The design of the stockholder's rights drive model

based on combination reward contract

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Abstract: This paper, from the perspective of economics and management, and mainly from the perspective of economics, conducts an exploratory research on the managerial incentive and constraining mechanisms in listed companies. This paper analyzes the population conditions of investment, financing, annual salary and stock option of the listed company in China. The paper designs the combination salary model which combines the annual salary and stock option. The listed companies of China have prodigious disfigurement in finance incentive mechanism, which is incentive deficient and constrain weak. The purpose of this paper is to design the stockholder's rights drive model based on combination reward contract. The results show that the listed companies in China prefer comparatively to the stock right financing and the listed companies' operators are not reason in investment. So it is designed the combination salary model which combines the annual salary and stock option. And it would be enlarging the liabilities financing to governing it. The paper puts forward essential factors which constitute the financial evaluation system and the measures which perfect and optimize the obvious incentive and hidden incentive, helping the listed companies to explore specific models in compensation design.

Key words: companies; incentive mechanism; finance governance; China

1. Introduction

The machine-made financial drive system of the corporations in the limited market have a lot of serious flaw in China, such as driving the serious insufficiency and the restraint feels weak worn out. There are different special interest groups in the enterprise interior, such as investor and producer and so on. Sometimes these special interest groups' benefit conflict mutually and contradictorily. The enterprise cannot be in favor of one hand benefit and be harm for the other hand benefit. Only to establish the mechanism to drive operator, can it achieve the balance in various special interest group[1]. Under the situation of the natural benefit goal inconsistent in the owner with the operator, how to arouse operator's enthusiasm fully and make them to choose voluntary behavior and the decision which conforms to the owner benefit, it should be the topic meaning in studies on the operator drive mechanism[2]. And it also has the extremely significant significance to the reality.

2. On the present situation of the financial drive

In China the operator's financial drive of limited cooperation pattern is mainly two kinds: One is the annual salary system; and the other is the stock option. But whether the annual salary system or the stock option pattern both have certain problems.

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2.1 Present situation and existence problem of the annual salary system

The annual salary system is the system which takes the year as the unit to decide the salary. The operator annual salary system refers that the enterprise takes the year as the unit to determine operator's reward, and provide the risk income by regarding its management achievement[3]. The annual salary system alters the contract income which the operator received from the fixed way to unfixed way. But as the same as the traditional wages and the bonus, it still is paid before that the enterprise distributes the dividend to the shareholder. Because the annual salary system implements in China for quite a short time, it has some problems inevitably, such as: (1) Insufficient consummation and nescience of inspection target system determined; (2) The contradiction between entrepreneur marketability and government appointment; (3) The lower and insufficient drive to the operator of annual salary; (4) Being in contradiction with traditional culture; (5) Information are not asymmetrical, etc.

The limited corporation's operators have grasped the information of the enterprise management condition, but the multitudinous shareholders only can understand the operating condition of the enterprise through the public information which provides by the operator[4]. Therefore the operator may use its information superiority to operate the company, preserve and distribute income easily, and create the way of gaining illegal income for oneself. Under the condition of the information distributing unsymmetrically, the annual salary system is very difficult to avoid the operator to hide the income completely.

2.2 Stock option and existence problem

The stock option gives the operator (the option price) the right to purchase certain quantity of the company share in future period of time according to the stipulation price. To implement the stock option drive mechanism to the market company's operators, it would be advantageous to reduce the proxy to spend, to correct manager's superficially psychology, and enhance the enterprise's cohesive force. But it also can increase the cost the operator to leave the job.

Certainly it doesn't mean that the stock option legality itself has no disadvantage. It has some problems, such as:

(1) Rising in stock price being non-operator diligently factor

In many situations, the rising of the stock price is not because of operator's endeavor, but possibly because of the changing of macroscopic economy, the adjusting of profession structure, even because the short-term congenial is in vogue and so on. Therefore, it would be possibly to have the behavior of the operator while vehicle.

(2) Original shareholder's property rights being quilt "dilution"

The stock option plan has a certain extent influence to the enterprise original shareholder's benefit. This kind of influence mainly displays in the possible meeting "the dilution". But, because the proportion of many company's stock option quantities which occupies the total stock number smaller than 1%, this kind of influence is extremely small.

(3) Contradiction in stock option and stock price distortion

Level of market stock price is incompletely orderly undulation, sometimes it is not necessary to reflect the company's achievement and investment value. Thus it causes the company image to be influence, and operator's personal interest also can have certain loss. In addition, because the incentive system and the company gain the suspension hook, if the operators can make the company's each profit to elevate to a certain level in the stipulation time, then may obtain the stock[5]. Since the achievement does not certainly have the fundamentals to progress, and each profit may operate in secret through all sorts of methods, therefore, the operator also possibly obtains

rewards.

(4) The bought stock option is possibly declined

Once the economy is not booming or the company does not manage the strength, the bought stock option would be largely declined, and it affects the stability of the staff troop. When the company stock price falls, the bought stock option would depreciate greatly; many staffs even face the unemployment. This kind of phenomenon especially is serious in the network company. When the stock price declines, many companies buy stock actually by the lower price to release the option and avoid the staff suffering the company's bad benefit. The partial companies also rework out the bought stock option price, and it makes up the staff's loss[6], this has completely violated the original intention of the bought stock option to reward the benefit.

3. Design on combination reward contract model

Looking from the assignment of surplus demands the power, it mainly has two ways, one is the design of gaining sharing contract, and the other is the introduction of stock option. From relations between the listed company's shareholders and manages superintendents, it needs to restructure the reward contract on unifying the two ways above to solve this problem.

In the design of regarding combination reward contract, the idea mainly is based on the client and agent model. It discusses that how the trustee designing a kind of the combination reward contract to reduce the proxy cost, it mainly includes unifying the short-term drive and the long-term drive under the unsymmetrical information condition.

3.1 Supposition model

It is the supposition that the trustee takes the maximal profit as their only goal. The agent's main source of income is original in trustee's compensation. Simultaneously it suppose that the trustee is the risk neutral, the agent is the risk loathing[7]. Thus, agent's utility function is an index, it shows as follow:

$$U(w) = -\exp(-rw) \tag{1}$$

This kind of utility function is widely applied, its superiority lies in the absolute risk loathing is the continues r value, which shows as follow:

$$r = -\frac{U''(w)}{U'(w)} \tag{2}$$

In the formula: r is used to weight absolute risk loathing degree; W represents salary.

The agent's cost function is a quadratic equation, it shows as follow:

$$C(e) = \frac{k}{2}e^2, k > 0 \tag{3}$$

In the formula (3): $C(0) = 0, C'(e) = ke > 0$, This indicates that the agent jumps over diligently and its cost is bigger. $C''(e) = k$, this indicates agent's marginal cost is growing.

But the agent's diligence may not be observed visually, the profit is the only variable which may be observed. The profit maybe expressed as follow:

$$x = e + q \tag{4}$$

In the formula (4): q represents the disturbing variable, it obeys the normal distribution: $q \approx N(0, s^2)$, e is for the agent's endeavor.

3.2 The design of stock option

Regarding the stock option design, this article will use the ordinary theory of Black-Scholes[8]. The option price-make model is to calculate. Then the option is shows as follow:

$$V = V_0 N(d_1) - Be^{-rt} N(d_2) \tag{5}$$

In which:

$$d_1 = \frac{In(V_0 / B) + (r_1 + 0.5d^2)T}{d\sqrt{T}} \tag{6}$$

$$d_2 = \frac{In(V_0 / B) + (r_1 - 0.5d^2)T}{d\sqrt{T}} = d_1 - d\sqrt{T} \tag{7}$$

In the formula (5), (6), (7): V_0 means the sign property, it is the company's overall value. B represents the price of the option carried out, and here it is namely for the book value of the zero interest coupon bond. T means the time from now to the option due date, here it is the debt due date. r represents the non-risk continual yearly compound interest during a limited time of the option. d represents the risk of sign property, it is expressed as the standard deviation of the company's annual total property return ratio here.

3.3 Combination reward contract design

The combination reward contract should be composed by two parts, one is the cash part, such as C; the other is the stock option part, such as W. If m is designed as the proportion of stock option, and some overseas real diagnosis research indicated that the linear model has certain representation. Then the combination reward contract should be showed as follow:

$$S = C + mW \tag{8}$$

Suppose the cash should be made up of two parts, such as a and b. a means the salary part of contract provision, and b means the salary variable which weighs how it carry on the change with the achievement changes. Then:

$$S = a + bV + mW \tag{9}$$

The equation which maximize the trustee's profit shows as follow:

$$\begin{aligned} Max_{\alpha,\beta,m} E(\pi) &= E[(1-\beta)x - \alpha - mW] \\ &= E[(1-\beta)(e+\theta) - \alpha - mW] \\ &= (1-\beta)e - \alpha - mW \end{aligned} \tag{10}$$

From the formula (10): we can see that the trustee profit maximization is limited by two factors: the drive restraint limit and the participated restraint limit.

Drive restraint limit means that, because of the asymmetrical information between the trustee and agent, the agent will make its expectation effectiveness maximal under the assigned drive plan. It can be expressed as follow:

$$MaxU[S - C(e)] \tag{11}$$

Participates in the restraint limit, the agent must be able to achieve some kind of smallest expectation cost. The expression is:

$$U[S - C(e)] \geq \overline{U} \tag{12}$$

To solve the above equation, the best parameter may be obtained. Thus, the best proxy cost would be obtained, and the most superior contract on combination reward would be designed.

4. The financial appraisal system on combination reward contract

The relations between shareholder and operational manager is a kind of client and agent relation. According to the most superior drive contract in the request and agent model above, it is not difficult to discover that the shareholder and the operational manager would undertake the risk together, and the most superior drive contract also indicates that the effort level of operator is the key link of coordinate assignment between them. Then how to evaluate operator's effort level? Speaking theoretically, it is mainly to evaluate the operational manager's achievement. But there are a series of problems to evaluate its achievement. It is mainly showed as follow:

(1) Choosing of evaluation target

Different evaluation targets have different influence on the effort level of the manager, then influence drives contract. Thus it would cause the drive effect to be influenced.

(2) Combination method of evaluation target

After selecting evaluation target, an important problem is carrying on the combination to them. And then it would be considered that the different target combination method would be used in the corresponding different drive combination.

(3) Constructing of evaluation system

According to the evaluation target and the combination method, it obtains the financial appraisal system which adapts for the Ltd. in Chinese.

The Accountant target mainly carries on appraisal to the operational achievement of manager of the enterprise. Looking from the target system of Ltd., it will be mainly explained by several targets. According to nine target system which was promulgated by national ministry department of finance, the accountant target will be divided into five kinds: gaining ability, transport business ability, paying off debt ability, the managing ability and developing ability. From these five aspects, it can be done to carry on a quite comprehensive inspection to the enterprise and design a set of accountant target appraisal system to the Ltd.. An accountant index appraisal system of the Ltd. is designed. It shows as follow:

Table 1   An accountant index appraises system of the listed company

Appraise content	Fundamental index	Reckoning
Gaining ability	Total assets earning ratio	Operating income and average total assets proportion
	Net asset earning ratio	Net profit and average net asset proportion
	Income cost ratios	Operating cost and income proportion
Serving ability	Total assets turnover rate	Net profit and average total assets proportion
	Rate of inventory turnover	Operating cost and average goods in stock proportion
Liquidity	Ratio of assets to liabilities	the debt to assets proportion
	Current ratio	Currency assets and the current liabilities proportion
Managing ability	Administration cost growth rate	The administration cost accrual and administration cost last year proportion
	Operating cost growth rate	the operating cost accrual and cost last year proportion
	Net profit growth rate	The net profit accrual and net profit last year proportion
Developing ability	Total assets growth rate	the increased assets and assets last year proportion
	Income from sales of products growth rate	the increased sales volume and sales volume last year proportion

5. Conclusions

The operator financial drive is a major issue to healthy development of enterprise, the financial drive mechanism needs to be consummated and optimized. In constructing the financial evaluation system, it is supposed to pay attention to some premise factors. And the dominant financial drive mechanism should assume the dynamic pattern with the appraisal system which revises mutually, whether the financial drive mechanism can display the ideal effect or not, it also needs to improve the information transmission function of Chinese stock market and founds the effective manager market positively. Whether the debt finance plays the positive role or not, it is not only decided by the quantity of financial fund, but also decided by the government financial mechanism. The mature and perfect government mechanism is the foundation and premise which makes the debt financing get positive effect, therefore, in order to make the recessive finance drive the mechanism more effectively, it must be done to make the government debt financial mechanism consummate and perfect.

References:

[1] Holmstrom. (1979). Moral Hazard and observability. *Bell Journal of Economics*, (10), 74-91.

[2] Dewatripont, Tirole. (1999). A theory of debt and equity: Diversity of securities and manager-shareholder congruence. *Quarterly Journal of Economics*, *109*.

[3] YANG Shu-jun, WANG Li-jing, HUANG Qun-hui. (2000). Establishes the effective drive restraint mechanism of operators in state-owned enterprise. *Chinese Soft Sciences*, (6).

[4] LI Heng, etc. (2002). *Entrepreneur mechanism theory during reforming time.* In: CHENG Si-wei. (Ed.). Beijing: Renmin University of China Publishing House.

[5] ZHANG Tao, WEN Xin-san. (2002). *Research on enterprise achievements appraisal.* Beijing: Economic Science Publishing House, 22-43.

[6] HUANG Qun-hui. (2002). Achievement appraisal and excitability of state-owned enterprise operator reward system. *China Industry Economy*, 6

[7] FENG Qiao-gen. (2002). Constructing of the drives mechanism. *Annual Meeting of Chinese Accountant Faculty*, 17-32.

[8] Antonio E. Bernardo, CAI Hong-bin, LUO Jiang. (2001). Capital budgeting and compensation with asymmetric information and moral hard. *Journal of Financial Economics*, (61), 311-344.

(Edited by Frank and Lily)