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Relational Incentives in Chinese Family Firms

Summary: This paper mainly discusses the choice of managerial compensation contracts in Chinese family firms. Relation or guanxi in Chinese language is an important factor that should be considered because it can bring the shirking cost to the relation-based manager and the caring cost to the owner under Chinese-style differential mode of association ("chaxu geju"). Our theoretical analysis shows that under some conditions it is optimal for the owner to choose the efficiency wage contract, and that under other conditions it is optimal for the owner to choose the share-based incentive contract.

Key words: Managerial compensation, Efficiency wage contract, Share-based incentive contract, Relation (Guanxi), Chinese family firm.

JEL: L20, M21, J33.

This paper focuses mainly on one of specific decesions of Chinese family firms. Although there is no unified definition of the family firm, according to well-known Wikipedia, "A family business is a business in which one or more members of one or more families have a significant ownership interest and significant commitments toward the business' overall well-being." As far as Chinese family firms are concerned, "one or more members of one or more families" usually belong to the same clan. China's private-owned enterprises, especially family firms, play a substantial role in the course of China's miraculous economic development (Martin Whyte 1995; Alistair Anderson et al. 2003; Franklin Allen, Jun Qian, and Meijun Qian 2005), which can be vividly demonstrated by the famous Wenzhou Mode or the more generalized Zhejiang Mode. The reason why these family firms could work so effectively is still remained as a blackbox. In order to open this blackbox, we should focus our attention on the internal organization of Chinese family firms. Just as the Nobel Prize laureate Ronald Coase and his collaborator point out, incentives and relation are indispensible for the successful operation of these firms (Ronald Coase and Ning Wang 2010). In Chinese family firms, relation or guanxi in Chinese language is an important factor that should be considered in the choice of managerial incentive contracts. However, to the best of my knowledge, there is almost no literature paying attention to the choice of relation-based managerial compensation contracts. This paper tries to fill the gap between the relation and the managerial incentives.

There are two strands of literature which are related to our paper. The first strand of literature focuses on the managerial compensation, which can be classified into at least two views (Lucian Bebchuk and Michael Weisbach 2010). One view centers on the optimal contracting (e. g., Bengt Holmstrom 1979), and the other view

concentrates on the managerial power (e. g., Bebchuk and Jesse Fried 2003). According to these two views, when the owner of a Chinese family firm hires a manager to operate his firm, he faces two serious opportunistic problems because of the lack of the effective constraints derived from manager and capital markets. One problem is that the manager may try to shirk, and the other problem is that the manager may misuse his delegated power. In order to solve these two problems, the owner of the family firm has found some institutional arrangements to improve on his bad situations, which conforms to the finding of Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer (1999). One of these institutional arrangements is the so-called discrimination mechanism in the Chinese cultural background, which allows the owner's family member at the same job-position with the hired manager (Minglin Wang and Shengchun Zhou 2005; Jiancai Pi 2008, 2010). In this way, the owner's family member can act as a monitor in general sense. The role of the monitor has been deeply analyzed by Ronald Dye (1986), Roger Congleton (1989), Roland Strausz (1997) and others, especially in the three-layer principal-agent cases. Another of these institutional arrangements is the introduction of relation-based manager, which is just the focus of this paper.

The second strand of literature focuses on the relation-based governance (Shuhe Li 2003; Shaomin Li, Seung Ho Park, and Li 2004), which holds that implicit agreements based on relation play an important role in determining the eventual enforcement outcome. Li (2003) uses the term relation in the sense that the two parties concerned share certain relevant private information about one another locally, which includes ex ante, interim, and ex post monitoring information honoring the contract. According to the analysis of Avinash Dixit (2003), the relation-based governance could be treated as self-governance, which is widely modelled as equlubria in repeated interactions (Michihiro Kandori 1992; Avner Greif 1993, 1994; Glenn Ellison 1994). Li (2003) and Li, Ho Park, and Li (2004) highlight that the relation-based society has some difficulty in transition to the rule-based society, and they view the relation from a macro-perspective. However, they neglect the relation in Chinese family firms at a micro-level. This paper extends their analytical target from the whole society to the family firms. We find that the relr5ation-based governance in Chinese family firms has a specific functioning mechanism, which has been greatly neglected by the existent literature.

The basic idea of this paper is as follows. Since the majority of Chinese family firms are engaged in processing and manufacturing industries, they eagerly need managerial abilities when they grow bigger and bigger and particularly reach a critical scale (Michael Carney 1998). However, the hired manager has serious moral hazard problems due to the deficiencies of law and formal contract enforcement just as we have previously analyzed. In order to reduce the degree of managerial opportunistic behavior, the owner of the family firm has to resort to hiring the relation-based manager. At the same time, in order to better incentivize the relation-based manager, the owner of the family firm has to pick out the optimal managerial compensation contract. There are two popular managerial compensation contracts in Chinese family firms. One is the so-called efficiency wage contract, which specifies that good performance implies high managerial compensation and that bad performance means

low managerial compensation and can be seen as a relatively high-powered incentive arrangement. The other is the so-called share-based incentive contract, which specifies the appropriate proportion that the owner and the relation-based manager obtain and can be regarded as a relatively low-powered incentive arrangement.

The rest of the paper is organized as follows. Section 1 is the basic setup. Section 2 provides the model of the efficiency wage contract. Section 3 offers the model of the share-based incentive contract. Section 4 conducts a comparative analysis of the two different models. Some concluding remarks are made in Section 5.

1. The Basic Setup

In this section, we follow Jean-Jacques Laffont and David Martimort's (2002) analytical framework. It is assumed that the relation-based manager is risk-neutral. If he exerts effort level $e \in \{0,1\}$, the firm's added-value will be $\overline{V}$ with probability $\pi(e)$, and $\underline{V}$ with probability $1-\pi(e)$, where $0<\pi(e)<1$. When the relation-based manager's performance is good, he can get a bonus, which may be a desirable efficiency wage or an appropriate share; however, when his performance is bad, he will not be punished, which signifies he is protected by limited liability. When he exerts no effort, his effort cost is Ψ_0^G. The traditional literature usually sets $\Psi_0^G = 0$ because it does not consider the existence of Chinese-style mutual relation. However, we set $\Psi_0^G \geq 0$, which reflects that there is some kind of spiritual and psychological cost when the relation-based manager shirks. For expositional ease, we call this cost the shirking cost throughout the paper. In essence, the shirking cost in this paper is similar to the uneasiness cost which is defined by Pi (2011). When he exerts effort, his effort cost is $\Psi_1^G = \Psi > 0$. The superscript G denotes relation (or guanxi in Chinese language), and the subscripts 0 and 1 represent $e=0$ and $e=1$, respectively. We assume that $\Psi_0^G < \Psi$, which implies that for the relation-based manager, exerting effort without the pricks of conscience brings more disutility than shirking with guilt at having fallen short of the owner's expectations. The following mathematical definitions should be noted, $\pi(1)=\pi_1$, $\pi(0)=\pi_0$, $\Delta\pi = \pi_1 - \pi_0 > 0$, $\Delta V = \overline{V} - \underline{V} > 0$, $\underline{V} > 0$.

There are two types of contracts that the owner of the family firm can choose from, either an efficiency wage contract or a share-based incentive contract. The Chinese-style relation is two-way. That is to say, the owner and the relation-based manager are tied down to the mutual relation.

Firstly, we consider the case of the efficiency wage contract. When the relation-based manager's performance is good, he will get a high efficiency wage $\overline{t} \geq 0$. When the relation-based manager's performance is bad, he will get a low efficiency wage $\underline{t} \geq 0$, where $\underline{t} \leq \overline{t}$. Although the owner must comply with the efficiency wage contract in order to incentivize the manager, he bears some kind of spiritual and psychological cost resulting from the relation when the relation-based manager

only gets a low efficiency wage. We suppose that this cost is c^G, where $c^G \geq 0$. For the sake of ease of exposition, we call this cost the caring cost throughout the paper.

Secondly, we consider the case of the share-based incentive contract. When the owner and the relation-based manager sign a share-based incentive contract, the owner gets $1-\alpha$ proportion and the relation-based manager obtains α proportion, where $0 \leq \alpha \leq 1$. All the other stipulations are similar to those under the efficiency wage contract except that there does not exist c^G to the owner at all under the share-based incentive contract.

Here, some points about the conception of the shirking cost (Ψ_0^G) and the caring cost (c^G) should be noted. First, these two costs based on relation are related to Xiaotong Fei's (2008) Chinese-style differential mode of association ("chaxu geju"), which is a multi-dimensional structure containing ego-centered relational distances. According to Fei (2008, p. 28), "In Chinese society, the most important relation is similar to the concentric circles formed when a stone is thrown into a lake. ...Everyone stands at the center of the circles produced by his own social influence. Everyone's circles are interrelated. One touches different circles at different times and places." Second, these two costs vary directly with relational distances. Third, different costs correspond to different relational distances, and hence different types of managers and owners. In a well-known economic terminology, these costs are common knowledge between the managers and owners. Fourth, Chinese-style differential mode of association ("chaxu geju") is rooted in Chinese culture, and reflects a special kind of personhood. In a word, these two costs in this paper are used to capture the particular cultural backgound in China.

Furthermore, the shirking cost (Ψ_0^G) can be seen as a proxy for the relation-based manager's reduced degree of moral hazard. The larger the shirking cost, the higher the relation-based manager's reduced degree of moral hazard. When $\Psi_0^G = 0$, the relation-based manager is equivalent to a nonrelation-based manager who is hired from a professional manager market. Similarly, the caring cost (c^G) can be seen as a proxy for the owner's degree of altruism. The larger the caring cost, the higher the owner's degree of altruism. When $c^G = 0$, the owner is completely selfish.

Without loss of generality, no matter when it is under an efficiency wage contract or under a share-based incentive contract, the fixed salary of the relation-based manager is normalized to zero. This normalization can simplify our analysis to the most degree.

The timing of the principal-agent game is as follows.

(i) At *t*=1, the owner offers an efficiency wage contract or a share-based incentive contract to the the relation-based manager;

(ii) At *t*=2, the relation-based manager rejects or accepts the offer;

(iii) At *t*=3, the hired relation-based manager chooses an effort, which is either 1 or 0;

(iv) At *t*=4, the firm's added-value is realized;

(v) At *t*=5, the signed contract is enforced.

2. Efficiency Wage Contract

According to Section 1, when it is under the efficiency wage contract, the programming problem will be:

$$\max_{\{(\underline{t},\overline{t})\}} \pi_1(\overline{V}-\overline{t})+(1-\pi_1)(\underline{V}-\underline{t}-c^G)$$

$$s.t.\quad \pi_1\overline{t}+(1-\pi_1)\underline{t}-\Psi \geq \pi_0\overline{t}+(1-\pi_0)\underline{t}-\Psi_0^G \tag{1}$$

$$\pi_1\overline{t}+(1-\pi_1)\underline{t}-\Psi \geq 0 \tag{2a}$$

$$\pi_0\overline{t}+(1-\pi_0)\underline{t}-\Psi_0^G \geq 0 \tag{2b}$$

$$\underline{t} \geq 0 \tag{3}$$

(1), (2a, b), and (3) are the relation-based manager's incentive compatibility, participation, and limited liability constraints, respectively.

According to the standard incentive theory, it is easy for us to find that constraint (3) is binding, namely $\underline{t}=0$. It is ouvious that $\frac{\Psi-\Psi_0^G}{\Delta\pi} \geq \frac{\Psi}{\pi_1}$ is equivalent to $\frac{\Psi}{\pi_1} \geq \frac{\Psi_0^G}{\pi_0}$, and that $\frac{\Psi-\Psi_0^G}{\Delta\pi} < \frac{\Psi}{\pi_1}$ is equivalent to $\frac{\Psi}{\pi_1} < \frac{\Psi_0^G}{\pi_0}$, which implies that constraint (1) is binding when $\Psi \geq \frac{\pi_1}{\pi_0}\Psi_0^G$ and that constraint (2b) is binding when $\Psi < \frac{\pi_1}{\pi_0}\Psi_0^G$.

Solving this programming problem, we obtain:

If $\Psi \geq \frac{\pi_1}{\pi_0}\Psi_0^G$, then

$$\underline{t}^{E*}=0 \tag{4}$$

$$\overline{t}^{E*}=\frac{\Psi-\Psi_0^G}{\Delta\pi} \tag{5}$$

If $\Psi < \frac{\pi_1}{\pi_0}\Psi_0^G$, then

$$\underline{t}^{E^*} = 0 \tag{6}$$

$$\overline{t}^{E^*} = \frac{\Psi_0^G}{\pi_0} \tag{7}$$

The superscript E^* stands for second-best state under the efficiency wage contract. $\overline{t}^{E^*}$ is the relation-based manager's equilibrium efficiency wage.

If $\Psi \geq \frac{\pi_1}{\pi_0}\Psi_0^G$, then the owner's equilibrium utility will be:

$$U_P^{E^*} = \pi_1 \Delta V + \underline{V} - (1-\pi_1)c^G - \frac{\pi_1(\Psi - \Psi_0^G)}{\Delta\pi} \tag{8}$$

If $\Psi < \frac{\pi_1}{\pi_0}\Psi_0^G$, then the owner's equilibrium utility will be:

$$U_P^{E^*} = \pi_1 \Delta V + \underline{V} - (1-\pi_1)c^G - \frac{\pi_1 \Psi_0^G}{\pi_0} \tag{9}$$

c^G, Ψ, and Ψ_0^G are three parameters which are of relevance for our comparative analysis in Section 4. Through comparative statics, we can obtain Proposition 1.

Proposition 1: When it is under the efficiency wage contract, $\frac{\partial U_P^{E^*}}{\partial c^G} < 0$, $\frac{\partial U_P^{E^*}}{\partial \Psi} < 0$ or $\frac{\partial U_P^{E^*}}{\partial \Psi} = 0$, $\frac{\partial U_P^{E^*}}{\partial \Psi_0^G} > 0$ or $\frac{\partial U_P^{E^*}}{\partial \Psi_0^G} < 0$.

Proof: When $\Psi \geq \frac{\pi_1}{\pi_0}\Psi_0^G$, then from (8), we obtain:

$$\frac{\partial U_P^{E^*}}{\partial c^G} = -(1-\pi_1) < 0,\ \frac{\partial U_P^{E^*}}{\partial \Psi} = -\frac{\pi_1}{\Delta\pi} < 0,\ \frac{\partial U_P^{E^*}}{\partial \Psi_0^G} = \frac{\pi_1}{\Delta\pi} > 0.$$

When $\Psi < \frac{\pi_1}{\pi_0}\Psi_0^G$, then from (9), we obtain:

$$\frac{\partial U_P^{E*}}{\partial c^G} = -(1-\pi_1) < 0\,,\ \frac{\partial U_P^{E*}}{\partial \Psi} = 0\,,\ \frac{\partial U_P^{E*}}{\partial \Psi_0^G} = -\frac{\pi_1}{\pi_0} < 0\,.$$

Proposition 1 implies that U_P^{E*} strictly decreases with c^G, and weakly decreases with Ψ, but is uncertain with regard to Ψ_0^G.

3. Share-Based Incentive Contract

According to Section 1, when it is under the share-based incentive contract, the programming problem will be:

$$\max_{\alpha}(1-\alpha)(\pi_1\overline{V} + (1-\pi_1)\underline{V})$$

$$s.t.\quad \alpha(\pi_1\overline{V} + (1-\pi_1)\underline{V}) - \Psi \geq \alpha(\pi_0\overline{V} + (1-\pi_0)\underline{V}) - \Psi_0^G \tag{10}$$

$$\alpha(\pi_1\overline{V} + (1-\pi_1)\underline{V}) - \Psi \geq 0 \tag{11a}$$

$$\alpha(\pi_0\overline{V} + (1-\pi_0)\underline{V}) - \Psi_0^G \geq 0 \tag{11b}$$

(10) and (11a, b) are the relation-based manager's incentive compatibility and participation constraints, respectively.

It is obvious that $\frac{\Psi}{\pi_1\Delta V + \underline{V}} \geq \frac{\Psi_0^G}{\pi_0\Delta V + \underline{V}}$ is equivalent to $\frac{\Psi}{\pi_1\Delta V + \underline{V}} \leq \frac{\Psi - \Psi_0^G}{\Delta\pi\Delta V}$, and that $\frac{\Psi}{\pi_1\Delta V + \underline{V}} < \frac{\Psi_0^G}{\pi_0\Delta V + \underline{V}}$ is equivalent to $\frac{\Psi}{\pi_1\Delta V + \underline{V}} > \frac{\Psi - \Psi_0^G}{\Delta\pi\Delta V}$. According to the standard incentive theory, it is easy for us to find that constraint (10) is binding when $\frac{\Psi}{\pi_1\Delta V + \underline{V}} \geq \frac{\Psi_0^G}{\pi_0\Delta V + \underline{V}}$ (namely, $\Psi \geq \frac{\Psi_0^G(\pi_1\Delta V + \underline{V})}{\pi_0\Delta V + \underline{V}}$), and that constraint (11b) is binding when

$$\frac{\Psi}{\pi_1 \Delta V + \underline{V}} < \frac{\Psi_0^G}{\pi_0 \Delta V + \underline{V}} \text{ (namely, } \Psi < \frac{\Psi_0^G (\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}}\text{).}$$

Solving this programming problem, we obtain:

If $\Psi \geq \frac{\Psi_0^G (\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}}$, then

$$\alpha^{S*} = \frac{\Psi - \Psi_0^G}{\Delta \pi \Delta V} \tag{12}$$

If $\Psi < \frac{\Psi_0^G (\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}}$, then

$$\alpha^{S*} = \frac{\Psi_0^G}{\pi_0 \Delta V + \underline{V}} \tag{13}$$

The superscript $S*$ stands for second-best state under the share-based incentive contract. α^{S*} is the relation-based manager's equilibrium proportion.

If $\Psi \geq \frac{\Psi_0^G (\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}}$, then the owner's equilibrium utility will be:

$$U_P^{S*} = (1 - \frac{\Psi - \Psi_0^G}{\Delta \pi \Delta V})(\pi_1 \Delta V + \underline{V}) \tag{14}$$

If $\Psi < \frac{\Psi_0^G (\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}}$, then the owner's equilibrium utility will be:

$$U_P^{S*} = (1 - \frac{\Psi_0^G}{\pi_0 \Delta V + \underline{V}})(\pi_1 \Delta V + \underline{V}) \tag{15}$$

Ψ and Ψ_0^G are two parameters related to our comparative analysis in Section 4. Through comparative statics, we can obtain Proposition 2.

Proposition 2: When it is under the share-based incentive contract, $\frac{\partial U_P^{S*}}{\partial \Psi} < 0$ or $\frac{\partial U_P^{S*}}{\partial \Psi} = 0$, $\frac{\partial U_P^{S*}}{\partial \Psi_0^G} > 0$ or $\frac{\partial U_P^{S*}}{\partial \Psi_0^G} < 0$.

Proof: When $\Psi \geq \frac{\Psi_0^G(\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}}$, then from (14), we obtain:

$$\frac{\partial U_P^{S*}}{\partial \Psi} = -\frac{\pi_1 \Delta V + \underline{V}}{\Delta \pi \Delta V} < 0, \quad \frac{\partial U_P^{S*}}{\partial \Psi_0^G} = \frac{\pi_1 \Delta V + \underline{V}}{\Delta \pi \Delta V} > 0.$$

When $\Psi < \frac{\Psi_0^G(\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}}$, then from (15), we obtain:

$$\frac{\partial U_P^{S*}}{\partial \Psi} = 0, \quad \frac{\partial U_P^{S*}}{\partial \Psi_0^G} = -\frac{\Psi_0^G(\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}} < 0.$$

Proposition 2 implies that U_P^{S*} weakly decreases with Ψ, but is uncertain with regard to Ψ_0^G.

4. A Comparative Analysis

In this section, we will conduct a comparative analysis between the outcomes under the efficiency wage contract and those under the share-based incentive contract. It is easy for us to find that $\Psi_0^G < \frac{\Psi_0^G(\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}} < \frac{\pi_1}{\pi_0} \Psi_0^G$. So, there are only three distinct interesting cases that should be paid attention to. According to Propositions 1 and 2, during the course of our comparative analysis, we should focus our attention on c^G, Ψ, and Ψ_0^G.

By comparison, it is easy for us to obtain the following three propositions.

Proposition 3: When $\Psi < \frac{\Psi_0^G(\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}}$, it is optimal for the owner to choose the share-based incentive contract.

Proof: When $\Psi < \frac{\Psi_0^G(\pi_1 \Delta V + \underline{V})}{\pi_0 \Delta V + \underline{V}}$, then from (9) and (15), we obtain:

$$U_P^{E*} - U_P^{S*} = -(1-\pi_1)c^G - \frac{\Delta \pi \underline{V} \Psi_0^G}{\pi_0(\pi_0 \Delta V + \underline{V})} \leq 0.$$

From Proposition 3, we know that when the relation-based manager's shirking cost is large enough (namely, $\Psi_0^G > \frac{\Psi(\pi_0\Delta V + \underline{V})}{\pi_1\Delta V + \underline{V}}$), the owner tends to choose the share-based incentive contract.

The intuition behind Proposition 3 is that when the relation-based manager's reduced degree of moral hazard is high, the owner had better adopt the relatively low-powered incentive arrangement, namely the share-based incentive contract.

Proposition 4: When $\frac{\Psi_0^G(\pi_1\Delta V + \underline{V})}{\pi_0\Delta V + \underline{V}} \le \Psi < \frac{\pi_1}{\pi_0}\Psi_0^G$, if $c^G \le \frac{\pi_0(\Psi - \Psi_0^G)(\pi_1\Delta V + \underline{V}) - \pi_1\Psi_0^G\Delta\pi\Delta V}{\pi_0(1-\pi_1)\Delta\pi\Delta V}$, then it is optimal for the owner to choose the efficiency wage contract; and if $c^G > \frac{\pi_0(\Psi - \Psi_0^G)(\pi_1\Delta V + \underline{V}) - \pi_1\Psi_0^G\Delta\pi\Delta V}{\pi_0(1-\pi_1)\Delta\pi\Delta V}$, then it is optimal for the owner to choose the share-based incentive contract.

Proof: When $\frac{\Psi_0^G(\pi_1\Delta V + \underline{V})}{\pi_0\Delta V + \underline{V}} \le \Psi < \frac{\pi_1}{\pi_0}\Psi_0^G$, then from (9) and (14), we obtain:

$$U_P^{E*} - U_P^{S*} = -(1-\pi_1)c^G - \frac{\pi_1\Psi_0^G}{\pi_0} + \frac{\Psi - \Psi_0^G}{\Delta\pi\Delta V})(\pi_1\Delta V + \underline{V}).$$

If $c^G \le \frac{\pi_0(\Psi - \Psi_0^G)(\pi_1\Delta V + \underline{V}) - \pi_1\Psi_0^G\Delta\pi\Delta V}{\pi_0(1-\pi_1)\Delta\pi\Delta V}$, then we obtain:

$$U_P^{E*} - U_P^{S*} \ge 0.$$

If $c^G > \frac{\pi_0(\Psi - \Psi_0^G)(\pi_1\Delta V + \underline{V}) - \pi_1\Psi_0^G\Delta\pi\Delta V}{\pi_0(1-\pi_1)\Delta\pi\Delta V}$, then we obtain:

$$U_P^{E*} - U_P^{S*} < 0.$$

From Proposition 4, we know that when the relation-based manager's shirking cost is moderate (namely, $\frac{\pi_0\Psi}{\pi_1} < \Psi_0^G \le \frac{\Psi(\pi_0\Delta V + \underline{V})}{\pi_1\Delta V + \underline{V}}$), the owner tends to

choose the efficiency wage contract if his caring cost is sufficiently small (namely, $c^G \le \frac{\pi_0(\Psi-\Psi_0^G)(\pi_1\Delta V+\underline{V})-\pi_1\Psi_0^G\Delta\pi\Delta V}{\pi_0(1-\pi_1)\Delta\pi\Delta V}$), and tends to choose the share-based incentive contract if his caring cost is sufficiently large (namely, $c^G > \frac{\pi_0(\Psi-\Psi_0^G)(\pi_1\Delta V+\underline{V})-\pi_1\Psi_0^G\Delta\pi\Delta V}{\pi_0(1-\pi_1)\Delta\pi\Delta V}$).

The intuition behind Proposition 4 is that when the relation-based manager's reduced degree of moral hazard is moderate and the owner's degree of altruism is low, the owner had better adopt the relatively high-powered incentive arrangement, namely the efficiency wage contract, and that when the relation-based manager's reduced degree of moral hazard is moderate and the owner's degree of altruism is high, the owner had better adopt the relatively low-powered incentive arrangement, namely the share-based incentive contract.

Proposition 5: When $\Psi \ge \frac{\pi_1}{\pi_0}\Psi_0^G$, if $c^G \le \frac{(\Psi-\Psi_0^G)\underline{V}}{(1-\pi_1)\Delta\pi\Delta V}$, then it is optimal for the owner to choose the efficiency wage contract; and if $c^G > \frac{(\Psi-\Psi_0^G)\underline{V}}{(1-\pi_1)\Delta\pi\Delta V}$, then it is optimal for the owner to choose the share-based incentive contract.

Proof: When $\Psi \ge \frac{\pi_1}{\pi_0}\Psi_0^G$, then from (8) and (14), we obtain:

$$U_P^{E*}-U_P^{S*}=-(1-\pi_1)c^G+\frac{\Psi(\pi_0\Delta V+\underline{V})-\Psi_0^G(\pi_1\Delta V+\underline{V})}{\Delta\pi\Delta V}.$$

If $c^G \le \frac{(\Psi-\Psi_0^G)\underline{V}}{(1-\pi_1)\Delta\pi\Delta V}$, then we obtain: $U_P^{E*}-U_P^{S*}\ge 0$.

If $c^G > \frac{(\Psi-\Psi_0^G)\underline{V}}{(1-\pi_1)\Delta\pi\Delta V}$, then we obtain: $U_P^{E*}-U_P^{S*}<0$.

From Proposition 5, we know that when the relation-based manager's shirking cost is small enough (namely, $\Psi_0^G \le \frac{\pi_0\Psi}{\pi_1}$), the owner tends to choose the efficiency wage contract if his caring cost is also small enough (namely, $c^G \le \frac{(\Psi-\Psi_0^G)\underline{V}}{(1-\pi_1)\Delta\pi\Delta V}$), and tends to choose the share-based incentive contract if his

caring cost is large enough (namely, $c^G > \frac{(\Psi - \Psi_0^G)\underline{V}}{(1-\pi_1)\Delta\pi\Delta V}$).

The intuition behind Proposition 5 is that when the relation-based manager's reduced degree of moral hazard is low and the owner's degree of altruism is also low, the owner had better adopt the relatively high-powered incentive arrangement, namely the efficiency wage contract, and that when the relation-based manager's reduced degree of moral hazard is low and the owner's degree of altruism is high, the owner had better adopt the relatively low-powered incentive arrangement, namely the share-based incentive contract.

According to Propositions 3, 4, and 5, we can draw a conclusion that both the shirking cost and the caring cost paly a certain role in the choice of managerial compensation contracts in Chinese family firms.

5. Concluding Remarks

In this paper, we mainly discuss the choice of managerial compensation contracts in Chinese family firms through an improved principal-agent framework. According to Oliver Williamson (1996), there is a fundamental difference between the institutional environment and the institutions of governance, as the former places a curb on the latter. In this paper, the managerial compensation contracts are the institutions of governance, while the imperfect manager and capital markets are the institutional environment in Williamson's sense. It is the external environment that determines the internal incentives of family firms (Mike Burkart, Fausto Panunzi, and Andrei Shleifer 2003) and the feasible actions of family firms (Michael Young et al. 2008). Relation is an important factor that should be considered in the choice of managerial incentive contracts. The reason why relation is very important is that it can bring the shirking cost to the relation-based manager and the caring cost to the owner under Chinese-style differential mode of association ("chaxu geju"). Under some conditions, it is optimal for the owner to choose the efficiency wage contract. However, under other conditions, it is optimal for the owner to choose the share-based incentive contract. In Alfred Chandler's (1977, 1990) language, it is the market pressure that constitutes a major driving force for the family firm to adopt suitable managerial compensation contracts. Siu-lun Wong (1985) argues that Chinese family firms tend to take different incentive structures at various stages of their developmental cycle, which is consistent with our theoretical analysis. In summary, this paper studies the interactions between informal relation and formal incentives. Understanding these interactions is of considerable interest for both academic researchers and policy makers.

By introducing the conception of the shirking cost and the caring cost under Chinese-style differential mode of association ("chaxu geju"), we can obtain different types of managers and owners. The corresponding mathematical treatment method in this paper is greatly different from Dixit (2003) and other existent literature, which may be used as a benchmark framework to deal with the relation-based governance in the future research.

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