

An Empirical Study on the Relationship between Enterprise Risk Management and Corporate Value—*From the Perspective of Top Executives Incentives*

Qian Wang¹, Heshan Guan¹ & Rongrong Deng¹

¹ School of Economics and Management in University of South China, China

Correspondence: Qian Wang, School of Economics and Management in University of South China, China.
E-mail: m15211476503@163.com

Received: December 28, 2015

Accepted: January 6, 2016

Online Published: December 28, 2016

doi:10.5539/ijbm.v12n1p228

URL: <http://dx.doi.org/10.5539/ijbm.v12n1p228>

Abstract

Top executives incentives and risk management are important contents of corporate governance research. However, few empirical data studies of risk management take top level manager incentives economic benefit into account, and the executive incentives effectiveness is unclear in most studies, the paper collected empirical data of listed companies in financial industry in 2008-2013, and we found a inverted “U” shaped non-linear curve exists from the relationship between ERM and corporate value, when it exceeds a certain level, ERM will come into being an significantly diminishing marginal effect. Secondly, when the degree of top executives incentives become weak, on the contrary, the risk management behaviors will happen with increasing frequency and improve reflected coefficients between enterprise value and ERM, and it’s contributive to raise enterprise value. However, this influence is weak and not significant for executive equity incentive. The empirical results provide some references for the financial enterprise risk management application and the practice of executive incentive.

Keywords: sensitivity, risk propensity, reflected coefficients, inverted “U” shaped

1. Introduction

It is well known that the ownership and management rights were separated gradually, and senior executives are the important part of corporate governance. In March 2015, the market value of the largest life insurance company in Britain—Prudential was instantaneous shrinking nearly 20 billion just because it’s CEO Tidjane Thiam planned to leave it. Meanwhile, the other company Credit Suisse which he will take part in shares soared nearly 7% (Note 1). So, the influence of executives on enterprise market value can’t be ignored, Especially in the speeding up globalization and deeply development financial liberalization. It is quite obvious that enterprises are facing the risk of environment has become increasingly diversified and complicated. Executives have significant decision-making authority and executive power in enterprise, so their risk propensity and risk decision-making behavior plays a guiding role in the strategic management goal. And according to the existing risk practice experiences, they suggests that if executives take comprehensive and effective risk management, it will be beneficial to the prevention and control of the risk and make the enterprise in the long-term invincible position. In addition, studies have shown that degree of executive incentive have a direct effect on their risk propensity and behavior choice. However, as human capital investors, executives individual performance are largely decided directly by their salary in company.

Most existed researches often focus on the correlation of executive incentive and enterprise value or the influence of executive incentive to enterprise risk bearing, etc. But the kind of studies or similar studies such as take executive incentive as regulating variable, from the perspective of executive incentive to explore the influence of enterprise risk management to the enterprise value are deficient. Other studies often fragmented the relations among them, and only shown three simple study of the relationship between any two, they neglected that take them as an organic system to analysis. In view of the direct influence of the executive incentive on the risk propensity and the direct action of the executives on the enterprise risk decision making, this paper mainly discusses that: Are executive incentives to be a direct cause of the corporate executive take measures to manage or avoid risk? Can the intensity of the executive incentive affect the improvement or improvement of the

enterprise's own value? Is the level of executive incentive has become a key variable in the regulation of enterprise risk management (also known as Enterprise Risk Management (ERM) level and enterprise value? What is the relationship between the level of enterprise risk management and enterprise value? These questions may be found in this article.

2. Literature Review and Research Hypotheses

2.1 Enterprise Risk Management

The multi-variability of world economic environment exposed traditional and piecemeal risk management method shortages. Early researches about ERM are mainly focused on its affecting factors. Kleff et al. (2003) found only a handful of companies in Canada may implement ERM under the board's incentive, risk management people's advocacy, and stock trading rules.

But researches are more care about relationship between ERM and enterprise performance or enterprise value in recent years. Some study show that: the implementation of ERM to enhance the value of the enterprise is conditional or not significant at all. For example, Stulz (1996) pointed out that only enterprises with low end income can benefit from the implementation of ERM, other kinds of companies may be damaged. After researched with 120 companies which set up with CRO (chief risk officer) position, Beasley (2008) also found that the implementation of ERM did not significantly affect the company's stock price. Gordon (2009) had constructed a variable of ERM implementation level which named ERMI index, and found that the impact of ERM to corporate performance is based on the various factors of ERM are in reasonable coordination. Tony K.Quon et al. (2012) studies show that the risk management information cannot predicted or affect the consequence of enterprise performance. In addition, Rampini and Adriano (2014) studied the dynamic model of commodity price risk management, and pointed out that the benefits of ERM were very limited. On the other hand, it has been proved that risk management has a significant positive impact on enterprise value, such as McShane (2011) using the enterprise risk management rank of standard Poor's rating as the variable to measure the implementation of ERM, and proved the positive role of traditional risk management behavior to enterprise value. Don Pagach et al (2010) take CRO as an symbol of enterprise implement ERM, Hoyt & Liebenberg (2010, 2011) regard ERM as dummy variable to study its impact on the Tobin Q, and both confirmed its positive impact. Wang Wen & Wang Dong (2013) also take the establishment of CRO as an sign for enterprise implementation risk management, through empirical testing to prove the effectiveness of the enterprise risk management .

By this taken, the domestic and foreign researches for the implementation of risk management for the enterprise value and the realization of the enterprise's goal are still in controversy. Above all, the paper puts forward the hypothesis 1:

H_{1a}: other conditions remain unchanged, ERM and enterprise value has no significant impact

H_{1b}: other conditions remain unchanged, ERM and the value of enterprises have a significant impact

2.2 Executives Incentives

As the most scarce resource in the new economic era and the most dynamic factor in the modern economic growth, the human capital of entrepreneur also has the characteristic of marginal return increases progressively. At the same time, it's found that: as the key human capital of the enterprise, the executive can or not play a very important part in the daily management of the enterprise be affected by a lot of factors, and executives incentives is the most direct one. In the early 1970s, Jensen and Meckling (1976) proposed "Efficient Incentive Hypothesis" which proposed that high monetary compensation and equity incentive is an effective mechanism to ease the conflicts of interest between executives and shareholders. However, excessive or inadequate incentives may bring serious entrenchment effect (Demsetz, 1983), namely, once the executive stock ownership incentive reached a certain limit, they will have enough influence and control, and it's unnecessary to worry about be fired by anyone, at the same time, even they will embezzle company resources, undermine company value and shareholders interests, so as to achieve the purpose of executives "fatten themselves", therefore, executive incentive has two sides.

Under the impact of the financial crisis, most of listed company has formed a sharp contrast between the downturn operating performance and the substantial private benefits of executives. Lots of executives on-the-job consumption level continues to rise, and the continuous improvement of the office environment optimization and private compensation, making about limits on executive "astronomical compensation" calls one after another, all "limit pay initiatives" becomes more and more popular. Whereas, academics generally believe that the compensation incentives have important or even crucial impact on the top executives risk management behavior. Stulz (1984) proposed that executive compensation contract is a key factor in the convergence of the interests of

executives and shareholders. Smith and Stulz (1985) suggested that taking executive's personal wealth utility is concave into account, the shareholders may offset executive risk aversion degree through adjusting the structure of salary. Kahneman (1990) mentioned that the higher level of monetary remuneration of senior executives is, the more risk averse they will have. At the same time, even Tufano (1996) had considered that the risk aversion level (which related with the stock and option) is the main determinant of enterprise risk management policy. To this century, the researches on this aspect are still more, Daniel A. Rogers (2002) proposed that the risk aversion degree is closely related with the salary contract, and directly decide senior management's style, namely the risk averse, neutral or lovers.

Different from foreign research, domestic research mainly focused on the implementation conditions and effects of executive incentive, and studies showed that if the conditions are different, the incentive effect is also significantly different. Qu Liang et al. (2010) found executive compensation has a nonlinear "U" effect on the firm value. Li Weian et al. (2010) pointed out that the rise of executive compensation reflects the growing demand of senior executive talent in market, but the corporate governance mechanisms which was designed to constrain executive rights has not yet played an effective role. Wang Yanni (2011) drew a conclusion that a positive correlation between the long-term equity and short-term incentives with R & D investment executives. Luo Jinhui (2014) did many empirical studies and putted forward that hired high-profile independent director in the listed companies has significantly lower executive pay-performance sensitivity. So we reached the research hypothesis 2:

H₂: The higher executive compensation incentive is, the stronger risk aversion tendency will be, and the positive correlation between enterprise risk management behavior and enterprise value will be more weak.

With the continually developing of our joint-stock system reforming and practicing in our country, the executive stock ownership generally from the internal employee stock instead of the market directly, also it is not allowed to transfer in the term of office. The separation of the equity liquidity has fundamentally damaged the consistency of the shareholders interests in listing corporation. In addition, the financial enterprise's executives holdings are showing some new features because of the financial industry's special nature, specific performance in the general and intensity of senior's holdings. For example, the holding proportion of financial executives in China is relatively lower than other industries, the average shareholding level is only about 0.064% in this paper's samples, on the contrary, the samples be collected from reference 12 which excluding the financial sector samples in listed companies, their holdings universality in cross-sectional data and panel data had reached 67.75% and 72.14%, and their average shareholding level have arrived about 0.5%. The huge difference between different industry is very obvious.

Meanwhile, Chinese academics have different ideas with stock-ownership incentive effect. It is believed that convergence of interest effects could reduce the agency conflict, and improve the company's risk tolerance level as well as risk control ability. The conflict source of target function between the senior managers and shareholders is their residual claim right and residual control right are not match either. Therefore, senior's holdings can alleviate the agency costs to a certain extent, and prompt the principal-agent interests converge on both sides. Such as Shen Hongbo (2012) proposed that equity incentives can motivate executives and companies to share profits, risks, and eliminate short-term behavior of executives, thus contribute to the enterprise long-term development; Some people thought that the entrenchment effect will depress the risk management and risk taking level when executives shareholding ratio exceeds a certain limit. Sun Yongxiang et al (1999) found that with the increasing of the first major shareholders proportion, taking 50% as the boundary points, the Tobin's Q will rise at first and then fall. Besides. there is a view that risk aversion hypothesis now is dominant, they believed that the measure of executives can get share makes their human capital focused on a certain company, their degree of wealth decentralization might be cut down, and increase their extent of risk aversion. Many independent directors are senior executives at the same time in other companies, they have potential motivation to transmit their decision-making expert reputation in the human capital market, which will largely determine their current and future career prospects, so they also tend to be conservative in risk management. Followed which the paper put forwards hypothesis 3:

H_{3a}: the higher the equity incentive is, the more weak positive correlation between enterprise risk management behavior and enterprise value will be

H_{3b}: the higher the equity incentive is, the more stronger positive correlation between enterprise risk management behavior and enterprise value will be.

3 Research Design

3.1 Data Sources and Sample Selection

Even though there are few cases of enterprise risk management implementation in China, the financial companies because of its special nature in industry have generally established a risk management positions or departments. This article takes the 44 financial enterprises in Shanghai and Shenzhen two markets as the research sample, and collected recent six years (2008-2013) annual report data to analyze the impact of executive incentive on the reflected coefficients between ERM and the value of the enterprise. Sample data are mainly derived from the database Resset and Guo Tai'an in China.

3.2 Variable Definition and Model Design

3.2.1 Dependent Variable

Most empirical research on risk management in domestic and international countries regard Tobin's Q as an important indicator of enterprise value, therefore this paper also uses Q value to measure the enterprise value.

3.2.2 Independent Variable

The ERM index used in this paper is based on the structure method of the risk management index in the American Standard and Poor 's rating. It's constructed with the targets of strategy, operation, reporting, compliance, finance and corporate social responsibility (CSR) which be referred by the "COSO framework" (Note 2) and existing research results, the reference could show the details.

Generally, executive incentive can be divided into executive compensation incentive and executive equity incentive. The methods of measuring executives compensation in literature generally include the natural logarithm of the top three executives salaries or the top three directors or the natural logarithm of all directors, supervisors and senior executive compensation's sum. Although there are some differences in the form of measurement in different documents, it is essentially a general estimation of senior executives salary. This text will take the first method to express the level of executive compensation incentive.

As for the executive equity incentive, someone regards the number of ownership, and also some works take the proportion of management shareholding (namely, the corporate executives holding shares and total number of shares ratio) or incentive intensity of managers to measure it. Taking the objectivity of the incentive intensity into account, this writing uses the executive incentive intensity index to evaluate the variable of executive equity incentives by reference (Xue Youzhi & Li Guodong, 2009).

The executive incentive intensity = Executive team's value of stock market/ The summaries of executive team total Cash

3.2.3 Control Variable

On the basis of predecessors' research results, the article apply some control variables such as the enterprise scale, the board monitoring, financial leverage, the character of property rights and the political connections to the regression model. Specific definitions are shown in Table 1.

Table 1. Variable Definitions

Variables	Name	Illustration
Q	Enterprise Value	Tobin's Q
ERM	Enterprise Risk Management	As shown in the formula 1 and references Lin Zijing & Wang Qian
$LnCOMP1$	Executive Compensation Incentive	The natural logarithm of the top three executives salaries in their annual reports
$lnMTID$	Executive Equity Incentive	As shown in this paper 3.2.2
FS	The Enterprise Scale	The natural logarithm of of total assets of the company
MBD	The Board Monitoring	$MBD = \frac{\text{The number of independent directors}}{\ln(\text{operating receipt})}$
DE	Financial Leverage	Total assets/Total liabilities
$STATE$	the Character of Property Rights	If nation-owned shares in joint-stock company are more than corporate shares, the value is 1, otherwise is 0
$Political$	the Political Connections	Executives which are associated with the person who had worked or working in government officials, people's congress or CPPCC and so on, the value is 1, otherwise is 0
$Year_t$	Years	During 2008-2013, $t=1,2...5$

3.2.4 Model Design

The data in this text are panel data, in order to reduce possible multi-collinearity between public data, we take

some logarithmic transformation with the model, namely using linear logarithmic regression model. At first, it's necessary to decide the type of panel data model. And the commonly used methods contain F test and Hausman test. F statistics often be used to decide whether choose a mixture model or a individual effect model, and Hausman statistics is an inspection index to decide whether to establish the random effects model or individual effect model. Specific test results shown in table 2.

In this paper, it has discovered that the F statistics is significantly greater than 0.05, also it's satisfied with $F > F_{0.05}(12, 218) \approx 1.55$ in the log linear regression model between the ERM index and the enterprise value Q. And that's to say, it can not accept the original hypothesis, the effect of individual fixed effects model is better than the mixed one. Meanwhile, owing to the arbitrary value of Hausman statistics in Table 2 are all satisfied with $H > \chi_{0.05}^2(12) = 21.026$, therefore, it cannot be assumed that the original hypothesis, Hausman test results indicate that the individual fixed effect model should be chose.

Table 2. The results of F test and Hausman test

F test			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	6.459751	-42,163	0.000
Cross-section Chi-square	213.641601	42	0.000
Hausman test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	41.894695	12	0.000

Consequently, four equations are built as follows: the first logarithmic regression equation be set by two important independent variable of executive incentive and risk management; the second one take the interaction variable of them as another independent variable to research the regulation effect of executive incentives; the third equation including the square item of ERM; and the last one contains the square item of ERM and the interaction variable of them, it has studied the nonlinear relationship of the main variables, and also took the adjustment effect of the executive incentive into account. Specific formulas displayed by (1):

$$\begin{aligned}
 LnQ_{it} &= \alpha_0 + \alpha_1 LnERM_{it} + \alpha_2 LnX_{it} + \alpha_3 FS_{it} + \alpha_4 MBD_{it} + \alpha_5 STATE_{it} + \alpha_6 DE_{it} + \alpha_7 Political_{it} \\
 &+ \alpha_8 \sum Year_i + \epsilon_{it} \\
 LnQ_{it} &= \alpha_0 + \alpha_1 LnERM_{it} + \alpha_2 LnX_{it} + \alpha_3 LnERM_{it} * LnX_{it} + \alpha_4 FS_{it} + \alpha_5 MBD_{it} + \alpha_6 STATE_{it} \\
 &+ \alpha_7 DE_{it} + \alpha_8 Political_{it} + \alpha_9 \sum Year_i + \epsilon_{it} \\
 LnQ_{it} &= \alpha_0 + \alpha_1 LnERM_{it} + \alpha_2 LnX_{it} + \alpha_3 LnERM_{it} * LnERM_{it} + \alpha_4 FS_{it} + \alpha_5 MBD_{it} + \alpha_6 DE_{it} \\
 &+ \alpha_7 STATE_{it} + \alpha_8 Political_{it} + \alpha_9 \sum Year_i + \epsilon_{it} \\
 LnQ_{it} &= \alpha_0 + \alpha_1 LnERM_{it} + \alpha_2 LnERM_{it} * LnERM_{it} + \alpha_3 LnERM_{it} * LnX_{it} + \alpha_4 LnX_{it} + \alpha_5 FS_{it} \\
 &+ \alpha_6 MBD_{it} + \alpha_7 STATE_{it} + \alpha_8 DE_{it} + \alpha_9 Political_{it} + \alpha_{10} \sum Year_i + \epsilon_{it}
 \end{aligned}
 \tag{1}$$

Among them, according to the above hypothesis, X on behalf of the executive compensation incentive and equity incentive, as independent variable they wouldn't appear the same equation simultaneously. α is the regression coefficient of variable, i refers to the number of enterprises, t means the year.

3.3 Descriptive Statistics

Table 3 is a descriptive statistical result with all variables. The average value of Tobin's Q is 1.37, and the median is 1.0766, it means that more than half of the financial enterprises investment return rates are rather high, at the moment, most of them have a strong motivation to enter the capital market to get arbitrage and realization^[22].The distribution of ERM index in this industry is relatively large, and the mean is only 0.0138. In

the previous text had referred that ERM only as a standard of corporate risk management, its actual value isn't very significant, and in the subsequent empirical research the natural logarithm of ERM value was found to be more appropriate compared with ERM. However, executives in different enterprises pay different level. The average value of top three executives compensation in financial industry had arrived about 7.05 million RMB in China, while the gap between the highest and lowest value in the sample had achieved a dozen times or even a hundred times, whose polarization is very serious. As for the executive stock ownership incentive is obvious different with other industries, the proportion of the financial industry executives in China is lower than other industries, and the general level of ownership is rather lower.

Table 3. Descriptive statistical result of variables

Variables	Samples		Mean	Standard Deviation	Minimum	Maximum	Percentiles		
	Valid	Missing					25	50	75
LnQ	233	31	0.1594	0.5079	-3.6519	2.7531	0.0076	0.0738	0.2598
LnERM	222	42	-0.8466	1.0892	-4.0410	4.6022	-1.2907	-0.8788	-0.5476
LnCOMP1	247	17	15.4189	0.9581	12.0197	17.6416	15.0641	15.5148	15.9992
lnMTID	245	19	1.7545	9.4993	0	114.78	0	0	0.0359
FS	233	31	25.6376	2.9463	15.7695	30.5711	23.5969	25.4884	28.1101
MBD	232	32	0.4617	0.1227	0.1745	0.7645	0.3526	0.4502	0.5509
STATE	246	18	0.3	0.46	0	1	0	0	1
DE	231	33	0.7438	0.2176	0.0259	0.9682	0.5798	0.8265	0.9381
Political	241	23	0.57	0.496	0	1	0	1	1

Simultaneously, the correlation coefficient matrix is reported in Table 4:

Table 4. Pearson correlation coefficient matrix of the variables

Variables	LnQ	LnCOMP1	MTID	lnERM	FS	MBD	STATE	DE	Political
LnQ	1								
LnCOMP1	-0.008	1							
lnMTID	-0.006	0.051	1						
lnERM	-.322**	-.316**	-0.081	1					
FS	-.223**	.498**	0	-0.049	1				
MBD	-.189**	.426**	0.109	-.134*	.460**	1			
STATE	-.138*	-0.017	-0.017	-0.002	-0.027	-0.077	1		
DE	-.181**	.479**	0.043	0.126	.559**	.443**	-0.07	1	
political	-0.097	.220**	0.057	-0.107	.197**	0.065	-0.1	0.108	1

Note. * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

It's well know that other variables basically does not exist obvious collinear relationship with each other, in addition to the enterprise scale FS and financial leverage ratio DE correlation coefficient > 0.5 and significant from table 4.

4. Empirical Study

4.1 Regression Results

The multiple regression model of this article is completed in Eviews6.0, and the result of the formula (1) is shown in table 5.

Table 5. Regression results of ERM and executive incentive to enterprise value

Variables	First-order Regression Model				Quadratic Regression Model			
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8
	LNCOMP1	LNCOMP1	lnMTID	lnMTID	LNCOMP1	LNCOMP1	lnMTID	lnMTID
(Constant)	0.059 (1.035)	0.168*** (3.289)	0.066 (1.168)	0.079 (1.359)	0.227*** (3.962)	0.212*** (3.889)	0.227*** (4.047)	0.231*** (4.028)
lnERM	-0.386*** (-6.083)	-0.155** (-2.5)	-0.389*** (-6.427)	-0.364*** (-5.486)	-0.182*** (-2.804)	-0.124** (-1.979)	-0.168*** (-2.633)	-0.16** (-2.378)
lnERM *lnERM					-0.163*** (-6.729)	-0.066** (-2.182)	-0.162*** (-6.823)	-0.162*** (-6.743)
LNCOMP1	0.018 (0.217)	-0.204*** (-2.596)			-0.058 (-0.75)	-0.184** (-2.355)		
lnERM *LNCOMP1		0.318*** (8.229)				0.245*** (4.844)		
lnMTID			-0.035 (-0.616)	0.076 (0.559)			-0.035 (-0.681)	0.003 (0.024)
lnERM *lnMTID				0.156 (0.904)				0.054 (0.342)
FS	-0.324*** (-3.3)	-0.622*** (-6.714)	-0.327*** (-3.386)	-0.331*** (-3.421)	-0.583*** (-6.011)	-0.659*** (-7.062)	-0.603*** (-6.268)	-0.603*** (-6.254)
MBD	-0.201*** (-3.061)	-0.083*** (-1.411)	-0.199*** (0.002)	-0.205*** (-3.163)	-0.141** (-2.339)	-0.085 (-1.465)	-0.154*** (-2.63)	-0.156*** (-2.645)
STATE	-0.096 (-1.625)	-0.077 (-1.498)	-0.086 (-1.438)	-0.081 (-1.364)	-0.118** (-2.205)	-0.09** (-1.763)	-0.111** (-2.054)	-0.109** (-2.014)
DE	0.124 (1.285)	0.296*** (3.417)	0.131 (1.374)	0.134 (1.406)	0.238*** (2.657)	0.303*** (3.527)	0.227*** (2.596)	0.228*** (2.598)
Political	-0.105 (-1.673)	-0.112** (-2.052)	-0.095 (-1.521)	-0.098 (-1.563)	-0.144** (-2.515)	-0.126** (-2.318)	-0.14** (-2.449)	-0.14** (-2.455)
R ²	0.297	0.472	0.3	0.302	0.425	0.484	0.431	0.431
Δ R ²	0.256	0.439	0.258	0.257	0.388	0.449	0.394	0.391
F	7.217*** (0.0000)	14.04*** (0.0000)	7.235*** (0.0000)	6.735*** (0.0000)	11.584*** (0.0000)	13.618*** (0.0000)	11.758*** (0.0000)	10.879*** (0.0000)
N	218	218	216	216	218	218	216	216

Note. The dependent variable of models are LNQ, and the number under the variable in bracket is t statistics.

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

Thus it can also be seen that the regression coefficient of model 7 and 8 can be improved by 0.425 and 0.431 respectively compared with 0.297 in model 1 and 0.3 in model 2 from table 5, and the fitting effect of the model is developed compared with the former. At the same time, obviously, ERM has a significant inverted U-shaped relationship with the enterprise value, and the significance level can achieve to 0.01, so the previous hypothesis H_{1b} (ERM has a significant impact to the enterprise value) has been verified. That's to say, the seniors may undertake some risk management and control under the pressure of the interests relevant parties, and also the actions will be conducive to the improvement and enhancement of corporate value. However, the executives have the motivation of risk rejection, agency problem and choice tendency which born with will accompany with them every now and then, and it is ultimately realized in the performs poorly risk management work, or even deliberately ignored risk management. Even if they had done some works, because of the enterprise want pursuit personal gain and self reputation, just as expected, this essential property also make the function of the risk management built on stilts, so it's harmful to corporate value. This empirical result also provides a reasonable

explanation for the phenomenon why there are so many different research conclusions.

Executive compensation incentive has an significant impact on the modulation effect of the reflected coefficient between ERM index and enterprise value. It means that when the degree of top executives incentives become weak, on the contrary, the risk management behaviors will happen with increasing frequency and improve reflected coefficients between enterprise value and ERM, and it's contributive to raise enterprise value, the hypothesis 2 was proved. In comparison with the executives pay incentives, executive stock ownership incentives have positive impact on the enterprise value whether in model 4 or 8, and empirical verified partially by the hypothesis 3. Namely, on the average risk management level, the executive stock ownership incentive has a positive moderating effect on the reflected coefficient between ERM and the enterprise value, so the higher the equity incentive is, the more stronger positive correlation between enterprise risk management behavior and enterprise value will be, but the performance is still not significant. The conclusion also have revealed that the compensation incentive is more effective than the equity incentive for making executives pay attention to risk management. If enterprises don't have adequate ability to resist the risk, and they are urgent to improve the current risk management situation at this time, with the research result, we can infer that taking the way of executive compensation incentive may be more rapid and effective than the way of the use of equity incentive. However, because of the invert U shaped relationship between ERM and the enterprise value, it can not be fully achieved the goal with blindly to incentive by compensation, also it's possible to bring about the decline in corporate performance and the spread of the agency problem. The conclusion of this paper provides some references for the practice of risk management in financial enterprises and executive incentive.

As for control variables, the relationship between FS and the enterprise value is significant and robust even though when $\alpha=0.01$. It's suggests that this kind of company have small company effect compared with foreign companies due to the special nature of the financial industry, management model by financial firms and the less developed market environment in China. Furthermore, the monitor from board of directors was proved have significantly negatively affect to the enterprise value, so the number of independent directors is not the more the better. Meanwhile, Luo Jinhui (2014) had found that human relationship director and "vase director" flooded in China, the original intention of company will end in smoke for what intended to hire director to oversight the executive management behavior and alleviate the agency problem among them. For the financial leverage ratio, the character of property rights and the political connections are all performed obviously in the nonlinear regression. Because of the differences in the capital structure among each company, every one has the different ability to use the funds provided by the creditors to engage in the production and management activities, which leads to the higher financial leverage ratio, but to a certain extent, it's beneficial to improve the enterprise value. Moreover, the state-owned property rights and political connection with the government will not give any extra promotion to enterprise value. And from the long-term view of the enterprise practice is also not conducive to the improvement of enterprise value. Although the enterprises have impulse to seek political connection to obtain the "political rents" and "economic rents", the market experiences had proved that the lack of free competition of enterprises in market is difficult to achieve sustainable business.

4.2 Discussion of Empirical Results

In this text, we had studied the executive incentive influence on the relationship between risk management and enterprise value, which has important theoretical and practical significance. Firstly, risk management is one of the key factors for the sustainable management and development of enterprises, and it played a very important role in the future development of enterprises; Secondly, executives occupies a high position, as the senior executive of the company, they directly determines the company's direction in the future and strategy choice. Enterprise risk management is a pattern that surround with the core objective of enterprise management and development, and take actions in view of the whole procedure. The attention of the top manager to the enterprise risk management will be helpful to the effective implementation of the enterprise risk management policies and measures. Thirdly, the reason why the enterprises take risk management is various, but the essence of enterprise risk management is to reduce the expected loss caused by risk, enhance the possibility of enterprise income, and achieve the purpose of promoting enterprise value.

There are four reasons why we choose the financial industry as a research sample, the first one is their special position and role in the economic development. As the core development of national economy, the financial industry is the key link to contact all aspects of it, and it's the driving force of the national economy in a virtuous circle. The second cause is that the accounting system be adopted by the financial industry is different from others because of the characteristic and operation content of the enterprise, which makes the empirical research risk management in China is few. Thirdly, existed studies have little consideration to executive incentive if it has any economic benefit of risk management, and academic circles haven't consistent conclusion of the executive

incentive effectiveness. The paper offered empirical evidence of executive incentive impact on risk management behavior, and enrich the related research. The fourth reason is that even if the case of enterprise risk management is not enough, the financial firms are all required to set risk management positions or department by its industry particularity and national regulatory request. Therefore, take them as research targets have feasibility and practical significance. Furthermore, the conclusions of this work have some reference for the design of senior executives incentive contract, the sustainable development of enterprises and enterprise risk management behavior.

The main work and contributions of this thesis contains that: (1) we had collected empirical data of listed companies in financial industry during 2008-2013, and tested respectively whether executive compensation incentive and equity incentives have an significant impact on the modulation effect of the reflected coefficient between ERM index and enterprise value. We also studied the relationship of the executive incentive and ERM influence on corporate value. And the results had shown that a inverted “U” shaped non-linear curve exists from the relationship between ERM and corporate value, when it exceeds a certain level, ERM will come into being an significantly diminishing marginal effect. (2) Compared with the executive equity ownership, executive compensation incentives’ positive regulation influence is more significant, this words were support the effective motivation view of Jensen who as the representative to some extent.

4.3 Robust Test

We test the the results robustness by replacing the main regression variables. Let ROA (Return of Assert) take the place of Tobin’s Q which represent the enterprise value, take the natural logarithm of all directors, supervisors and senior executive compensation’s sum (namely LnCOMP2) and the proportion of management shareholding (namely MSID as LnCOMP1 and MTID respectively for regression again, the results are consistent with table 5, which shows the robustness of the conclusions of this paper. And empirical results of the main variables are briefly reported here.

Table 6. The results of robust test

Variables	Model1.1	Model1.2	Model1.3	Model1.4	Variables	Model2.1	Model2.2	Model2.3	Model2.4
lnERM	0.095 (1.57)	-0.111* (1.818)	-0.108* (1.798)	-0.132** (2.1)	lnERM	-0.171*** (-2.666)	-0.003 (-0.065)	-0.177*** (-2.766)	-0.07* (-1.752)
LnERM^2	-0.119*** (-5.334)	-0.088*** (-2.99)	-0.117*** (-5.314)	-0.115*** (-5.173)	LnERM^2	-0.159*** (-6.487)	-0.055*** (-3.035)	-0.161*** (-6.712)	-0.051*** (-3.193)
LnCOMP1	-0.037 (-0.525)	-0.077 (-1.029)			LnCOMP2	0.024 (0.332)	-0.058 (-1.166)		
LnERM *LnCOMP1		0.077 (1.595)			LnERM *LnCOMP2		-0.369*** (-15.079)		
LnMTID			0.062 (1.306)	0.189* (1.686)	LnMSID			-0.056 (-0.921)	-0.331*** (-8.174)
LnERM *LnMTID				0.179 (1.251)	LnERM *LnMSID				-3.454*** (-18.115)
R ²	0.479	0.485	0.481	0.485	R ²	0.423	0.728	0.426	0.78
Δ R ²	0.445	0.449	0.447	0.449	Δ R ²	0.387	0.709	0.389	0.765
F	14.258	13.523	14.255	13.386	F	11.524	38.815	11.622	51.54
F_P	0.000	0.000	0.000	0.000	F_P	0.000	0.000	0.000	0.000
N	216	216	214	214	N	218	218	218	218

Note. The dependent variable of model1.1-1.4 and model2.1-2.4 are LnROA and LNQ respectively, and the number under the variable in bracket is t statistics. *, **, *** indicates significance at the 10%, 5%, and 1% levels respectively.

From table 6 we can see that the model regression results of ROA which has replaced Tobin’s Q are basically consistent with the original model. ERM and enterprise value still show obvious inverted U shaped nonlinear relationship, that is, when it exceeds a certain level, ERM will come into being an significantly diminishing marginal effect. But the difference is that the executive incentives’ modulation effect in this model is not very good, and the regression effect is far less than the former. In addition to the basic conclusion, the model also presents a new feature, which is that the effect of executive compensation incentive and equity incentive nearly

same, and the later one's square of R has a significant improvement, which is also a optimization of regression model effect. And also further proved the positive role of the executive incentive in the reflected coefficient between risk management and enterprise value.

5. Research Conclusion

Top executives incentives design and risk management are important contents of corporate governance research. The article explored the deep mechanism of ERM to enterprise value from the perspective of executive incentives in financial firms, and divided executive incentives into compensation incentives and equity incentives specifically, at the same time took the executive incentives as regulated variable to study the relationship between risk management and enterprise value. The paper collected empirical data of listed companies in financial industry, and found a inverted "U" shaped non-linear curve exists from the relationship between ERM and corporate value, which is more further than the previous research; Secondly, when the degree of top executives incentives become weak, on the contrary, the risk management behaviors will happen with increasing frequency and improve reflected coefficients between enterprise value and ERM, and it's contributive to raise enterprise value. However, this influence is weak and not significant for executive equity incentive. Based on the phenomenon that few empirical data studies take top level manager incentives' economic benefit into account in risk management, results of the paper provides the empirical evidence of the influence between executive incentive and ERM in financial companies and enriched the relevant researches. In addition, this empirical results provide some references for the financial enterprise risk management application and the practice of executive incentive.

References

- Beasley, M., Pagach, D., & Warr, R. (2008). Information conveyed in hiring announcements of senior executives overseeing enterprise-wide risk management processes. *Journal of Accounting, Auditing & Finance*, 23(3), 311-332. <http://dx.doi.org/10.1177/0148558X0802300303>
- COSO. (2004). Enterprise Risk Management--Integrated Framework: Application Techniques. Committee of sponsoring organizations of the tread way commission. <http://dx.doi.org/10.1002/9781119201939.app4>
- Gordon, L. A., Loeb, M. P., & Tseng, C. Y. (2009). Enterprise risk management and firm performance:A contingency perspective. *Journal of Accounting and Public Policy*, 28(4), 301-327. <http://dx.doi.org/10.1016/j.jaccpubpol.2009.06.006>
- Hoyt, R. E., & Liebenberg, A. P. (2011). The value of enterprise risk management. *Journal of Risk and Insurance*, 78(4), 795-822. <http://dx.doi.org/10.1111/j.1539-6975.2011.01413.x>
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure. *Journal of Financial Economics*, 3(4), 305-360. [http://dx.doi.org/10.1016/0304-405x\(76\)90026-x](http://dx.doi.org/10.1016/0304-405x(76)90026-x)
- Kleffner A. E., Lee R. B., & McGannon, B. (2003). The effect of corporate governance on the use of enterprise risk management: Evidence from Canada. *Risk Management and Insurance Review*, 6(1), 53-73. <http://dx.doi.org/10.1111/1098-1616.00020>
- Lan, Y. J. (2002). Theoretical Basis and Policy Choice about Inspiritment Restriction Mechanism of Human Capital of Entrepreneur. *The Journal of Quantitative & Technical Economics*, 2, 15-17. <http://doi.org/10.3969/j.issn.1000-3894.2002.02.004>
- Li, W. A., Liu, X. G., & Chen, J. H. (2010). Manager talents, corporate governance and reference point: the determinants of executive compensation in Chinese listed firms. *NanKai Business Review*, 2, 4-15.
- Li, X. R., & Zhang, R. J. (2014). Equity incentives influence risk-taking: Agency cost or risk averse? *Accounting Research*, 1, 57-63. <http://doi.org/10.3969/j.issn.1003-2886.2014.01.009>
- Lin, Z. J. (n.d.). The ERM evaluation of non-financial enterprises in China and its influence on the enterprise value. University of Xiamen
- Luo, J. H. (2014). The star effect of independent directors: from managerial pay-performance sensitivity perspective. *NanKai Business Review*, 3, 62-73.
- McShane, M. K., Nair, A., & Rustambekov, E. (2011). Does enterprise risk management increase firm value. *Journal of Accounting, Auditing & Finance*, 26(4), 641-658. <http://dx.doi.org/10.1177/0148558x11409160>
- Qu, L., & Ren, G. L. (2010). An empirical study on the relationship between top management compensation and equity incentives and corporate value. *Modern Economic Science*, 5, 73-79

- Quon T. K., Zeghal D., & Maingot, M. (2012). Enterprise risk management and firm performance. *Procedia-Social and Behavioral Sciences*, 62, 263-267. <http://dx.doi.org/10.1016/j.sbspro.2012.09.042>
- Rampini A. A., & Sufi, A., & Viswanathan, S. (2014). Dynamic risk management. *Journal of Financial Economics*, 111(2), 271-296. <http://dx.doi.org/10.1016/j.jfineco.2013.10.003>
- Shen, H. B., Pan, F., & Gao, X. Z. (2012). Institution environment and the incentive effects of managerial ownership. *China Industrial Economics*, 8, 96-108.
- Smith Jr., C. W., & Stulz, R. M. (1985). The determinants of firms' hedging policies. *Journal of Financial and Quantitative Analysis*, 20, 391-405. <http://dx.doi.org/10.2307/2330757>
- Stulz R. M. (1984). Optimal hedging policie. *Journal of Financial and Quantitative Analysis*, 19, 127-140. <http://dx.doi.org/10.2307/2330894>
- Stulz R. M. (1996). Rethinking risk management. *Journal of Applied Corporate Finance*, 9(3), 8-25. <http://dx.doi.org/10.1111/j.1745-6622.1996.tb00295.x>
- Sun, Y. X., & Huang, Z. H. (1999). The study on the equity structure and performance of the Listing Corporation. *Economic Research Journal*, 12, 23-39.
- Tufano, P. (1996). Who manages risk? An empirical examination of risk management practices in the gold mining industry. *Journal of Finance*, 51, 1097-1137. <http://dx.doi.org/10.1111/j.1540-6261.1996.tb04064.x>
- Wang W., & Wang, D. (2013). Examination of effectiveness of enterprise risk management based on the perspective of value of company. *Journal of China University of Geosciences (Social Sciences Edition)*, 13(5), 121-129.
- Wang, Q., Liu, C., Luo, Z. C., & Guan, H. S. (2015). The financial firms' ERM level and it's effects on firm performance. *Finance and Accounting Monthly*, 18,124-129
- Wang, Y. N. (2011). The influence of top management incentives on R&D investment—evidence from listed manufacturing companies in China. *Studies in Science of Science*, 29(7), 1071-1078.
- Xue, Y. Z., & Li, G. D. (2009). Diversification strategy, managerial ownership status design and corporate governance. *Journal of Management Science*, 2, 2-13.
- Ye, J. F., Chen, X. (2008). The research on the influence of the top management share holding on the enterprise value--Evidence from a high-tech industry listing Corporation. *Research on Financial and Economic Issues*, 3, 101-108.
- Zhang, J., Huang, Z. Z. (2014). Top level manager incentives, opportunistic earnings management and audit fees -perspective from heterogeneity of earnings management. *NanKai Business Review*, 3, 74-83.
- Zhang, S. (2006). The empirical test of the relationship between the level of profitability and market value of listing Corporation in China. *Securities Market Herald*, 6, 6-9.

Notes

Note 1. It's drawn from <http://money.163.com/>

Note 2. The COSO framework was erected by Committee of Sponsoring Organization(referred to as COSO), it has announced the "internal control-integrated framework" and "enterprise risk management framework" in 1992 and 2004 respectively, the "COSO framework" refers to the latter generally.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).