IS THERE A FIRM-SIZE EFFECT IN CEO STOCK OPTION GRANTS?

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Abstract

Schaefer (1998) and Baker and Hall (2004) posit a firm size effect for regular executive compensation but not specifically for executive stock option grants. They propose an inverse relation between pay-performance sensitivity and firm size along with a positive relation between the marginal productivity of executive effort and firm size. The product of pay-performance sensitivity and executive productivity is 'incentive strength'. They find a weakly positive association between incentive strength and firm size. We substitute Hall and Murphy's (2002) pay-performance sensitivity metric to detect a firm size effect in CEO stock option grants. After adjusting for small-firm risk aversion and private diversification 'clienteles', we document evidence of a residual small-firm effect impacting on incentive strength principally through grant size. Given lower small-firm deltas, grant size appears to have been increased by compensation committees to ensure small-firm CEOs are not under-compensated relative to their large-firm counterparts. We also find that firm complexity influences pay-performance sensitivity as well, but not labor productivity (proxying for CEO productivity). No evidence is found that firm smallness and complexity impact on labor productivity. However, we empirically confirm a negative relation between pay-performance sensitivity and firm smallness and, by implication, firm complexity.

Keywords: stock options. CEO, firm size

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1. Introduction

Schaefer (1998) and Baker and Hall (2004) modify the standard pay-performance sensitivity argument for the marginal productivity of CEO effort (or pay-to-effort). They identify a trade-off between CEO productivity and firm risk given that pay-performance sensitivity (as measured) is inversely-related to CEO risk aversion. Schaefer reports an inverse relation between pay-performance sensitivity on salary and bonus and the square-root of firm size, lending empirical support to the positive relation suggested by Jensen and Murphy (1990) when applying their dollar definition of pay-performance sensitivity to firm performance. Baker and Hall replicate the Schaefer result on stock and option compensation combined (linearly) but after modifying the sensitivity definition for interaction between pay-performance sensitivity and marginal productivity of effort (incentive strength) and find that incentive strength is approximately constant, or rises slightly, as firm size increases depending on the assumption made concerning CEO private wealth. The implication is that the marginal productivity of CEO effort increases with firm size at about the same rate as the level of firm risk faced by CEOs.

Since neither of these studies explicitly considers CEO stock option grants, there is a gap in our knowledge concerning a firm size effect with respect to the incentive strength of option grants. As Baker and Hall (2004) admit[146], option grants (along with restricted stock grants) remain a key instrument for reducing the agency cost of equity. To the extent CEOs of small firms are closer to owner-managers and because small-firm CEOs have lower risk aversion than large-firm CEOs, option grants in small firms are expected to have lower pay-performance sensitivities than in large firms. Hall and Murphy (2000, 2002) posit but do not test a relation between CEO risk aversion, private diversification and pay-performance sensitivity for stock option grants, but omit to specify a firm-size effect. Hence, there is an absence of direct evidence on the issue whether small firms should tailor their stock option grants differently from large firms. Further, neither the Schaefer (1998) nor the Baker and Hall models accommodate the private diversification of CEOs. Baker and Hall also suggest that attributes of firm size may impinge on optimal incentive contracting, such as the degree of capital intensity, corporate diversification and differences in organizational structure. We therefore extend our analysis to embrace attributes that are characteristic of small firms in the event that firm smallness is proxying for at least one of these

[146] Fn. 2, p.769.

attributes. The present paper seeks to establish empirically whether (i) a firm-size effect applies to CEO stock option grants, and (ii) whether any such size effect represents underlining attributes of firm size. To do this, we employ the option-specific measure of pay-performance sensitivity of Hall and Murphy (2000, 2002) in tandem with labor productivity (proxying for executive productivity) to yield an incentive strength metric. Pay-performance sensitivity is the product of the option delta and absolute grant size. Since delta and stock volatility are positively related, the expectation is that large U.S. firms (which typically are more risky than small U.S. firms) will have higher deltas and hence pay-performance sensitivity for a given grant size. Contrary to the U.S., Australian small firms exhibit higher stock volatility than large firms which is attributable to the higher proportion of resource- and tech-based stocks among small firms. Thus, a large-firm effect attributable to higher stock volatility in the U.S. becomes a small-firm effect in Australia[147]. Specifically, we would then expect the inverse relation between pay-performance sensitivity (as measured) and firm size to reverse for Australia, effectively providing a robustness test of the Schaefer (1998) and Baker and Hall (2004) firm size propositions using a new dataset. Likewise, the positive relationship between firm size and executive productivity posited by these U.S. studies is also expected to reverse for Australian firms.

Adherence to the Hall and Murphy (2002) pay-performance sensitivity metric requires recognition of CEO risk-aversion and private diversification. Their model argues a positive relationship between pay-performance sensitivity and an inverse relation with private diversification. The intuition is that a less (more) risk-averse CEO requires lower (higher) incentive, while a less (more) diversified CEO requires more (less) incentive. Small-firm CEOs are arguably less-diversified and less risk-averse than large-firm CEOs. The lower risk aversion of small firm CEOs is therefore expected to drive a lower pay-performance sensitivity relative to large firms, while lower private diversification of small firm CEOs is expected to drive a higher pay-performance sensitivity. We document a small-firm effect in incentive strength *via* the pay-performance sensitivity component but not labor productivity (proxying for CEO productivity). We therefore provide empirical support for Baker and Hall (2004) but only with respect to pay-performance sensitivity. Notwithstanding their higher stock volatility, Australian small firms exhibit lower deltas and larger grants implying that grant size is used at least to offset the delta effect. One attribute of firm smallness, firm complexity, is found to have a similar explanatory power to that of firm size.

[147] Hereafter, expectations concerning a large firm-size effect are stylized in terms of small-firm effect.

The paper is organized as follows. The following section provides a summary of the relevant literature that examines firm size and executive incentive. Sample selection procedures, measurement of key variables along with descriptive statistics are discussed in Section 3. Key relationships are analyzed and the results reported in Section 4, with the summary and conclusions following in Section 5.

2. Literature review

Rosen (1992) and Holmstrom (1992) both challenge the implicit assumption of Jensen and Murphy (1990) that pay-performance sensitivity is independent of firm size: Rosen, along with Murphy (1985) specify a positive relation while Holmstrom proposes an inverse relation. Along with pay-performance sensitivity, Schaefer (1998) and Baker and Hall (2004) both recognize CEO marginal productivity for effort in their optimal incentive arguments. The optimal pay-performance slope (or sensitivity) is given by the general form $b_i^* = \frac{1}{1+k\rho_i\sigma_i^2}$, where *k* is a constant, ρ_i is absolute CEO risk aversion in *i*th firm, σ_i^2 is the variance of the *i*th firm's stock return. Baker and Hall define b_i as the percentage of CEO stock ownership following Jensen and Murphy while Schaefer defines b_i on salary and bonus. Baker and Hall replace both unities with marginal productivity of CEO effort ($\gamma_i^2 = \frac{2b_i^*\rho_i\sigma_i^2}{1-b_i^*}$), while Schaefer weights $\rho_i\sigma_i^2$ by a cost parameter (*c*) and $S_{t-1}^{2(\phi-\gamma)}$, where S_{t-1} is beginning firm value, ϕ is the marginal rate of change in firm risk and γ is the marginal return to effort: CEOs trade off ϕ for γ. Schaefer hypothesizes and finds that pay-performance sensitivity is higher for smaller firms, implying that the marginal productivity of CEO effort increases with firm size more slowly than the amount of risk faced by the CEO (i.e., $\gamma < \phi$). In other words, for a given stock volatility, Schaefer attributes the lower pay-performance sensitivities of large-firm CEO salary and bonus to higher tenure risk that offsets the CEO's increased productivity (being the product of workload and ability), and also to conjectured higher stock volatility of large firms. Although CEO marginal productivity is likely higher in large firms than small firms, a talented executive in a small firm runs the risk of failing in a large firm owing to more complex organizational and political structures. Hence, larger firms are expected to have smaller pay-performance sensitivities (as defined). On the other hand, Baker and Hall find pay-for-effort $ln(\gamma_i)$ is positively associated with firm size as measured by *ln*(market value) across three assumptions concerning

CEO wealth[148]. An underlying inverse relation between pay-performance sensitivity (as defined by b_i and consistent with Jensen and Murphy, 1990) and firm size is also noted.

To summarize, Schaefer (1998) proposes and finds that larger firms have smaller pay-performance sensitivities on salary and bonus because the marginal productivity of CEO effort increases more slowly than the level of risk faced by the CEO. Modifying the measure of the pay-performance sensitivity metric to include the marginal product of CEO effort, Baker and Hall (2004) also propose and find that larger firms have smaller pay-performance sensitivities on total CEO compensation. Baker and Hall note that although CEOs of large firms typically own trivial fractions of the firm's stock, in absolute terms their shareholdings are larger than those of small firm-CEOs, so higher small-firm pay-performance sensitivity is economically less significant than the leverage of large stock ownership in large firms. They assume the marginal productivity of CEO effort increases proportionately with firm size, such that incentive strength can be measured by the CEO's stock ownership in the firm. They define compensation as salary plus the change in CEO wealth resulting from changes in the value of stock and option holdings. They find that CEO incentive falls slightly as firms become larger. A stronger fall does not occur because the incentive-decreasing decline in percentage equity ownership is offset by the increase in marginal productivity. The implication is that lower pay-performance sensitivity of large firms is almost neutralized by CEOs increased productivity in large firms. Baker and Hall further posit a positive relation between executive incentive and firm size in more capital-intensive industries and a negative relation for diversified firms. Both Schaefer and Baker and Hall specify an inverse relation between executive incentive and risk aversion: thus, to the extent that CEOs of large firms are more risk-averse, their optimal incentive is lower.

The results of the Schaefer (1998) and Baker and Hall (2004) studies need to be qualified in three respects. First, their pay-performance sensitivity measures do not recognize grant size in the formation of executive incentive. Although this circumvents interpretative difficulties in relation to absolute and relative incentive arguments, the omission deprives their analysis of a major decision variable: grant size is a key input in the optimal contracting models of Hall and Murphy (2000, 2002) and Choe (2003). A second qualification is that CEOs' private diversification is omitted as a variable by Schaefer and Baker and Hall owing to lack of data, but Baker and Hall experiment with different assumptions on how CEO wealth accrues. Finally, and more generally, their propositions with respect to the relation between pay-performance sensitivity (as defined) and CEO risk aversion and firm size hinge on the underlying positive relation between stock volatility and firm size.

Given that small Australian firms have higher stock volatility than large firms, our aim is to test the robustness of the Schaefer (1998) and Baker and Hall (2004) models with respect to stock volatility when an opposite firm size effect is implied. Since their models rely on stock volatility and not firm size as a basis of argument, their interpretations should reverse when it is small firms that have higher stock volatility, as long as small-firm CEOs have lower absolute risk aversion than CEOs of large firms. It is therefore of interest to test the robustness of their results with a dataset where large firms exhibit lower stock volatility than small firms. In Australia, the resource sector which is characterized by high risk constitutes a larger share of the economy than in the U.S. A higher proportion of smaller Australian firms is resource-related relative to larger firms, so smaller firms exhibit higher stock volatility than larger firms. As a consequence, and other things equal, for Australian data we expect to observe an opposite outcome to these U.S. studies: that pay-performance sensitivity as defined by Hall and Murphy (2000, 2002) is expected to vary positively, and not inversely, with firm size.

3. Sample descriptives

Our sample comprises 168 stock option grants made to 65 CEOs made by 51 listed Australian companies during the period 1987-2000. A wide array of industries is represented, including 30 resource stocks which are predominately small firms. Since no Australian executive compensation databases are available, all grant data were obtained from an 'options' keyword search of all ASX-listed companies included in *Huntleys' DatAnalysis* service. Deletions were made for companies with quoted options, foreign companies and data inadequacies or inconsistencies. In Australia, as in the United States, shareholders must approve CEO stock option plans put to them by company compensation committees, usually in Annual General Meeting. During the sample period covering the late 1980s and the 1990s, ASX *Listing Rule* 10.14 prescribed shareholder approval by special resolution for issues of securities to related parties (which includes CEOs) by way of employee incentive schemes. The resolution must have been passed at a general meeting held no earlier than the last annual general meeting of the company. Issues of ordinary securities (the American equivalent is common stock) or claims thereon through such schemes and without ordinary shareholders' approval were capped at 15% of outstanding ordinary share capital (*Listing Rule* 7.1). Irregular grants outside such schemes similarly required shareholder approval (*Listing Rule* 10.11), but the 15% cap did not apply. The *Corporations Act* (s.205G) sets a maximum period of 14 calendar days

[148] The assumptions are that: (i) CEO wealth is proportional to all CEO compensation, (ii) CEO wealth is proportional to CEO stock ownership, and (iii) CEO wealth is constant.

within which a company was to notify the ASX of any change, acquisition or disposal of company-issued securities held by directors, including stock options. Once shareholder approval is given, the compensation committee usually has discretion as to the frequency, size and timing of awards, as well as determination of the strike price. CEOs are invariably not members of their compensation committees, but this does not preclude CEO influence over their deliberations[149].

Measures of key firm and CEO characteristics are as follows. Firm size is measured by the book value of total assets rather than firm value because asset sub-group values are available only at book. A firm is classified as small when total assets are ≤ $500 million, else it is classified as large. Capital intensity is the proportion of plant, property and equipment (at net book value) represented in the book value of total assets. This measure is preferred to depreciation/earnings before interest and tax because of variations in earnings due to non firm-specific events and differing accounting treatments. Similar to Coles, Daniel and Naveen (2007) firm complexity is the product of *ln*(1+Number of segments), *ln*(Total assets) and (1+Total assets/Total debt)[150]. Firm complexity is increasing in the number of segments (Rose and Shephard, 1997), total assets (Booth and Deli, 1996) and leverage (Klein, 1998). A firm is classified as diversified (=1) if its operations straddle two or more *ANZSIC* codes at the two-digit level. CEO risk aversion and private diversification are both proxied and measured on a relative scale. Risk aversion is $MRP/5(\sigma^2)$ where the market risk premium (*MRP*) is set at 7 per cent and σ is the standard deviation of stock returns for a given company (stock volatility). This metric is based on a measure commonly used by investment managers[151]. Private diversification is proxied in relative terms by $ln(1+(1/\text{Percentage of stock owned beneficially by the CEO}))$, relying on the intuition that private diversification increases as the percentage of firm stock beneficially-owned by the CEO decreases. Labor productivity is given by the coefficient on labor inputs obtained from a two-stage Cobb-Douglas estimation, where output is measured by Value-added, capital input is measured by net Property, Plant & Equipment (PPE) and labor input is measured by Total Assets *less* PPE; value added is *ln*(Market-to-book of assets × Total assets) - 1. Following Baker and Hall (2004) incentive strength is the product of labor productivity and pay-performance sensitivity. Table 1 describes the characteristics of small *versus* large firms. The book value of total assets is preferred to firm market value as a size sorting variable for two reasons. First, fluctuating stock price volatility during the sample period often causes firms to move from one category to the other as the market value of equity fluctuates and, second, firm market value is influenced by the same factors that enter into the pay-performance sensitivity measure. Panel A shows that our small firms are less than one-tenth the size of our large firms, whichever size measure is used. The most consistent distinguishing characteristics are stock volatility and firm age. Small firms exhibit about double the stock volatility of large firms and are less than half the listing age of large firms. The stock volatility difference is attributable to the presence of a higher proportion of resource and high-tech stocks in the small-firm sub-sample. The relation between stock volatility and firm size is opposite to that exhibited by U.S. firms (Baker and Hall, 2004). Small firms also exhibit higher market-to-book of assets ratios (suggesting more growth opportunities) but have lower free cash flow which suggests a higher need than large firms for external financing. Market-to-book of assets and stock volatility are positively correlated for small firms (r = 0.21, p = 0.07) but inversely correlated for large firms (r = -0.40, p = .03). Interest coverage (representing financial risk) does not discriminate. The two remaining panels of Table 1 look at CEO-related factors. Panel B shows conclusively that CEOs' relative risk aversion and private diversification are lower in small firms compared with large firms. This is an expected outcome because more risk-averse CEOs will tend to migrate to large firms which, in Australia, have comparatively lower stock volatility. Likewise, relative private diversification is higher in large firms than small firms because CEO shareholdings tend to be tiny in large firms.

Panel C describes five option grant characteristics. Option grant value/total assets and option grant value/market value of equity are both consistently higher for small firms than for large firms. Analysis shows that both inequalities are influenced by higher small-firm grant sizes. In other words, option grants in small firms are worth more than option grants in large firms principally as a result of the higher stock volatility of small firms in the present sample. The option delta for small firms is significantly lower than that of large firms, notwithstanding their higher stock volatility. Grant size (as a percentage of the number of outstanding common) is significantly higher for small firms relative to large firms, while pay-performance sensitivity is lower[152]. The latter inequality is due to the relatively larger grants of small firms.

[149] Yermack (1997) cites two examples of companies acknowledging management CEO influence over the terms and conditions of CEO awards, but no such instances were observed during collection of our sample.

[150] The three components are unequally weighted because there are no *a priori* grounds for equal weights.

[151] See Bodie, Kane and Marcus (2005).

[152] As hypothesized by Hall and Murphy (2002), pay-performance sensitivity and CEO risk aversion are positively related (ρ = 0.224, p=.001), implying that more risk-averse CEOs require higher pay-performance sensitivity to maintain given incentive. Pay-performance sensitivity and CEOs' private diversification appear inversely related as hypothesized, but not significantly so.

To discriminate the characteristics of Australian firm smallness, firm complexity, capital intensity and corporate diversification, Table 2 reports four regressions on selected firm characteristics. In regression (1) small firms are shown more likely to have higher stock volatility, market-to-book and interest coverage but lower free cash flow and are more likely to be younger than large firms. Apart from stock volatility, the remaining descriptors are consistent with those of U.S. firms (Coles, Daniel and Naveen, 2008). Diversified firms are shown to have lower stock volatility and are older than more focused firms in regression (2). Regression (3) shows that more capital-intensive firms have higher stock volatility, interest coverage but lower free cash flow than less capital-intensive firms, while more complex firms are shown in regression (4) to have lower volatility, market-to-book and older in firm years. These relations are broadly consistent with those documented by Coles, Daniel and Naveen. More generally, corporate diversification, capital intensity and firm complexity exhibit different loadings on firm characteristics relative to small firms.

4. Analysis

To determine labor productivity, a two-stage Cobb-Douglas model is estimated in which labor input is measured by *ln*(Total assets *less* PPE). Book values are used because market value is not available for PPE and all asset balances are measured at the latest pre-grant balance date. Since labor input is inferred from the balance of non-PPE assets, the complement (PPE) which measures capital input cannot be included in the same regression, so a two-stage estimation is performed to account for collinearity (refer Table 3). Output is measured by Value-added which is *ln*(Market-to-book of assets × Total assets)-1. Labor productivity is given by the coefficient attaching to labor input. The two-stage model is estimated separately for four sectors: engineering & construction, agriculture, chemicals & pharmaceuticals, mining & energy and services, financial & retailing. The results are reported in Table 3. Labor productivity varies from 0.885 per cent for services, financial & retailing to 1.100 per cent for mining & energy for a 1.0 per cent change in labor input. In the remaining three sectors the value-added change is below 1.0 per cent, but this is sustainable when combined with capital productivity. The high ranking of mining & energy is expected.

As a preliminary step, the construct 'incentive strength' and its components is regressed on CEO risk aversion and private diversification, along with a dummy variable for firm smallness which is included to capture any overlap with the former variables. A least squares specification assumes all the explanatory variables are exogenous. While this is true of firm size, there may be a degree of endogeneity in risk aversion if more risk-averse CEOs are attracted to large firms, but such an argument is thought unlikely to extend to private diversification. Stock volatility is not included owing to strong association with the both the small firm binary variable and CEO risk aversion, as measured. Results of three least square regressions reported in Table 4: in regression (1) the dependent variable is pay-performance sensitivity, in regression (2) it is labor productivity and in regression (3) it is incentive strength. Regression (1) shows that pay-performance sensitivity is unrelated to any of these variables. This result is contrary to Baker and Hall (2004) and Schaefer (1998) who posit a negative relation with risk aversion, and also Hall and Murphy (2002) who posit a positive relation with risk aversion. Thus, a neutral result does not constitute a problem. The negative relation between private diversification and pay-performance sensitivity posited by Hall and Murphy is also not found. Regression (2) is a rerun of regression (1) with labor productivity substituted as the dependent variable. Small firms are shown to have significantly lower productivity, in accord with Baker and Hall's (2004) observation that small-firm executives increase their productivity when moving to a larger firm. In addition, labor productivity is positively related to CEO risk aversion (and to a lesser extent private diversification) implying that CEOs are more productive as risk aversion increases, consistent with Baker and Hall. Following Baker and Hall, incentive strength is the product of pay-performance sensitivity and labor productivity. Incentive strength (regression (3)) exhibits a similar relation with firm smallness and risk aversion. Hence, the suggestion is that labor productivity and not pay-performance sensitivity drives incentive strength through risk aversion (positively) and firm smallness (negatively). Private diversification appears unrelated, but this could be attributable to the proxy status of our measure. Given that Australian small firms have higher stock volatility than large firms, a robustness test is appropriate to determine whether incentive strength is determined by stock volatility or firm smallness. Since our measure of CEO risk aversion is highly correlated with stock volatility a substitute measure of risk aversion uncorrelated with stock volatility is employed in which beta risk is an instrument for stock volatility. The resulting measure is *ln*(1/CAPM-required return), which is uncorrelated with stock volatility (r = -0.090, p = 0.245). Regression (4) of Table 4 shows that even though stock volatility is significantly negatively associated with incentive strength, firm smallness retains its inverse significance with incentive strength as documented in regression (3). A potential problem with a least squares specification is that any endogeneity with respect to the explanatory variables is not corrected. Since there is a likelihood that less risk-averse CEOs prefer smaller firms that (in Australia) are less risky, to this extent firm smallness becomes endogenous. Likewise, as suggested by Hall and Murphy (2002) the degree of CEOs' private diversification also determines the level of pay-

performance sensitivity and indirectly a firm size preference if pay-performance sensitivity varies systematically with firm size. Following this reasoning, a series of two-stage least squares estimations is performed in which firm smallness is replaced with CEO risk aversion and private diversification plus an explanatory variable that is complementary to the dependent variable. In Table 5 we regress incentive strength and its components on firm smallness, CEO risk aversion and private diversification after allowing for the simultaneous association of firm smallness with CEO risk aversion and private diversification. Regression (1) shows that incentive strength (following Baker and Hall, 2004) is strongly negatively related to firm smallness. When pay-performance sensitivity is substituted for incentive strength as the dependent variable (regression (2)) the negative relation persists, but disappears when labor productivity is the dependent variable (regression (3)). The implication is that labor productivity is independent of firm size within an incentive context. Thus, for small firms it appears compensation committees need to focus on grant size for a given delta, to the extent the latter is exogenous. To determine whether it is grant size or option delta driving the negative relation between pay-performance sensitivity and firm size, the option delta and grant size are added separately to the instrument set of regression (2). The results are reported in regressions (4) and (5). Both estimations confirm a firm size effect operates both through the option delta and grant size. The small firm coefficient is larger in regression (5) than either regressions (2) and (4) (small firm coefficient = -3.079 *versus* -2.234 and -2.280, respectively). This regularity suggests that grant sizes for small-firm CEOs are adjusted upwards to compensate for their lower deltas relative to large firms. In the absence of such an adjustment and other things equal, small-firm CEOs would be under-compensated relative to large-firm CEOs and migrate to large firms. We therefore advocate that executive option compensation models need to recognize a firm size effect. In the event that firm smallness proxies for attributes of small firm size, a robustness test is applied. Three such attributes are identified for analysis: firm complexity, capital intensity and corporate diversification. The latter two are suggested by Baker and Hall (2004), while the former is suggested by Coles, Daniel and Naveen (2007). The three attributes are subtly different. Complex firms are typically multi-segment and have a complex debt portfolio. Consistent with Hermalin and Weisbach (1988) and Yermack (1996), Coles, Daniel and Naveen (2007) argue that complex firms which are typically large are more difficult to manage and therefore require a broader range of executive inputs. Likewise, capital-intensive firms imply a broader skill set for CEOs compared with labor-intensive organizations. In both cases, we expect to observe stronger executive incentives. Diversified firms are likely larger than focused firms but need not be complex or may not be capital-intensive and are expected to exhibit lower risk (stock volatility), so lower executive incentive is expected to be observed.

The three attributes are discriminated by regressing (again in a two-stage framework) incentive strength separately on the three attributes while specifying CEO risk aversion, private diversification and firm smallness as instruments. Regressions (1) through (3) are reported in Table 6. Regression (1) on firm complexity is the only successful estimation. Given these results, we conclude that for a given level of CEO risk aversion incentive strength is influenced by firm complexity rather than capital intensity and corporate diversification. To determine how firm complexity interacts with pay-performance and labor productivity further two-stage estimations are performed, the results of which are reported in Table 7. Regressions (1) and (2) show that firm complexity is positively related with pay-performance sensitivity, but unrelated to labor productivity by virtue of the inadequate Durbin-Watson statistic. Thus, pay-performance sensitivity (along with incentive strength) is also found influenced by firm complexity over and above firm smallness. To determine whether delta or grant size is driving pay-performance sensitivity within the present structure for a given firm complexity, regression (1) is re-estimated with delta and grant size independently added to the instrument set. The results reported as regressions (3) and (4) of Table 7, which show minimal differences from regression (1) indicating that the relation between pay-performance sensitivity and firm complexity is not affected by delta and grant size differences. The robustness of our findings is further established with respect to alternative measures of firm size, including market value of the firm and firm sales. Likewise, closely similar results are produced when substituting the alternative firm size measures in the measure of firm complexity. Instead of using a composite measure for complexity, we use the individual variables in our regressions and find that, as expected, the coefficients on all three variables are significantly positive with respect to pay-performance sensitivity and incentive strength, but not labor productivity. An alternative measure of private diversification that introduces benchmarking to absolute CEO private wealth specific to the host firm is also tried, being $1/ln(W)$ where W is the market value of firm stock beneficially-owned by the CEO. As with the relative measure, the intuition is that private diversification is more likely as investment in the host firm increases.

5. Summary and conclusions

Baker and Hall (2004) and Schaefer (1998) propose a firm-size effect in relation to recurring executive compensation. Baker and Hall document empirically a weakly positive relation between firm size and various measures of incentive strength, comprising

the product of pay-performance sensitivity (as measured) and the marginal productivity of CEO effort. We test for the presence of a firm smallness effect on executive incentive in the context of CEO stock option grants. Our test metric is pay-performance sensitivity as measured by Hall and Murphy (2002), which is option-specific. Descriptively, small (Australian) firms are characterized by higher stock volatilities and lower option deltas than large firms. Given lower small-firm volatility, lower risk aversion of small-firm CEOs is to be expected. Relying on a proxy for private diversification, small-firm CEOs are also less privately-diversified than their large-firm counterparts. Executive productivity is proxied by labor productivity coefficients obtained from a two-stage estimation of a Cobb-Douglas production function across four identifiable industrial sectors.

There are several empirical findings. First, incentive strength is found strongly inversely related to firm smallness where the latter is characterized by instruments for CEO risk aversion, private diversification, pay-performance sensitivity and labor productivity. Our result therefore exhibits a stronger inverse relationship with respect to small firms than that posited by Baker and Hall (2004). Second, the small-firm effect persists when observing pay-performance sensitivity as defined by Hall and Murphy (2002), but has no impact on labor productivity in the same incentive structure. The former result is consistent with the expectation of Baker and Hall and also Schaefer (1998) that small firms have lower pay-performance sensitivities, while the insignificance of a small-firm effect with respect to labor productivity does not support the U.S. studies. Pay-performance sensitivity is unaffected when the option delta and grant size are independently substituted as small firm instruments. Second, incentive strength is also impacted positively by firm complexity for given CEO risk aversion, but not by capital intensity and corporate diversification. Finally, we show that firm complexity, although correlated with firm size, exists separately as an incentive argument irrespective of the option delta and grant size. The implication of our findings is that executive compensation models need at least to recognize the small-firm effect and firm complexity when determining optimal compensation. Operationally, further research is required on the issue of whether optimal executive incentive models require adjustment for the joint productivity of labor and capital inputs. Specifically, the apparent insensitivity of labor productivity to firm complexity and firm smallness requires elaboration.

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Appendices

Table 1. Characteristics of small *versus* large firms

A firm is classified as small when total assets are ≤ $500 million, else it is classified as large. All financial variables relate to the fiscal period prior to grant. Firm value is the sum of market value of equity and the book value of debt. Market-to-book of assets is the sum of the market value of equity at grant plus the book value of debt, both divided by total assets of book. Stock volatility is measured by the annualized standard deviation of pre-award monthly stock returns over a minimum of 36 months prior to grant. Free cash flow is the ratio of operating cash flow less preferred and equity dividend payments to the book value of assets. Interest coverage ratio is the natural logarithm of earnings before net interest and tax on net interest. Firm age is the number of years since the date of listing. Relative CEO risk aversion is $MRP/5(\sigma^2)$ where the market risk premium (*MRP*) is set at 7 per cent and σ is the standard deviation of stock returns for a given company. Relative private diversification is proxied by $ln(1+(1/\text{Percentage of stock owned beneficially by the CEO}))$. Option grant value is the number of granted options multiplied by the Black-Scholes call value adjusted for dividends. The Option delta is the partial derivative of the call value with respect to the stock price adjusted for dividends. Grant size is the number of granted options divided by the number of outstanding ordinary shares. Pay-performance sensitivity is delta multiplied by the number of granted options.

	Mean			Median		
	Small firms	Large firms	*t* difference	Small firms	Large firms	*Z* difference
Number of grants	*103*	*65*		*103*	*65*	
Panel A: Firm characteristics						
Total assets ($m)	210.1	2,791.4	-11.37***	181.4	2,462.9	-10.92***
Firm value ($m)	262.9	2,954.4	-8.66***	212.3	2,376.2	-10.50***
Market-to-book (assets)	1.58	1.07	2.69***	1.13	1.00	1.95*
Stock volatility (%)	15.60	7.29	9.25***	12.20	6.80	8.41***
Free cash flow	-0.02	0.01	-2.31**	-0.01	0.01	-2.30**
ln(Interest coverage ratio)	1.46	1.85	-1.23	1.67	1.71	-0.89
Firm age (years)	12.7	29.4	-11.29***	11.0	33.0	9.02***
Resource stocks (%)	36.9	12.3				
Panel B: CEO characteristics						
Relative CEO risk aversion	1.26	3.14	-9.01***	0.96	3.03	-8.54***
Relative private diversification	2.76	5.43	-6.05***	2.27	5.55	-5.14***
Panel C: Option characteristics						
Option grant value/Total assets (%)	0.26	0.24	2.50**	0.04	0.01	3.70***
Option grant value/Market value of equity (%)	1.50	0.38	3.25***	0.06	0.02	4.10***
Option delta	1.33	2.69	-5.75***	1.39	2.34	-5.49***
Grant size (%)	0.48	0.13	4.19***	0.24	0.05	5.08***
Pay-performance sensitivity (/million)	0.35	0.67	-2.38**	0.16	0.21	-2.21**

*** denotes two-tailed significance at the 1% level or better.
** denotes two-tailed significance between 1% and 5%.
* denotes two-tailed significance between 5% and 10%.

Table 2. Regressions of firm 'smallness' and associated properties on selected firm characteristics

A firm is classified as small when total assets are ≤ $500 million, else it is classified as large. A firm is classified as diversified (=1) if its operations straddle two or more *ANZSIC* codes at the two-digit level. Capital intensity is the proportion of PPE represented in Total assets. Firm complexity is the product of *ln*(1+Number of segments), *ln*(Total assets) and (1+Total assets/Total debt). Stock volatility is measured by the annualized standard deviation of pre-award monthly stock returns over a minimum of 36 months prior to grant. Market-to-book of assets is the sum of the market value of equity at grant plus the book value of debt, both divided by total assets of book. Interest coverage ratio is the natural logarithm of earnings before net interest and tax on net interest. Free cash flow is the ratio of operating cash flow less preferred and equity dividend payments to the book value of assets. Firm age is the number of years since the date of listing. *z* (*t*) statistics are shown in parentheses for the logit (least squares) regressions. Logit (least squares) regression results are Huber/White-corrected (White corrected) for heteroskedasticity.

Dependent variable:	Logit regressions		Least squares regressions	
	Small firm (=1) (1)	Corporate diversificatio (=1) (2)	Capital intensity (3)	Firm complexity (4)
n=168				
McFadden R^2	0.611	0.469		
Adjusted R^2			0.099	0.477

Table 2 continued

Log likelihood	-43.590	-60.622		
F-statistic			4.683	31.435
probability	0.000	0.000	0.000	0.000
Constant	-3.625**	-0.816*	4.625***	8.020***
	(-2.010)	(-1.817)	(9.664)	(9.114)
Stock volatility	50.537***	-4.730**	3.770**	-17.970***
	(3.568)	(-2.002)	(2.456)	(-4.669)
Market-to-book (assets)	1.602**	-0.123	0.157	-0.431***
	(2.350)	(-1.097)	(1.386)	(-3.720)
ln(Interest coverage ratio)	0.796**	-0.075	0.258***	-0.168
	(2.116)	(-1.029)	(2.741)	(-1.031)
Free cash flow	-13.378**	0.846	-5.925**	3.058
	(-2.249)	(0.567)	(-2.263)	(0.868)
Firm age (years)	-0.179***	0.115***	0.011	0.164***
	(-3.015)	(4.735)	(0.792)	(6.129)

*** denotes two-tailed significance at the 1% level or better.
** denotes two-tailed significance between 1% and 5%.
* denotes two-tailed significance between 5% and 10%.

Table 3. Two-stage least squares regressions of Value-added on labor and capital inputs

Output is measured by Value-added which is *ln*(Market-to-book of assets × Total assets)-1. Capital input is measured by *ln*(Property, Plant & Equipment) and labor input is measured by *ln*(Total Assets *less* Property, Plant & Equipment). All asset balances are measured at the latest pre-grant balance date. The simultaneous equations are:

$$ln(\text{Laborinput}) = \alpha_0 + \alpha_1\, ln(\text{Capitalinput}) + \varepsilon$$

$$ln(\text{Value-added}) = \beta_0 + \beta_1\, ln(\text{Laborinput}) + \varepsilon$$

where the estimation of the second equation is reported below. *t* statistics are shown in parentheses. Regression results are White-corrected for heteroskedasticity.

Industry classification:	Engineering & construction	Agriculture, chemicals & pharmaceuticals	Mining & energy	Services, financial & retailing
N	51	34	31	52
Adjusted R^2	0.835	0.530	0.907	0.843
Durbin-Watson	1.746	1.950	1.909	2.195
Constant	0.035	0.737	0.188	0.253
	(0.148)	(1.257)	(0.655)	(0.703)
Labor input	0.986***	0.950***	1.110***	0.885***
	(21.08)	(7.954)	(17.564)	(17.136)

*** denotes two-tailed significance at the 1% level or better.

Table 4. Least squares regressions of incentive strength and its components on firm smallness, CEO risk aversion and private diversification

Pay-performance sensitivity is delta multiplied by the number of granted options, where delta is the partial derivative of the call value with respect to the stock price adjusted for dividends. Labor productivity is the coefficient on labor inputs obtained from a two-stage Cobb-Douglas estimation, where output is measured by Value-added, capital input is measured by net Property, Plant & Equipment (PPE) and labor input is measured by Total Assets *less* PPE; value added is *ln*(Market-to-book of assets × Total assets) - 1. All asset variables are measured at the latest pre-grant balance date. Incentive strength is the product of Pay-performance sensitivity and Labor productivity. A firm is classified as small when total assets are ≤ $500 million, else it is classified as large. *t* statistics are shown in parentheses. In regressions (1) through (3) relative CEO risk aversion is $MRP/5(\sigma^2)$ where the market risk premium (*MRP*) is set at 7 per cent and σ is the standard deviation of stock returns for a given company, whereas in regression (4) relative risk aversion is proxied by the natural logarithm of the inverse of the CAPM-required return. Relative private diversification is proxied by $ln(1+(1/\text{Percentage of stock owned beneficially by the CEO}))$. Stock

volatility is measured by the annualized standard deviation of pre-award monthly stock returns over a minimum of 36 months prior to grant. *t* statistics are shown in parentheses. Regression results are White-corrected for heteroskedasticity.

Dependent variable:	Pay-performance sensitivity (1)	Labor productivity (2)	Incentive strength (3)	Incentive strength (4)
n=168				
Adjusted R^2	0.040	0.580	0.110	0.103
F-statistic	3.333	77.731	7.916	5.777
Probability	0.021	0.000	0.000	0.000
Constant	0.470	5.649***	7.166*	4.312
	(0.438)	(26.154)	(1.727)	(0.729)
Small firm (=1)	-0.607	-2.310***	-7.713**	-8.967***
	(-1.205)	(-12.531)	(-2.412)	(-2.285)
CEO risk aversion	0.519	0.154***	2.145**	5.125**
	(1.532)	(2.892)	(2.034)	(2.064)
Private diversification	0.074	0.047*	-0.002	0.125
	(0.458)	(1.886)	(0.005)	(0.254)
Stock volatility				-20.287**
				(-2.499)

*** denotes two-tailed significance at the 1% level or better.
** denotes two-tailed significance between 1% and 5%.
* denotes two-tailed significance between 5% and 10%.

Table 5. Two-stage least square regressions of incentive strength and components on firm smallness

Pay-performance sensitivity is delta multiplied by the number of granted options, where delta is the partial derivative of the call value with respect to the stock price adjusted for dividends. Labor productivity is the coefficient on labor inputs obtained from a two-stage Cobb-Douglas estimation, where output is measured by value added, capital input is measured by net Property, Plant & Equipment (PPE) and labor input is measured by Total Assets *less* PPE; value added is (Market-to-book of assets – 1) multiplied by Total assets, where both variables are measured at the latest pre-grant balance date. Incentive strength#1 is the product of Pay-performance sensitivity and Labor productivity. CEO risk aversion is $MRP/5(\sigma^2)$ where the market risk premium (*MRP*) is set at 7 per cent and σ is the standard deviation of stock returns for a given company. Relative private diversification is proxied by $ln(1+(1/\text{Percentage of stock owned beneficially by the CEO}))$. A firm is classified as small when total assets are ≤ $500 million, else it is classified as large. Delta is the partial derivative of the call value with respect to the stock price adjusted for dividends. Grant size is the number of granted options divided by the number of outstanding ordinary shares. *t* statistics are shown in parentheses. Regression results are White-corrected for heteroskedasticity. Estimation of the second of the following pairs of simultaneous equations is reported below:

Regression (1):

$$\text{Small firm} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Pay-performance sensitivity} + \beta_4 \text{Labor productivity} + \varepsilon$$

$$\text{Incentive strength} = \alpha_0 + \alpha_1 \text{Small firm} + \alpha_2 \text{ CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Regression (2):

$$\text{Small firm} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Labor productivity} + \varepsilon$$

$$\text{Pay-performance sensitivity} = \alpha_0 + \alpha_1 \text{Small firm} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Regression (3):

$$\text{Small firm} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Pay-performance sensitivity} + \varepsilon$$

$$\text{Labor productivity} = \alpha_0 + \alpha_1 \text{Small firm} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Regression (4):

$$\text{Small firm} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Labor productivity} + \beta_4 \text{Option delta} + \varepsilon$$

$$\text{Pay-performance sensitivity} = \alpha_0 + \alpha_1 \text{Small firm} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Regression (5):

$$\text{Small firm} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Labor productivity} + \beta_4 \text{Grant size} + \varepsilon$$

$$\text{Pay-performance sensitivity} = \alpha_0 + \alpha_1 \text{Small firm} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Dependent variable:	Incentive strength (1)	Pay-performance sensitivity (2)	Labor productivity (3)	Pay-performance sensitivity (4)	Pay-performance sensitivity (5)
n=168					
Adjusted R^2	0.083	0.024	-1.193	0.023	0.003
Durbin-Watson	1.907	1.990	0.266	1.988	1.952
Constant	15.187***	2.132***	11.977*	2.178***	2.994***
	(2.892)	(3.095)	(1.677)	(3.194)	(3.495)
Small firm (=1)	-15.568***	-2.234***	-8.507	-2.280***	-3.079***
	(-3.417)	(-2.838)	(-1.234)	(-2.816)	(-3.017)
CEO risk aversion	1.080	0.298	-0.685	0.292	0.184
	(1.321)	(1.271)	(-0.665)	(1.269)	(0.879)
Private diversification	-0.343	0.004	-0.222	0.002	-0.033
	(-0.703)	(0.027)	(-0.723)	(0.013)	(-0.248)

*** denotes two-tailed significance at the 1% level or better.
** denotes two-tailed significance between 1% and 5%.
* denotes two-tailed significance between 5% and 10%.

Table 6. Two-stage least square regressions of incentive strength on properties of firm smallness

Pay-performance sensitivity is delta multiplied by the number of granted options, where delta is the partial derivative of the call value with respect to the stock price adjusted for dividends. Labor productivity is the coefficient on labor inputs obtained from a two-stage Cobb-Douglas estimation, where output is measured by value added, capital input is measured by net Property, Plant & Equipment (PPE) and labor input is measured by Total Assets *less* PPE; value added is (Market-to-book of assets – 1) multiplied by Total assets, where both variables are measured at the latest pre-grant balance date. CEO risk aversion is $MRP/5(\sigma^2)$ where the market risk premium (MRP) is set at 7 per cent and σ is the standard deviation of stock returns for a given company. Relative private diversification is proxied by $ln(1+(1/\text{Percentage of stock owned beneficially by the CEO}))$. Firm complexity is the product of ln(1+Number of segments), ln(Total assets) and (1+Total assets/Total debt). Capital intensity is the proportion of PPE represented in Total assets. A firm is classified as diversified (=1) if its operations straddle two or more *ANZSIC* codes at the two-digit level. *t* statistics are shown in parentheses. Regression results are White-corrected for heteroskedasticity. Estimation of the second of the following pairs of simultaneous equations is reported below:

Regression (1):

$$\text{Firm complexity} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Pay} - \text{performance sensitivity} + \beta_4 \text{Labor productivity} + \beta_5 \text{Small firm} + \varepsilon$$

$$\text{Incentive strength} = \alpha_0 + \alpha_1 \text{Firm complexity} + \alpha_2 \text{ CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Regression (2):

$$\text{Capital intensity} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Pay} - \text{performance sensitivity} + \beta_4 \text{Labor productivity} + \beta_5 \text{Small firm} + \varepsilon$$

$$\text{Incentive strength} = \alpha_0 + \alpha_1 \text{Capital intensity} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Regression (3):

$$\text{Corporate diversification} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Pay} - \text{performance sensitivity} + \beta_4 \text{Labor productivity} + \beta_5 \text{Small firm} + \varepsilon$$

$$\text{Incentive strength} = \alpha_0 + \alpha_1 \text{Corporate diversfcation} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

	(1)	(2)	(3)
n=168			
Adjusted R^2	0.182	-0.399	0.311
Durbin-Watson	1.900	1.525	1.689
Constant	-8.015**	67.422***	-6.187**
	(-2.249)	(2.866)	(-2.057)
Firm complexity	1.680***		
	(3.171)		
Capital intensity		-11.499***	
		(-2.825)	
Corporate diversification			17.065***
			(3.175)

Table 6 continued

CEO risk aversion	0.794**	0.457	1.438**
	(2.026)	(0.488)	(2.515)
Private diversification	-0.267	2.258**	0.021
	(-0.800)	(2.454)	(0.051)

*** denotes two-tailed significance at the 1% level or better.
** denotes two-tailed significance between 1% and 5%.

Table 7. Two-stage least square regressions of incentive strength and components on firm complexity

Pay-performance sensitivity is delta multiplied by the number of granted options, where delta is the partial derivative of the call value with respect to the stock price adjusted for dividends. Labor productivity is the coefficient on labor inputs obtained from a two-stage Cobb-Douglas estimation, where output is measured by value added, capital input is measured by net Property, Plant & Equipment (PPE) and labor input is measured by Total Assets *less* PPE; value added is (Market-to-book of assets – 1) multiplied by Total assets, where both variables are measured at the latest pre-grant balance date. CEO risk aversion is $MRP/5(\sigma^2)$ where the market risk premium (MRP) is set at 7 per cent and σ is the standard deviation of stock returns for a given company. Relative private diversification is proxied by $ln(1+(1/\text{Percentage of stock owned beneficially by the CEO}))$. Firm complexity is the product of ln(1+Number of segments), ln(Total assets) and (1+Total assets/Total debt). Capital intensity is the proportion of PPE represented in Total assets. A firm is classified as diversified (=1) if its operations straddle two or more *ANZSIC* codes at the two-digit level. *t* statistics are shown in parentheses. Regression results are White-corrected for heteroskedasticity. Estimation of the second of the following pairs of simultaneous equations is reported below:

Regression (1)

$$\text{Firm complexity} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Labor productivity} + \beta_4 \text{Small firm} + \varepsilon$$

$$\text{Pay-performance sensitivity} = \alpha_0 + \alpha_1 \text{Firm complexity} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Regression (2)

$$\text{Firm complexity} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Pay-performance sensitivity} + \beta_4 \text{Small firm} + \varepsilon$$

$$\text{Labor productivity} = \alpha_0 + \alpha_1 \text{Firm complexity} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Regression (3)

$$\text{Firm complexity} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Labor productivity} + \beta_4 \text{Small firm} + \beta_5 \text{Delta} + \varepsilon$$

$$\text{Pay-performance sensitivity} = \alpha_0 + \alpha_1 \text{Firm complexity} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Regression (4)

$$\text{Firm complexity} = \beta_0 + \beta_1 \text{CEO risk aversion} + \beta_2 \text{Private diversification} + \beta_3 \text{Labor productivity} + \beta_4 \text{Small firm} + \beta_5 \text{Grant size} + \varepsilon$$

$$\text{Pay-performance sensitivity} = \alpha_0 + \alpha_1 \text{Firm complexity} + \alpha_2 \text{CEO risk aversion} + \alpha_3 \text{Private diversification} + \varepsilon$$

Dependent variable:	(1) Pay-performance sensitivity	(2) Labor productivity	(3) Pay-performance sensitivity	(4) Pay-performance sensitivity
n=168				
Adjusted R^2	0.064	0.751	0.069	0.067
Durbin-Watson	2.008	0.768	2.014	2.012
Constant	-0.741	1.936***	-1.027	-0.853
	(-0.927)	(11.488)	(-1.032)	(-1.042)
Firm complexity	0.136***	0.311***	0.202***	0.162***
	(2.731)	(15.154)	(2.639)	(3.180)
CEO risk aversion	0.407	0.023	0.312	0.370
	(1.429)	(0.553)	(1.480)	(1.364)
Private diversification	0.052	0.036*	0.029	0.043
	(0.351)	(1.723)	(0.217)	(0.293)

*** denotes two-tailed significance at the 1% level or better.
* denotes two-tailed significance between 5% and 10%.