerial ownership because of managerial wealth constraints. On the other hand, market value of equity is positively associated with VESO. Risk measured by volatility of earnings is included to examine the possibility that high firm specific uncertainty affects the level of managerial ownership (Cho, 1998). The use of leverage may lessen the need for external financing thereby resulting in an increase in managerial ownership (Cho, 1998) as well as an increase in VESO or leverage and VESO may be perceived as an alternative monitoring mechanism (Warfield et al., 1995). Cho also argues that managers may prefer to have a higher stake in highly liquid firms due to the ease of discretionary spending. Himmelberg et al. (1999) argue that firms with high investment spending may have high managerial ownership to alleviate the monitoring problems caused by discretionary managerial investment, which may result in a positive relation between managerial ownership and investments.

Table V presents the results of our simultaneous equations system. Panel A reports the results using our primary measure of discretionary accruals and Panel B reports the results using the modified
Jones model. In Panel A we document significant p-values for VESO (0.061) and VESO2 (0.043) in the DACC regression. The signs of those two variables are consistent with our previous findings. Once again it implies a non-monotonic relation between VESO and discretionary accruals. In the VESO regression, the coefficient of DACC shows a positive but insignificant p-value implying that DACC does not affect VESO. In Panel B we measure discretionary accruals by using the modified Jones model. In the DACC regression the findings in relation to VESO variables are consistent with our original findings. Once again, our VESO regression does not suggest an insignificant relation between DACC and VESO[15].

Table V. Relation between VESO and discretionary accruals: simultaneous equation systems

<table>
<thead>
<tr>
<th></th>
<th>Panel A (Warfield et al model)</th>
<th>Panel B (modified Jones model)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VESO</td>
<td>-0.074 (0.061)</td>
<td>-1.124 (0.087)</td>
</tr>
<tr>
<td>VESO2</td>
<td>0.006 (0.043)</td>
<td>0.097 (0.079)</td>
</tr>
<tr>
<td>USUBSP</td>
<td>-0.016 (0.297)</td>
<td>-0.026 (0.222)</td>
</tr>
<tr>
<td>LEV</td>
<td>0.002 (0.971)</td>
<td>-0.147 (0.053)</td>
</tr>
<tr>
<td>BIND</td>
<td>-0.034 (0.529)</td>
<td>-0.489 (0.414)</td>
</tr>
<tr>
<td>AUD</td>
<td>-0.005 (0.543)</td>
<td>-0.297 (0.152)</td>
</tr>
<tr>
<td>MB</td>
<td>0.001 (0.053)</td>
<td>0.018 (0.064)</td>
</tr>
<tr>
<td>LTACC</td>
<td>-0.014 (0.056)</td>
<td>-0.099 (0.028)</td>
</tr>
<tr>
<td>LOSS</td>
<td>0.043 (0.009)</td>
<td>0.059 (0.033)</td>
</tr>
<tr>
<td>ASST</td>
<td>0.006 (0.512)</td>
<td>-0.339 (0.159)</td>
</tr>
<tr>
<td>MVEQ</td>
<td>0.002 (0.000)</td>
<td>0.001 (0.028)</td>
</tr>
<tr>
<td>VOL</td>
<td>-2.659 (0.000)</td>
<td>-2.659 (0.000)</td>
</tr>
<tr>
<td>LIQ</td>
<td>0.456 (0.134)</td>
<td>1.099 (0.069)</td>
</tr>
<tr>
<td>INV</td>
<td>0.149 (0.750)</td>
<td>1.990 (0.043)</td>
</tr>
<tr>
<td>DACC</td>
<td>0.255 (0.475)</td>
<td>0.088 (0.104)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.187 (0.213)</td>
<td>5.729 (0.000)</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.059</td>
<td>0.628</td>
</tr>
</tbody>
</table>

Notes: This table reports the regression results relating to VESO and discretionary accruals; different notations used in the table are defined as follows: DACC – absolute value of discretionary accruals estimated according to Warfield et al. (1995) model/modified Jones model; VESO – logged value of market value of equity multiplied by the percentage of share ownership by the executive directors; ESO – percentage of ordinary shares owned by the executive directors of the board; USUBSP – percentage of ordinary shares owned by the unaffiliated (excluding the directors) substantial shareholders; LEV – leverage, calculated as the ratio of book value of debt and book value of total assets; BIND – board independence calculated as the number of independent directors scaled by the size of the board; AUD – dummy variable 1 if the firm is audited by Big 4 auditors; MB – market to book ratio; LTACC – lagged total accruals; LOSS – loss dummy variable; ASST – natural log of book value of assets; MVEQ – natural log of market value of common equity; VOL – volatility of earnings calculated as a SD of earnings of preceding five years scaled by book value of assets; LIQ – liquidity, calculated as the ratio of net operating cash flows and book value of assets; INV – investment, calculated as the ratio of capital expenditure to book value of assets; year and industry dummies are not reported; the reported results are heteroskedasticity and autocorrelation consistent; figures in the parentheses are p-values.

Reconciliation of managerial ownership and value of managerial ownership. Since VESO has two variable components (value and proportion), it may be argued that the level of control dominates the value and vice versa. This concern is addressed by forming portfolios of managerial ownership based on the proportion of ownership and examining the relation between VESO and discretionary accruals within these portfolios. Accordingly we create four portfolios of managerial ownership – the first portfolio with the least managerial ownership (based on proportion) and the fourth portfolio with the greatest managerial ownership. The results are reported in Table VI. In the first three portfolios we document a significant non-monotonic, convex relation between VESO and discretionary accruals. Whilst we find a similar non-monotonic, convex relation in the last portfolio,
the results are not significant. Overall these results suggest that it is the value, rather than the proportion of managerial ownership that is associated with discretionary accruals.

Additional analysis. First, we also follow the prior literature and we replace VESO and VESO2 with executive director share ownership (ESO) and the square of executive director ownership (ESO2) in all the analyses of the full sample reported in Tables IV-VI. In untabulated results, we find significant p-values for the coefficients ESO and ESO2 but the signs of ESO and ESO2 are positive and negative, respectively. In other words, we find a positive relation between managerial ownership and discretionary accruals up to a certain point followed by a negative relation. Implied is a non-monotonic, concave relation between managerial ownership and the absolute value of discretionary accruals. This is inconsistent with the theory outlined in Section 2 of this paper (and any of the results reported in the admittedly fairly limited prior literature). A possible explanation for the initial positive relation is that increased ownership arises from the increased volatility in accounting earnings reflected in higher accruals. However, the system of simultaneous equations used to test for endogeneity did not indicate that accruals and managerial ownership (ESO) were co-determined. Overall, this suggests that VESO may be more appropriate to identify the incentives associated with managerial ownership.

Second, we use an alternative approach to control for industry differences. Consistent with the Australian economy, around 17 per cent of our sample are resource (metal and mining and energy) companies. Accordingly, we also use a resource dummy in all regressions and document a significantly positive coefficient for this variable. It suggests that the resource companies are more likely to manage earnings than the non-resource companies but otherwise our results remain unchanged.

Table VI. Relation between VESO and discretionary accruals: simultaneous equation systems

<table>
<thead>
<tr>
<th>Variable</th>
<th>Portfolio 1</th>
<th>Portfolio 2</th>
<th>Portfolio 3</th>
<th>Portfolio 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>VESO</td>
<td>-0.057 (0.071)</td>
<td>-0.139 (0.039)</td>
<td>-0.102 (0.029)</td>
<td>-0.100 (0.262)</td>
</tr>
<tr>
<td>VESO²</td>
<td>0.003 (0.079)</td>
<td>0.010 (0.080)</td>
<td>0.006 (0.140)</td>
<td>0.007 (0.217)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.251 (0.032)</td>
<td>0.506 (0.009)</td>
<td>0.450 (0.179)</td>
<td>0.250 (0.432)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.035</td>
<td>0.024</td>
<td>0.037</td>
<td>0.017</td>
</tr>
</tbody>
</table>

Notes: This table reports the regression results relating to VESO and discretionary accruals to test whether the proportion of ownership dominates value in VESO-DACC relation; we split the sample into quartiles based on proportion of ownership and create four portfolios of managerial ownership; the first portfolio includes those firm-year observations that have least managerial ownership and the last portfolio includes firm-year observations with greatest managerial ownership; different notations used in the table are defined as follows: DACC – absolute value of discretionary accruals estimated according to Warfield et al. (1995) model/modified Jones model; VESO = logged value of market value of equity multiplied by the percentage of share ownership by the executive directors; the reported results are heteroskedasticity and autocorrelation consistent; figures in the parentheses are p-values.

Third, Himmelberg et al. (1999), in a managerial ownership-performance context, argue that managerial ownership may also be endogenously determined by unobserved firm heterogeneity. Therefore, we repeat all the analyses using a random effect model and fail to find any qualitative difference to our main findings.

Fourth, we then split our sample into two different sub-samples based on time periods – from 2000 to 2004, 2005 to 2006 and replicated the original analysis. The purpose of splitting the sample is to test any impact of the major corporate regulatory changes (for example, the introduction of ASX corporate governance guidelines in 2003) that took place during our study period. The results for these sub-samples are qualitatively similar to the original results.

Fifth, we also examine the impact of the dollar value of ownership by all directors, that is, executive and non-executive directors, on discretionary accruals by repeating all regressions using this alternative definition and find no qualitative differences in results. However, when we repeat the
analyses using dollar value of ownership by non-executive directors, we find no relation between discretionary accruals and dollar value of ownership by non-executive directors. Our results may reflect the non-executive directors lack of operational responsibilities and hence the inability to manage earnings. Alternatively, it is also possible that they may be immune to the theorised incentive alignment or entrenchment effects associated with share ownership.

5. Conclusion
We examine the relation between the value of managerial share ownership and discretionary accruals in Australian firms. We argue that VESO is a direct driver of incentive alignment and/or managerial entrenchment and our results strongly support this contention. These results show a non-monotonic, convex relation between VESO and discretionary accruals consistent with incentive alignment up to a certain level of VESO, followed by entrenchment effects. We also find that these results are driven by firms with income increasing, as opposed to income decreasing, discretionary accruals. Our results are robust to alternative measures of discretionary accruals as well as in regard to autocorrelation, heteroskedasticity, multicollinearity and potential issues of endogeneity.

Executive remuneration in Australia continues to be the subject of much societal debate and long term incentives such as equity in their firms form an increasing proportion of executive remuneration. Accordingly, understanding the incentive effects associated with managerial share ownership is an important issue that potentially impacts a wider policy debate. More specifically, our research shows regulators and other stakeholders that the value, rather than proportion, of managerial share ownership may be an effective internal governance mechanism to align incentives. Moreover, the lack of a relation between discretionary accruals and the dollar value of ownership by non-executive directors may reflect the non-executive directors’ inability to manage earnings or that they may be immune to the theorised incentive alignment or entrenchment effects associated with share ownership.

We acknowledge that, ideally, VESO should be examined in the context of each manager’s personal wealth but the information on the latter is not publicly available. Whilst introducing the concept of VESO into the literature is novel, we are cognisant of the fact that the results may be specific to an institutional context hence replication of this work in other jurisdictions is desirable. Additionally, the recognition of employee stock option plans in Australian financial statements was made mandatory with the introduction of “AASB 2: share-based payment” in 2005. A useful extension of this research would be to consider the impact of managerial stock option plans in the relation examined. Finally, our study looks at top 300 ASX listed companies. It is possible that the documented relation between VESO and discretionary accruals may not hold in smaller firms.

Notes
1. A principal-agent relationship is established where one or more parties (the principal(s)) engage another party (the agent) to perform some duties on their behalf which involves delegating some decision-making authority to the agent (Jensen and Meckling, 1976). Although an agent is expected to act in the best interest of the principal, being a “rational economic person”, the utility maximizing agent may have different goals and risk preferences and thereby seeks to undertake actions that maximize his/her own interest (Jensen and Meckling, 1976). Such divergence of interests creates a potential conflict in a the relationship.
2. The sample size of Warfield et al. (1995) is 4,778 firm-year observations over the period 1988-1990.
3. However, we also use share ownership by all directors in additional analysis.
4. Ideally this would be measured as a proportion of a manager’s personal wealth but, in the absence of publicly available information about the personal wealth of managers, we use the absolute value of managerial ownership as a proxy.
5. There can be a relative disjoint between VMSO and MSO. The correlation coefficient of these two measures in our sample is 0.517.
6. We also do the same analysis after trimming the top and bottom 1 per cent observations based on the key variables, that is, VESO and DACC. Our results are not qualitatively different from those reported in the paper.
7. The year 2006 was chosen as the terminating year to ensure that our analysis is not compromised by the period of financial crisis which had its genesis in 2007-2008.
8. Various discretionary accruals models of earnings management suffer from estimation errors and are always subject to criticism (Dechow et al., 1995). A major limitation of this research is that existing techniques for measuring discretionary accruals lack power as the existing models have poor ability to isolate such accruals. Furthermore, tests using these
techniques are misspecified due to correlated omitted variables in samples with extreme financial performance, a situation that is not uncommon in tests for earnings management. Alternative techniques have been proposed for identifying discretionary accruals (Dechow and Dichev, 2002), but offer minimal improvements over previous models.

9. We apply White’s (1980) heteroskedasticity consistent standard errors for all regression analyses performed in this study. Furthermore, we apply the firm clustering technique for all the analyses because multiple observations from the same firm (but from different years) are included in our dataset.

10. One of the measures of board monitoring that has been widely used in the previous literature is board independence (Vicknair et al., 1993; Peasnell et al., 2005). The governance literature emphasises the role of independent directors in resolving agency problems between managers and shareholders through the creation of appropriate employment contracts and the subsequent monitoring of managerial behaviour. Whilst a number of control variables could have been used, in the interest of having a relatively parsimonious model, board independence has been used as a suitable proxy for corporate governance.

11. In the context of Australia, Koh (2003) and Davidson et al. (2005) reported the average DACC to be 0.077 and 0.156, respectively.

12. The average VESO is AUD 2.1 million and is heavily skewed. Therefore, we use log of dollar value of ownership.

13. To test the problem of multicollinearity we run the auxiliary regressions and check the R 2 values and tolerance factors from these regressions. The R 2 values and tolerance factors do not suggest the presence of any serious multicollinearity problem.

14. There is empirical support for this proposition in the related area of the managerial ownership-performance relation (Demsetz and Villalonga, 2001).

15. We also use an alternative regression technique to examine the relation between VESO and level of discretionary accruals. In particular, we use an IV regression (2 SLS) and predict VESCO using the average age of executive directors as well as the other independent variables. We find that average age of executive directors significantly influences VESCO. The first-stage fitted values for VESCO are then used in the second-stage OLS regression. Our unreported results are consistent with the findings in Table IV.

References


Further reading
ASX Corporate Governance Council (2003), Principles of Good Corporate Governance and Best Practice Recommendations, ASX Corporate Governance Council.

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