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Research on corporate social responsibility for employees based on principal agent model

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ABSTRACT

In the current background of social development, the corporate social responsibility for employees has become increasingly prominent. So in this paper, establish the principal-agent model between the government and the enterprises to research three cases of government regulation of the background: One is that the government can supervise the corporate activities. The other is that the government can not supervise the corporate activities. The third one is the introduction to other variables. In these cases, this paper discusses the optimal incentive contract, finally it draws that the government incentive contract should consider the external factors and risk sharing in order to improve the efforts of enterprises, increase social benefits, and reduce agency cost.

KEYWORDS

Corporate social responsibility; Employees; Government; Principal agent; Enterprises.



INTRODUCTION

In modern society, the idea of people-oriented is changing the enterprise from the pursuit of interests to the social responsibility. At the same time, many enterprises have gradually realized that employees have an important influence on the development of enterprises long-term^[1]. And they are also an important source of the enterprise competitive advantage. From the SA8000 social responsibility system to the legal system is increasingly perfect, and it is also reflected that corporate social responsibility on employees' attention is more. At present, migrant workers are more and more attention, because they are supporting a large part of Chinese enterprise employees. In some regions of China will still appear to labor shortage after the Spring Festival. The National Bureau of Statistics recently released data show, in 2012 China's 15 - 59 working age population decreased by 3450000, this is a quite long period of time the first absolute decline.

From 2010 to 2020, the population of working age will be reduced by about 29000000 that will have a significant impact on economic growth^[2]. So, the enterprise must prevent the loss of staffs and reduce the cost of human resources, the enterprise must face with the follow-up to deal with the impact on possible future of the shortage of personnel. The better way to solve this problem is that government regulation enterprises fulfill their social responsibility for employees increasingly prominent.

According to the actual situation of China, in order to ensure the enterprise social responsibility to its employee to get better effect, the regulation by the government is necessary^[3]. As the social management, the characteristics of the laws and regulations promulgated by the government of authoritative, mandatory, can restrain enterprise good behavior^[4]. The government should find the balance between the enterprise and staff in order to promote the development of enterprises and ensure the progress of the society. Therefore, the government has an important role in the enterprise social responsibility to employees.

The principal-agent hypothesis between government and enterprises

In the course of the government to enterprises to promote social responsibility for employees, the agency relationship exists on government and business. The government has issued some regulations forced enterprises to fulfill social responsibility for employees, such as the "Labor Law", "Labor Contract Law", "Trade Union Law" and so on. Between the government and the enterprise is information asymmetry, and supervising cost of government is limited. The enterprise can hide their own behavior, government can not fully aware the extent of the efforts of the staff corporate social responsibility. So, government and corporate exist of the hidden action of moral hazard, and as the government must formulate a scientific and reasonable incentive contracts that encouraging enterprises to actively participate in the^[5]. Use the optimal principal-agent model to research the optimal incentive contract issues^[6].

Hypothesis

Hypothesis 1: The economic efficiency of enterprises and enterprise 's efforts, the social security level of employees, and the concern of staff for the enterprise to fulfill the social responsibility is related. At the same time, the economic efficiency of enterprises is related to other uncertain factors, such as changes in national policies, natural disasters. So we can assume that A for the enterprise to variable dimension; θ is not affected by the uncertain external factors control the enterprises, and the mean value is 0, variance is normally distributed random variables σ^2 ; r is the concern of the staff of the enterprise to fulfill the social responsibility, $r > 0$; a, r, θ determine the directly benefit companies $x(a, r, \theta)$, it can be said that the economic benefits of the enterprise based on the Cobb Douglas production function: $x = Aa^k r^h + \theta$

Among them A is the current level of social security, $k + h > 1$, a, r is beneficial to economic output, k, h are respectively, correlation coefficient.

Hypothesis 2: According to the principal-agent theory, the principal is risk neutral, the agents are risk averse. Having the advantage of information asymmetric in trading one is the agent, the other party is the principal. Compared with the information and benefit information costs of enterprises, government policies and laws and regulations is public information, so the government is the principal, the enterprise is the agent, namely the enterprise risk aversion coefficient is constant, the utility function is $\mu = e^{-\rho w}$, $\rho > 0$ is the measure of absolute risk aversion, w is the actual monetary income.

Hypothesis 3: The assumption that the government has issued a document, standardize enterprise on employee commitment to social responsibility, and there is a corresponding punishment measures, government and enterprises to make incentive contract. Suppose the government only cares about the social level of output, it will first make a corporate employee social responsibility standards, such as the training expenses, employee benefits, wages, social insurance payment rate, then according to the situation of the implementation of reward and punishment, so can set up the incentive contract for: $S(\pi) = \alpha + \beta(\pi - \alpha)$

The incentive contract consists of two parts: One part is according to the standard of enterprise level a government efforts to bring social benefit just meet the government standard α , the enterprise should enjoy the normal social subsidy or preferential treatment. Another part is that the efforts for the enterprise level a generating beyond or below standard obtain the rewards and punishment, if the rewards and punishment coefficient is $\beta \in R, 0 \leq \beta \leq 1$, it reflects the government and the enterprises in sharing the agent risk relationship, so beyond the reward is $\beta(\pi - \alpha)$.

The government and corporate revenue function

$$C(a) = m + \frac{1}{2}ba^2$$

Cost function of corporate :

$C(a)$ is the enterprise effort equivalent monetary cost, m is the corporate fixed cost, b is the cost coefficient, $b > 0$, b is higher, brought more negative utility.

Revenue function of corporate

Corporate revenue it is the economic benefits and government incentives and benefits, minus the cost of corporate. Based on the above assumption, The revenue function of corporate is

$$w = x + S(\pi) - C(a) = Aa^k r^h + \theta + \alpha + \beta(\pi - \alpha) - m - \frac{1}{2}ba^2$$

Because the corporate is risky to assume social responsibilities to employees in the process, so the equivalent profit corporate is that the expected benefit minus cost of risk enterprises.

$$Ew - \frac{1}{2}\rho\beta^2\sigma^2 = Aa^k r^h + \alpha + \beta(la - q - \alpha) - m - \frac{1}{2}ba^2 - \frac{1}{2}\rho\beta^2\sigma^2$$

Return function of government

Government as principal hope enterprise can bring more social benefits to the society, so the government revenue to pay for social enterprises to bring social benefits minus government incentive cost and the cost of supervision, the government expected return is equal to the expected utility, so the enterprise social responsibility to employees benefit is $\pi(a, \theta)$, l is a social benefit coefficient associated with the efforts of variables, $l \in R, l \geq 0$; The government is responsible for the supervision and inspection of enterprises, to ensure the implementation of corporate social responsibility to employees, so the government supervision cost can be set as q , π is the social benefit output function: $\pi = la + \theta$.

Eventually the government for revenue function:

$$Ev(\pi - q - S(\pi)) = E(\pi - q - \alpha - \beta\pi + \alpha\beta) = (1 - \beta)(la - \alpha - q)$$

The government can fully supervise the efforts of enterprises to undertake the social responsibility to employees

Supervision in the government through its own set of supervision departments, formulate the corresponding system on the activities of enterprises, which is between the government and the enterprise information is symmetric, then the incentive constraints are of no avail.

The optimal condition is the enterprise and the government also maximize their own interests. Assuming the enterprise to the cost benefits is w^0 , if the equivalent profit enterprises is less than w^0 , then the government incentive is not working, only when the enterprises in the process of social responsibility to employees in the benefit is greater than w^0 , the incentive contract is effective, so the participation constraints of the enterprises can be expressed as

$$Aa^k r^h + \alpha + \beta(la - q - \alpha) - m - \frac{1}{2}ba^2 - \frac{1}{2}\rho\beta^2\sigma^2 \geq w^0$$

The government's optimal choice problems is to establish reasonable α, β , and monitoring the efforts of enterprises choose reasonable, so the optimization problem is stated as follows:

$$\max_{\alpha, \beta} Ev = (1 - \beta)(la - \alpha - q)$$

$$s.t. (IR) Aa^k r^h + \alpha + \beta(la - q - \alpha) - m - \frac{1}{2}ba^2 - \frac{1}{2}\rho\beta^2\sigma^2 \geq w^0$$

Under this condition, the government does not need to pay more costs to the enterprise, the corporate can achieve the minimum standards of social responsibility to employees to assume the responsibility of the government of α . So α can be brought to the objective function, in order to simple calculation, according to the production function, $k + h > 1$ is a scale, having a promoting effect on output, therefore can be set to $k = h = 1$, the problem can be simplified as:

$$\max_{\alpha, \beta, a} Aar + la - q - m - \frac{1}{2}ba^2 - \frac{1}{2}\rho\beta^2\sigma^2 - w^0$$

The above shows that the enterprise income minus the costs to maximize, and because of the government's revenue will reach the maximum at the same time, namely the final enterprise income and government cost is equal, so the first order conditions: $a^0 = (Ar+l)/b, \beta^0 = 0$.

The above results into the enterprise participation constraints, it can get the Pareto optimal contract, optimal incentive contract of enterprise government:

$$\alpha^0 = w^0 + Aar + m + \frac{1}{2}ba^2 = w^0 + Ar \frac{Ar+l}{b} + m + \frac{(Ar+l)^2}{2b}$$

The results show: when achieving Pareto optimal state, it means that enterprises will not bear any risk, as long as the government paid to the enterprise is just equal to the minimum income of enterprises and employees to take responsibility to get extra income. When the entrepreneur's effort is less than a^0 , the government pay should be less than a^0 , more than w^0 , but enterprises will choose the effort of a^0 , because the profit is the biggest. In addition, the government can effectively supervise the activities of enterprises, establish a good image of the government, promote the development of enterprises, but also get public recognition, so Pareto optimal condition above is of practical significance.

The government can not fully supervise the efforts of enterprises to undertake the social responsibility to employees

If the government can't effort supervision enterprises. It is under the condition of information asymmetry, the government could not observe the efforts of enterprises, so that enterprises will choose the appropriate a , equivalent income to determine their maximum, the obtained:

$$a = (Ar + \beta l) / b$$

Thus it can be seen that the effort level is composed of two parts: One is the enterprise employee recognition Ar/b , the other part is for obtain assume social responsibility to employees get reward and effort $\beta l/b$. When $\beta = 0$, then $\alpha = Ar/b$. The efforts of the enterprise is entirely in order to obtain employee recognition, therefore, incentive enterprises as the optimal problem, the government is that:

$$\max_{\alpha, \beta, a} Ev = (1 - \beta)(la - \alpha - q)$$

$$s.t. (IR) Aar + \alpha + \beta(la - q - \alpha) - m - \frac{1}{2}ba^2 - \frac{1}{2}\rho\beta^2\sigma^2 \geq w^0$$

$$(IC) a = \frac{Ar + \beta l}{b}$$

The participation constraint and incentive constraints take into the objective function, get

$$\max_{\beta} \frac{Ar + \beta l + A^2 r^2 + Ar \beta l^2}{b} - q - m - \frac{(Ar + \beta l)^2}{2b} - \frac{1}{2}\rho\beta^2\sigma^2 - w^0$$

$$\text{The first order conditions: } \beta = l^2 / (l^2 + b\rho\sigma^2) > 0$$

From the above result, enterprises will take some risk when they take on the social responsibility of the staff. The size of the risk β and cost coefficient b , social benefits l , risk aversion coefficient ρ , random variable σ^2 are related. It is negatively related to β and ρ, σ^2, b , The enterprise less risk averse, bear the greater the risk of employee social responsibility. When the enterprise bear the social responsibility to employees of effort, external uncertainty is very sensitive, affected by external conditions greatly. So the key is to balance between the incentive contract and risk. That is to say the government should determine a reasonable β , it can guide the enterprises to bear the social responsibility of the staff.

$$a = \frac{Ar}{b} + \frac{l^3}{b(l^2 + b\rho\sigma^2)}$$

And further calculation can be obtained for the efforts of enterprises:

It can draw that a and A, r, b, ρ, σ, l are related. The government is not able to control the ρ . But the government through policy changes, tax concessions, enable enterprises to reduce costs b , further reduced σ^2 . And it can make social

benefit coefficient l increases and improve the social public attention r , Further improve the social management of A , this will increase the effort level of the enterprise.

The government can't supervise the activities of enterprises, there will be two types of costs: One kind is the risk cost, for the enterprise is the risk income, for the government is the cost of risk, because it unable to reach Pareto optimal risk sharing generated; one is the incentive cost, it is caused by the enterprise of the high and low levels of effort return. If the total agency cost is Q , then $Q = R + I = R + E - C$. Among them, the incentive cost is expected net loss of output E enterprises and efforts to save the cost of C . The solving procedure is as follows:

From the above we can get risk cost: $R = 1/2\rho\beta^2\sigma^2 = l^4\rho\sigma^2/2(l^2 + b\rho\sigma^2)^2 > 0$

$$a = \frac{Ar + \beta l}{b} = \frac{(l^2 + b\rho\sigma^2)Ar + l^3}{b(l^2 + b\rho\sigma^2)} \leq \frac{Ar + l}{b} = a^0$$

The entrepreneur's effort:

That is to say in the case of non symmetric optimal effort level is less than the effort level under the symmetric information, the enterprise expected output net loss:

$$E = a^0 - a = \frac{Ar + l}{b} - \frac{(l^2 + b\rho\sigma^2)Ar + l^3}{b(l^2 + b\rho\sigma^2)} = \frac{l\rho\sigma^2}{l^2 + b\rho\sigma^2} > 0$$

Efforts to save the cost of C :

$$C = C(a^0) - C(a) = \rho\sigma^2[lb\rho\sigma^2(2Ar + l) + 2l^3 + 2Ar^2]/2(l^2 + b\rho\sigma^2)^2$$

$$\text{Incentive cost : } I = E - C = \rho\sigma^2 l(2l^2 + 2b\rho\sigma^2 - lb\rho\sigma^2 - 2l^3 - 2Arb\rho\sigma^2 - 2Ar^2)/2(l^2 + b\rho\sigma^2)^2$$

$$\text{Total agency cost : } Q = R + I = \rho\sigma^2 l(2 - l - 2Ar)/2(l^2 + b\rho\sigma^2)$$

Therefore, the positive and negative total agency cost is determined by the size of the relationship between l, A, r , that is to say the total agency cost and social benefit coefficient, the level of social security and the degree of social concern for employees are related. Because the total cost for the $Q = R + I = R + E - C$, when the total agency cost is greater than 0, it is explained that the enterprise needs to pay the agency cost, effort cost savings can not make up for the other two costs. When the total agency cost is less than 0, it indicates that the enterprise to cost savings can offset the cost of risk and expected output losses, it is explained that the enterprise has a certain profit in the asymmetric information. When the total agency cost is 0, explained that the enterprise did not gain no loss.

Analysis of the influence of external conditions on the incentive contract

Assume, z is another enterprise thae the government is able to observe the social responsibility benefits for employees, and it is not associated with the efforts of enterprises of the variables, but it is related to θ , obey normal distribution, so $E(z) = 0, D(z) = \sigma_z^2$

Then the incentive contract is that: $S(\pi, z) = \alpha + \beta(\pi - \alpha + \gamma z)$

Among them, γ is the gain coefficient that it is related to z . When $\gamma = 0$, z is independent of the enterprise' income. At this time, the optimal problem of government is the selection of suitable α, β, γ , it can be obtained by the equivalent income for the enterprise:

$$Aa^k r^h + \alpha + \beta(la - q - \alpha) - m - \frac{1}{2}ba^2 - \frac{1}{2}\rho\beta^2 \text{Var}(\pi + \gamma z)$$

$$= Aa^k r^h + \alpha + \beta(la - q - \alpha) - m - \frac{1}{2}ba^2 - \frac{1}{2}\rho\beta^2(\sigma^2 + \gamma^2\sigma_z^2 + 2\gamma \text{cov}(\pi, z))$$

Among them, $\text{cov}(\pi, z)$ is the covariance between π and z , the enterprise income is more than w^0 , it will get the participation constraints:

$$Aa^k r^h + \alpha + \beta(la - q - \alpha) - m - \frac{1}{2}ba^2 - \frac{1}{2}\rho\beta^2(\sigma^2 + \gamma^2\sigma_z^2 + 2\gamma \text{cov}(\pi, z)) \geq w^0$$

In the contract, any incentive given, the enterprise will choose an appropriate level of effort to maximize their income. So the optimization: $a = (Ar + \beta l)/b$

Because the variable z has nothing to do with a , γ does not affect the efforts of enterprises, the result is the same with that the government is not able to supervise the activities of enterprises. So it is the incentive constraints.

The government's expected revenue is: $Ev(\pi - S(\pi, z)) = (1 - \beta)(la - \alpha - q)$
 So, the participation constraint and incentive constraints take on the type to get:

$$\max_{\beta, \gamma} l \frac{Ar + \beta l}{b} + Ar \frac{Ar + \beta l}{b} - q - m - \frac{1}{2} b \frac{(Ar + \beta l)^2}{b^2} - \frac{1}{2} \rho \beta^2 (\sigma^2 + \gamma^2 \sigma_z^2 + 2\gamma \text{cov}(\pi, z)) - w^0$$

Because z and expected income is independent, the government will choose γ to minimize the cost of risk cost, the first order conditions optimal is:

$$\frac{l^2 - \beta l}{b} - \rho \beta (\sigma^2 + \gamma^2 \sigma_z^2 + 2\gamma \text{cov}(\pi, z)) = 0 \quad \gamma \sigma_z^2 + \text{cov}(\pi, z) = 0$$

The solution: $\beta = l^2 / [l^2 + b\rho(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2)]$ $\gamma = \text{cov}(\pi, z) / \sigma^2$

When π, z are not related, that is $\text{cov}(\pi, z) = 0, \gamma = 0$, it can be obtained α, β , the result is the same with that the government is not able to supervise the activities of enterprises.

When π, z is positive correlation, that is $\text{cov}(\pi, z) > 0, \gamma < 0$, it can be drawn: when $z > 0$, it is said that the condition of outside is good, the enterprise obtained the income but not necessarily pay the effort degree is high, it can only be just good luck. When $z < 0$, and vice.

When π, z is negative correlation, that is $\text{cov}(\pi, z) < 0, \gamma > 0$, it can be drawn: when $z > 0$, it is said that external conditions are bad for enterprises, so the government should increase to the enterprise incentive compensation. When $z < 0$, and vice.

Easy to prove:
$$\beta = \frac{l^2}{l^2 + b\rho(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2)} > \frac{l^2}{l^2 + b\rho\sigma^2}, \text{var}(S(\pi, z)) < \text{var}(S(\pi))$$

Under a contract can derive the total agency cost, the solving procedure is as follows:

Risk cost:
$$R = \frac{1}{2} \rho \text{var}(S(\pi, z)) = \frac{\rho l^4 (\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2)}{2(l^2 + b\rho(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2))^2}$$

Expected output net loss:
$$E = \frac{Ar + l}{b} - \frac{Ar + \beta l}{b} = \frac{l\rho(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2)}{l^2 + b\rho(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2)}$$

Incentive cost:
$$I = E - C = \frac{(2Ar\beta\rho + 2l^4\rho)(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2) + (2Ar\beta^2 + l^2b\rho^2)(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2)^2}{2(l^2 + b\rho(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2))^2}$$

Total agency cost:
$$Q = R + I = \frac{(3l^4\rho + 2Ar\beta\rho)(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2) + (2Ar\beta^2 + l^2b\rho^2)(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2)^2}{2(l^2 + b\rho(\sigma^2 - \text{cov}^2(\pi, z) / \sigma_z^2))^2}$$

Comparison of calculated by two different kinds of incentive contract results can be obtained: In the $S(\pi, z)$ contract, risk cost and incentive costs are small, only $\text{cov}(\pi, z) = 0$, the agency cost of two cases is the same. In the setting of incentive contract, considering the external conditions can reduce the risk undertaken by the enterprise and enhancing the enterprise that can gain. At the same time, the government also can reach the ideal state own. That is to say, when $\text{cov}(\pi, z) \neq 0$, the government can use external conditions z , to set the incentive contract and write it into the contract.

CONCLUSIONS

The government can't effort supervision enterprise good social responsibility on the staff of the situation, and the enterprise and the government is pursuing its own benefit maximization of economic subject. Carrying out social responsibility to employees in the enterprise has the certain difficulty for the government, so the government should establish the reasonable incentive mechanism. Government to formulate a reasonable incentive mechanism mainly must pay attention to three aspects to consider:

One is to consider how to improve the working level of enterprise. Efforts of enterprises and many factors are closely related, among others factors that the government can control is to reduce parts of the enterprise to improve the enterprise's cost of effort.

On the other hand are that considers how to share the risk problem. Because enterprises will assume certain risks, similarly, risk and many factors are related, it and enterprise cost is negatively correlated, reducing the cost of enterprise can make the risk between enterprise and government to share the optimized. So the government should do that it is through some preferential tax policy, subsidy mechanism to reduce the cost of enterprises, in this way it can enhance the efforts of

enterprises, risk sharing between the optimization of government and enterprises. it can play the role of incentive contract of real and promote corporate social responsibility to employees process.

Third aspects should pay attention to the cost problem. In the specific formulation of incentive contracts, the government should consider their own cost. It can be drawn from the above analysis, the government in the formulation of incentive contract, the consideration of other factors, can reduce the cost of government. But the premise is the government considering the supervision enterprise factors for the cost is less than the cost savings, if the supervision cost too much, there is no significance, but will reduce government revenue, contrary to the original intention. So the government in the formulation of incentive mechanism should fully consider the cost of its own.

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