

# Managerial Ownership and Performance: A Quantile Regression Analysis

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**Abstract**-The relationship between managerial ownership and corporate performance is still a controversial issue, besides the empirical research methods in the earlier relevant study all involved the use of OLSE method, OLSE only focus on the central tendency of the distribution, lacks of complete description of the entire distribution, besides its results are easily influenced by extreme value. To solve these problems, this article uses quantile regression method to study the relationship between them.

**Keywords**-Managerial Ownership; Firm Performance; Quantile Regression.

## I. INTRODUCTION

Managerial ownership plays an important role in solving the agency problem. However, the academia has not reached a consensus on the relationship between managerial ownership and corporate performance. The difference of market and firm specific factors of each company may lead to the impact of executive ownership on firm performance is possibly not uniform cross-sectionally, so many scholars tried to consider these market or firm specific factors in their study, for example, according to the degree of competition Sun Wenxi (2007) divided enterprises into resource type enterprise and competitive enterprise; Zhai Qi (2013) used the improved cash flow combination method to segment sample companies to study the relationship between equity incentive effect and corporate performance in different enterprise life cycle.

To use quantile regression method to study the impacts of managerial ownership on firm performance, we can concentrate on whether the impacts of managerial ownership on firm performance are uniform across firms with different performance stages without data segmentation.

In earlier researches, most scholars used OLSE optimization techniques to study the relationship between managerial ownership and corporate performance. The OLSE focus on the central tendency of the distribution, always lacks of complete description of the entire distribution, besides its results are easily influenced by extreme value, instead the quantile regression method can remedy the deficiency above of OLSE method.

So the author tries to use quantile regression method to study the relationship between managerial ownership and corporate performance.

## II. RESEARCH DESIGN

### A. The Introduction of Quantile Regression Model

Quantile regression is applied when an estimate of the various quantiles in a population is desired. In addition, the quantile regression has several other useful features. First, the quantile regression estimator minimizes the weighted sum of absolute residuals rather than the sum of squared residuals, and thus the estimated coefficient vector is not sensitive to outliers. Second, a quantile regression model employs a linear programming representation and simplifies examination. Third, this analysis is particularly useful when the conditional distribution does not have a standard shape, such as an asymmetric, fat-tailed, or truncated distribution. The quantile regression approach can thus obtain a much more complete view of the effects of explanatory variables on the dependent variable.

### B. Sample

The sample was chosen from Shenzhen stock exchange main board A Share market for the period 2009 to 2014, then the initial sample were subject to the following exclusions: (1) Firms in the financial and insurance industry are excluded due to the different liabilities and capital structures compared to those in the manufacturing and service sectors (2) Firms under ST or ST\* (3) Firms whose management shareholding is "0" (4) Firms who has incomplete data (5) Firms who went public in 2009~2014 (6) Firms whose assets liabilities rate greater than 1.

Having excluded firms on the above basis, a final sample of 1608 is derived.

### C. Variables

The key variables are measures of the performance of firms and managerial ownership. Furthermore, a small number of additional variables are used to control for effects on the performance of firms.

- Corporate performance
- Company performance can not only be expressed as the capital market based performance information, but also can be expressed as the accounting based performance information. However in the current market environment of China, most company's stock price does not reflect the real performance effectively. So we utilize the accounting performance indicators to measure firm performance, among them, ROE is representative accounting index. As industries have different potentials, it is necessary for us to use the industry

adjusted ROE (ADROE) as a proxy. In specific terms, the industry adjusted ROE is obtained by subtracting the industry average ROE from the firm ROE.

- The ratio of managerial ownership (Monp)
- Managerial ownership is measured as the percentage of equity shares directly owned by the executives at the accounting year end.
- Executive monetary compensation (Mc) = Average value of the top three executive monetary compensation
- Ownership concentration (Ocn) = Shareholding ratio of the top ten stockholder, the degree of ownership concentration represents the degree of shareholders controlling over company, the degree of the centralization of the company shares is high, and the shareholders have a higher control over the company
- Capital structure (Deratio): Debt to assets ratio
- On one hand debt to assets ratio reflects the company's financial risk, when the debt to assets ratio is high, the financial risk is relatively high which may bring cash flow shortage and enterprise's capital chain affected, thereby affecting the enterprise operating and producing regularly and financial performance of the enterprise. On the other hand, the debt to assets ratio represents the size of the financial leverage, and the financial leverage also has an impact on the firm performance
- (Size) Firm size = natural log of book value of total assets The size of enterprises contributes to the formation of scale advantages and cost advantages, so the size of the enterprise will have an important impact on the enterprise performance.

### III. EMPIRICAL RESULTS AND ANALYSIS

This section we use the QR regression method to perform our empirical research, compare the result in traditional OLSE method with the QR method and make analysis to the empirical result.

Figure 1 Impact of the managerial stockholding on firm performance (ADROE) across various quantile levels

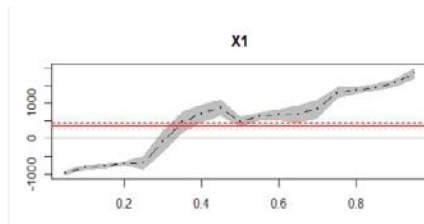


Figure 1 shows the regression coefficient estimates of managerial ownership variable under OLSE and quantile regression method, the red line represents coefficient estimates in OLSE method. It is a horizontal line, indicating that the relationship between the managerial ownership and corporate performance is positive correlativity under the

OLSE method, and however under the regression method, coefficient estimation result is different in different performance quantiles, with the increase of enterprise performance quantile, regression coefficients range from negative to positive, and shows a tendency to increase first, then decrease and then increase.

Figure 2 Fitting curves at different quantiles

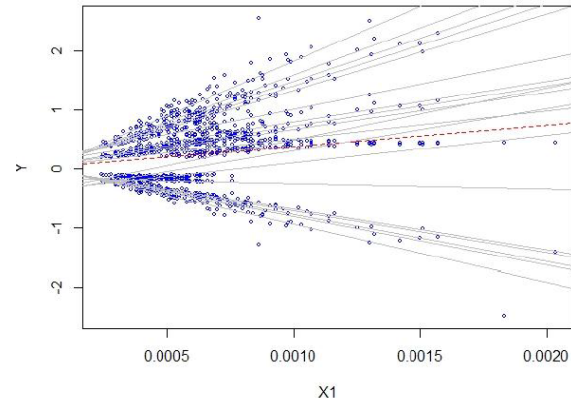


Figure 2 is the description of full sample, the red linear represents the fitting result in OLSE method, we can find that it deviates a lot from the full sample distribution, and the gray curves represent the fitting results in QR method. Among these gray curves, some lines slope upward, and some lines slope downward. To elaborate a bit on that, at the higher performance quantile, the relationship between managerial ownership and firm performance is positive, while at the lower performance quantile, the relationship between managerial ownership and firm performance is negative. From this figure, we can further validate that OLSE focuses on the central tendency of the distribution, lacks of complete description of the entire distribution.

As the increasing of quantile level of corporate performance, the impact of management ownership on ADROE varies widely in magnitude and sign of the estimated coefficients, initially the relationship between managerial ownership and corporate performance is negative. At the thirty percent quantile, correlation between these two is insignificant, but the estimated coefficient is still negative. Subsequently for higher quantiles, the relationship between managerial ownership and corporate performance is significant positive, that is to say the relationship between managerial ownership and corporate performance varies in different performance quantile. When the enterprise performance level is relatively low, there is a negative correlation between executive ownership and corporate performance, when the level of enterprise performance is relatively high, there is a significant positive correlation between the two.

First, in accordance with firm life-cycle theory, a firm in the growth/decline stage is usually associated with higher/lower firm performance, when the firm are in the growth stage, the managerial ownership incentive can have a positive impact on the performance of the enterprise. To

some extent the higher the level of corporate performance, the better the company's development, then the more significant the impact of managerial ownership on corporate performance. At this time, the effect of "convergence interests" dominates ; When the enterprise is in the recession period, the operating performance of the enterprise is not good, the more managerial ownership, the greater control right over the enterprise, then the more benefits plunder from the firm, besides increased managerial ownership might encourage management to pursue overly risky investment projects, enhancing bankruptcy costs and reducing profitability, particularly when firms are in the declining stage. So with the increase of managerial ownership , the regression coefficient decreases as negative, then managerial entrenchment effects dominate. Firms at the decline stage should differ from those at the growth stage in management incentive measures for enhancing performance. To the firms at the decline stage, high managerial ownership is not conducive to the growth of enterprise performance.

At the same time, returning to Figure1, when the enterprise performance quantile is higher than 45%, the regression coefficient shows a monotonically increasing trend, at the 40%~45% quantile, the regression coefficient decreases, when at the 0%~40% quantile , the regression coefficient showed an upward trend, that is to say with the decrease of firm performance, initially the regression coefficient decreased , when reduced to a certain value, then there is a rise ,it is not as we expected that the regression coefficient has been in a downward trend as the decrease of performance quantile , may be the reason of this phenomenon is that when the enterprise enters the mature period, according to the enterprise life cycle theory, the enterprise performance will be significantly lower than that in the growth period, however the incentive effect of managerial ownership would not be immediately reduced, as the accumulation of favorable conditions in the growth period and the lag effect of managerial ownership incentive ,the incentive effect of managerial ownership

increases instead at this time (reflected in the 40%~45% quantile in Figure1).

#### IV. CONCLUSION

Evidences show that traditional OLSE method capture central behaviors only, and misidentify the relationship between managerial ownership and performance with regard to size, significance, and even sign, particularly for extremely profitable or less profitable firms ,besides we find that when the firms are in the growth period ,the managerial ownership incentive can have a positive impact on the performance of the enterprise ,however when the firms are in the recession period, with the increase of managerial ownership , the managerial ownership incentive can have a negative impact on the performance, that is to say, for the firms at the decline stage, high managerial ownership is instead not conducive to the growth of enterprise performance.

Usually company's performance evaluation system includes many indicators, each index can reflect the performance from a certain point of view, however this paper uses only a single index to measure the corporate performance that may not be accurate enough , This is deficiency of this article and also the direction that the author need to study in the future.

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