

The Empirical Analysis under SEM Model on Governance Effect of BOD's Power

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ABSTRACT

The process of managerial revolution gradually promotes the position of the handlers, making it an important factor affecting firm performance. Based on managerial discretion theory, the four core measurement elements of managerial discretion are defined while the conceptual model of the managerial discretion and firm performance are built. Besides, since the power of board of directors, as a key internal governance mechanism, plays an important regulatory role on the model, this article put forward the hypothesis of the relationship among managerial discretion, power of board of directors and firm performance.

Keywords: SEM model; BOD power; governance effect; regulatory role

INTRODUCTION

Since the 19th century, the research on handlers' behavior in modern firm theory has taken a great leap with the establishment and prosperity of theory of property rights, principal-agent theory, transaction cost theory and contract theory. As we can see, the process of managerial revolution has made its change from how managerialism performed its central part to the mode of market management and company management did. In the wake of the thriving of modern company, the mode of company management has developed into that of managerialism pioneered by career managers. In the darkest time, heated debate on how should company develops and organize its internal structure had even been arisen, that is to say, a company should be run sticking to the doctrine of shareholdings or the theory of stakeholder?

Different from the past, we consider company as a combination of a succession of contracts in stead of barely a social organization nowadays. From the angle of company management, the centre of social economy is not company as a social organization any more but comprehensive management in a company under the implementing of numerous regulations and systems like external supervision. And managerial discretion which exactly bridges managers themselves and the operation of company, actually can be regarded as an indicator of managers' ability to run the company and a result that balances the interest and right of career managers and that of other interest groups . When studying the changes of relations between the mode of company management and the power and right of relative interest groups, we attach great importance to the study of managerial discretion . To sum up, we safely conclude that managerial discretion shapes itself in the complex process during which managers and other interest groups endeavour to strengthen their power and make it licit until they reach the balance of the dynamic game in the course of which managerial discretion becomes the eventual condition combination of different factors including external environment, internal organizational structure and individual characteristics of managers.

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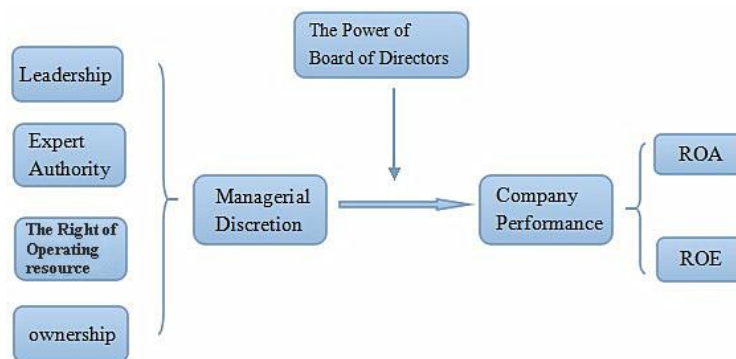
The board of directors (BOD) has long been treated as the supervision authority on behalf of the interest and right of shareholders(Jensen, 1993). As the core of the decision-making and controlling system in a company, the board of directors attracts the attention of many experts and scholars who pay more time and energy on studying relative theory of the board. What’s more, the theory of manager’s power established not long ago thrives gradually and raises challenges towards the traditional company management mechanism especially the question whether the power of manager is able to be used to handle and control salaries and company performance and whether the board of directors can bring good effect upon the reform of management. We are going to establish the basic conceptual model of managerial discretion and company performance based on the existing documents and researches in this thesis and examine its validity by restraint model, in order to figure how can the board of directors bring the most effective result to the company management and provide creative evidence and advice to the reform of company management.

The Conceptual Model of the Supervision Role of BOD

Here we stick to function analysis method and take the component factors of managerial discretion that is ownership, leadership, expert authority, the right of operating resource and the supervision role of BOD for what influence the company performance, which can be summed up by the model below:

The Model Bases itself on these Hypothesis

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Pic1. The conceptual model of company performnace influencing factor

The model bases itself on these hypothesis:

Managerial discretion plays a vital part in influencing company performance. The knowledge , experience and other resources of career managers consist of the advantages for a company to establish and develop . Moreover, managerial rent theory and principal-agent theory admit the producing value of managerial discretion as the company’s economic rent. However, managers will in no doubt take advantage of the company for their own interest and right and do harm to the company’s performance as a detrimental result, which has become a principal-agent problem unsolved in company management theory . In environmantal decision theory , company performance has nothing to do with managerial disretion but is mainly effected by external environment. However, from the angle of company’s strategy, the theory of managerial right not only makes concrete definition on managerial discretion and the right and power of managers but also presents us how career managers create and tap the value of company from certain kind of mechanism and a variety of aspects. However, the theory of managerial right does not give a positive or negative comment

directly on the good effect of managerial discretion but approves on the opinion that different kinds of power have kinds way to reacting on company performance which is also influenced by individual, different party and outer environment. Our study combines the theory of principal-agent and consider that managerial discretion cannot be more important in both aspects of company management and company strategy.

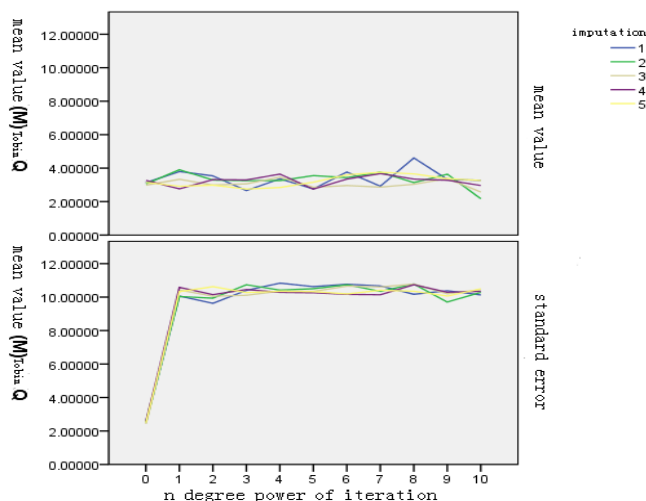
Managerial discretion is nonlinearly related to the effect of company performance. A CEO of a company always pursues the maximized individual interest for himself, which requires that he ought to be in the decision making position in his company and equipped with the power big enough to influence BOD, including the right of reputation, social status (Finkelstein, 1992), the right to interpose recruitment decided by BOD or to persuade BOD to change their decision, etc. Actually, a new CEO always needs 1 to 2 years to acquire requiring knowledge or skills and at this stage managers carry out every strategy and method good to the company’s development and always help the company out of trouble or value it up. But as the improvement of its performance and profit, managerial discretion tends to widen and expand and as the time goes on and on, career managers start to accumulate their own professional knowledge and skills, helping to solidate their leading status and gradually enhance the managerial discretion. Once the CEO focus on a certain developing strategy for a long time, his ability of exploring and creating will definitely be reduced greatly. (Miller, 1991) [7]. As is showed in many researches, in the later period of CEO’s tenure, their ability and knowledge is more than hard to improved due to some psychological factors like overconfidence and arrogance, which lays detrimental influence on firm performance.

Whether the supervision power of BOD is strong or weak means a lot to managerial discretion and company performance and different degrees of its power have different influences on adjusting the relation between managerial discretion and firm performance. As for the researches on the function and role of BOD, principal-agent theory offers the mainstream explanation and analysis at the present though stewards theory, theory of friendly BOD and resource-dependent theory explain the effect of BOD from different angles and aspects. However which theory is, it regards the BOD as the core of company management. What’s more, even if under different legal system in different countries, the divide of BOD’s function is basically the same. Generally, the member of BOD plays three roles namely the role of serving, making strategy and supervising and controlling (Dalton, Daily and Ellstrand, 1996) [8]. According to Johnson Daily (1996) [9], the variate of the power of BOD has something to do with BOD’s function of controlling, serving and providing related resource. Therefore, the right of supervision in BOD’s power lays different effect on the relation between managerial discretion and company performance in all probability.

SOME DATAS TO BE DEALED WITH IN THE PRELIMINARY STAGE

Owing to the large amount of samples we have found before, and what’s worse is there is quite a lot of missing value amid the samples, we will fill up these missing value by using MCMC method.

Firstly let’s consider about the monotonicity which is the premise on using MCMC method. If the datas are in monotone form, then the cell with missing value stays in continuity with that with no missing value. Because when there is no cell with unmissing value in the bottom right and there is no cell with missing value in the top left that is to say monotonicity is not clear according to the existed datas, we can safely use MCMC method to analyze.



Pic2

The chart above shows us the result of 5 degree power of iteration. At the first degree the standard error fluctuates sharply but later on both the mean value and standard error stay stable, which proves that the result of using MCMC method is pretty accurate.

After operating 5 degree power of iteration (in another word, 5 other values are found to fill one missing value up) , we are going to figure out the model which highly corresponds to the reality by establishing regression equation for fit-index and parameter estimation if we want to decide which value of 5 is the best under the background of our study.

We adhere to the most strict way of canceling in order to detect outliers and these ways are Cook’s distance, studentized residual and leverage value.

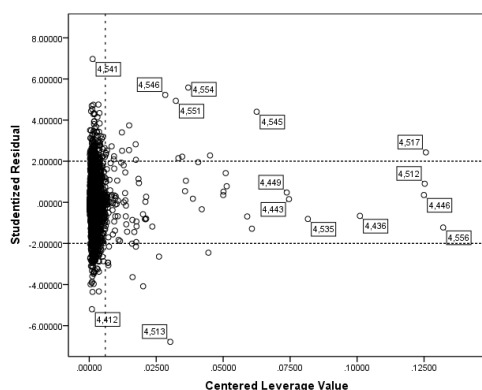
Cook’s distance:

$$D_i = \frac{e_i^2}{k+1} \times \frac{h_i}{1-h_i}$$

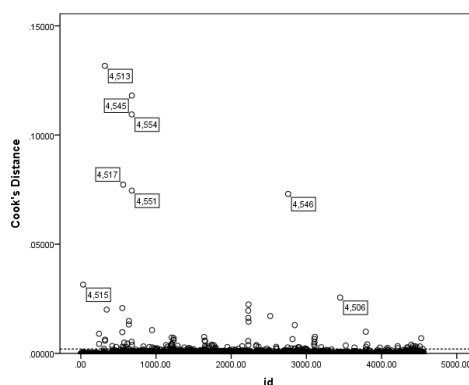
In the equation above, e_i^2 stands for standardized residual, k represents independent variable and n is the number of samples.

If $D_i > \frac{4}{n-k-1}$, outlier may probably appear.(samples need to be relaxed when it is oversized and it is relaxed by 10 times here).

Draw a scatterplot of Cook’s distance and id:



Pic3



Pic4

Next we will calculate the leverage value and studentized residual and the results come out as:

$$h_i = \frac{1}{n} + \frac{(x_i - \bar{x})^2}{\sum_{j=1}^n (x_j - \bar{x})^2}$$

Leverage value:

$$e_i^* = \frac{e_i}{s_{e(-i)} \sqrt{1 - h_i}}$$

Studentized residual:

The referred region should be 2 times greater than the average of h_i . (the region is relaxed by 3 times here). $s_{e(-i)}$ here deletes the observed value from residual standard error. And the referred region is [-2,2].

Ps: the dashed line represents the value out of the critical value(which is 3 times bigger than the standard) and it makes a big difference to the whole model.

When dealing with the heresy values, we delete them in 3 strictest steps. First and foremost, we deal with the anomaly case of datas that composite the results of Cook’s distance, leverage value (h_i) and studentized residual and delete one with the biggest Cook’s distance of all probable results. At last, according to the Euclid distance of the structural model of managerial discretion and firm performance, we will delete some of the observed value and obtain 3096 completed samples eventually.

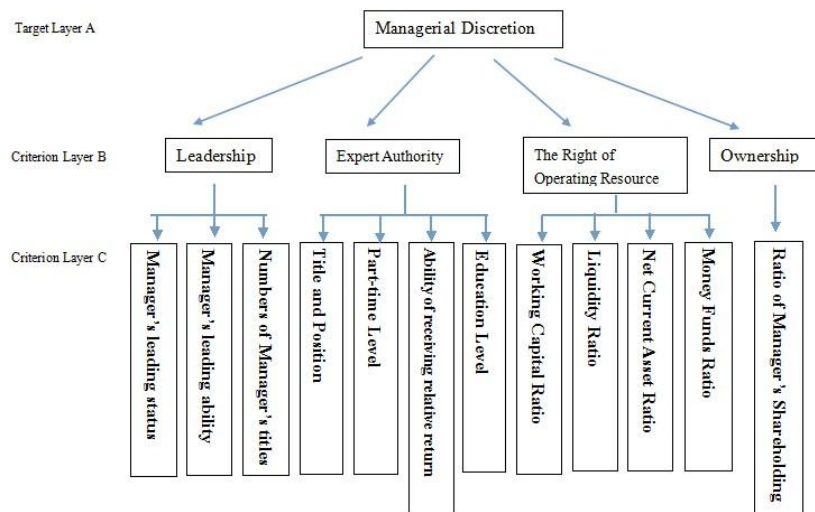
the empirical analysis on moderating effect under different magnitude of BOD’s supervision power

A Brief Introduction of Modeling Based on Structural Equation

Structure equation model is the combination of confirmatory factor model and (latent variable) causal model which is called structural model(sm) and the equation is named structure equation, depicting the relation between latent variables. Structure equation model is also the integration of path analysis and confirmatory factor analysis and equipped with the advantages of both analysis.

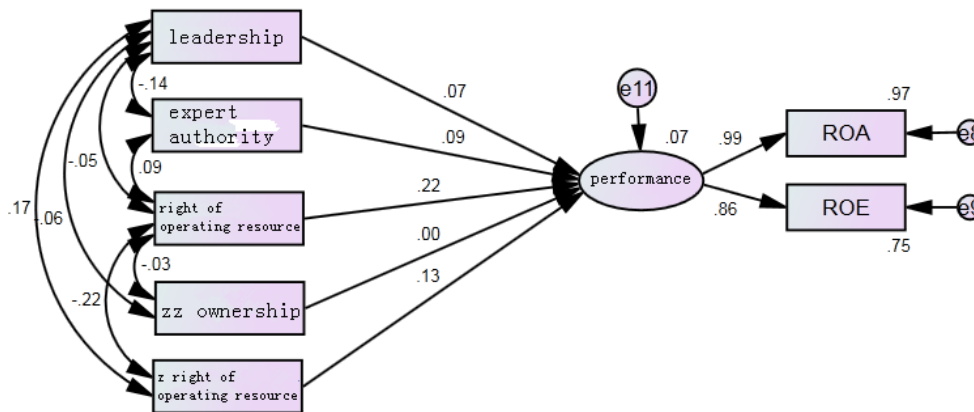
The Establishment of Basic Conceptual Model

In this article, we are going to construct a basic conceptual model on the base of managerial discretion and firm performance, which can be depicted as follow:



Pic5.

Our study will make concrete analysis on ownership , leadership , expert authority and he right of operating resource according to the model of managerial discretion set up by Finkelstein(1992). As for norms, we mainly use Zheng Changzheng’s index system of managerial discretion for reference. Picture 6 is the fitting result of the model, amid which Z right of operating resource stands for the square of the right of operating resource and ZZ ownership for the square of ownership.



Default Model
 chi-square value =205.502(df=8);P=.000
 GFI=.968;CFI=.968;NFI=.966
 RMSEA=.079;TLI=.915

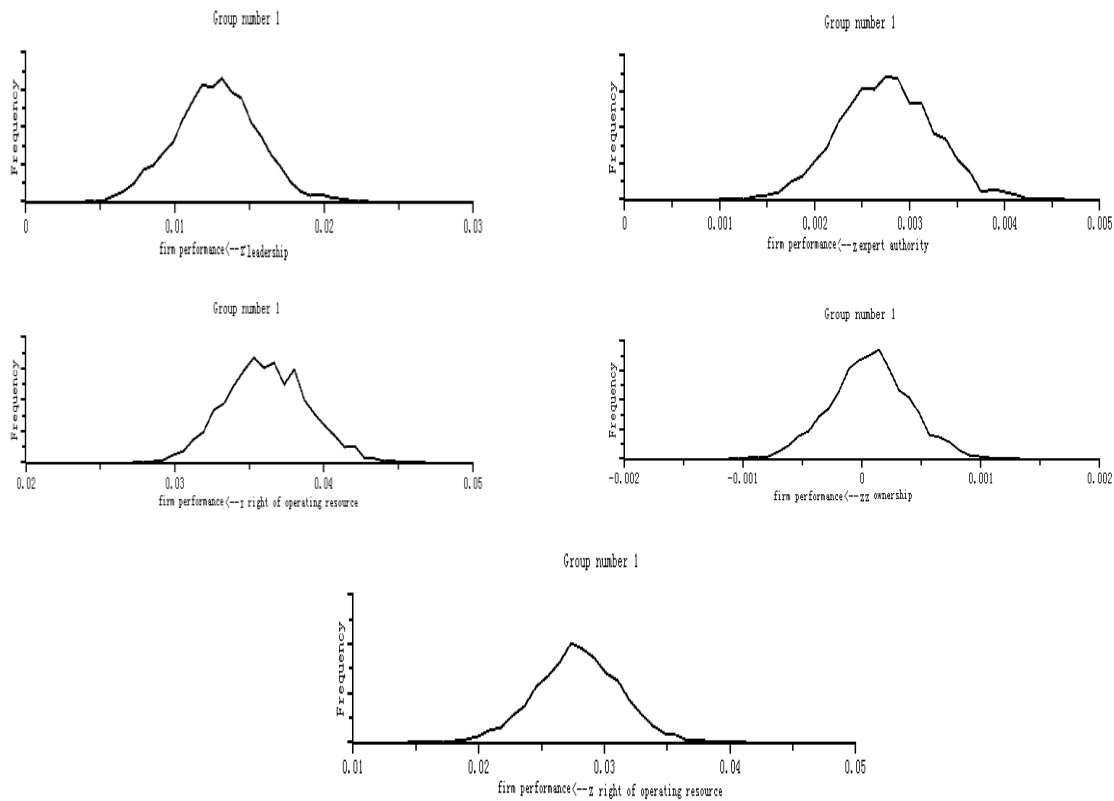
Pic6.

We take the statistics—the goodness of fitting for reference when evaluating the model. Generally speaking, except for RMT,SRMR,GFI,AGFI and PGFI, others are all the function of the statistics χ^2 . Absolute indicator measures the fitting degree the hypothesis model and the datas of samples. The critical value of fitting index cannot be asured by simulation study , therefore, we cannot easily get a fitting index barely from simulation studying from the angle of methdology. Concerning the limitation of simulation study above, our study will choose measurement index comprehensively and cautiously. From the default model above, we find out that managerial discretion explains 7% of firm performance and based on the researches done by other experts and scholars, NNFI、GFI、RMSEA and SRMR are the indexs quite reasonable. (Wen Zhonglin,etc. 2004) [11]. When taking the fitting index of model into account , except that the ratio of chi-square and DF is larger than expected, other indexs are within expectation and rational. Surprisingly we find that the measurement model of latent variable is not only authentic but efficient as well. Now we are considering path index. Except that a ownership has a less outstanding effect on firm performance, other results influence firm performance positively and observably, which indicates that the measurement model deserves reliance.

Owing to the variables we have used, a effective normal distribution still leaves much to be desired. In this case, we shall deduce the posterior distribution of BAYES SEM path index for a reasonable distribution of parameters (the average of parameter).

It turns out that the probability of posterior pretest and the ratio of acceptable samples are up to standard, all errors and variances are greater than zero and the model converges finally.

Picture 7 is the posterior distribution of path index

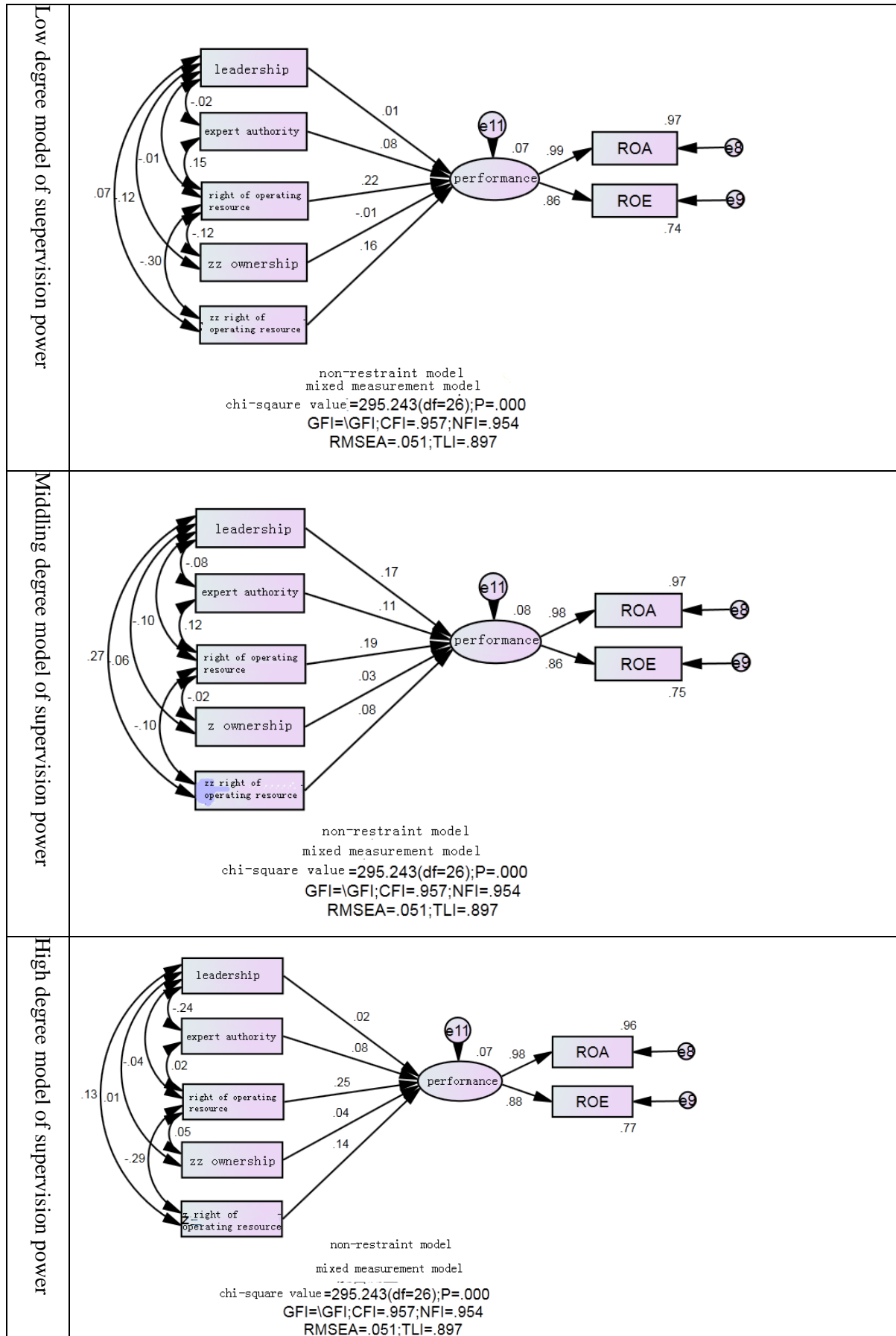


Pic7

Evaluating Structure Equation

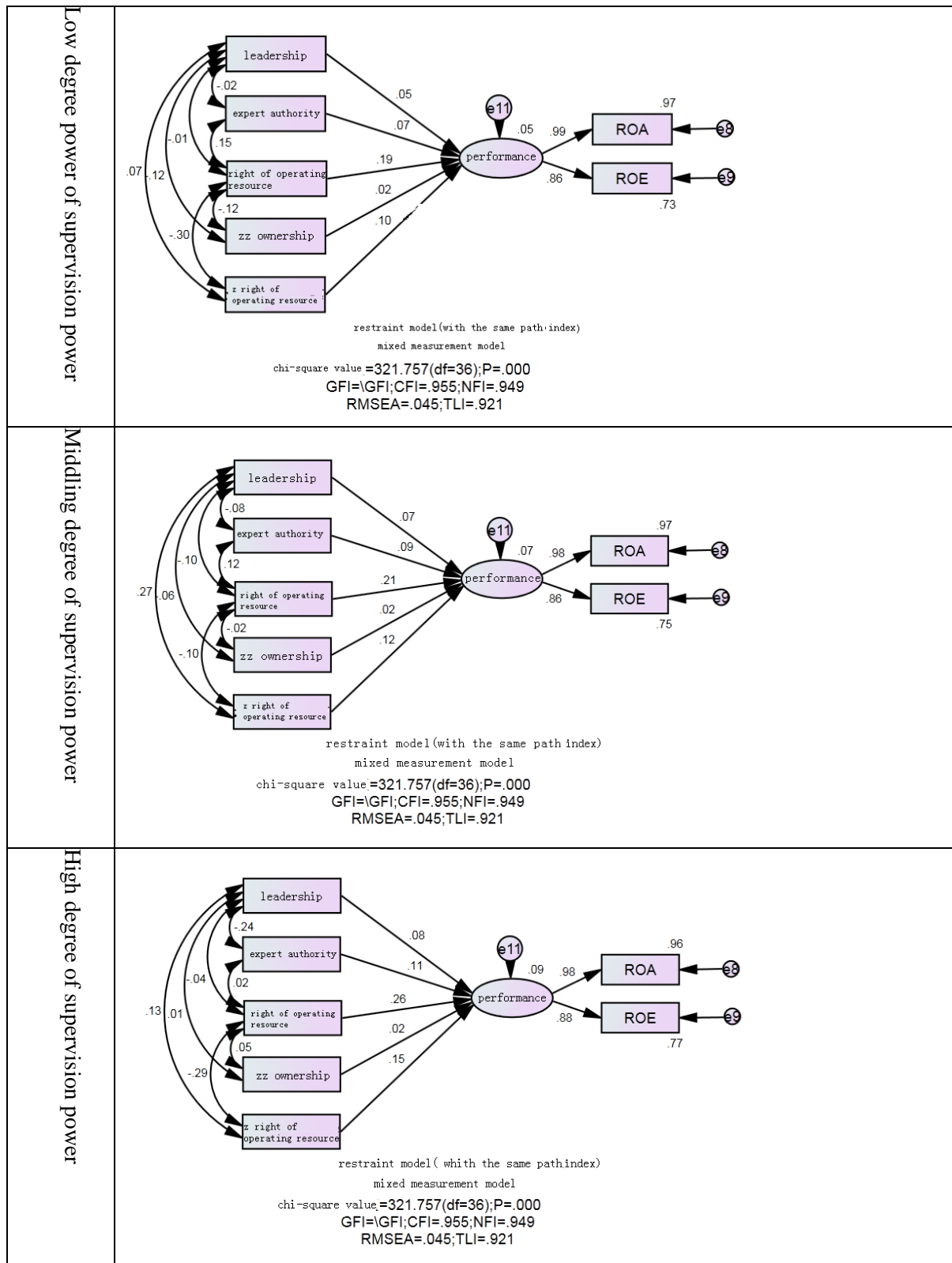
When the moderator variable is the category one and independent variable is the continuous one, we shall carry out the regression analysis group by group. What to do first is to analyze the principal component of null variable with the method of factor analysis according to the supervision power of BOD, by which we can acquire the variable, the supervision power of BOD, and divide the data coming out into three degrees, likewise, high, middling and low by 33% of each. In the next place, concerning some relative principles of multi-group analysis, if the examination result indicates that the hypothesis model is effective and the chi-square value acceptable changes remarkably then we can conclude with no doubt that the variable we are examining has outstanding moderating effect on the hypothesis model we’s risen. In alternative model or competition model, researcher can pick up the most adaptive and concise one among different groups of models with limited dependent variable. To be more concrete, we shall make the regression coefficient limit in 2 groups of structure equation the same and get a DF relevant to χ^2 value, then get rid of the limit to reevaluate the model so as to acquire a new χ^2 whose DF is the difference value of the 2 models’ DF. If the result is outstanding on statistics, then its moderating effect is outstanding. Actually, we implement restraint model to figure out whether the power of BOD has moderating effect or not. The principle of moderating effect is to take chi-square value to compare in both restraint and non-restraint model and see whether there is big difference or not. In another word, let’s say Benchmark model as the default model and compare the result of path index model and that of Benchmark model, if the chi-square value reaches the significance level, then we can conclude that there are some difference between these 2 models, which also proves the existence of moderating effect. Concise results of the 2 models are as follow:

the evaluation of structure equation under non-restraint model(without any limitation)



Pic8. The evaluation of structure equation under non-restraint model without any limitation

2) The evaluation of structure equation under restraint model with the same path index



Pic9. The evaluation of structure equation under restraint model with the same path index

According to the null hypothesis, that is to presume non-restraint model is effective, we find that the result of restraint model, namely the chi-square value is 26.515 while the significance level is $p < 0.05$, which denies null hypothesis and indicates that the variable of supervision does have outstanding moderating effect.

Analysis on the Examination Result of Structure Equation

Based on the index from the model, we can say that the conceptual model has a good fitting degree. And at the mean time, we have proved the existence of moderating effective by establishing restraint model. At last, we can draw the conclusion that when the supervision power of BOD is on the middling degree, managerial discretion makes the largest contribution to firm performance by analyzing amid multigroup. (the R is 0.082 in spss on middling degree of supervision power, which explains 8.2% of all the information, while 6.5% and 7.4% on low and high degree of supervision power)

Here are the Analysis of Examination Results

Managerial discretion has obvious effect on firm performance.

To testify hypothesis 1: By carrying out structure equation method, we got the fitting index of conceptual model between managerial discretion and firm performance and made the conclusion that the model is equipped with a pretty good fitting degree on the basis of samples chosen. And from the path index, we can know that leadership, expert authority and right of operating resource place outstanding influence on firm performance. However, ownership cannot affect firm performance too much.

Managerial discretion is nonlinearly related to firm performance. To testify hypothesis 2: we found that the square of right of operating resource is closely related to firm performance by operating mixed measurement model, which provides the evidence for us to believe in the hypothesis of the nonlinear relation between managerial discretion and firm performance.

The moderating effect of BOD’s power exists indeed. Principal-agent theory lays emphasis on the independence of BOD, approving the idea for BOD to supervise and control managers but ignoring the fact that there are difference between the power of BOD; similarly, resource-dependent theory focus on the BOD’s function of acquiring resource, but lacks more concern when managers take the charge of BOD because in this way the BOD’s ability of acquiring resource will reduce sharply. Thereby, managerial discretion will be constrained and reduces its influence on firm performance if the BOD is over powerful while managers will be in charge of BOD and the firm will miss good chance to improve its performance if managers are over powerful. As a conclusion, let’s say that only proper degree of BOD’s power can facilitate firm performance and lay a positive influence.

CONCLUSION

Based on the method of structure equation, we have constructed and studied the model of managerial discretion and firm performance and designed and measured the factor, managerial discretion by analyzing managerial discretion and the power of BOD, after which we implemented all these factors in empirical examination through structure equation model. What we got as the result of empirical examination affirms the hypothesis in the model. And we are informed that the power of BOD should be constrained in a certain range of degree. Only when career managers are properly stimulated and supervised can managerial discretion promote and prosper firm performance. This paper is supported by Education Ministry Youth Foundation Project (15YJC630137): Research on the influence and mechanism of political gene on the rent-seeking behavior of enterprises. This paper is supported by Guangdong Seedling project; Run by the private higher education policy review and comprehensive reform research frontier problem (2013WYM_0018).and Economics major international creative talent, The practice and exploration of the cooperative cultivation mode of the competition and promoting science(125-XCQ14336).

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