

CORPORATE GOVERNANCE, CONTROL TYPE, AND PERFORMANCE: THE NEW ZEALAND STORY

Jianguo Chen*, Dar-Hsin Chen*, Ping He**

Abstract

This study investigates the ownership structure of New Zealand non-financial companies in terms of both ownership and management control and examines the effect of ownership structure on corporate governance and firms' performance. The Berle and Mean's hypothesis of separation of ownership and control does not find support in New Zealand. Further analysis tests the proposition that the diffusion of corporate ownership has allowed corporate managers to pursue goals other than profit maximization. The findings do provide evidence of a non-monotonic relation between managerial shareholdings and firm performance. This result indicates the complex nature of the relationship between ownership structure and firm value.

Keywords: Corporate Governance; Ownership structure; Agency cost; Corporate Finance

* Both Jianguo Chen and Ping He are at the Department of Finance, Banking and Property at Massey University, New Zealand.

**Dar-Hsin Chen is at Department of Business Administration, National Taipei University, Taiwan.

Please address all correspondence to: Dar-Hsin Chen, Department of Business Administration, National Taipei University, 151 University Rd., San Shia, Taipei County, 237 Taiwan. Tel: 886-2-2500-9820. Fax: 886-2-2502-9353. Email: dhchen@mail.ntpu.edu.tw.

1. Introduction

The relationship between ownership structure and firm performance has been a focus of academic research as early as Berle and Mean (1932), who hypothesize that an inverse correlation should be observed between the diffuseness of shareholdings and firm performance. Given the significance of this topic in management, economics, and finance, the relationship between ownership structure and firm performance is one that has received considerable attention in the empirical studies. However, the empirical results have failed to provide consistent evidence to prove whether the type of ownership does significantly affect firm performance.

In response to these conflicting results, Demsetz and Villalonga (2001) suggest that no systematic relations should be expected between ownership structure and firm performance. This is because that optimal ownership structures are those that emerge from the interplay of market forces. Demsetz (1983) argues that ownership should be thought of as an endogenous variable and that this effect should not be ignored in empirical estimation in order to reach an unbiased conclusion. As a result, question should be raised regarding the findings of the previous studies that treat ownership structure as exogenous.

Another concern, raised by McEachern (1975), is that the majority of previous studies make no

difference between outside owners who are not actively involved in management and owners who are also managers. He further argues that by treating no difference between these two groups, the previous studies assume that controlling shareholders who are also managers have similar incentives to those shareholders who are external to the firm. By recognising the possible conflicting interests between these two groups, Demsetz and Villalonga (2001) adopt the two ownership variables, that is, the fraction of shares owned by the five top shareholding interests and the fraction of shares owned by top managers and directors of the board.

Another new development, advanced by Morck et al. (1988) and McConnell and Servaes (1990), is that consideration should be given to possibility of the existence of non-linear relationships between ownership and performance. This study has been built upon Demsetz and Villalonga (2001), who adopt two equations to account for the endogeneity concern and two measures of ownership structure for allowing for the different interests. The study also seeks to contribute to the limited evidence regarding the relationship among corporate governance, ownership structure, and firm performance in the New Zealand context, where two previous studies have failed to account for the endogeneity and multi-dimension concerns of ownership structure. Moreover, this study revisits the work of Morck et al. (1988) by running a

segmented linear regression of firm performance on managerial ownership for investigating whether our results are consistent with their findings.

The remainder of the paper is organized as follows. Section 2 reviews the related literature and Section 3 discusses the conceptual issues. Section 4 describes the employed data and models, followed by the discussion of main findings in Section 5. Finally, Section 6 concludes this paper.

2. Literature Review

Berle and Mean (1932) hypothesize that an inverse correlation should be observed between the diffuseness of shareholdings and firm performance. This is because that when shareholders are too diffuse to monitor managers, corporate resources can be used for the benefits of managers rather than for maximising shareholder wealth. In supporting the Berle and Mean's notion, managerial theorists, such as Williamson (1964), explain that the separation of ownership from control allows managers to pursue their own interests at the expense of the maximisation of shareholder wealth. Therefore, management controlled firms should be less profitable than owner controlled firms. Mosen and Downes (1965), for example, argue that large managerial firms, or diffused ownership firms, are expected to be more risk averse and experience less variability of profits than concentrated ownership firms due to the divergence of goals between owners and top management in modern capitalism.

On the other hand, opponents of this view argue that managers are effectively constrained from taking actions that are not in the best interests of shareholders. Fama (1980), for example, claims that competition in the managerial labour markets will constraint managerial discretion and the presence of external directors on the board may limit management undesirable behaviour. Jensen and Mackling (1976) show how the interests of both managers and shareholders can be aligned through increased level of management ownership and well-designed management compensation packages. Benston (1985) also draws the same conclusion regarding this matter and suggests that increasing management shareholding is an effective way to mitigate agency problems. This is because that the potential gains from stock market will be far more than management remuneration in most cases.

Considering the significance of this topic in management, as well as finance, economics and law, the relationship between the ownership structure and firm performance is also one that has received considerable attention in the empirical studies. Some studies find support for the managerial hypothesis of which owner-controlled firms are expected to earn higher rates of return than manager controlled firms. Mosen et al. (1968), for example, find that the owner-controlled group of firms outperformed the management-controlled firms by a considerable

margin through the analysis of 500 largest U. S. industrial firms between 1952 and 1963. By carrying out a study for 86 large U. K. firms during the period of 1957-1967, Radice (1971) reveals that higher profit rates and greater variability of profits are more expected to be associated with owner-controlled firms than management-controlled firms. Consistent with the previous studies, Holl (1977) also observes a significant out-performance by owner-controlled firms over management-controlled firms during a study for 343 U. S. firms.

Holl (1975), however, observes inconclusive evidence with respect to the effect of ownership and control on firm performance during a study of 183 quoted U. K. firms. Holl (1977) later suggests that one of possible reasons reconciling the conflicting evidence reported earlier is the failure of allowing for the constraint effect of market discipline upon management behaviour. Holl (1977) further argues that only these management-controlled firms, not subject to this discipline, are expected to report lower profit rates than owner-controlled firms. Kamerschen (1968) employs the type of control as one of the explanatory variables relating to firm performance among the 200 largest U. S. non-financial firms, but his finding also is not statically significant. In contrast to the studies mentioned before, there are few, which have found management-controlled firms significantly out-perform owner-controlled firms. For example, Thonet and Poensgen (1979) find that management-controlled firms are expected to earn higher return on equity.

So the empirical research on the effects of ownership structure on firm performance span several decades, however, has failed to provide consistent evidence to prove whether the type of ownership does significantly affect firm performance. Historically, empirical research has examined the impact of ownership structure on firm performance by using simple regression models. But more recently a second generation of research has been built upon an idea raised by Demsetz (1983), who argues that ownership should be thought of as an endogenous variable and that this effect should not be ignored in empirical estimation in order to reach an unbiased conclusion. Demsetz and Lehn (1985) provide evidence of the endogeneity of a firm's ownership structure and also assess the validity of the thesis forwarded by Berle and Means (1932): A linear regression of an accounting measure of profit rate on the fraction of shares owned by the five largest shareholding interest, in which ownership structure is treated as an endogenous variable, gives no evidence of a relation between ownership structure and firm performance. By re-examining this relationship Demsetz and Villalonga (2001) provide further evidence to support the view that optimal ownership structures are those that emerge from the interplay of market forces. Consequently, they argue that no systematic relation should be expected between ownership structure and firm performance.

In support of the endogeneity concern raised by Demsetz and Lehn (1985), Cho (1998) provided further evidence that firm value affects ownership structure by estimating a simultaneous equation regression instead of OLS. As a result, he argues that ownership structure is endogenously determined, and in turn, question should be raised regarding the findings of the previous studies that treat ownership structure as exogenous. Several recent studies have also analysed the impact of managerial ownership on firm performance. Morck et al. (1988) and McConnell and Servaes (1990) argue that the relationship between management ownership and firm performance is non-linear. Based on the findings of Morck et al. (1988), there is a positive relationship between management ownership and Tobin's Q in the 0% to 5% ownership range, a negative relationship in the 5% to 25% range, and a positive relationship beyond the 25% ownership level. In terms of these findings, Morck et al. (1988) interpret that managerial ownership at low levels provides effective means to align conflicting goals between shareholders and management, whereas management becomes entrenched and can indulge in non-value-maximizing activities at high levels of managerial ownership.

Fogelbery (1980), the first to consider the relationship between ownership and control in New Zealand, suggests that New Zealand has experienced a substantial movement towards management control, because it is beyond the resources of any individual or small group of shareholders to manage a company once the company reaches a certain size. Given the growing separation of ownership and management of companies in New Zealand, the question of how the changing pattern of ownership affects firm performance has become popular. Little evidence to our knowledge, however, is available for the New Zealand markets, while a number of studies, although contradictory, are available for the U. S. and the U. K. markets. There are, however, only two previous studies have examined impacts of ownership structure on firm performance of New Zealand listed companies. The first one is carried out by Firth (1986), who classifies companies as either owner-managed or owner-controlled. Firth (1992) finds no evidence of significant relationship between control-type and accounting figures based measures of profitability. He further argues that the result supports the view that as long as strong monitoring and incentive schemes have been imposed upon firm management, firm performance is not necessarily dependent on ownership structure. Fox (1996) also concludes that ownership of New Zealand public companies does not appear to influence firm performance by measuring ownership as the proportion of issued voting capital held by the major largest shareholder. In support of the Firth's view, Fox (1996) further argues that the reason for this finding may lie in the nature of ownership structure of New Zealand listed companies. According to Fox (1996), New Zealand companies have become more

majority controlled and less management controlled since 1962. Consequently, little scope has been left for management to pursue activities which are not in the best interests of shareholders. In other words, major shareholders have enough power to discipline the management, who do pursue such self-interested behaviour. Although the same conclusion has been reached by these two previous studies in examining the relationship between ownership structure and firm performance, the reliability of their results could be challenged by the findings of Demsetz and Villalonga (2001), who argue that ownership structure is endogenous. Their arguments imply that the findings (Firth, 1992; Fox 1996) are bound to yield biased regression estimates by failing to take into account the impact of endogeneity when seeking to ascertain the relationship between ownership and performance. Another potential problem associated with the Firth and Fox's findings is the failure to distinguish between outside owners who were not actively involved in management and owners who were also managers.

3. Conceptual and Measurement Issues

3.1 Ownership Structure

One of the main issues to the study of the effects of ownership structure on firm performance has been the classification of firms by control type. The majority of previous studies, such as Monsen et al. (1968) and Booudreaux (1973), differentiate between owner-controlled (OC) firms and management-controlled (MC) firms in terms of different criteria of ownership percentage (Short, 1994). Owner-controlled firms are those where a dominant shareholding interest exists, while management-controlled firms include those in which ownership is so widely distributed that no one individual or group has an interest that is large enough to allow them to exert a dominant influence.

In the previous studies, varying cut-off points are used to distinguish between OC and MC firms. Little consensus with regard to the ownership level at which there is effective control of the firm has been reached (Short, 1994). This arbitrary nature of measuring ownership structure impairs the reliability of their findings. Another concern associated with these studies is the failure to examine the identification of shareholders. Specifically, McEachern (1975) argues that OC firms should be further categorised into two groups in order to distinguish between outside owners who are not actively involved in management and owners who are also managers. He further argues that by treating no difference between these two groups, the previous studies assume that controlling shareholders who are also managers have similar incentives to those shareholders who are external to the firm. The problem associated with this view is that the owner managers may behave the same way as any other professional managers. As mentioned earlier, both studies (Morck et al., 1988; McConnell and Servaes, 1990), which find a non-linear relationship

between firm performance and managerial ownership also supports McEachern's (1975) argument that external shareholders and owner-managers should be assumed to have similar incentives to maximize shareholder value.

This paper will adopt the two ownership variables used by Demsetz and Villalonga (2001). These two variables are the fraction of shares owned by the five top shareholding interests (TOP5) and the fraction of shares owned by top management and directors of board (MH). By distinguishing ownership between top shareholders and the board, Demsetz and Villalonga (2001) recognise the potential diverging interests between them. Furthermore, using continuous variables rather than many control-classification schemes, which arbitrarily choose cut-off points for control type, will enhance the reliability of our findings. As Demsetz and Villalonga (2001) describe, by using these two measures to account for the complexity of interests, a study should give a more accurate result in terms of the relationship between ownership structure and firms performance.

The passage of the 1993 Companies Act in New Zealand provides a unique opportunity to study the efficacy of board oversight, and also makes this study possible. Under the 1993 Act, name, remuneration and interest of each director are compulsory disclosures in annual report. Directors' share dealings are also required to be disclosed in each report.

3.2 Endogeneity issues

While Morck et al. (1988) and McConnell and Servaes (1990) derive their conclusions regarding the relationship between ownership structure and firm performance by treating ownership structure as exogenous variable, Demsetz and Lehn (1985) show that ownership structure is endogenous and argue that due to insider information and performance compensation, ownership structure is as likely to be affected by firm performance as ownership structure is to affect performance. Their findings, ownership structure is endogenous, imply that any study with regards to relationship between ownership structure and firm performance is bound to yield biased regression estimates if they fail to account for this endogeneity. Consistent with Demsetz and Lehn (1985), Cho (1998) also finds that management ownership is a function of market value of equity and industry type. Furthermore, his findings showed that firm value, measured by Tobin's Q, is an important determinant of the management ownership. Based on the findings, Cho (1998) casts doubt upon the results in previous studies, such as Morck et al. (1988), who treat ownership structure as exogenous. In addition, Himmelbery et al. (1999) also recognize the endogeneity of managerial ownership in their study. They further explain that managerial equity stakes are an important and well-known mechanism to align the incentives of management and shareholders, and in turn this contracting environment has important

implications for econometric models designed to test the relationship between ownership structure and firm performance.

3.3 Firm performance and control variables

Two measures of performance are collected to value firm profitability: Proxy Tobin's Q and accounting-based return on equity (ROE). The Q-ratio, calculated from dividing the market value of equity by the net tangible assets attributable to shareholders, is a common measure of efficiency and future opportunities of company. According to Demsetz and Villalonga (2001), these two measures differ in two respects. First, accounting-based profit measure (ROE) is backward-looking whilst forward-looking for Tobin's Q. Another difference is that accounting profit only partially involves estimates of future events in the form of depreciation and amortization. The Tobin's Q, however, is greatly influenced by a wide range of unstable factors, such as, investor psychology, and market forecasts. Considering the above concerns, we use both measures to evaluate firm performance.

In addition to the variables mentioned above, the following control variables have been chosen for this study. Firm size, measured as the natural logarithm of total assets, is included to account for the possibility that firm performance and ownership are related through the size of the firm. Firm growth, measured as sales growth, is used to allow for life-cycle effects. Financial leverage, measured as the ratio of shareholders' equity against capital employed, is adopted to take into account the possible influence of a firm's capital structure upon its investment decisions. (Harris & Raviv, 1991). Finally, same as Demsetz and Villalonga (2001), two measures of financial risk have been included in this research: market risk (MR), or beta, measured by a regression of the monthly return on a stock on a market return index, and firm specific risk (FSR) measured as standard error of estimate from the regression. This is because based on the capital asset pricing model (Fama and Miller, 1972), investors in high beta shares seek compensation for risk in a high-expected rate of return. Therefore, both MR and FSR are included as control variables since they are likely to influence behaviour in different ways. Thus, the following variables are used in this study:

- 1) Firm value: measured by Proxy Tobin's Q and accounting-based ROE;
- 2) Ownership structure: measured by the fraction of shares owned by the five top shareholding interests (TOP5) and the fraction of shares, not including options, held by top management and directors of the board (MH);
- 3) Size: natural logarithm of booking total assets;
- 4) Growth: percentage growth rate of annual sales;
- 5) Leverage: ratio of shareholders' equity against book values of assets;

- 6) Market risk (MR): measured by β coefficient obtained through running a regression of the monthly return on a stock on monthly market return index;
- 7) Firm specific risk (FSR): measured as standard error of β estimate from the regression.

4. Data and Models

4.1 Description of data

The sample utilized in this research comprises all companies listed on the New Zealand Stock Exchange (NZSE) during the period of 2000-2003, excluding the newly listed firms during this period. Financial institutions, property, and mining companies are excluded from this study due to their unusual characteristics of balance sheet. Finally, data are collected for a total of 80 firms for 2000, 72 firms for 2001, 68 firms for 2002, and 63 firms for 2003, which all required information is available. For a further analysis, the firms are divided into three general categories: industrial firms, agriculture and forestry firms, and service firms. Accounting information, including ownership data, has been collected from DATEX database, whereas share price of listed companies downloaded from the Datastream. The measures for market risk (beta) and firm specific risk (standard error) have been calculated by running a regression of the monthly return on a stock on the monthly market return index.

4.2 OLS Regression Model

As mentioned earlier, a common approach for estimating the impact of ownership structure on firm value is based on the use of OLS analysis. Thus, the OLS regression model is discussed first. This study uses the following OLS regression models to test whether ownership structure affects firm value.

$$1) \quad Q = \alpha + \beta_1 \text{TOP5} + \beta_2 \text{MH} + \beta_3 \text{Ln}(\text{SIZE}) + \beta_4 \text{GROWTH} + \beta_5 \text{LEVERAGE}; \text{ or}$$

$$\text{ROE} = \alpha + \beta_1 \text{TOP5} + \beta_2 \text{MH} + \beta_3 \text{Ln}(\text{SIZE}) + \beta_4 \text{GROWTH} + \beta_5 \text{LEVERAGE};$$

$$2) \quad \text{MH} = \alpha + \beta_1 \text{Q} + \beta_2 \text{Ln}(\text{SIZE}) + \beta_3 \text{LEVERAGE} + \beta_4 \text{MR} + \beta_5 \text{FSR}; \text{ or}$$

$$\text{MH} = \alpha + \beta_1 \text{ROE} + \beta_2 \text{Ln}(\text{SIZE}) + \beta_3 \text{LEVERAGE} + \beta_4 \text{MR} + \beta_5 \text{FSR}$$

Note:

- Q: Proxy Tobin's Q, calculated as the market value of equity divided by the book value of net tangible assets attributable to shareholders;
- ROE: return on equity, measured as the pre-tax profit divided by the market value of equity;
- TOP5: the fraction of shares owned by the five top shareholding interests;
- MH: the fraction of shares, excluding options, owned by the directors of board;
- Ln(SIZE): natural logarithm of booking total assets;
- GROWTH: percentage growth rate of annual sales;
- LEVERAGE: measured as the ratio of shareholdings' equity (market value) against book values of assets;

- MR: market risk, measured by β coefficient obtained through running a regression of the monthly return on a stock on monthly market return index;
- FSR: Firm specific risk, measured as standard error of β estimate from the regression.

4.3 2SLS Regression Model

One of key assumptions of OLS regression is the recursivity assumption. That is, the model should not involve feedback loops. Thus, for instance, the model should not contain a situation such as one where researchers must assume that the disturbance term of the dependent variable is correlated with the causes of the independent variables. In this study, if some determinants of firm value are also determinants of ownership structure, then ownership structure might spuriously appear to be a determinant of firm value. Thus, two-stage least squares regression (2SLS) is used to cover this situation where ordinary least squares (OLS) regression's assumption of recursivity cannot be reasonably held. The econometric model advanced by Demsetz and Villalonga (2001) comprises two equations. This study has adopted the following two equations to analyze the relationship between ownership structure and firm performance in order to account for the endogeneity effect.

$$1) \quad Q = \alpha + \beta_1 \text{TOP5} + \beta_2 \text{MH} + \beta_3 \text{Ln}(\text{SIZE}) + \beta_4 \text{GROWTH} + \beta_5 \text{LEVERAGE}; \text{ or}$$

$$\text{ROE} = \alpha + \beta_1 \text{TOP5} + \beta_2 \text{MH} + \beta_3 \text{Ln}(\text{SIZE}) + \beta_4 \text{GROWTH} + \beta_5 \text{LEVERAGE}$$

$$2) \quad \text{MH} = \alpha + \beta_1 \text{Q} + \beta_2 \text{Ln}(\text{SIZE}) + \beta_3 \text{LEVERAGE} + \beta_4 \text{MR} + \beta_5 \text{FSR}; \text{ or}$$

$$\text{MH} = \alpha + \beta_1 \text{ROE} + \beta_2 \text{Ln}(\text{SIZE}) + \beta_3 \text{LEVERAGE} + \beta_4 \text{MR} + \beta_5 \text{FSR};$$

$$3) \quad \text{TOP5} = \alpha + \beta_1 \text{Q} + \beta_2 \text{Ln}(\text{SIZE}) + \beta_3 \text{LEVERAGE} + \beta_4 \text{MR} + \beta_5 \text{FSR}; \text{ or}$$

$$\text{TOP5} = \alpha + \beta_1 \text{ROE} + \beta_2 \text{Ln}(\text{SIZE}) + \beta_3 \text{LEVERAGE} + \beta_4 \text{MR} + \beta_5 \text{FSR}$$

Note:

- Q: Proxy Tobin's Q, calculated as the market value of equity divided by the book value of net tangible assets attributable to shareholders;
- ROE: return on equity, measured as the pre-tax profit divided by the market value of equity;
- TOP5: the fraction of shares owned by the five top shareholding interests;
- MH: the fraction of shares, excluding options, owned by the directors of board;
- Ln(SIZE): natural logarithm of booking total assets;
- GROWTH: percentage growth rate of annual sales;
- LEVERAGE: measured as the ratio of shareholdings' equity (market value) against book values of assets;
- MR: market risk, measured by β coefficient obtained through running a regression of the monthly return on a stock on monthly market return index;
- FSR: Firm specific risk, measured as standard error of β estimate from the regression.

5. Empirical Results

5.1 Firm Characteristics

Tables 1-4 contain the summary statistics for the whole sample and the three sub-samples. Considering the potential influence of outliers, observations with extreme values have been excluded from this study. As a result, there are a total of 261 observations available for the following analysis. Table 1 shows that the average level of managerial ownership is about 18% for 261 observations. Figure 1 depicts that there are 134 out of the 261 observations with managerial ownership level not more than 5%. That is, in 134 observations, comprising 51% of the sample population, top management own not more than 5% of the firm. The sample distributions are skewed towards low levels of managerial ownership. The managerial shareholdings, however, do span a wide range of ownership levels. In 115 observations, accounting for 44% of the whole population, board members own more than 10% of the firm.

5.2 Correlations

Table 5 presents the correlation matrix among the variables employed in this study. It is not surprising to see that Tobin's Q is positively correlated with ROE. The positive relation between Tobin's Q, or ROE, and managerial ownership seems to indicate the improved performance with the increasing managerial ownership. There is also a positive relation between Tobin's Q, or ROE, and TOP5, another measure of ownership structure. However, an only simple correlation matrix is not enough to give any conclusion regarding the complex nature of ownership structure and firm performance. Managerial shareholdings are negatively related with Ln(assets), the book value of total assets. Ln(assets) is negatively related with equity ration. These findings are reasonable. We can expect that it is more difficult for management to own significant fraction of shares in a bigger firm than a smaller firm, while a bigger firm with more tangible assets has more debt capacity for borrowing, compared with a smaller firm. None of remaining variables in the matrix are correlated to an extent to which mention is deserved.

5.3 Regression Results

5.3.1 OLS Regression Results

Results, based on Tables 6 and 7, show that firm performance, measured by Tobin's Q and ROE, is always statistically dependent on at least one measure of ownership structure by using OLS regression model, and vice versa. This result is inconsistent with the previous findings in New Zealand. In the previous studies, Firth (1992) and Fox (1996) report that there is no evidence of significant relationship between ownership structure and firm performance. This result, however, is partly consistent with Demsetz and Villalonga (2001), who find that firm performance is

always statistically dependent on at least one of the two ownership measures, but the reverse is not true.

5.3.2 2SLS Regression Results

Also based on the Tables 6 and 7, the results show that none of the two measures of ownership structure is statistically significant in the explanation of firm performance, measured as Tobin's Q and ROE. This finding is consistent with Demsetz and Villalonga (2001), who argue that no systematic relations should be observed between ownership structure and firm performance if endogeneity issue is considered, since optimal ownership structure are those that emerge from the interplay of market forces. Moreover, this finding provides evidence of the existence of endogeneity issue in the New Zealand context.

Examination of Tables 5 and 6 also reveal that, respective of the performance measure used and models adopted, there is a strongly negative relationship between managerial shareholdings and size variable. This is consistent with the view that it is harder for top management to acquire controlling shareholdings in big firms than small firms.

The next point is to test which measure of ownership structure is likely to be more strongly endogenous. After examining the Tables 8 and 9, we find that both two measures of firm performance, Tobin's Q and ROE, have a stronger influence upon TOP5 than that of upon MH. This result is inconsistent with Demsetz and Villalonga (2001), who found that management shareholdings were more strongly affected by firm performance than TOP5, measure of outside ownership structure. It is, however, difficult to find a reasonable explanation for this finding. Another point deserved to mention is that MR, measured by β , consistently relates negatively to ownership structure. This is consistent with the idea raised by Demsetz and Villalonga (2001) that variation in risk could cause variation on ownership structure.

5.3.3 Piecewise Regressions

We then investigate the break points, found by Morck et al. (1988), for determining whether our findings are consistent with their results. A segmented linear regression of firm performance, measured by Proxy Tobin's Q, has been run upon managerial ownership and other control variables by using both OLS and 2SLS regression models. The results for the Morck et al. (1988) replication using OLS model are presented in Tables 10. It is interesting to see that our findings are completely consistent with the general tenor of Morck et al.'s hypothesis that a non-linear relationship existed between performance and managerial ownership. More specifically, there is a positive relationship between management ownership and Tobin's Q in the 0% to 5% ownership range, a negative relationship in the 5% to 25% range, and a significantly positive relationship beyond the 25% ownership level. However, a potential problem for this kind of the treatment, mentioned before, is the

ignorance of endogeneity concern of ownership structure. Once the endogeneity of ownership structure has been considered, the results based on Table 11 show that management ownership is not significant in explaining firm performance during each range of managerial shareholdings. However, our finding does provide some evidence of a non-monotonic relation. This finding is consistent with Demsetz's view that at the low levels of management ownership market discipline will force management to adhere to value maximisation, but at high levels of management ownership performance may be affected adversely. This is because that the high levels of management ownership could lead to management entrenchment.

6. Conclusion

This study is primarily motivated by relatively few evidence regarding relationship among corporate governance, ownership structure, and firm performance for the New Zealand publicly listed companies. The two previous studies, New Zealand focused, have failed to take into account the endogeneity and multi-dimension issues of ownership structure. Thus, the reliability of previous results could be seriously challenged by the findings of Demsetz and Villalonga (2001). Another concern, advanced by Morck et al. (1988) and McConnell and Servaes (1990), is that consideration should be given to possibility of the existence of non-linear relationships between ownership and performance. To our knowledge, no previous study has been carried out to investigate whether New Zealand evidence is consistent with these hypotheses, forwarded by Morck et al. (1988) and McConnell and Servaes (1990).

The results from OLS regressions indicate that firm performance is always statistically dependent on at least one measure of ownership structure by using OLS regression model, and vice versa. This result is inconsistent with the previous findings in New Zealand. After allowing for the endogeneity of ownership structure, the results show that none of the two measures of ownership structure is statistically significant in the explanation of firm performance. This finding is consistent with Demsetz and Villalonga (2001), who argue that no systematic relations should be observed between ownership structure and firm performance. Another interesting finding is that our results are completely consistent with the general tenor of Morck et al.'s hypothesis that a non-linear relationship existed between performance and managerial ownership if the endogeneity concern of ownership structure is ignored. Once the endogeneity of ownership structure has been considered, results show that management ownership is not significant in explaining firm performance during each range of managerial shareholdings. However, our findings do provide some evidence of a non-monotonic relation between ownership structure and firm performance. However, a potential problem

for this kind of the treatment, mentioned before, is the ignorance of endogeneity concern of ownership structure. Once the endogeneity of ownership structure has been considered, results show that management ownership is not significant in explaining firm performance during each range of managerial shareholdings. However, our findings do provide some evidence of a non-monotonic relation.

This study generally shows that there is no strong evidence in New Zealand to support the Berle and Means's hypotheses of which a reverse relationship exists between ownership concentration and firm performance. Our findings, however, do provide evidence of a non-monotonic relation between managerial shareholdings and firm performance. This indicates that the complex nature of the relationship between ownership structure and firm value; thus further research on how the structure of corporate governance affects firm's value is needed.

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Appendices

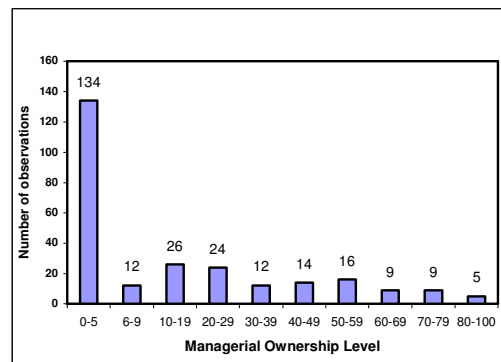


Figure 1. Managerial ownership level analysis

Table 1. Simple statistics for variables containing all firms

Variables	Mean	Std Dev	Minimum	Maximum
Q	2.81	8.82	-32.91	79.66
ROE	12.60	64.95	-217.05	847.84
TOP5	61.10	21.57	0.06	99.19
MH	18.15	24.11	0.00	91.23
Ln(SIZE)	5.31	0.88	3.23	8.25
LEVERAGE	49.83	26.97	-84.99	99.68
GROWTH	11.56	43.97	-99.53	208.17
MR	0.20	0.53	-0.54	6.54
FSR	0.03	0.02	0.00	0.10

Table 2. Simple statistics for variables containing only industrials firms

Variable	Mean	Std Dev	Minimum	Maximum
Q	3.09	9.12	-20.75	79.66
ROE	22.91	91.33	-50.21	847.84
TOP5	58.38	21.94	0.06	99.19
MH	21.39	27.03	0	91.23
Ln(SIZE)	5.21	0.87	3.23	6.64
LEVERAGE	49.79	22.39	-6.40	95.89
GROWTH	12.14	44.95	-70.84	206.49
MR	0.15	0.21	-0.38	1.19
FSR	0.03	0.02	0.00	0.10

Note: Sector classification is based on the following criteria. Industrial firms includes firms in the following classes: construction materials; building products; machinery; commercial supplies; consumer durables; health care equipment and supplies; internet software; technology hardware and equipment; textiles.

Table 3. Simple statistics for variables containing only service firms

Variable	Mean	Std Dev	Minimum	Maximum
Q	2.93	10.04	-32.91	64.29
ROE	7.09	52.75	-217.05	342.54
TOP5	64.37	21.89	6.09	95.68
MH	15.79	21.14	0	87.14
Ln(SIZE)	5.41	0.90	633.64	8.25
LEVERAGE	45.49	31.72	-84.99	99.68
GROWTH	9.60	36.23	-85.15	190.62
MR	0.28	0.748	-0.22	6.54
FSR	0.03	0.01	0.00	0.08

Note: Sector classification is based on the following criteria. Service includes firms in the following classes: restaurants and leisure; media; retailing; insurance; and consumer.

Table 4. Simple statistics for variables containing only agriculture and forestry firms

Variable	Mean	Std Dev	Minimum	Maximum
Q	2.16	4.85	0.19	32.14
ROE	7.83	24.37	-136.68	67.10
TOP5	58.54	19.63	28.62	96.70
MH	17.98	24.90	0	76.91
Ln(SIZE)	5.28	0.83	3.57	6.91
LEVERAGE	58.89	20.13	27.51	97.47
GROWTH	14.57	55.71	-99.53	208.17
MR	0.11	0.22	-0.54	0.68
FSR	0.03	0.02	0.00	0.10

Note: Sector classification is based on the following criteria. Agriculture and forestry includes firms in the following classes: agriculture; agricultural products; fishing; forestry; forest products.

Table 5. Correlation matrix

	Q	ROE	TOP5	MH	Ln(SIZE)	LEVER.	GROWTH	MR	FSR
Q	1.00000								
ROE	0.52799	1.00000							
TOP5	0.13465	0.07937	1.00000						
MH	0.12988	0.16065	0.12755	1.00000					
Ln(SIZE)	0.00351	0.05526	0.08997	-0.32947	1.00000				
LEVERAGE	-0.06117	-0.02114	0.02568	0.03128	-0.30867	1.00000			
GROWTH	0.00076	-0.01692	-0.02266	0.01131	-0.01770	-0.11043	1.00000		
MR	-0.02877	-0.00849	-0.18620	-0.08354	0.08181	-0.07755	0.00243	1.00000	
FSR	-0.14176	-0.13466	-0.03609	0.02993	-0.03859	0.00871	0.01932	0.05293	1.00000

Note: Variable definitions and sources are provided earlier.

Table 6. Comparison of OLS and OLS regression containing all firms

	Tobin's Q (OLS)	Tobin's Q (2SLS)	MH (OLS)	MH (2SLS)
Intercept	-0.47187 (-0.10)	52.42472 (0.60)	69.28550 (6.38)***	47.24462 (2.10)**
TOP5	0.04870 (1.85)*	0.204186 (0.78)		
MH	0.04445 (1.78)*	-0.74967 (-0.58)		

Table 6 continued

GROWTH	-0.00093979 (-0.07)	-0.00009 (-0.00)		
Ln(SIZE)	0.11099 (0.15)	-8.47872 (-0.60)	-9.48239 (-5.60)***	-9.30158 (-3.43)***
LEVERAGE	-0.02102 (-0.95)	-0.06374 (-0.75)	-0.06451 (-1.17)	0.025059 (0.26)
MR			-2.69220 (-1.01)	-1.54320 (-0.36)
FSR			61.39241 (0.66)	311.8365 (1.48)
Q			0.35712 (2.21)**	3.394868 (1.80)*

Note: t-statistics are in parentheses.

- * significant at the 0.10 level;
- ** significant at the 0.05 level;
- *** significant at the 0.01 level.

Table 7. Comparison of OLS and OLS regression containing all firms

	ROE (OLS)	ROE (2SLS)	MH (OLS)	MH (2SLS)
Intercept	-55.62382 (-1.68)*	350.7734 (0.53)	71.21604 (6.67)***	65.29033 (2.34)**
TOP5	0.11127 (0.58)	1.305869 (0.66)		
MH	10.55434 (3.04)***	-5.54680 (-0.56)		
GROWTH	-0.02437 (-0.26)	-0.01781 (-0.08)		
Ln(SIZE)	9.69176 (1.83)*	-56.3018 (-0.53)	-9.80592 (-5.84)***	-13.5762 (-2.59)***
LEVERAGE	-0.00557 (-0.03)	-0.33374 (-0.51)	-0.07162 (-1.31)	-0.02706 (-0.19)
MR			-2.79111 (-1.05)	-2.31844 (-0.35)
FSR			70.93892 (0.77)	516.8953 (1.06)
ROE			0.06846 (3.15)***	0.855137 (1.12)

Note: t-statistics are in parentheses.

- * significant at the 0.10 level;
- ** significant at the 0.05 level;
- *** significant at the 0.01 level.

Table 8. Comparison of management shareholdings and outside investor shareholdings in the role of endogenous ownership variable (all firms)

	MH endogenous			A5 endogenous	
	Q	MH		Q	TOP5
Intercept	52.42472 (0.60)	47.24462 (2.10)**		-1.87969 (-0.30)	20.72444 (1.01)
TOP5	0.204186 (0.78)			0.094605 (0.66)	
MH	-0.74967 (-0.58)			0.036347 (1.03)	
GROWTH	-0.00009 (-0.00)			-0.00061 (-0.05)	
Ln(SIZE)	-8.47872 (-0.60)	-9.30158 (-3.43)***		-0.10177 (-0.10)	3.856212 (1.55)
LEVERAGE	-0.06374 (-0.75)	0.025059 (0.26)		-0.02341 (-1.00)	0.103484 (1.18)

Table 8 continued

MR		-1.54320			-6.46119
		(-0.36)			(-1.66)*
FSR		311.8365			225.0190
		(1.48)			(1.18)
Q		3.394868			3.081371
		(1.80)*			(1.84)*

Note: t-statistics are in parentheses.

- * significant at the 0.10 level;
- ** significant at the 0.05 level;
- *** significant at the 0.01 level.

Table 9. Comparison of management shareholdings and outside investor shareholdings in the role of endogenous ownership variable (all firms)

	MH endogenous			A5 endogenous	
	ROE	MH		ROE	TOP5
Intercept	350.7734	65.29033		-60.9815	42.20768
	(0.53)	(2.34)**		(-1.34)	(3.21)***
TOP5	1.305869			0.285985	
	(0.66)			(0.28)	
MH	-5.54680			0.523480	
	(-0.56)			(2.04)**	
GROWTH	-0.01781			-0.02311	
	(-0.08)			(-0.25)	
Ln(SIZE)	-56.3018	-13.5762		8.882050	1.959339
	(-0.53)	(-2.59)***		(1.25)	(0.92)
LEVERAGE	-0.33374	-0.02706		-0.01466	0.044080
	(-0.51)	(-0.19)		(-0.09)	(0.65)
MR		-2.31844			-7.54043
		(-0.35)			(-2.34)**
FSR		516.8953			133.3703
		(1.06)			(1.00)
ROE		0.855137			0.283695
		(1.12)			(2.19)**

Note: t-statistics are in parentheses.

- * significant at the 0.10 level;
- ** significant at the 0.05 level;
- *** significant at the 0.01 level.

Table 10. Piecewise regressions based on OLS model

	Tobin's Q (OLS) 0%-4%	Tobin's Q (OLS) 5%-25%	Tobin's Q (OLS) >25%
Managerial Ownership			
Intercept	2.65867	6.76815	2.24288
	(0.38)	(1.09)	(0.20)
TOP5	0.07472	0.07327	-0.05402
	(2.19)	(1.60)	(-0.61)
MH	0.05104	-0.26368	0.19779
	(0.08)	(-1.93)	(2.51)
GROWTH	-0.01064	0.02150	0.00860
	(-0.54)	(1.13)	(0.38)
Ln(SIZE)	-0.50084	-1.67771	-0.05398
	(-0.50)	(-1.32)	(-0.03)
LEVERAGE	-0.04296	0.09318	-0.10179
	(-1.26)	(3.56)	(-1.67)

Note: t-statistics are in parentheses.

- * significant at the 0.10 level; 1.65
- ** significant at the 0.05 level; 1.96
- *** significant at the 0.01 level. 2.58

Table 11. Piecewise regressions based on 2SLS model

	Tobin's Q (2SLS)	Tobin's Q (2SLS)	Tobin's Q (2SLS)
Managerial Ownership	0%-4%	5%-25%	>25%
Intercept	1.846703 (0.15)	-10.6897 (-0.37)	34.88075 (0.73)
TOP5	0.074219 (2.13)	-0.01390 (-0.09)	0.623533 (0.71)
MH	0.822354 (0.09)	0.572703 (0.42)	-0.99409 (-0.65)
GROWTH	-0.01266 (-0.400)	0.020192 (0.78)	-0.03531 (-0.48)
Ln(SIZE)	-0.39165 (-0.23)	0.912258 (0.20)	-1.87780 (-0.37)
LEVERAGE	-0.04969 (-0.55)	0.015804 (0.12)	-0.19403 (-1.11)

Note: t-statistics are in parentheses.

- * significant at the 0.10 level; 1.65
- ** significant at the 0.05 level; 1.96
- *** significant at the 0.01 level. 2.58