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Abstract

Our study examines the relationship between four indicators of board structure and firm value and the extent to which this relationship may be affected by the level of growth options relative to assets-in-place. These indicators are the level of accounting expertise, gender diversity, the level of independence and the size of the board. Using a sample of 543 firm-years covered by 125 firms listed on the New Zealand Exchange for the 1998-2007 financial years, we found that these board structure indicators together with the level of growth options significantly impact on firm value after effectively controlling for the endogeneity problem. Specifically, firms with a lower number of directors with accounting expertise and/or a higher number of female directors on the board have higher firm value. For firms with a higher level of growth options, a higher percentage of independent directors on the board and/or a larger board are more value relevant. Our findings related to board accounting expertise and board gender diversity particularly may have important implications for corporate regulators.

1 Introduction

The board of directors are viewed as “the lynchpin of corporate governance” (Gillan, 2006, p. 385). Fama and Jensen (1983) characterise board’s responsibilities as including both the ratification of management decisions and the monitoring of management performance. In addition, the board of directors has the power to hire, fire and compensate the senior management team. The board’s responsibilities for monitoring managers’ actions ensure that such actions are aligned with shareholders’ interests and operates to mitigate managerial opportunism (Fama and Jensen, 1983). These fundamental roles of the board of directors, as a critical component of a good corporate governance system, have given rise to a great deal of research investigating the value relevance of an effective board of directors.

Despite this rich literature, there has been little research that examines the relationship between various aspects of the board structure and firm value and the extent to which the level of growth options relative to assets-in-place affects this relationship. Within this limited literature, research studies examining the association between board structure and firm value in the presence of growth options tend to focus on only one specific aspect of the board structure, namely board independence, rather than a combined set of various aspects of the board structure. Furthermore, board size has only been used as a control variable. In addition, these research studies are only based on a cross-sectional data set. Using a sample of 306 firms listed on the Australian Securities Exchange drawn from the UTS Accenture “Who Governs Australia” database for the year 2001, Matolcsy et al. (2004) found that firms with larger investments in growth options could benefit from having more outside directors which was reflected through a

higher firm market value. Another research study by Orr et al. (2005), which is based on a sample of 60 randomly selected firms listed on the New Zealand Exchange (NZX) during the year 2001, documents that firms with high level of growth options were more likely to have a higher proportion of outside directors on the board than firms with a low level of growth options. This in turn has a positive effect on the relationship between board independence and firm value.

Our study extends these prior research studies by examining the relationship between four important board structure indicators and firm value, and the extent to which the level of growth options relative to assets-in-place affects this relationship. These four board structure indicators are the level of accounting expertise, gender diversity, the level of independence and the size of the board. The study is based on a longitudinal sample of 125 firms listed on the NZX which covers 543 firm-years with financial reporting dates ending between 31 January 1998 and 31 December 2007. Our results provide strong evidence that these four board structure indicators together with the level of growth options have a significant influence of firm value after effectively controlling for the endogeneity problem. Specifically, firms with a lower level of accounting expertise and/or a higher level of female directors on the board are associated with higher firm value. A higher level of independent directors on the board and/or larger board is more value relevant for firms with a higher level of growth options relative to assets-in-place.

Our study contributes to the literature in several ways. First, our study is the first study which analyses the impact on firm value of the level of accounting expertise on the board and board gender diversity and its association with the level of growth options

relative to assets-in-place. Second, our study is based on a longitudinal data set which provides more generalisable results than those documented in prior research studies which only focus on a cross-sectional data sample. Third, we effectively employ two-stage least squares to control for potential endogeneity problem between board structure and firm value, which has not previously used in prior research studies on board structure, growth options and firm value. Our study also departs from prior research studies in this area as it considers board size as an important component of board structure rather than as a control variable.

The remainder of our paper is organised as follows. Section 2 summarise relevant literature on board structure, growth options and firm value and describes the research hypotheses. An overview of the research design is provided in section 3. Section 4 presents the results and our study concludes in section 5.

2 Literature Review and Hypothesis Development

2.1 Four Board Structure Indicators and the Measures of their Effectiveness

The board of directors with its dual responsibilities of monitoring management and ratifying decisions, underpinned by its fiduciary obligations to the company, is generally viewed as an important corporate governance mechanisms (Gillan, 2006). From an agency theory perspective, the board's monitoring role operates to protect shareholders from the self interests (agency costs) of management. Accordingly, the more a board is able to effectively monitor management, the more agency costs will be reduced. Numerous research studies have shown that the level of accounting expertise on the board, board gender diversity, the level of independence on the board and board

size all individually enhance the board's ability to operate as an effective corporate governance mechanism (John and Senbet, 1998; Carter et al., 2003; Karamanou and Vafeas, 2005).

First, the presence of directors with accounting or financial expertise on the board is argued to enhance the board monitoring performance (Karamanou and Vafeas, 2005). According to Felo et al. (2003), firms with a higher percentage of directors with accounting or financial expertise on the board tended to have higher financial reporting quality. Firms which had at least one financial expert on the board were less likely to be required to restate earnings (Abbott et al., 2004). Interestingly, Defond et al. (2005) document that accounting expertise, not the overall financial expertise, is the determinant of the improvement of an audit committee's ability to ensure high financial reporting quality, especially for firms with a strong corporate governance structure.

Second, it is contended that board diversity in general, and board gender diversity in particular, promotes a better understanding of the marketplace, increases creativity and innovation as well as enhances the effectiveness of corporate leadership (Robinson and Dechant, 1997). In addition, Cox and Blake (1991) argue that firms that deal with diversity-related issues well should have cost advantages over firms that do not. In fact, according to Keys et al. (2002), firms ranked by *Fortune* as being among the "diversity elite" added more value to their shareholders compared to non-diversity promoters. Carter et al. (2003) also found significant positive relationships between the percentage of women or minorities on the board and firm value after effectively controlling for size, industry and other corporate governance measures.

Third, Fama and Jensen (1983) argue that a larger proportion of non-executive directors on the board could enhance board monitoring performance. According to Chen and Jaggi (2000), firms with a higher percentage of non-executive directors on the board were more engaged and provided more comprehensive statutory disclosures. Firms with a higher level of board independence were less likely to engage in earnings management (Klein, 2002). In addition, Matolcsy et al. (2004) and Orr et al. (2005) both document that firms with more outside directors on the board have higher firm value, especially in the presence of high level of growth options relative to assets-in-place.

Lastly, board size is argued to enhance board monitoring performance, as appointing more directors on the board would enhance board knowledge and provide greater capacity to share the monitoring responsibilities (Song and Windram, 2004; Karamanou and Vafeas, 2005). However, larger boards are posited to be less flexible and less efficient due to higher coordination costs and less effective communication (John and Senbet, 1998; Coles et al., 2008). According to Bradbury et al. (2006), firms with a greater number of directors on the board tended to have high earnings quality. However, Yermack (1996) documents a negative relationship between board size and firm value. Given that most NZX listed firms are relatively small, the first effect could be reasonably argued to dominate the second.

Drawing from both the theoretical arguments and empirical evidence, it is argued that the level of accounting expertise on the board, board gender diversity, the level of independence on the board and board size are positively related to board monitoring performance as an effective corporate governance mechanism.

2.2 The Influence of Board Structure on Firm Value and its Association with Growth Options

Where an agency problem or conflict of interests exists among stakeholders of a firm, corporate governance in general, and board structure in particular, are more important. An effective corporate board is especially useful to ameliorate those issues arising from the separation of ownership and control and where such agency problems cannot be satisfactorily contracted away due to significant uncertainty, information asymmetry and contracting costs (Hart, 1995). According to Bushman and Smith (2003), corporate governance serve two important purposes: (1) to ensure that minority shareholders receive reliable information about the value of firms and that a company's managers and large shareholders do not cheat them out of the value of their investments, and (2) to motivate managers to maximise firm value instead of pursuing personal objectives. Based on this theoretical argument and together with the empirical evidence relating to the role of an effective board structure in mitigating managerial opportunism, the hypothesis in regard to the influence of board structure on firm value is stated as follows:

H1: A more effective board structure is more value relevant.

A firm's value is a function of its expected future cash flows, discounted for risk and time. Cash flows can be generated from assets-in-place and from the realisation of growth options. Assets-in-place represent the firm's investments in real or physical assets while growth options represent the firm's value of the opportunity for future investments in assets (Orr et al., 2005).

Compared to assets-in-place, growth options are more firm-specific and are more difficult to trade on secondary markets as their value is mostly determined jointly by other assets held by the firm (Matolcsy et al., 2004). The nature of such investments in growth options creates an increased need to monitor management (Smith and Watts, 1992; Skinner, 1993). This is because of concerns that management may use their discretion to make decisions that are in their self interests and as a result do not maximise firm value for shareholders (Jensen and Meckling, 1976). This need is exacerbated when the proportion of a firm's growth options to assets-in-place increases. In order to mitigate this problem, the firm can introduce measures to more effectively monitor management. Measures such as having more directors with accounting expertise, more female directors, more independent directors and/or increasing board size combine to create a board structure that will more effectively monitor management. Firms with a more effective board structure reduce the opportunities for management to act opportunistically and provide more experience and knowledge that ensures growth options are exercised optimally. Therefore, the hypothesis regarding the impact of growth options on the relationship between board structure and firm value is stated as follows:

H2: A more effective board structure is more value relevant for firms with higher growth options.

3 Research Design

3.1 Study Period and Sample

The sample selection process commences with the 317 firms listed in the Events section of the NZX database as at 17 September 2008. After a deduction of 113 firms for which data is not available on the NZX database, 31 firms which are listed on the New Zealand Alternative Market (NZAX) and 48 firms that have issued at least 5 annual reports since being listed on the NZSX, the final sample comprises 125 firms in total. These 125 firms cover a total of 897 firm-years with financial reporting dates ending between 31 January 1998 and 31 December 2007. After deleting 17 firm-years with negative book value of equities and 337 firm-years with missing board structure indicators, the total firm-years in the final sample is 543.

Details about this sample selection process are provided in Table 1

[INSERT TABLE 1 HERE]

3.2 Data Sources

The NZX listing status was extracted from the Events section of the NZX database as at 17 September 2008. Data related to board structure was carefully extracted from the annual reports which are provided in the Annual Reports section of the NZX database. Accounting and market-related data was obtained from either the NZX database or the Datastream database.

3.3 Board Structure

As discussed in section 2.1, the effectiveness of board structure is related to the level of accounting expertise on the board, board gender diversity, the level of independence on the board and board size (John and Senbet, 1998; Carter et al., 2003; Karamanou and Vafeas, 2005). In the context of our study, we use the percentage of directors with

accounting expertise (*BRDACCEXP*), the percentage of female directors (*BRDDIVERSITY*), the percentage of non-executive directors (*BRDINDP*) and the total number of directors (*BRDSIZE*) on the board as proxies for the level of accounting expertise, gender diversity, the level of independence on the board and board size, respectively (see Table 2).

[INSERT TABLE 2 HERE]

It can be seen from Table 3 that the correlations among these board structure indicators are not significant enough to indicate a multicollinearity problem. Therefore, we follow Karamanou and Vafeas (2005) to use only single indicators to measure the effectiveness of board structure and reject the necessity to use exploratory principal component factor analysis (PCA) as suggested in Larcker et al. (2007) or Truong and Dunstan (2010).

[INSERT TABLE 3 HERE]

According to Hermalin and Weisbach (2003), there are other factors which might impact both board structure and firms attributes. These firm attributes can include firm value. Therefore, a spurious correlation may be observed between board structure and firm value. Board structure is empirically documented to be related firm size, leverage and growth prospects. In order to address the concern about the expected spurious relationship between board structure and firm value and detect a one-way causal effect of board structure on firm value, a two-stage least squares method is employed. The natural logarithm of the total assets, the natural logarithm of the total liabilities divided by the total equity and the natural logarithm of the market value of equity divided by the book value of equity are used as proxies for firm size, leverage and growth prospects, respectively.

In the first stage, each board structure indicator was regressed on the three proxies for firm size, leverage and growth prospects; and the residuals of each board structure indicator were obtained. These residuals represent the unexplained portion of the board structure indicators which are not explained by the firm characteristics identified in prior literature. In the second stage, the residuals of these board structure indicators replace the original board structure indicators in the model used to test the impact of board structure on firm value and its association with growth options. Specifically, the residuals *BRDACCEXP_R*, *BRDDIVERSITY_R*, *BRDINDP_R* and *BRDSIZE_R* replace the original *BRDACCEXP*, *BRDDIVERSITY*, *BRDINDP* and *BRDSIZE*, respectively.

3.4 Growth Options

Consistent with Orr et al. (2005), growth options are measured by the value of growth opportunities to the market value of firm. The market value of firm is measured by the market value of equities plus the book value of total liabilities and the growth opportunities is the difference between the market value of firm and the book value of total assets.

While Orr et al. (2005) use a dummy variable which indicates whether the firm is in the high growth options group (top 50 percent based on the growth options value) and Matolcsy et al. (2004) employ the market to book value of equities as a proxy for growth options, we use the actual value of growth options.

3.5 Hypothesis Testing Procedures

To test the relationship between board structure and firm value and the extent to which this relationship is affected by growth options, we employ a form of the Ohlson's (1995) model as a basis to estimate the following regression equation:

$$\begin{aligned}
 MVE_{i,t} = & a_0 + a_1BVE_{i,t} + a_2NPAT_{i,t} + a_3LEVERAGE_{i,t} + a_4BRDACCEXP_R_{i,t} + \\
 & a_5BRDDIVERSITY_R_{i,t} + a_6 BRDINDP_R_{i,t} + a_7BRDSIZE_R_{i,t} + a_8GROWTH_{i,t} + a_9 \\
 & BRDACCEXP_R_GROWTH_{i,t} + a_{10}BRDDIVERSITY_R_GROWTH_{i,t} + \\
 & a_{11}BRDINDP_R_GROWTH_{i,t} + a_{12}BRDSIZE_R_GROWTH_{i,t} + \mu_{i,t}
 \end{aligned}$$

where:

<i>MVE</i>	=	market value of equities per share basis at the end of the current financial year
<i>BVE</i>	=	book value of equities per share basis at the end of the current financial year
<i>NPAT</i>	=	earnings per share at the end of the current financial year
<i>LEVERAGE</i>	=	the natural logarithm of the book value of total liabilities divided by the book value of total equities at the end of the current financial year
<i>BRDACCEXP_R</i>	=	the residual value of the <i>BRDACCEXP</i> indicator
<i>BRDDIVERSITY_R</i>	=	the residual value of the <i>BRDDIVERSITY</i> indicator
<i>BRDINDP_R</i>	=	the residual value of the <i>BRDINDP</i> indicator
<i>BRDSIZE_R</i>	=	the residual value of the <i>BRDSIZE</i> indicator
<i>GROWTH</i>	=	the difference between the market value of firm and the book value of total assets divided by the market value of firm at the end of the current financial year (the market value of firm is the market value of equities plus the book value of total liabilities)
<i>BRDACCEXP_R_GROWTH</i>	=	<i>BRDACCEXP_R</i> multiplied by <i>GROWTH</i>
<i>BRDDIVERSITY_R_GROWTH</i>	=	<i>BRDDIVERSITY_R</i> multiplied by <i>GROWTH</i>
<i>BRDINDP_R_GROWTH</i>	=	<i>BRDINDP_R</i> multiplied by <i>GROWTH</i>
<i>BRDSIZE_R_GROWTH</i>	=	<i>BRDSIZE_R</i> multiplied by <i>GROWTH</i>

The variables of interests in testing H1 are the residuals of the four board structure indicators. Significant positive coefficients on these variables confirm this hypothesis.

For H2, the variables of interests are the four interactions variable between the residuals of the board structure indicators and growth options. If H2 is correct, we expect to observe significant positive coefficients on these interaction variables.

LEVERAGE is included to control for the the effect that capital structure could have on equity value (Orr et al., 2005). Also, numerous research studies suggest that leverage could confound the value relevance of outside directors (Jensen, 1986, 1989; Anderson et al., 1993; Gul and Tsui, 1998). Also, prior to estimating the model, the skewness and kurtosis statistics are checked for this variable and extreme values are winsorised to preserve the characteristics of the original data while minimising the possible distortion of results by these extreme values. The maximum number of observations winsorised is low at the level of 5 percent of the sample observations.

4 Results

4.1 Univariate Analysis

Table 4 presents the descriptive statistics for the dependent and independent variables. The mean of the market value of equity per share, book value of equity per share and earnings per share is \$2.875, \$1.759 and \$0.144, respectively. The average leverage is relatively high at 1.685 compared to the average of 1.246 for ASX listed firms reported in Matolcsy et al. (2004). The percentage of directors with accounting expertise, female directors and non-executive directors is 27.6, 5.6 and 85 percent, respectively. The percentage of non-executive directors is far higher than the 66.5 percent for ASX listed firms documented in Matolcsy et al. (2004). The average board size is 6.5 which is similar to that of 6.6 for ASX listed firms. The mean of growth options is 0.166.

[INSERT TABLE 4 HERE]

To facilitate the analysis of our hypotheses, we first divide the 543 firm-years in the entire sample into a low growth options group and a high growth options group based on the variable *GROWTH*. Untabulated descriptive statistics for the *GROWTH* variable of these two groups are as follows: (1) for the 272 firm-years in the low growth options group, the mean, median and standard deviation of *GROWTH* is -0.133, -0.032 and 0.321, respectively; and (2) for the 271 firm-years in the high growth options group, the mean, median and standard deviation of *GROWTH* is 0.467, 0.461 and 0.186, respectively. The value of growth options for the high growth options group is significantly larger for that reported for the low growth options group at the 1 percent level using both two-tailed *t*-test (t-statistic = 26.674 and p-value = 0.000) and Mann-Whitney z-test (z-statistic = 20.162 and p-value = 0.000).

Table 5 compares the dependent and independent variables (except for *GROWTH*) for low and high growth options groups. It is obvious from Table 5 that the mean *MVE* for firms with high growth options (\$3.656) is significantly higher than that for firms with low growth options (\$2.096) at the 1 percent level. It is interesting to observe that the mean *BVE* for firms with high growth options (\$1.461) is significantly lower than that for firms with low growth options (\$2.056) at the 1 percent level. The mean *NPAT* for high growth options group (\$0.210) is far higher than that of low options group (\$0.078) and the difference between the two groups is significant at the 1 percent level. The mean *LEVERAGE* for firms with low growth options is -0.357 which is higher than the -0.484 reported for the high growth options group. However, this difference is not significant.

Among the four board structure indicators (accounting expertise, gender diversity, independence and size), only gender diversity shows a significant difference at the 1 percent level between the two groups. The percentage of female directors on board for firms with high growth options is 6.9 percent compared to only 4.4 percent documented for firms with low growth options. The percentage of directors with accounting expertise and non-executive directors on board and board size are quantitatively similar across the two groups.

[INSERT TABLE 5 HERE]

4.2 Multivariate Analysis

The regression results of testing our two hypotheses are presented in Table 6. The coefficient estimate on *BRDACCEXP_R* is -1.576 and is significant at the 1 percent level, which rejects H1 with regard to accounting expertise. A lower percentage of directors with accounting expertise on the board is more value relevant. The coefficient estimate on *BRDDIVERSITY_R* is 1.983 and is significant at the 5 percent level, which confirms H1 with regard to gender diversity. Firms with a higher percentage of female directors on the board are associated with higher market value of equities. The coefficients on *BRDINDP_R* and *BRDSIZE* are positive but are not significant. Therefore, H1 is only accepted in respect of board gender diversity.

The coefficient estimates on *BRDINDP_R_GROWTH* and *BRDSIZE_R_GROWTH* are positive and are significant at the 5 and 1 percent levels, respectively, which leads to the acceptance of H2 with regard to independence and size. The percentage of non-executive directors on the board and board size are more value relevant for firms with higher growth options. However, the coefficient estimates on

BRDACCEXP_R_GROWTH and *BRDDIVERSITY_R_GROWTH* are positive but are not significant. Therefore, H2 is only accepted in respect of board independence and size. The value of growth options relative to assets-in-place is critically important when determining the effect on firm value of board independence and size.

Other results in Table 6 show that the coefficient estimates on *BVE*, *NPAT*, *LEVERAGE* and *GROWTH* are all positive and are significant at the 1 percent level. In addition, the regression estimated has high explanatory power, as determined by the adjusted R^2 of 0.769 and the *F*-statistic of 151.150, which is significant at the 1 percent level.

[INSERT TABLE 6 HERE]

4.3 Sensitivity Analysis

First, White's heteroscedasticity standard errors are used to allow the refitting of the model which may contain heteroscedastic residuals. The results obtained from retesting the model are quantitatively similar to the main findings.

Second, the model is retested inclusive of each of the industry dichotomous variables for the six major industry categories: (1) materials, mining or energy, (2) technology, telecommunication or biotechnology, (3) financial services, (4) utilities, airports, airlines, ports or shipping, (5) manufacturing or healthcare, and (6) consumer staples. It is interesting to observe that firms in the materials, mining or energy industries are associated with higher market value of equities while firms in the financial services, manufacturing or healthcare industries have lower market value of equities. The other results are not significantly different from the main findings.

5 Conclusion

The objective of our study is to examine the relationship between four important board structure indicators and firm value, and the extent to which the level of growth options relative to assets-in-place affects this relationship in New Zealand.

Based on a sample of 543 firm-years covered by 125 firms listed on the NZX with financial reporting dates ending between 31 January 1998 and 31 December 2007, our results document significant evidence that the four board structure indicators together with the level of growth options significantly impact on firm value after effectively controlling for the endogeneity problem. Firms with a lower number of directors with accounting expertise and/or a higher number of female directors on the board have higher firm value. For firms with a higher level of growth options relative to assets-in-place, a higher percentage of independent directors on the board and/or a larger board are more value relevant.

The findings related to board accounting expertise and board gender diversity particularly may have important implications for corporate regulators. It is interesting to observe that while board gender diversity adds value to a firm, the same conclusion cannot be reached with regard to accounting expertise. Our findings on gender diversity are consistent with overseas regulatory developments promoting the percentage of female directors on the board. Most notably the ASX recently amended its Corporate Governance Principles and Recommendations to require listed companies to publish a policy concerning diversity and to annually disclose progress towards gender diversity in the firm generally and on the board.

The major limitation of our study is that it focuses a small sample within a small jurisdiction of New Zealand; therefore, the generalisability of the findings reported in

this study is potentially diminished. Given that the sample firms must have survived a minimum of five years since being listed in order to be included in the final sample, the findings from this study may not be representative for newly listed firms. In addition, as we adopt the percentage of non-executive directors on the board as a proxy for board independence, this proxy may not accurately capture the percentage of truly independent directors on the board. The percentage of non-executive directors on the board was employed in our study as the data regarding the percentage of truly independent directors on the board was not disclosed before October 2003.

Therefore, future research could extend the dataset and examine the relationship between true board independence and firm value. In addition, our model could be retested on a dataset obtained from a larger jurisdiction and/or including newly listed firms. Further research could also be undertaken to explain our findings concerning the value relevance of accounting expertise.

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Table 1
Sample Selection Procedure

Selecting Criteria	Number of Observations
Sample Firms	
Total firms listed on the Events section of the NZX database as at 17 September 2008	317
Less firms listed on the Events section of the NZX database not covered by the NZX database	(113)
Less firms listed on the NZAX	(31)
Less firms not issuing at least 5 annual reports since being listed on the NZSX	(48)
Total firms in the final sample	125
Sample Firm-years	
Total firm years for 125 firms	897
Less firm-years with negative book value of equities	(17)
Less firm-years with missing board structure indicators	(337)
Total firm-years in the final sample	543

¹ The total number of firm-years includes all firm-years with financial reporting dates ending between 31 January 1998 and 31 December 2007.

Table 2
Definitions of Board Structure Indicators

<i>BRDACCEXP</i>	The percentage of directors with accounting expertise on the board.
<i>BRDDIVERSITY</i>	The percentage of female directors on the board.
<i>BRDINDP</i>	The percentage of non-executive directors on the board.
<i>BRDSIZE</i>	The number of directors on the board.

Table 3
Correlation Matrix for Board Structure Indicators

	<i>BRDACCEXP</i>	<i>BRDDIVERSITY</i>	<i>BRDINDP</i>
<i>BRDDIVERSITY</i>	-0.155 0.000**		
<i>BRDINDP</i>	0.032 0.464	-0.005 0.910	
<i>BRDSIZE</i>	-0.084 0.049*	0.143 0.001**	0.087 0.043*

^, * and ** denote significance at the 0.1, 0.05 and 0.01 levels, respectively (two-tailed). Pearson, point-biserial and Phi correlation coefficients are followed by p-value. See Table 2 for definitions of board structure indicators.

Table 4
Descriptive Statistics

Variables	Mean	Median	Standard Deviation
<i>MVE</i> (\$)	2.875	1.650	3.339
<i>BVE</i> (\$)	1.759	1.086	2.472
<i>NPAT</i> (\$)	0.144	0.094	0.417
Total Liabilities/Total Equities	1.685	0.794	3.953
<i>LEVERAGE</i>	-0.421	-0.230	1.321
<i>BRDACCEXP</i> (%)	0.276	0.250	0.165
<i>BRDDIVERSITY</i> (%)	0.056	0.000	0.090
<i>BRDINDP</i> (%)	0.850	0.857	0.156
<i>BRDSIZE</i> (Number)	6.494	6	1.903
<i>GROWTH</i>	0.166	0.174	0.398

See Section 3 for definitions of variables

Table 5
Univariate Comparison between Variables for Low and High Growth Option Firm-years

Variables	Low Growth Option N = 272			High Growth Option N = 271			Low vs. High Growth Option	
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation	t-test	Mann- Whitney test
<i>MVE</i> (\$)	2.096	1.035	2.877	3.656	2.900	3.585	5.589**	7.366**
<i>BVE</i> (\$)	2.056	1.166	2.913	1.461	0.983	1.889	-2.824**	-3.320**
<i>NPAT</i> (\$)	0.078	0.068	0.445	0.210	0.766	1.146	3.733**	5.664**
Total Liabilities/Total Equities	2.353	0.815	5.390	1.015	0.766	1.146	-4.005**	-0.736
<i>LEVERAGE</i>	-0.357	-0.205	1.481	-0.484	-0.267	1.138	-1.121	-0.736
<i>BRDACCEXP</i>	0.270	0.250	0.173	0.283	0.250	0.156	0.967	1.329
<i>BRDDIVERSITY</i>	0.044	0.000	0.090	0.069	0.000	0.089	3.160**	4.130**
<i>BRDINDP</i>	0.859	0.875	0.153	0.841	0.857	0.160	-1.358	-1.528
<i>BRDSIZE</i>	6.485	6	1.842	6.502	6	1.966	0.101	0.524

^, *, ** Characteristics are significantly different at the 0.1, 0.05, 0.01 levels, respectively (two-tailed). See Section 3 for definitions of variables.

Table 6
Summary of the OLS Regression Coefficients for the Relationship between the Market Value of a Firm and the Accounting Value of Equity, Earnings, Board Structure and Growth Options

Variable	Predicted Sign	Coefficient	Standard Error	t-statistic	p-value
Intercept	?	0.457	0.097	4.700	0.000**
<i>BVE</i>	+	1.046	0.031	33.670	0.000**
<i>NPAT</i>	+	1.309	0.180	7.280	0.000**
<i>LEVERAGE</i>	?	0.219	0.053	4.110	0.000**
<i>BRDACCEXP_R</i>	+	-1.576	0.466	-3.380	0.001**
<i>BRDDIVERSITY_R</i>	+	1.983	0.887	2.240	0.013*
<i>BRDINDP_R</i>	+	0.069	0.500	0.140	0.445
<i>BRDSIZE_R</i>	+	0.015	0.049	0.310	0.380
<i>GROWTH</i>	+	2.842	0.186	15.260	0.000**
<i>BRDACCEXP_R_GROWTH</i>	+	0.985	1.099	0.900	0.186
<i>BRDDIVERSITY_R_GROWTH</i>	+	-2.607	2.289	-1.140	0.128
<i>BRDINDP_R_GROWTH</i>	+	1.987	1.093	1.820	0.035*
<i>BRDSIZE_R_GROWTH</i>	+	0.444	0.129	3.430	0.001**
Adjusted R ²		0.769			
F-statistic		151.150**			
p-value		0.000**			

^, * and ** denotes significance at the 0.1, 0.05 and 0.01 levels, respectively. One-tailed (two-tailed) test is used when coefficient sign is predicted (not predicted). See Section 3 for definitions of variables.