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The Diversification Discount:

Are Control Mechanisms Less Effective in Diversified Firms?

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Abstract

Purpose: This study investigates whether the market value discount experienced by multi-segment, (diversified) firms versus single-segment (focused) firms is associated with relative levels of internal and external governance. The goal is to shed light on the diversification discount by examining the role of internal and external control mechanisms.

Methodology: Using a sample of single- and multi-segment firms over the period 1996-2015, we examine the relationship between firm value, the level of corporate diversification, and different levels of internal and control governance mechanisms. We use multivariate regression analysis to explore whether the effect of internal and external control on firm value varies across focused and diversified firms and whether strong external control substitutes for a lack of internal control.

Findings: Our results indicate a negative correlation between firm value and the level of corporate diversification. Additionally, we find a positive correlation between firm value and the level of internal and external control mechanisms. However, the impact of these control mechanisms is significantly weaker in diversified firms.

Unique Contributions to Theory, Policy and Practice: This study provides evidence that agency problems are more pronounced in diversified firms, and that weaker governance is associated with the diversification discount along three dimensions. Firstly, lower levels of internal control have a negative effect on firm value, and this impact is greater for diversified firms. Secondly, external control, as measured by institutional ownership and financial analysts' coverage, is positively related to the value of single-segment firms and, to a lesser extent, multi-segment firms. Lastly, strong external control substitutes for a lack of internal control in single-segment firms but not in

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diversified firms. This suggests that the role of institutional investors and financial analysts is more restricted under complex operational and informational structure.

Keywords: *Diversification*; *Firm value*; *Control mechanisms*; *CEO power*

JEL Classification: G32, G34

1. Introduction

Finance literature shows that internal and external control mechanisms are critical to firm performance. Strong external control as proxied by institutional ownership and financial analyst coverage has been linked to superior firm performance (McConnel and Servaes, 1990; Gillan and Starks, 2007), while the lack of internal control, as measured by CEO power, has been associated with poor firm performance (Rechner and Dalton, 1991; Bebchuk et al., 2011). Although these results hold for single- and multi-segment firms, we investigate whether these control mechanisms are less effective in the latter. On one hand, corporate diversification may be a form, and even a result, of CEO power, allowing CEOs to accumulate more power. On the other hand, complex operational and informational structures in diversified firms may impede external monitoring by institutional investors and financial analysts. This paper proposes that, due to the complex operational and informational structure in diversified firms, internal and external governance control mechanisms may be less effective compared to those in single-segment firms, leading to lower firm value for diversified relative to single-segment firms.

Corporate diversification is a natural consequence of firm growth, where the availability of resources allows the firm to benefit from investment opportunities in other industries that yield higher rates of return (Gomes and Livdan, 2004). When new investment opportunities in a given industry are exhausted because of competition, firms are left with two main options: to transfer a large part of their earnings to shareholders or to invest in more promising industries mainly through mergers and acquisitions. Based on this rationale, corporate diversification is expected to enhance value, especially with the firm's ability to channel funds across different divisions to the most promising ones (Stein 1997). Therefore, shareholders will seek diversification whenever it adds value to their holdings. However, the decision to diversify or to allocate funds between different investment opportunities is made by firm agents. Because CEOs can make investment decisions that maximize their own utility, their decisions may not be optimal for shareholders. Consequently, diversification may lead to value destruction if CEOs diversify to obtain private benefits (Aggarwal and Samwick, 2003).

Denis et al. (1997) conclude that diversification strategies are mainly motivated by agency problems, while Amihud and Lev (1981) argue that CEOs' incentives to reduce their personal risk motivate them to diversify the firm in multiple lines of business. Moreover, managing a larger firm brings the CEO more power and prestige (Jensen 1986) and even higher compensation (Jensen and

Murphy 1990). Aggarwal and Samwick (2003) state that CEOs in diversified firms are able to extract more private benefits compared to those in single-segment firms. Shareholders and CEOs have different incentives to diversify so that diversification is most likely to add value when it is driven by shareholders' incentives rather than by CEOs' personal incentives. Control mechanisms in firms should help better align CEO decisions with the incentives of shareholders.

Denis et al. (1997, p. 136) state "…managers may maintain a diversification strategy even if doing so reduces shareholder wealth." Under this hypothesis, managers will reduce diversification only if pressured to do so by internal or external monitoring mechanisms. The authors find that the level of diversification is negatively related to managerial equity ownership, the equity ownership of outside blockholders, and to other external corporate control threats.

Unlike Denis et al. (1997) who use blockholders' ownership as a proxy for external control, we use institutional ownership and analysts' coverage as proxies for external control. The external monitoring role of institutional investors and of financial analysts may limit agency costs and enhance firms' value (Moyer et al., 1989; McConnel and Servaes, 1990; Chung and Jo, 1996; Gillan and Starks, 2007). However, as the complex operational and informational structure in diversified firms may restrict external monitoring, we explore in this study the association between the degree of corporate governance and reduced values of diversified firms.

On that point, this paper tests the hypothesis that, when compared to focused firms, diversified firms suffer more from the lack of internal controls and benefit less from strong external control. We argue that a lack of internal and external controls on the CEO leads to more pronounced agency problems between the CEO and shareholders, which results in value destruction. To the extent that CEO decisions, such as optimal allocation of internal funds, are more difficult to monitor in diversified firms, we expect the negative effect of weak internal and external governance on firm value to be greater in diversified firms. Furthermore, we investigate whether high institutional ownership or significant financial analyst coverage can substitute for a lack of internal control in diversified firms.

For a sample of single- and multi-segment firms over the period 1996–2015, this study provides evidence that diversified firms suffer more from a lack of internal control when compared to single-segment firms; the negative effect of CEO power on firm value is significantly greater in diversified firms. We also find that the effect of institutional investors and financial analysts on firm value varies significantly between single- and multi-segment firms. While external controls are positively correlated with firm value, the positive effect of those controls are less significant in diversified firms when compared to single-segment firms. Finally, we find that strong external control in single-segment firms moderates to a large extent the negative effect of CEO power on firm value. However, we do not find any evidence on a substitution effect between internal control and strong external control in diversified firms.

This study fills a gap in the literature examining the effects of corporate diversification on firm value by investigating whether the diversification discount typically found for multi-segment firms is associated with the degree of internal and external corporate governance.[1] It also enhances the large body of literature in finance and organizational theory that investigates the effect of CEO power on firm value.[2] The rest of the paper is organized as follows. Section 2 discusses the sample and our main variables. Sections 3 and 4 examine the effects of internal and external control measures, respectively, on firm value. Section 5 investigates the interaction of internal and external control measures and assesses whether strong external control can substitute the lack of internal control. Finally, we provide concluding remarks in section 6.

2. Data and variables

We create full samples of diversified and focused firms from the COMPUSTAT segment database over the period 1996–2015. If a firm reports more than one segment at the 3-digit SIC code level, it is included in the diversified sample. Otherwise, firms reporting a single segment at the 4-digit SIC code level comprise the focused sample. Following Berger and Ofek (1995), we exclude firmyear observations with at least one segment in either the financial services industry or in utilities in addition to those with missing or no SIC codes. We also exclude American Depository Receipts and small firms (total sales less than $20 million). For diversified firms, we require the sum of total sales for the segments of a firm to be within 90–110% of total firm sales as reported in the COMPUSTAT industrial file. We then adjust individual segment sales based on their relative weights to equal total firm sales reported on COMPUSTAT industrial file, resulting in a sample of 29,429 segment-year observations.

We employ the measure introduced by Berger and Ofek (1995) as a measure of firm excess value, which we calculate in two steps. First, we impute the value of each firm, $I(V)$, as the sum of the imputed values of its segments as follows

$$I(V) = \sum^{n}_{i=1} AI_i * (Ind_i(V/AI)_{mf}), \quad (1)$$

where for each firm with n segments, i, AI is sales, and $Ind(V/AI)_{mf}$ is the multiple of total capital to sales for the median single-segment firm in segment i's industry. Then, we compute the excess value (EV) as

$$EV = \ln(V/I(V)), \quad (2)$$

where firm market value, V, is the market value of common equity plus book value of debt. Excess value measures the gain or loss in value from corporate diversification. Therefore, if the

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[1] See Berger and Ofek (1995), Denis et al. (2002), Fauver et al. (2003), Akbulut and Matsusaka (2008), and Kuppuswamy and Villalonga (2015).

[2] See Mallette and Fowler (1992), Daily and Dalton (1994), Adams et al. (2005), Masulis et al. (2007), Liu and Jiraporn (2010), Bebchuk et al. (2011), Hoechle et al. (2012).

market value of the firm is less than the market value of its separate segments treated as standalone firms, the excess value will be negative, referred to as a diversification discount.

For external control measures, we use two measures institutional ownership and analysts' coverage. We obtain institutional ownership data for all common stocks traded on NYSE, AMEX, and NASDAQ through 13F filings from Thomson Financial. This database contains quarterly data about institutional holdings. For each firm, we compute the average number of shares held by institutions for a given year, and then we divide it by the average number of shares outstanding for that same year. The resulting ratio represents institutional ownership measure, *IO*. Higher institutional ownership as measured by a higher *IO* value implies a higher level of external control.

We obtain analyst coverage data from the Institutional Brokers' Estimate System (IBES). We compute the number of analysts covering a given firm during a given year, as well as the number of issued estimates and recommendations. We create variable ln(*analyst*), which equals the natural logarithm of (1 + the number of analysts covering a firm during a given year). The variable takes a value of zero if the firm is not followed by any analyst during a given year.

Table 2a provides descriptive statistics for the full samples of diversified firm segments (Panel A) and related firms (Panel B), as well as for single-segment, focused firms (Panel C). The average segment in Panel A has $1.6 billion of assets and $1.5 billion of sales. The segment observations in Panel A correspond to the 11,618 firm-year observation on 1,903 different firms reported in Panel B. On average, the diversified segments represent about 34% and 39%, respectively, of $4.7 billion in assets and $3.9 billion in sales for diversified firms. Of the 1,903 diversified firms, 447 firms have a single firm-year observation, 327 firms have more than 10 firmyear observations, and 37 firms have 20 complete observations that cover the entire sample period. Turning to Panel C, the focused firms on average have lower assets and sales than diversified firms, with $1.9 billion and $1.7 billion, respectively. Focused firms tend to be younger, as well, with an average age of 16.5 years compared to 25 years for diversified firms.

Contrasting the measures of external control in Table 2a for both sets of firms, we observe that diversified firms have slightly higher institutional ownership (*IO*) at 48% than do focused firms, with 41%. However, both sets of firms have the same analyst coverage (*covered*), each with 56% covered by at least one analyst in any given year, and approximately the same number of analyst coverage (*analysts*), with 4.45 analysts on average for each firm. In that both samples have highly similar levels of external monitoring vis-à-vis institutional ownership and analyst coverage, any difference in the effect of external governance on *excess value* may be associated with varying degrees of efficacy of such monitoring.

Prior studies find that low internal control as measured by powerful CEOs is associated with poor firm performance (Rechner and Dalton, 1991; Bebchuk et al., 2011). We follow Adams et al. (2005) and Hoechle et al. (2012) and construct a measure of CEO power based on board structure and composition. The variable, *power*, equals one if a CEO is the only corporate insider

on the board of directors, is president of the firm and chairman of the board of directors, and zero otherwise. We obtain data on executive compensation and corporate governance to construct *power* from ExecuComp and RiskMeterics, respectively. As these data sources only cover firms in the S&P 1500 index, merging with the full samples results in subsamples of 5,859 segment observations, corresponding to 2,876 diversified firm-years, and 7,996 focused firm-year observations.

Table 2b provides descriptive statistics for the subsamples of diversified firm segments (Panel A) and related firms (Panel B) and focused firms (Panel C). On average, the diversified firms and related segments and focused firms in the subsamples (Table 2b) are larger than the firms and segments in the full sample (Table 2a). The segments in Table 2b comprise on average 32% of assets and 41% of sales, slightly lower and higher than for the full sample, respectively. However, the subsample firms are on average older than those in the full sample, with diversified firms about 34 years old and focused firms 25 years old.

Notably, institutional ownership (*IO*) is 66% and 70%, respectively, for diversified and focused firms in the subsamples, which is higher than that for the full samples. Moreover, subsample firms have considerably more analyst attention; on average, 85-90% of firms are covered by at least one analyst in any given year (*covered*), with 9.9 and 12.4 analysts covering each firm. S&P 1500 firms in the subsamples have more external monitoring from institutional owners and have markedly more external monitoring from analyst coverage.

3. Internal control and the value of the firm

Jensen and Meckling (1976) argue that CEOs seek non-pecuniary benefits to maximize their own utility. CEO power is a form of such benefits and it gives the CEO the ability to implement her own strategies with little resistance from the board of directors. Therefore, more CEO power reflects a lack of internal control on CEOs' actions. Shleifer and Vishny (1989) state that firms run by a "one man show" are less likely to be takeover targets as their CEOs have enough power to reject any takeover attempt. Moreover, because powerful CEOs are less likely to be replaced, they are less concerned about the impact of their decisions on shareholders' welfare. Conversely, a high level of internal control implies that critical decisions are taken by a coalition of executives and that the CEO is unable to solely enforce any strategic change in the firm (Boumosleh, 2007).

When CEOs are able to advance their own agendas, they may take sub-optimal strategic decisions. Such decisions may negatively affect firm performance, leading to a lower firm value.

Therefore, we expect CEO power to have a negative effect on firm value. Moreover, powerful CEOs are more likely to seek diversifying strategies (Finkelstein, 1992; Brown and Sarma, 2007). Diversification allows CEOs to build large corporate empires (Jensen and Meckling, 1976), to reduce managerial risk (Amihud and Lev, 1981), and to even accumulate more power. Moreover, operating in multiple industries increases the operational and informational complexity of CEOs' job as they have to deal with different lines of business and to efficiently allocate firm resources

to its unrelated segments (Finkelstein and Hambrick, 1989; Bushman et al., 2004). CEOs diversify their firms in a way that mainly fits their own level of knowledge and expertise which allows them to entrench themselves against any possible future replacement (Shleifer and Vishny, 1989).

As CEOs are able to accumulate more power in diversified firms and as strategic decisions in these firms, such as internal capital allocation, may lead to more severe consequences when compared to those in single-segment firms, we expect that the negative effect of CEO power is present for both types of firms but stronger in diversified firms.

Hypothesis 1: *The negative effect of weak internal controls is stronger in diversified firms compared to focused firms.*

To test the effect of internal control on firm value, and thus Hypothesis1, we estimate Eq.

(3),

$$EV_{it} = \alpha + \beta_1 C_{it} + \beta_2 Power_{it} + \beta_3(D_{it}*C_{it}) + \beta_4(D_{it}*Power_{it}) + \beta_5 D_{it} + \varepsilon_{it}, \quad (3)$$

where for firm *i* in year *t*, *EV* is the excess value of the firm, *power* is our measure of CEO power, *D* is a binary variable equal to one for diversified firms and zero otherwise, and *C* is a vector of control variables (*Size*, *Firm_Age*, *Leverage*, *Profitability* and *Tobin's Q*).

Table 3 reports the results of estimating Eq. (3) for the subsamples. Although we expect CEO power to be negatively related to firm value, the focal point in this section is in any significant difference that may exist between the effects of CEO power in diversified and focused firms. The coefficients on *power* are significantly negative in all models, as expected; the estimates for *power* for focused and diversified firms of –0.031 and –0.087, respectively, suggest that focused firms run by powerful CEOs are likely to sell at 3.1% compared to an 8.7% discount for diversified firms with powerful CEOs.

With the lack of internal control, powerful CEOs decisions are more likely to reflect their own preferences rather than those of shareholders and are less likely to be challenged by the board of directors. Consequently, powerful CEOs may make suboptimal decisions that result in value destruction. This result is in line with findings in other studies that assess the effect of weak internal control mechanisms on firm value. Rechner and Dalton (1991), find that CEO power proxied by CEO duality is negatively related to firm performance. Moreover, firms managed by powerful CEOs are more likely to go bankrupt (Hambrick and D'Aveni, 1992; Daily and Dalton, 1994). Finally, Bebchuk et al. (2011) find that higher CEO power is associated with lower firm value.

To address Hypothesis 1, we turn to the interaction term of the diversified firm binary variable and CEO power (*D*Power*) for the pooled sample. The coefficient on the interaction term, *D*Power*, is –0.057 and significantly different from zero, suggesting that diversified firms suffer more from lack of internal control when compared to single-segment firms. While focused firms managed by powerful CEOs sell at a 3.1% discount, diversified firms managed by powerful CEOs sell at an 8.7% discount. This result supports the assertion that agency costs are more severe in

diversified firms. We therefore fail to reject Hypothesis 1; that the negative effect of CEO power on firm value is more severe for diversified firms than for single-segment firms.

4. External control and the value of the firm

While the previous section examined the effect of internal control on firm value, this section examines how external control as measured by institutional ownership and financial analyst coverage affects firm value. Ownership structure has had radical changes over the last few decades with the emergence of institutional investors as the major players in US stock markets. As institutional ownership has increased, the role of these owners has evolved from passive to active (Gillan and Starks, 2000). Due to their significant holdings, Gillan and Starks (2007) contend that institutional owners have the incentive to engage in costly external monitoring to enhance the firm value and thus the value of any investment. Moreover, their concentrated voting power allows them to be more influential on managerial performance (Bainbridge. 2005). Given this, we expect institutional ownership to increase firm value.

Bushman et al. (2004) argue that diversified firms will benefit more from costly monitoring activities compared to single firms as the former faces more complex operational and informational environments. Although diversified firms have more dispersed institutional ownership, diversified firms' institutional investors may still seek an active control role compared to individual investors (David et al.,1998).[3] However, diversification represents an indirect form of CEO power and the firm may be heavily diversified as a consequence of decisions made by powerful CEOs. Moreover, CEOs in diversified firms have an expertise advantage and a higher informational advantage over the board members, especially if the firm operates in completely unrelated industries. It follows that the influence of institutional owners and their effect on firm value may be weaker.

Like institutional investors, analysts can also play a role in external monitoring through issuing earnings estimates, which provide insights to investors about what to expect from the firm and provide them with a measure to test managerial performance. When a firm's earnings consistently fall below analysts' estimates, this implies poor managerial performance. Consequently, this will elicit a negative reaction from investors and the firm's stock price will decline. There are several theories predicting firm value to increase with analyst coverage. Merton (1987) presents the Investor Recognition Hypothesis and the role of analysts in increasing the visibility of the firm, while Amihud and Mendelson (1986, 2000) emphasize the relevance of analysts in increasing the number of informed traders, lowering bid-ask spread and therefore improving liquidity. Finally, analysts play a major monitoring role (Chung and Jo, 1996) and the importance of that role increases with the level of agency costs (Moyer et al., 1989). This form of external governance is neither mandated by laws and regulations nor chosen by the firm; analyst coverage of a given firm is determined by factors beyond the control of the firm (Lang et al., 2004;

[3] Diversified firms are significantly larger than single firms and have a more disperse investors' base.

Jiraporn et al., 2012). In this paper, we are interested in the monitoring role of analysts, which we expect to be positively related to firm excess value.

Analysts are usually specialized in some industries, as specialization increases their forecast accuracy (Jacob et a., 1999). Consequently, their jobs become more complicated in diversified firms where they have to be knowledgeable in completely unrelated industries. Clement (1999) shows that analysts' forecast accuracy is negatively related to the number of industries that they follow. As estimating the earnings of diversified firms require analyst expertise in a larger number of industries, the accuracy of their estimates is expected to decrease. Gilson et al. (2001) reveal that focus-increasing spin-offs result in a significant increase in analyst coverage, as well as an increase in forecast accuracy for parent and subsidiary firms.

As the work of financial analysts is much more complicated in diversified firms, we expect their monitoring role to be less effective in such firms when compared to their role in singlesegment firms. Therefore, we anticipate analyst coverage to have a weaker effect in increasing firm excess value in diversified firms. Given the preceding discussion, we develop our next hypothesis.

Hypothesis 2: *The positive effect of external monitoring on firm value is weaker for diversified firms compared to focused firms.*

To test the effect of external control on the value of firms, we estimate Eq. (4),

$$EVit = \alpha + \beta 1Cit + \beta 2Xit + \varepsilon it, \quad (4)$$

where for firm *i* in year *t*, *EV* and *C* are defined as before in Eq. (3), and *X* is one of the external control proxies: ln(*analyst*) equals the natural log of one plus the number of analysts covering the firm in a given year, *IO* is the proportion of shares outstanding held by institutional investors, or *EXControl*, which is the average of *IO* and ln(*analyst*), scaled respectively by their mean values.

We first investigate whether Hypothesis 2 holds by estimating Eq. (4) for the full samples of focused and diversified firms, the results of which are reported in Table 4. For focused firms, the coefficients of *IO* and ln(*analyst*) of 0.097 and 0.020, respectively are significant at the 1% level, indicating a 9.7% and 2% positive effect on firm excess value. Diversified firms exhibit statistically significant and positive effects of institutional ownership and analyst coverage, as well, but to a lesser degree. The differences in coefficients between focused and diversified firms for *IO* and ln(*analyst*) of 0.08 and 0.017, respectively, are statistically significant, with *t*-statistics of 5.21 and 2.04, suggesting that the effect external monitoring is stronger for focused firms. While this may lead us to fail to reject hypothesis 2, our analysis up until this point is for each type of external monitoring in isolation, thus is not complete.

As institutional ownership and analyst coverage are highly correlated, we do not include the two measures in the same regression specification, but rather we create a new variable to

capture the compound effect of the two variables. Thus, *EXControl* is equal to the average of *IO* and ln(*analyst*), scaled respectively by their mean values. Once again, we find in Table 4 that the effect of this new external control proxy is positive and statistically significant in single-segment (0.045) and diversified (0.004) firms. The difference in coefficients of 0.0041 is statistically significant at the 1% level, as well (t = 2.71). These results suggest that the monitoring role of institutional investors and financial analysts is less impactful in diversified firms. As a whole, the results in Table 4 lead us to fail to reject Hypothesis 2.

5. Interaction of internal and external control

In this section, we examine the effects of internal and external controls, and their interaction, on firm value. More specifically, we first explore whether external controls moderate, or eliminate, the negative effect of CEO power on firm value. Morse et al. (2011) find that greater institutional ownership can substitute for the lack of internal control in preventing incentive contract rigging by powerful CEOs. Their results suggest a substitution effect between internal and external control mechanisms. If such a substitution exists, then we would expect CEO power to lessen any effect of the external control proxies. To investigate this possibility, we estimate Eq. (5),

$$EV_{it} = \alpha + \beta_1 C_{it} + \beta_2 Power_{it} + \beta_3 X_{it} + \beta_4 D_{it} + \beta_3 (D_{it} * C_{it}) + \beta_4 (D_{it} * Power_{it}) + \beta_5 D_{it} * X_{it} + \varepsilon_{it}, \quad (5)$$

where for firm i in year t, C is the vector of control variables, *Power* is our proxy CEO power, X is one of the external control measures, and D is the diversification binary indicator variable.

Table 5 reports the effect of institutional ownership (Panel A), financial analyst coverage (Panel B), and the external control proxy (Panel C), *EXControl*, for the subsamples when CEO power is included as a regressor. The results show a similar pattern to those reported in table 4 and, interestingly, the inclusion of *power* as an explanatory variable does not reduce the magnitude of the effect of external control; the coefficients of external control measures are all significantly positive and the same (or very similar) magnitude as without CEO power. Of note, however, is that the statistical significance across Panels A-C of the estimated coefficients for the external control proxies of diversified firms are less than those of single-segment firms. To test whether the difference between the coefficients is statistically significant, we interact the binary variable, *D*, and the other control variables, *C*, in separate models for the external control proxies. The coefficient of the interaction term between the diversification binary variable and the external control measures is significantly negative across the 3 panels, implying that the role of institutional investors and financial analysts is less beneficial in more complex structures, such as in diversified firms.

We now investigate the finding of Table 5 further to assess whether there is a mitigating interaction between internal and external controls. Hoechle et al. (2011) find that diversified firms have inferior governance structures and are more likely to be managed by powerful CEOs. However, the authors also indicate that diversified firms have higher institutional investor ownership. These findings show that diversified firms have lower internal control and higher

external control as measured by institutional ownership. The leads us to the question, will external control in this case substitute for the lack of internal control?

In the absence of strong institutional investors, CEOs may gain power (David et al., 1998).

Conversely, large institutional investors have strong incentives to monitor CEOs' actions and decisions to protect the value of their investments (Shleifer and Vishny, 1986). In fact, large firms have been under considerable pressure from institutional investors to empower the board of directors and to increase its role in strategic decision making (Finkelstein and Hambrick, 1996; Westphal and Zajac, 1997).

Institutional investors can even exert pressure on boards to replace CEOs when firms perform poorly (David et al., 1998; Westphal and Fredrickson, 2001). On the other hand, a higher level of financial analysts' coverage will put the firm under more public scrutiny and expose the effect of the CEO decisions on firm value. Therefore, we expect higher levels of external control to mitigate the lack of internal control in single firms. In diversified firms, however, the negative effect of CEO power has a larger influence on firm value and the positive effect of institutional ownership and financial analysts' coverage is more restricted. Therefore, we do not expect a substitution effect between internal and external control in diversified firms.

Hypothesis 3: *Higher external control does not mitigate the negative effect of low internal control in diversified firms as it does for focused firms.*

To test the interaction between external and internal control, we estimate Eq. (6) and report the results in Table 6.

$$EV_{it} = \alpha + \beta_1 C_{it} + \beta_2 Power_{it} + \beta_3 HEC_{it} + \beta_4 (HEC_{it} * C_{it}) + \beta_5 (HEC_{it} * Power_{it}) + \varepsilon_{it}, \quad (6)$$

where for firm *i* in year *t*, *HEC* is a binary variable equal to one if the level of external control is high (*EXControl* is greater than the median value of all observations) and zero otherwise, and all other variables are as defined in previous sections.

The estimate for CEO power (*power*) is consistently negative in all models. However, the magnitude of the coefficient varies significantly across the high and low external control subsamples. For single-segment firms, the coefficient is -0.053 for single firms with low external control and -0.010 for single firms with high external control. The right-most column of results for focused firms shows that the decrease of 0.043 is significant at the 5% level. Thus, high external control reduces the negative effect of CEO power by more than 81%. Moreover, the negative effect of CEO power is significant in all models with the focused subsample except for firms with high external control, implying that the negative effect of CEO power on firm value is mitigated through high external control. This result supports the substitution hypothesis between external control and internal control.

Turning to the diversified subsamples, the coefficient of CEO power is equal to -0.103 for firms with low external control and -0.071 for firms with high external control. However, this

reduction of 31%, in the negative effect of CEO power, is not significant as shown in the right most column of Table 6. We conclude that the strong external control cannot substitute the lack of internal control in diversified firms. The combined results reported in Table 6 for focused and diversified firms lead us to fail to reject Hypothesis 3. The complex operational and informational structure in diversified firms prevents institutional investors and financial analysts from fully exercising their monitoring role in diversified firms.

6. Conclusion

In this paper, we explore the interaction of internal and external control in single-segment, focused firms and multi-segment, diversified firms. We attempt to explain the diversification discount in the context of internal and external control by providing evidence that diversified firms suffer more from the lack of internal control and benefit less from strong external control as measured by institutional ownership and financial analysts' coverage.

When shareholders have more control over critical decisions such as diversification and investments allocation (low CEO power), we anticipate corporate diversification to add value to firms on average. However, when CEOs have more power and external control mechanisms are less effective, CEOs are more likely to take decisions that result in value loss for shareholders. The consequences of such decisions will be much more pronounced in more complex structures such as in diversified firms.

We find evidence that diversified firms suffer more from the lack of internal control when compared to single firms; the negative effect of CEO power on firm's excess value is significantly more pronounced in diversified firms. This result implies that agency costs are more severe in diversified firms when compared to single firms. While external control, as measured by institutional ownership and financial analysts' coverage, is positively correlated with firm value, the effect differs significantly across single and diversified firms. While external control effect is significantly positive in single firms, the effect is less significant for diversified firms. Finally, we find that high institutional ownership coupled with high financial analysts' coverage mitigates the negative effect of CEO power on firm value in single firms. However, high levels of external control do not moderate the negative effect of CEO power in multi-segment firms. These results suggest that the role of institutional investors and financial analysts is more restricted under complex operational and informational structure.

… Large institutional investors should be more prudent in their investments in multi-segment firms, particularly when such firms exhibit a high level of corporate diversification coupled with a lack of internal control. Future research could investigate whether the impact of institutional investors on firm value varies across different types of institutional investors, such as Bushee's (2004) classification of transient investors (high portfolio turnover, low stake sizes), quasi-indexer (low portfolio turnover, low stake sizes), and dedicated investors (low portfolio turnover, high stake sizes). It is predicted that the ownership of dedicated investors is more strongly

correlated with higher firm value, but this effect may be more limited in multi-segment firms. Furthermore, would a higher ownership of dedicated investors in multi-segment firms moderate the effect of poor internal control. Another relevant area of research would be to explore how different classes of institutional investors react to changes in the level of corporate diversification or CEO power. For example, would institutional investors reduce their holdings in a given firm following an increase in its level of corporate diversification or an increase in its CEO power?

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Table 1 Variable Descriptions

Variable	Description
Excess value	The natural log of the ratio of a firm's actual value to its imputed value.
Assets	Total assets expressed in millions of dollars.
Size	Natural logarithm of total assets expressed in millions of dollars.
Sales	Total sales expressed in millions of dollars.
Age	The number of years since the firm was added to the COMPUSTAT industrial files.
Leverage	The ratio of total debt to total assets.
Profitability	The ratio of EBIT (Earnings Before Interest and Tax) to total sales
Tobin's Q	The market value of equity plus the book value of debt divided by the book value of assets.
D	A dummy variable equals to one if the firm is diversified and zero otherwise.
Segments	The number of 4-digit SIC code segments operated by a given firm during a given year.
Power	A dummy variable equal to one if the CEO is powerful (CEO is only insider and holds the chairman and president titles) and zero otherwise.
IO	The ratio of institutional ownership to total shares outstanding.
Covered	A dummy variable equals to one if the firm is covered by a least one financial analyst during a given year and zero otherwise.
Analysts	Total number of financial analysts covering a given firm during a given year.
ln(*analyst*)	Natural logarithm of one plus the number of financial analysts covering the firm in a given year.
Estimates	The total number of estimates issued by analysts for a given firm during a given year.

Recommendations	The total number of recommendations issued by analysts for a given firm during a given year.
EXControl	A measure of external control equal to the average of IO and ANALYST variables scaled respectively by their mean values.
HEC	High external control; a dummy variable equal to one if the level of external control is high (EXControl is greater than the median value of all observations) and zero otherwise.

Table 2a Descriptive Statistics – Diversified and their Segments and Focused Firms (full sample)

This table reports descriptive statistics of financial characteristics for diversified firm segments identified at the 4-digit SIC code level (Panel A), diversified firms (Panel B), and focused firms (Panel C) for the period 1996–2015. Statistics are reported for the following variables: the natural log of the ratio of a firm's actual value to its imputed value (*excess value*), the book value of total assets (*assets*), the value of annual sales (*sales*), the number of years since the firm was added to the COMPUSTAT industrial files (*age*), the ratio of total debt to total assets (*leverage*), the ratio of EBIT (Earnings Before Interest and Tax) to total sales (*profitability*), the market value of equity plus the book value of debt divided by the book value of assets (*Tobin's Q*), the number of 4-digit SIC code segments operated by a given firm during a given year (*segments*), a binary variable equal to one if the CEO is powerful (CEO is only insider and holds the chairman and president titles) and zero otherwise (*power*), the ratio of institutional ownership to total shares outstanding (*IO*), a binary variable equal to one for firms covered by at least one analyst during a given year and zero otherwise (*covered*), the total number of financial analysts covering a given firm during a given year (*analysts*), the total number of estimates issued by analysts for a given firm during a given year (*estimates*), and the total number of recommendations issued by analysts for a given firm during a given year (*recommendations*).

Panel A: Diversified firm segments

	N	Mean	Std. Dev.	5%	Median	95%
Assets (mill. $)	29,429	1,582.91	5,765.45	3.49	176.36	7,359.17
Sales (mill. $)	29,429	1,521.00	6,371.12	4.72	204.75	6,904.00

Panel B: Diversified firms

	N	Mean	Std. Dev.	5%	Median	95%
Excess Value	11,618	-0.10	0.54	-0.94	-0.09	0.82
Assets (mill. $)	11,618	4,682.90	15,038.04	25.40	643.15	22,843.00
Sales (mill. $)	11,618	3,888.51	11,219.45	30.13	612.68	18,784.00
Age (years)	11,618	25.07	15.56	4.00	19.00	53.00
Leverage	11,618	0.48	0.25	0.16	0.46	0.85
Profitability	11,618	0.06	0.16	-0.12	0.07	0.24
Tobin's Q	11,618	1.59	0.84	0.81	1.37	3.06
Segments	11,618	2.48	0.79	2.00	2.00	4.00
IO	11,618	0.48	0.32	0.00	0.46	0.94
Covered	11,618	0.56	0.50	0.00	1.00	1.00
Analysts	11,618	4.45	6.92	0.00	1.00	20.00
Estimates	11,618	20.64	39.71	0.00	2.00	98.00
Recommendations	11,618	3.50	6.18	0.00	0.00	16.00

Panel C: Focused firms

	N	Mean	Std. Dev.	5%	Median	95%
Excess Value	46,871	-0.01	0.58	-0.99	0.00	1.00
Assets (mill. $)	46,871	1,924.17	6,132.87	24.93	255.68	8,403.00
Sales (mill. $)	46,871	1,710.51	5,168.45	26.18	240.73	7,539.96

Age (years)	46,871	16.50	11.14	4.00	13.00	42.00
Leverage	46,871	0.44	0.35	0.11	0.39	0.90
Profitability	46,871	0.01	0.34	-0.43	0.06	0.31
Tobin's Q	46,871	2.02	1.82	0.77	1.54	4.80
Segments	46,871	1.00	0.00	1.00	1.00	1.00
IO	46,871	0.41	0.31	0.01	0.32	0.94
Covered	46,871	0.56	0.50	0.00	1.00	1.00
Analysts	46,871	4.52	6.96	0.00	2.00	19.00
Estimates	46,871	21.83	40.61	0.00	4.00	98.00
Recommendations	46,871	3.77	6.55	0.00	1.00	17.00

Table 2b Descriptive Statistics – Diversified and their Segments and Focused Firms (subsamples)

This table reports descriptive statistics of financial characteristics for diversified firm segments identified at the 4-digit SIC code level (Panel A), diversified firms (Panel B), and focused firms (Panel C) for the period 1996–2015. Statistics are reported for the following variables: the natural log of the ratio of a firm's actual value to its imputed value (*excess value*), the book value of total assets (*assets*), the value of annual sales (*sales*), the number of years since the firm was added to the COMPUSTAT industrial files (*age*), the ratio of total debt to total assets (*leverage*), the ratio of EBIT (Earnings Before Interest and Tax) to total sales (*profitability*), the market value of equity plus the book value of debt divided by the book value of assets (*Tobin's Q*), the number of 4-digit SIC code segments operated by a given firm during a given year (*segments*), a binary variable equal to one if the CEO is powerful (CEO is only insider and holds the chairman and president titles) and zero otherwise (*power*), the ratio of institutional ownership to total shares outstanding (*IO*), a binary variable equal to one for firms covered by at least one analyst during a given year and zero otherwise (*covered*), is the total number of financial analysts covering a given firm during a given year (*analysts*), the total number of estimates issued by analysts for a given firm during a given year (*estimates*), and the total number of recommendations issued by analysts for a given firm during a given year (*recommendations*).

Panel A: Diversified firm segments

	N	Mean	Std. Dev.	5%	Median	95%
Assets (mill. $)	5,859	2,477.95	5,910.60	42.97	642.89	12,114.00
Sales (mill. $)	5,859	2,788.17	6,703.55	43.70	790.50	12,076.62

Panel B: Diversified fi ms

	N	Mean	Std. Dev.	5%	Median	95%
Excess Value	2,876	-0.01	0.46	-0.78	-0.02	0.75
Assets (mill. $)	2,876	7,536.06	18,108.59	313.24	2,216.81	30,452.93
Sales (mill. $)	2,876	6,852.17	13,928.96	315.07	2,041.90	27,945.74
Age (years)	2,876	34.37	16.08	8.00	37.00	59.00
Leverage	2,876	0.44	0.16	0.18	0.44	0.68
Profitability	2,876	0.10	0.11	-0.01	0.09	0.23
Tobin's Q	2,876	1.70	0.79	0.94	1.49	3.09
Segments	2,876	2.58	0.83	2.00	2.00	4.00
Power	2,876	0.20	0.40	0.00	0.00	1.00
IO	2,876	0.66	0.28	0.01	0.71	0.96
Covered	2,876	0.85	0.36	0.00	1.00	1.00
Analysts	2,876	9.86	8.51	0.00	8.00	26.00
Estimates	2,876	49.23	55.98	0.00	32.00	161.00

Recommendations	2,876	7.84	8.16	0.00	6.00	23.00

Panel C: Focused firms

	N	Mean	Std. Dev.	5%	Median	95%
Excess Value	7,996	0.14	0.51	-0.73	0.10	1.02
Assets (mill. $)	7,996	4,213.75	8,981.59	178.30	1,156.36	18,122.00
Sales (mill. $)	7,996	3,521.50	8,567.58	136.87	1,133.19	17,254.71
Age (years)	7,996	25.44	17.30	9.00	17.00	51.00
Leverage	7,996	0.39	0.20	0.11	0.38	0.72
Profitability	7,996	0.09	0.22	-0.11	0.10	0.34
Tobin's Q	7,996	2.22	1.53	0.93	1.77	5.05
Segments	7,996	1.00	0.00	1.00	1.00	1.00
Power	7,996	0.18	0.38	0.00	0.00	1.00
IO	7.996	0.70	0.27	0.01	0.77	0.94
Covered	7,996	0.90	0.29	0.00	1.00	1.00
Analysts	7,996	12.44	9.52	0.00	11.00	32.00
Estimates	7,996	65.67	66.89	0.00	45.00	193.00
Recommendations	7,996	10.46	9.80	0.00	30.00	98.00

Table 3 Effect of Internal Control on Firm Value

This table reports results from estimating Eq. (3) for the subsamples of focused firms, diversified firms, and the pooled sample of all firms for the period 1996–2015. The independent variables are the natural logarithm of total assets in millions of dollars (*size*), the number of years since the firm was added to the COMPUSTAT industrial files (*age*), the ratio of total debt to total assets (*leverage*), the ratio of EBIT (Earnings Before Interest

and Tax) to total sales (*profitability*), the market value of equity plus the book value of debt divided by the book value of assets (*Tobin's Q*), a binary variable equal to one if the CEO is powerful and zero otherwise (*power*), and a binary variable equal to one for diversified firms and zero otherwise (*D*). *t*-statistics are provided in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

The dependent variable is excess value.

	Focused	Diversified	Pooled
Intercept	-0.454***	-0.521***	-0.454***
	(-14.22)	(-9.47)	(-14.66)
Size	0.058***	0.021***	0.058***
	(12.31)	(2.66)	(12.72)
Age	-0.003***	-0.001*	-0.003***
	(-5.96)	(-1.70)	(-6.11)
Leverage	-0.364***	-0.006	-0.364***
	(-11.50)	(-0.34)	(-11.54)
Profitability	0.007	0.2673***	0.007
	(0.16)	(5.67)	(0.84)
Tobin's Q	0.175***	0.215***	0.175***
	(40.11)	(16.64)	(40.69)
Power	-0.031**	-0.087***	-0.031***
	(-2.13)	(-3.97)	(-3.88)
D			-0.067* (-1.70)

*D*Size*			-0.037*** (-4.45)
*D*Age*			0.002** (2.38)
*D*Leverage*			0.358*** (5.22)
*D*Profitability*			0.261*** (2.92)
*D*Tobin's Q*			0.040*** (3.08)
*D*Power*			-0.057** (-2.06)
N	7,996	2,876	10,872
Adj. R^2	0.262	0.180	0.255

Table 4 Effect of External Control on Firm Value: Full Samples

This table reports results from estimating Eq. (4) for the samples of focused and diversified firms for the period 1996–2015. The independent variables are the natural logarithm of total assets in millions of dollars (*size*), the number of years since the firm was added to the COMPUSTAT industrial files (*age*), the ratio of total debt to total assets (*leverage*), the ratio of EBIT (Earnings Before Interest and Tax) to total sales (*profitability*), the market value of equity plus the book value of debt divided by the book value of assets (*Tobin's Q*), the ratio of institutional ownership to total shares outstanding (*IO*), the natural logarithm of one plus the number of financial analysts following the firm during a given year (ln(*analyst*)), and a measure of external control which is equal to the average of *IO* and ln(*analyst*) variables scaled by their mean values respectively (*EXControl*). *t*-statistics are provided in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

The dependent variable is excess value.

	Focused			Diversified		
Intercept	-0.585***	-0.579***	-0.581***	-0.845***	-0.843***	-0.845***
	(-56.87)	(-56.09)	(-56.33)	(-36.31)	(-35.99)	(-36.27)
Size	0.093***	0.092***	0.090***	0.069***	0.068***	0.069***
	(52.96)	(50.79)	(49.78)	(23.21)	(21.93)	(22.35)
Age	-0.007***	-0.007***	-0.007***	-0.003***	-0.003***	-0.003***
	(-27.59)	(-26.97)	(-27.35)	(-7.60)	(-7.81)	(-7.71)
Leverage	-0.324***	-0.322***	-0.318***	-0.068***	-0.064***	-0.066***
	(-30.12)	(-29.91)	(-29.50)	(-2.69)	(-2.50)	(-2.58)
Profitability	0.102***	0.095***	0.099***	0.134***	0.129***	0.131***
	(8.59)	(8.03)	(8.37)	(3.05)	(2.95)	(2.99)
Tobin's Q	0.130***	0.130***	0.129***	0.233***	0.243***	0.244***
	(85.61)	(85.16)	(84.96)	(39.27)	(38.79)	(39.06)
IO	0.097***			0.017*		
	(10.90)			(1.66)		
ln(*Analyst*)		0.020***			0.003*	
		(11.69)			(1.91)	
EXControl			0.045***			0.004*
			(12.45)			(1.75)
N	46,871	46,871	46,871	11,618	11,618	11,618

Adj. R^2	0.258	0.259	0.259	0.233	0.233	0.233

Table 5 Effect of External Control on Firm Value: Subsamples

This table reports results from estimating Eq. (4) for the subsamples of focused diversified firms and the pooled sample with *IO*, ln(*analyst*), and *EXControl* as proxies for external control in Panels A, B, and C, respectively, for the period 1996–2015. The independent variables are the natural logarithm of total assets in millions of dollars (*size*), the number of years since the firm was added to the COMPUSTAT industrial files (*age*), the ratio of total debt to total assets (*leverage*), the ratio of EBIT (Earnings Before Interest and Tax) to total sales (*profitability*), the market value of equity plus the book value of debt divided by the book value of assets (*Tobin's Q*), a binary variable equal to one if the CEO is powerful and zero otherwise (*power*), the ratio of institutional ownership to total shares outstanding (*IO*), and a binary variable equal to one for diversified firms and zero otherwise (*D*). *t*-statistics are provided below the coefficients in the table.

***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

The dependent variable is excess value.

Panel A: Institutional Ownership Effect

	Focused		Diversified		Pooled	
Intercept	-0.523***	-0.520***	-0.525***	-0.522***	-0.523***	-0.520***
	(-15.20)	(-15.02)	(-8.70)	(-8.71)	(-15.19)	(-14.96)
Size	0.056***	0.056***	0.018**	0.018***	0.056***	0.056***
	(11.80)	(11.81)	(2.54)	(2.66)	(11.74)	(11.75)
Age	-0.003***	-0.003***	-0.001*	-0.001*	-0.003***	-0.003***
	(-5.94)	(-5.82)	(-1.67)	(-1.70)	(-6.04)	(-5.86)
Leverage	-0.344***	-0.347***	0.014	0.021	-0.344***	-0.347***

	(-10.86)	(-10.92)	(0.23)	(0.34)	(-10.86)	(-10.97)
Profitability	0.025	0.024	0.164***	0.160***	0.025	0.024
	(0.59)	(0.57)	(5.64)	(5.62)	(0.49)	(0.41)
Tobin's Q	0.175***	0.175***	0.201***	0.202***	0.175***	0.175***
	(40.15)	(40.17)	(16.48)	(16.63)	(40.42)	(40.47)
Power		-0.031**		-0.087***		-0.031***
		(-2.16)		(-3.96)		(-3.71)
IO	0.106***	0.106***	0.017*	0.016*	0.106***	0.106***
	(4.87)	(4.88)	(1.75)	(1.70)	(4.79)	(4.81)
D					-0.002*	-0.002
					(-1.69)	(-1.47)
*D*Size*					-0.038***	-0.038***
					(-3.70)	(-3.68)
*D*Age*					0.002**	0.002**
					(2.10)	(1.99)
*D*Leverage*					0.358***	0.368***
					(4.65)	(4.75)
*D*Profitability*					0.139***	0.136***
					(3.13)	(3.14)
*D*Tobin's Q*					0.026***	0.027***
					(3.06)	(3.07)

*D*Power*						-0.056* (-1.81)
*D*IO*					-0.089*** (-2.59)	-0.090** (-2.44)
N	7,996	7,996	2,876	2,876	10,872	10,872
Adj. R^2	0.265	0.265	0.174	0.180	0.256	0.257

Panel B: Analysts' Coverage Effect

	Focused		Diversified		Pooled	
Intercept	-0.470*** (-14.75)	-0.465*** (-14.55)	-0.532*** 9.61)	(- -0.524*** (-9.50)	-0.470*** (-14.77)	- 0.465*** (-14.51)
Size	0.047*** (9.02)	0.047*** (9.03)	0.016** (2.25)	0.017** (2.32)	0.047*** (8.96)	0.047*** (8.99)
Age	-0.003*** (-5.66)	-0.003*** (-5.54)	-0.001 (-1.61)	-0.001 (-1.64)	-0.003*** (-5.75)	-0.003*** (-5.58)
Leverage	-0.332*** (-10.34)	-0.334*** (-10.41)	0.019 (0.32)	0.026** (0.43)	-0.332*** (-10.35)	-0.334*** (-10.46)
Profitability	0.010 (0.23)	0.009 (0.22)	0.153*** (5.56)	0.152*** (5.57)	0.010 (0.63)	0.009 (0.65)
Tobin's Q	0.173*** (39.46)	0.173*** (39.49)	0.201*** (16.39)	0.202*** (16.52)	0.173*** (39.74)	0.173*** (39.79)

Power		-0.030**		-0.088***		-0.030***
		(-2.07)		(-3.99)		(-3.64)
ln(*analyst*)	0.022***	0.022***	0.004**	0.005**	0.022***	0.022***
	(4.82)	(4.79)	(1.97)	(2.03)	(4.81)	(4.78)
D					-0.062*	-0.054
					(-1.69)	(-1.54)
*D*Size*					-0.031***	-0.030***
					(-2.76)	(-2.78)
*D*Age*					0.002**	0.002*
					(2.00)	(1.89)
*D*Leverage*					0.351***	0.358***
					(4.55)	(4.65)
*D*Profitability*					0.143***	0.142***
					(3.01)	(3.03)
*D*Tobin's Q*					0.028***	0.029***
					(3.09)	(3.09)
*D*Power*						-0.088*
						(-1.79)
*D**ln(*analyst*)					-0.018**	-0.017**
					(-2.03)	(-1.97)
N	7,996	7,996	2,876	2,876	10,872	10,872

Adj. R^2	0.264	0.265	0.175	0.180	0.256	0.257

Panel C: External Control Effect

	Focused		Diversified		Pooled	
Intercept	-0.505***	-0.500***	-0.532***	-0.527***	-0.505***	-0.500***
	(-15.34)	(-15.15)	(-9.32)	(-9.26)	(-15.35)	(-15.09)
Size	0.050***	0.050***	0.017**	0.018***	0.050***	0.050***
	(10.16)	(10.16)	(2.49)	(2.57)	(10.10)	(10.12)
Age	-0.003***	-0.003***	-0.001*	-0.001*	-0.003***	-0.003***
	(-5.75)	(-5.63)	(-1.65)	(-1.67)	(-5.84)	(-5.67)
Leverage	-0.334***	-0.334***	0.016	0.023	-0.334***	-0.334***
	(-10.44)	(-10.50)	(0.26)	(0.38)	(-10.44)	(-10.56)
Profitability	0.022	0.022	0.157***	0.155***	0.022	0.022
	(0.53)	(0.51)	(5.59)	(5.58)	(0.34)	(0.36)
Tobin's Q	0.174***	0.174***	0.201***	0.202***	0.174***	0.174***
	(39.81)	(39.83)	(16.49)	(16.63)	(40.08)	(40.13)
Power		-0.030**		-0.088***		-0.030***
		(-2.11)		(-3.99)		(-3.68)

EXControl	0.091***	0.090***	0.016*	0.020*	0.091***	0.090***
	(5.32)	(5.32)	(1.72)	(1.76)	(5.28)	(5.27)
D					-0.028*	-0.027
					(-1.70)	(-1.47)
*D*Size*					-0.033***	-0.032***
					(-3.05)	(-3.06)
*D*Age*					0.002**	0.002*
					(2.01)	(1.90)
*D*Leverage*					0.349***	0.359***
					(4.53)	(4.63)
*D*Profitability*					0.135***	0.133***
					(3.09)	(3.10)
*D*Tobin's Q*					0.027***	0.028***
					(3.12)	(3.13)
*D*Power*						-0.058*
						(-1.81)
*D*EXControl*					-0.075***	-0.070**
					(-2.61)	(-2.49)
N	7,996	7,996	2,876	2,876	10,872	10,872
Adj. R^2	0.265	0.265	0.174	0.180	0.257	0.258

Table 6 The Interaction of Internal and External Control and its Effect on Firm Value

This table reports results from estimating Eq. (5) for the samples of focused and diversified firms for the period 1996–2015. The independent variables are the natural logarithm of total assets in millions $ (*size*), the number of years since the firm was added to the COMPUSTAT industrial files (*age*), the ratio of total debt to total assets (*leverage*), the ratio of EBIT (Earnings Before Interest and Tax) to total sales (*profitability*), the market value of equity plus the book value of debt divided by the book value of assets (*Tobin's Q*), a binary variable equal to one if the CEO is powerful and zero otherwise (*power*), a binary variable equal to one for diversified firms and zero otherwise (*D*), and a binary variable equal to one if the level of external control is high (*EXControl* is greater than the median value of all observations) and zero otherwise (*HEC*). *t*-statistics are provided below the coefficients in the table. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. The dependent variable is the excess value.

	Focused			Diversified		
External Control	High	Low	All	High	Low	All
Intercept	-0.171***	-0.616***	-0.616***	-0.332***	-0.619***	-0.619***
	(-3.75)	(-12.43)	(-13.41)	(-3.29)	(-8.89)	(-8.73)
Size	0.022***	0.078***	0.078***	-0.002	0.029***	0.029***
	(3.37)	(9.79)	(10.56)	(-0.13)	(3.12)	(3.07)
Age	-0.003***	-0.001*	-0.001*	-0.001	-0.001	-0.001
	(-5.27)	(-1.76)	(-1.90)	(-0.65)	(-1.27)	(-1.25)
Leverage	-0.302***	-0.379***	-0.379***	0.054	0.012	0.012
	(-7.16)	(-7.88)	(-8.51)	(0.49)	(0.17)	(0.17)
Profitability	0.119*	0.095	0.095*	0.603***	0.739***	0.739***
	(1.77)	(1.41)	(1.72)	(3.36)	(4.75)	(4.66)
Tobin's Q	0.173***	0.169***	0.169***	0.214***	0.180***	0.180***
	(31.55)	(24.14)	(26.04)	(13.14)	(9.62)	(9.14)

Power	-0.010	-0.053**	-0.053**	-0.071**	-0.103***	-0.103**
	(-0.55)	(-2.32)	(-2.50)	(-2.40)	(-2.96)	(-2.36)
HEC			0.445***			0.288**
			(6.62)			(2.37)
*HEC*Size*			-0.056***			-0.030**
			(-5.57)			(-1.98)
*HEC*Age*			-0.002**			0.000
			(-2.03)			(0.34)
*HEC*Leverage*			0.078			0.041
			(1.22)			(0.32)
*HEC*Profitability*			0.073***			-0.137
			(2.79)			(-0.58)
*HEC*Tobin's Q*			0.004			0.033
			(0.49)			(1.34)
*HEC*Power*			0.043**			0.032
			(2.08)			(0.72)
N	3,998	3,998	7,996	1,438	1,438	2,876
Adj. R^2	0.293	0.210	0.274	0.201	0.142	0.181