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Keywords

Models, trust, sharing, Chinese, private, enterprises

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Models of Trust-Sharing in Chinese Private Enterprises

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ABSTRACT

This paper presents two related models of development patterns of Chinese private enterprises. They illustrate incentive-based reasons for ownership arrangements of private enterprises, and highlight how institutional foundations of trust, particularly government and family-based cultural values, play an important role in influencing the development of private enterprises. These models attempt to explain why government and family-based culture are crucial for the ownership structure and management of private enterprises. The main argument in the models is that the structure of family businesses can be viewed, in essence, as a form of trust-sharing (*Guanxi*-sharing) arrangement within the firm. Furthermore, the increase in the prevalence of family businesses can be seen as a result of family trust replacing government trust in the firm's economic activities.

Key Words: Private enterprises in China, *Guanxi*, government and family trust, corporate governance.

JEL classification: G30, L20, P50

1 Introduction

The rise of the private sector in China has attracted a lot of attention for the way in which it has fuelled rapid economic growth during the last three decades. Indeed, private enterprises in China are the most dynamic component of the Chinese economy, but the rapid development the private sector remains a puzzle: how could this happen despite the absence of well-defined private property rights? To answer this question, many have argued that standard property rights theory needs to incorporate social and cultural contexts (e.g. Weitzman and Xu, 1994; Xing, 1995; Smyth, 1997). This leads to an interesting research topic of interpreting the role of cultural values in the emergence of the private sector in China. Among such cultural influences, trust (or *Guanxi* in Chinese) is a very important issue.

Guanxi is one of the major dynamics in Chinese society (Alston, 1989). The term *Guanxi* in the Chinese language is very loose, taking on multiple meanings, and it is generally viewed as networks of informal relationships and exchanges of favours that dominate business activity (Lovett et al., 1999; Li, 2002). According to Chiao (1982) and King (1991), factors that promote cooperation and shared social experience among individuals are considered as the core of *Guanxi* in Chinese society. Similarly, it is commonly accepted that trust provides a solid foundation for cooperation. Given the implied cooperative characteristics, when discussing the business practices of Chinese private firms, *Guanxi* and trust are interchangeably used in much of the literature (e.g. Wank, 1996; Xin and Pearce, 1996; Li, 1998; Lovett et al., 1999; Schlevogt, 2001; Sun and Wong, 2002). This paper also treats trust and *Guanxi* as synonymous terms. We use a general notion of trust, which has been frequently cited in recent literature (Williamson, 1993; Lorenz, 1999; James, 2002), to replace the notion of cooperative culture (Weitzman and Xu, 1994) to explain the development of Chinese private enterprises.

In this paper, we mainly discuss *Guanxi* within a firm, and treat *Guanxi* as a non-marked resource in the process of production. For the purpose of current research, *Guanxi*, or trust, can be understood as special connections and cooperation derived from government and family-based cultural values. In practice, the private entrepreneur typically pursues one of three cooperative arrangements: cooperation

with the government as a “red-hat”¹ firm, cooperation with the family as a family business, or cooperation with both the government and family. The third type of cooperation can be seen in private enterprises in so called Zhejiang model, where many “red-hat” firms are also household enterprises. These three types of cooperation are in essence trust-sharing (*Guanxi*-sharing) arrangements. Although “red-hat” enterprises were prevalent from the beginning of the reform period to the late 1990s, there are almost no private enterprises registered as “red-hat” firms at present, while family businesses are still prevalent in China. This paper attempts to theoretically explain this phenomenon.

The remainder of this paper is organised as follows. Section 2 reviews the literature on government and family trust. Section 3 presents the basic model and considers the determination of the optimal choice of ownership arrangements. Section 4 extends the model to explain the interplay between government and family trust in Chinese private enterprises. Conclusions follow in Section 5.

2 Government vs family *Guanxi*

Among the private firms in China, there are two types of prevalent *Guanxi* network. One is government *Guanxi* which refers to entrepreneurial ties with officialdom (Wank, 1996). In a complex political and economic environment like China, business people are motivated to cultivate *Guanxi* connections with government in order to access structural support (Xin and Pearce, 1996). Government support is considered a major benefit that Chinese private firms might derive from their *Guanxi* activities (Davies et al. 1995). Although state patronage does not form part of the conventional theories on entrepreneurship, case studies of private enterprises in western China by Vicziany and Zhang (2004) show that political connections have been helpful for some of the most successful private entrepreneurs. Yang (1994) points out that since government officials are usually the most proficient *guanxi* practitioners themselves, they may serve as effective intermediaries which help to establish a larger *Guanxi* network. Sometimes, government *Guanxi* can also offer a protection role to private business (Redding, 1990). In addition, in an imperfect institutional environment such

¹ This can best be described as private firms put on a “hat” of collective ownership to adopt the appearance of being state or collective enterprises. The firm may appear to be “red” or collective from the top but in reality, at the grass roots, it is a private enterprise.

as China, where many exchange relationships are personalized and access to market information and scarce inputs is a matter of privilege, government *Guanxi* can be represented by procurement ability, which is essential for successful production (Tian, 2000).

Nevertheless, it is important to make a distinction between Government *Guanxi* and bribery activities, the central difference being that *Guanxi* refers to relationship building while bribery is simply an illicit transaction (Yang, 1994; Lovett et al., 1999). In other words, *Guanxi* places much more emphasis on human feelings, long-term obligations and bonding than the merely material interest exchanged, whereas with bribery and corruption, the social relationship is a means, not an end, of the exchange. Given this distinction, in this paper *Guanxi* is viewed in a positive fashion. We accept the distinction between *Guanxi* and bribery or corruption, and also the argument that *Guanxi* is productive (Wank, 1996). In particular, we see *Guanxi* as productive in providing transaction cost advantages in the transitional economy of China.

Another type of *Guanxi* is family *Guanxi*, which refers to the trusting relationship between family members and friends. In China, family ties are substantially strengthened by Confucianism. One of the most distinctive features of Chinese societies is their family orientation. The kinship-based *Guanxi* is due to strong family identification and role obligation as defined and reinforced by social norms permeating Chinese societies (Bond and Hwang, 1986). In other words loyalty and related favouritism to family is an obligation, which justifies the dynamism of family business in China. Sun and Wong (2002) argue that trusting relationships between family members underpin the development of private enterprises. Notably, although family *Guanxi* is mostly family centred, it has an extraordinary capacity to extend beyond family members to friends and acquaintances (Sun and Wong, 2002). As a result, family *Guanxi*, like government *Guanxi*, can also be treated as an ability to obtain necessary inputs for successful production that cannot be readily acquired through ordinary market transactions. The important role played by family *Guanxi* is obviously reflected in the dominance of family businesses among Chinese private enterprises, as discussed above.

While both government and family *Guanxi* have played an important role in the development of Chinese private enterprises, differences between them can be located in terms of three important factors of trustworthiness: ability, benevolence, and integrity (Mayer et al., 1995; Lovett et al., 1999). The meaning of these three factors is somewhat elusive in the literature (Lovett et al., 1999). However, in simple terms, ability refers to competence and expertise, while benevolence refers to loyalty and altruism, and integrity refers to consistency and congruity (Mayer et al., 1995).

In terms of ability, although family members have been a major source of cheap and flexible resources for private enterprises (Roberts and Zhou, 2000), their financial competence is limited compared with that of the government in accessing capital, in particular bank loans, which is critical to enterprise development (Sun and Wong, 2002). In this manner, government trust can be interpreted as being at a higher level of ability than family trust. In terms of benevolence, although the government generally acts as a “helping hand” in market-oriented reforms (Li, 1998), this does not mean that government policy always gives priority to the long-term development of private enterprises (Sun and Wong, 2002). Rather, new regulations have often been accompanied by “rectification” campaigns, which have impeded private enterprise development (Gregory et al., 2000). Moreover, there is a tendency for the government to increase rent-seeking in successful enterprises (Sun, 2002; Yang, 2002). In contrast, it is generally accepted that family relationships represent loyalty and altruism simply because family members care more about each other than outsiders (Whyte, 1995; Schlevogt, 2001). In this manner, family trust is at a higher level of benevolence than government trust. In terms of integrity, it has been argued that private business was experimental during the reform periods (Gelb et al., 1993) and there was no effective mechanism to ensure that the government could not suddenly reverse the reform process or impose exactions on private enterprises (Li, 2004), while the success of family firms lies in the stability of the family system (James, 1999; Yeung, 2000). In this respect, family trust represents a higher level of integrity than government trust. To sum up, among the three aspects of trustworthiness, government trust generally represents a higher level of ability, while family trust generally represents a higher level of benevolence and integrity within private enterprises. These differences between government and family trust affect a firm’s decision to cooperate with the government or with the family.

More importantly, government and family *Guanxi* have different effects on corporate governance of private enterprises. Within a typical family business, control rights are in the hands of the owner, who is also the manager of the firm (Schlevogt, 2001). In other words, this kind of firm can be viewed as an owner-cum-manager firm (Fama and Jensen, 1983; James, 1999). Moreover, often the investor is also the owner of the firm. In this sense, the management of a family business is called “three roles in one” management (the investor, the owner, and the manager) or “four roles in one” (adding the producer) in some of the literature (Blue Book of Private Enterprises, 2001, 2002; Gan, 2002). In terms of corporate governance, a family business is characterized by non-separation of ownership and control. In contrast, the control rights within a “red-hat” enterprise rest with both the manager and the government (Smyth, 1997; Hsiao et al., 1998), or the government only (Weitzman and Xu, 1994; Chang and Wang, 1994; Che and Qian, 1998). Consequently, the government shares the profits with investors (Pearce, 2001; Rao et al., 2005). However, the conflicts of objectives and interests between the firm and the government are obvious because local governments are not purely economic actors but pursue multiple social, political and economic objectives such as employment maximization (Bowles and Dong, 1999; Sun, 2002). As a consequence, private enterprises often go along with government interference, which often contradicts their interests (Sun and Wong, 2002). In fact, there is a tendency for local governments to misuse their ownership rights over TVEs and “red-hat” enterprises (Sun, 2002). In this manner, corporate governance in a “red-hat” enterprise can be interpreted as separation of ownership and control. The distinction between family and government *Guanxi* is the underpinning idea of our theoretical model.

Despite all the empirical studies, there is hardly any work done to provide a theoretical explanation of government and family trust in the rise of the private enterprises in China. One exception is the significant contribution made by Tian (2000), which could be a starting point. Tian (2000) developed a model based on Eswaran and Kotwal (1985) to discuss the nature of TVEs, in which there is a considerable involvement of the government. Tian considers both the institutional environment and the institutional arrangements, but focuses on the determination of the optimal choice of ownership arrangements by taking the institutional environment

as exogenous. He concludes that private ownership is the optimal property rights arrangement “based on a set of presumptions that may not be satisfied by transitional and other irregular economic environments, in which economic freedom is constrained and markets are absent, immature, or imperfect.” (Tian, 2000, pp.248-249) In short, Tian shows that collective ownership dominates private ownership in a transitional (and/or developing) economic environment, while private ownership dominates collective ownership in a developed economic environment. In Tian’s opinion, however, private ownership is the appropriate mechanism to achieve an efficient allocation of resources. Therefore, he concludes that privatization requires that the economic environment is improved first.

Tian’s model fits well with the development of Chinese TVEs, especially given the gradual nature of privatization in China, particularly when TVEs are viewed as an intermediate form of “pure” private enterprise. Tian’s model can also be used to explain the phenomenon of “red-hat” firms within the context of the development of Chinese private enterprises. However, his model does not clearly explain the phenomenon of family businesses. As noted earlier, there are almost no private enterprises registered as “red-hat” firms in present-day China. This can be partially explained by improvements in the economic environment, but more importantly, by the increasing importance of family trust relative to government trust in the economic activities of firms. The reason behind this argument is that the economic environment in present-day China is still generally accepted as immature. Therefore, we extend Tian’s model to provide an explanation for this feature of the development of Chinese private enterprises in the following sections.

Our model differs from Tian’s model in the following aspects. First, we discuss the optimal arrangement for Chinese private enterprises from the perspective of the agent who has superior management ability. In contrast, Tian discusses the optimal ownership in terms of social welfare that consists of the expected incomes of both the private entrepreneur and the government. Second, we use a more general notion of trust and attempt to distinguish the role of government from that of the family, while Tian considers only the role played by the government. In our model, there is a distinction between the manner in which family and government trust enter the firm’s economic activities. In particular, the use of government trust gives rise to separation

of ownership and control, but the use of family trust does not. Third, we go beyond Tian's model. Since our model is more general, we can derive Tian's theorems and conclusions, which are presented in our first proposition. More importantly, our models give new results, in particular, those that explain the interplay of government and family trust, thus providing an explanation for the prevalence of family businesses in China.

3 The Basic Model

Based on Tian's (2000) framework, we develop a general model for private enterprises, and introduce both government and family trust (*Guanxi*) into the firm's economic activities to examine the interplay of the two types of trust and its effects on the equilibrium ownership structure.

3.1 Assumptions and foundations

In order to capture the role of government and family *Guanxi*, it requires that non-marketed resources are considered to be inputs in the production process. The idea of non-marked resources has been already used for various studies (e.g. Reid, 1977; Eswaran and Kotwal, 1985; Tian 2000). We focus on two specific non-marketed resources: management ability and *Guanxi* ability. These two abilities constitute the core of private enterprise management, and they are crucial for successful production in a developing market such as China.²

Consider two agents: Agent 1 is a private entrepreneur (or investor) with superior management ability, M , while Agent 2 possesses superior *Guanxi* ability, G . Agent 1 can establish a firm by choosing one of two organizational forms. In one organizational form, he runs the firm solely by himself, i.e., there is a non-cooperative arrangement, and in the other, he runs the firm jointly with Agent 2, i.e., there is a cooperative arrangement.

We assume that effective production in imperfect markets uses three types of resources: capital investment, management ability M , and *Guanxi* ability G . The profit from the investment for given M and G can be denoted by a function, $\Pi(M, G; \rho)$,

² We do not attempt to measure the degree of market imperfection in China in this paper.

which is assumed to be increasing, continuous, and concave in its first two arguments. In this function, ρ , with $0 \leq \rho \leq 1$, is used to denote the degree of market perfection. Increasing ρ implies that the market environment is becoming more transparent. Likewise, the importance of *Guanxi* ability is considered to decrease as the degree of market perfection increases. Capital investment \bar{k} , which is another input resource and can be made solely or jointly by the two agents, is assumed to take the value of 1 without loss of generality. Both management and *Guanxi* activity are time-consuming processes, and time devoted can be used as a proxy for management input and *Guanxi* input. We assume that both the agents have one unit of time that can be allocated between production and alternative activities, and uses λ to denote the *Guanxi* ability of the agent 1. Due to different endowment advantages, we assume that one hour of the agent 1's time devoted to *Guanxi* is equivalent to only a fraction λ of one hour devoted by the agent 2 who has superior *Guanxi* ability. Thus, $0 < \lambda < 1$. As the model is focused on economic profit, opportunity income (denoted u) is taken into account. The income from alternative activities of the agent 1 (opportunity income) is given by u_1 and that of the agent 2 is given by u_2 ³. All opportunity incomes are assumed to be exogenous.

In order to explicitly solve the above model by the differentiation approach, we restrict the conditional profit function to be some specific function form. Especially, we have to address the issue of incorporating both government and family *Guanxi* into our model. To accommodate the profit function, G is assumed to take a CES (constant elasticity of substitution) form as $G = (G_g^\beta + G_f^\beta)^{1/\beta}$, where G_g is government *Guanxi* and is family *Guanxi*, with $0 \leq G_g, G_f \leq 1$, $G_g + G_f \leq 1$, and $0 < \beta < 1$. The introduction of G_f is a key feature that distinguishes our model from that of Tian (2000). Under this assumption, government and family *Guanxi* can take the value of zero separately, but they cannot be zero simultaneously. When $G_g = 0$ or $G_f = 0$, it indicates that Agent 1 or 2 has only family or government *Guanxi*, respectively. When $0 < G_g, G_f < 1$, Agent 1 or 2 has both family and government *Guanxi*. These correspond to cooperation with family only, or government only, or

³ Note that here and elsewhere in this paper, quantities subscripted by 1 refer to Agent 1, and quantities subscripted by 2 refer to Agent 2.

both, respectively. In this model, the latter case is a general one while the others are the special cases described in Tian's (2000) model.

Given technology and price for simplicity, the profit function is assumed to take a Cobb-Douglas form as

$$(1) \Pi = M^{\alpha_1} (G_g^\beta + G_f^\beta)^{(1-\rho)\alpha_2/\beta}, \text{ where } \alpha_1, \alpha_2 > 0, \text{ and } \alpha_1 + \alpha_2 < 1.$$

In the above function the relative importance of capital input can be denoted as $\alpha_3 = 1 - \alpha_1 - \alpha_2$.

In the following section, we explicitly solve the model presented above for this Cobb-Douglas specification. The important findings of this paper will be derived by comparison and cross comparison of the static results.

3.2 Arrangement choices and solutions

We first consider the general case, i.e., cooperation with both government and family *Guanxi*.

3.2.1 Non-cooperative arrangement

Under this type of arrangement, Agent 1 runs the firm solely, makes one unit of capital investment, hires unskilled labour and allocates his time between management, *Guanxi*, and his alternative activity such as being employed by another employer or just enjoying leisure time in order to maximize his expected income. That is, with the profit function given by (1), Agent 1's income maximization problem becomes

$$(2) \Pi_1^s = \max_{M_1, G_{1g}, G_{1f}} \left[M_1^{\alpha_1} \lambda_1^{(1-\rho)\alpha_2} (G_{1g}^\beta + G_{1f}^\beta)^{(1-\rho)\alpha_2/\beta} + (1 - M_1 - G_{1g} - G_{1f}) \mu_1 \right],$$

$$\text{where } M_1, G_{1g}, G_{1f} \geq 0, \text{ and } M_1 + G_{1g} + G_{1f} \leq 1.$$

When $M_1 + G_{1g} + G_{1f} = 1$, the solution is given by

$$(3) M_1^{s*} = \frac{\alpha_1}{\alpha_1 + (1-\rho)\alpha_2}, \text{ and } G_{1g}^{s*} = G_{1f}^{s*} = \frac{(1-\rho)\alpha_2}{2[\alpha_1 + (1-\rho)\alpha_2]}.$$

When $M_1 + G_{1g} + G_{1f} < 1$, the interior solution is given by

$$(4) \quad G_{1g}^{s*} = G_{1f}^{s*} = \left\{ u_1^{-1} \lambda_1^{(1-\rho)\alpha_2} \alpha_1^{\alpha_1} [(1-\rho)\alpha_2]^{1-\alpha_1} 2^{\frac{(1-\rho)\alpha_2 - \beta(1-\alpha_1)}{\beta}} \right\}^{\frac{1}{1-\alpha_1-(1-\rho)\alpha_2}},$$

$$\text{and } M_1^{s*} = \frac{2\alpha_1}{(1-\rho)\alpha_2} G_{1g}^{s*}.$$

Substituting (4) into (2), the expected income of Agent 1 is

$$(5) \quad \Pi_1^s = [1 - \alpha_1 - (1-\rho)\alpha_2] \left\{ \lambda_1^{(1-\rho)\alpha_2} \alpha_1^{\alpha_1} [(1-\rho)\alpha_2]^{(1-\rho)\alpha_2} 2^{(1-\rho)\alpha_2(1-\beta)/\beta} \right\}^{[1-\alpha_1-(1-\rho)\alpha_2]} \\ \times u_1^{-[\alpha_1+(1-\rho)\alpha_2]/[1-\alpha_1-(1-\rho)\alpha_2]} + u_1.$$

3.2.2 Cooperative arrangement

Under this arrangement, Agent 1 and Agent 2 run the firm jointly, and each of them receives their share of the residual income. We assume that they share the profit according to some given ratio, which depends on the bargaining power of each agent. Recall that $0 \leq \theta \leq 1$ is the profit share of Agent 1, then the net income of Agent 1 is given by

$$(6) \quad \Pi_1^c = \max_{M_1} \left[\theta M_1^{\alpha_1} (G_{2g}^\beta + G_{2f}^\beta)^{(1-\rho)\alpha_2/\beta} + (1-M_1)u_1 \right],$$

$$\text{where } 0 \leq M_1 \leq 1, \quad 0 \leq G_{2g}, G_{2f} \leq 1, \quad \text{and } G_{2g} + G_{2f} \leq 1, .$$

Solving this problem, Agent 1's reaction function is

$$(7) \quad M_1 = \min \left\{ 1, \left[u_1^{-1} \theta \alpha_1 (G_{2g}^\beta + G_{2f}^\beta)^{(1-\rho)\alpha_2/\beta} \right]^{\frac{1}{1-\alpha_1}} \right\}.$$

Similarly, Agent 2's income maximization problem is

$$(8) \quad \Pi_2^c = \max_{G_{2g}, G_{2f}} \left[(1-\theta) M_1^{\alpha_1} (G_{2g}^\beta + G_{2f}^\beta)^{(1-\rho)\alpha_2/\beta} + (1-G_{2g}-G_{2f})u_2 \right],$$

$$\text{where } 0 \leq G_{2g}, G_{2f} \leq 1, \quad \text{and } G_{2g} + G_{2f} \leq 1.$$

Solving this problem for an interior solution, Agent 2's reaction function is

$$(9) \quad G_{2g} = G_{2f} = \min \left\{ 1, \left[u_2^{-1} (1-\theta) M_1^{\alpha_1} (1-\rho) \alpha_2 2^{\frac{(1-\rho)\alpha_2}{\beta}-1} \right]^{\frac{1}{1-(1-\rho)\alpha_2}} \right\}.$$

Following the approach of Eswaran and Kotwal (1985) and Tian (2000), we assume that there is an interior Nash equilibrium. The interior solution is given by

$$(10) \quad M_1^{c*} = \left\{ u_1^{-1} \alpha_1 \theta^{1-(1-\rho)\alpha_2} (1-\theta)^{(1-\rho)\alpha_2} 2^{(1-\rho)\alpha_2(1-\beta)/\beta} \left[\frac{(1-\rho)\alpha_2 u_1}{\alpha_1 u_2} \right]^{(1-\rho)\alpha_2} \right\}^{\frac{1}{1-\alpha_1-(1-\rho)\alpha_2}},$$

$$\text{and } G_{2g}^{c*} = G_{2f}^{c*} = \frac{(1-\theta)u_1(1-\rho)\alpha_2}{2\theta u_2 \alpha_1} M_1^{c*}.$$

Finally, also following the approach of Eswaran and Kotwal (1985), for a given share θ , Agent 1 will set a level of Agent 2's remuneration that holds Agent 2 at (or barely above) his opportunity income. In other words, Agent 1's expected income is the joint profit of both Agent 1 and Agent 2, less the opportunity income of Agent 2, becoming

(11)

$$\begin{aligned} \Pi_1^c &= (M_1^{c*})^{\alpha_1} [(G_{2g}^{c*})^\beta + (G_{2f}^{c*})^\beta]^{(1-\rho)\alpha_2/\beta} + (1-M_1^{c*})u_1 + (1-G_{2g}^{c*}-G_{2f}^{c*})u_2 - u_2 \\ &= [1-\theta\alpha_1-(1-\theta)(1-\rho)\alpha_2] \left\{ \alpha_1 (1-\theta)^{(1-\rho)\alpha_2} \alpha_1^{\alpha_1} [(1-\rho)\alpha_2]^{(1-\rho)\alpha_2} 2^{(1-\rho)\alpha_2(1-\beta)/\beta} \right\}^{\frac{1}{1-\alpha_1-(1-\rho)\alpha_2}} \\ &\quad \times u_1^{-\alpha_1/[1-\alpha_1-(1-\rho)\alpha_2]} u_2^{-(1-\rho)\alpha_2/[1-\alpha_1-(1-\rho)\alpha_2]} + u_1. \end{aligned}$$

3.3 Special cases

In practice, a private firm can choose to cooperate with government only or family only instead of with both government and family; that is, the private firm may use only one type of *Guanxi* input for production, i.e., $G_f = 0$, or $G_g = 0$. These are special cases of our general model, with Tian's (2000) model the special case where $G_f = 0$. In our general model, Agent 2 has superior ability with respect to both family and government *Guanxi*. In these special cases, Agent 2 has only one type of superior *Guanxi* ability. We consider these special cases below.

3.3.1 Non-cooperative arrangement

The calculation approach is the same as before but simpler. Under the non-cooperative arrangement, we first consider the case when Agent 1 has only family *Guanxi*, i.e., $G_{1g} = 0$. With the profit function given by (1), Agent 1's income maximization problem in (2) becomes

$$(12) \quad \Pi_1^{s'} = \max_{M_1, G_{1f}} \left[M_1^{\alpha_1} \lambda^{(1-\rho)\alpha_2} G_{1f}^{(1-\rho)\alpha_2} + (1 - M_1 - G_{1f}) u_1 \right],$$

where $M_1, G_{1f} \geq 0$, and $M_1 + G_{1f} \leq 1$.

Thus, if $M_1 + G_{1f} = 1$, the solution is given by

$$(13) \quad M_1^{s'*} = \frac{\alpha_1}{\alpha_1 + (1-\rho)\alpha_2}, \text{ and } G_{1f}^{s'*} = \frac{(1-\rho)\alpha_2}{\alpha_1 + (1-\rho)\alpha_2}.$$

If $M_1 + G_{1f} < 1$, the interior solution is given by

$$(14) \quad G_{1f}^{s'*} = \left\{ \lambda_1^{(1-\rho)\alpha_2} u_1^{-1} (1-\rho)\alpha_2 \left[\frac{\alpha_1}{(1-\rho)\alpha_2} \right]^{\alpha_1} \right\}^{\frac{1}{1-\alpha_1-(1-\rho)\alpha_2}},$$

$$\text{and } M_1^{s'*} = \frac{\alpha_1}{(1-\rho)\alpha_2} G_{1f}^{s'*}.$$

Substituting (14) into (12), Agent 1's expected income is

$$(15) \quad \Pi_1^{s'} = [1 - \alpha_1 - (1-\rho)\alpha_2] \left\{ \lambda^{(1-\rho)\alpha_2} \alpha_1^{\alpha_1} [(1-\rho)\alpha_2]^{(1-\rho)\alpha_2} \right\}^{\frac{1}{1-\alpha_1-(1-\rho)\alpha_2}} \\ \times u_1^{-[\alpha_1 + (1-\rho)\alpha_2] / [1-\alpha_1-(1-\rho)\alpha_2]} + u_1.$$

In the alternative scenario where $G_{1f} = 0$, Agent 1 has only government *Guanxi*, and the result is almost the same as that when $G_{1g} = 0$, except that G_{1f} is replaced by G_{1g} . Therefore, Agent 1's expected income is the same as in (15). These two cases are extreme cases of the non-cooperative arrangement.

3.3.2 Cooperative arrangement

Under this arrangement, we first consider the case when Agent 2 has only family *Guanxi*, i.e., $G_{2g} = 0$. With the profit function given by (1), Agent 1's income maximization problem in (6) becomes

$$(16) \Pi_1^{c'} = \max_{M_1} [\theta M_1^{\alpha_1} G_{2f}^{(1-\rho)\alpha_2} + (1-M_1)u_1], \text{ where } 0 \leq M_1 \leq 1.$$

Solving this problem, Agent 1's reaction function is

$$(17) M_1 = \min \left\{ \left[\theta u_1^{-1} \alpha_1 G_{2f}^{(1-\rho)\alpha_2} \right]^{1/(1-\alpha_1)} \right\}$$

Similarly, Agent 2's income maximization problem in (8) is

$$(18) \Pi_2^{c'} = \max_{G_{2f}} [(1-\theta)M_1^{\alpha_1} G_{2f}^{(1-\rho)\alpha_2} + (1-G_{2f})u_2], \text{ where } 0 \leq G_{2f} \leq 1.$$

Solving this problem, Agent 2's reaction function is

$$(19) G_{2f} = \min \left\{ \left[(1-\theta)u_2^{-1} (1-\rho)\alpha_2 M_1^{\alpha_1} \right]^{1/[1-(1-\rho)\alpha_2]} \right\}$$

Also assuming an interior solution and solving (17) and (19) for an interior Nash equilibrium, we have

$$(20) M_1^{c'*} = \left\{ u_1^{-1} \alpha_1 \theta^{1-(1-\rho)\alpha_2} (1-\theta)^{(1-\rho)\alpha_2} \left[\frac{(1-\rho)\alpha_2 u_1}{\alpha_1 u_2} \right]^{(1-\rho)\alpha_2} \right\}^{1/[1-\alpha_1-(1-\rho)\alpha_2]},$$

$$\text{and } G_{2f}^{c'*} = \left[\frac{(1-\theta)u_1 (1-\rho)\alpha_2}{\theta u_2 \alpha_1} \right] M_1^{c'*}.$$

Finally, Agent 1's expected income is the joint profit of both Agent 1 and Agent 2, less the opportunity income of Agent 2, i.e.,

$$(21) \Pi_1^{c'} = (M_1^{c'*})^{\alpha_1} (G_{2f}^{c'*})^{(1-\rho)\alpha_2} + (1-M_1^{c'*})u_1 + (1-G_{2f}^{c'*})u_2 - u_2 \\ = [1-\theta\alpha_1-(1-\theta)(1-\rho)\alpha_2] \left\{ \theta^{\alpha_1} (1-\theta)^{(1-\rho)\alpha_2} \alpha_1^{\alpha_1} [(1-\rho)\alpha_2]^{(1-\rho)\alpha_2} \right\}^{\frac{1}{1-\alpha_1-(1-\rho)\alpha_2}} \\ \times u_1^{-\alpha_1/[1-\alpha_1-(1-\rho)\alpha_2]} u_2^{-(1-\rho)\alpha_2/[1-\alpha_1-(1-\rho)\alpha_2]} + u_1.$$

In the alternative scenario where $G_{2f} = 0$, Agent 2 has only government *Guanxi*, and the result is almost the same as $G_{2g} = 0$, except that G_{2f} is replaced by G_{2g} . Therefore, Agent 1's expected income is the same as in (21). These two cases are extreme cases of the cooperative arrangement.

3.4 Optimal arrangement

Having determined Agent 1's expected income under the non-cooperative and cooperative arrangements, the optimal arrangement will be given by the one that maximizes his expected income. We consider only the interior solution cases, although the results for the corner solution cases can be obtained in a similar manner.

3.4.1 General optimum

Proposition 1. *For a profit-maximizing private firm, the non-cooperative arrangement dominates the cooperative arrangement when the economic (market) environment is close to perfect. On the other hand, the cooperative arrangement dominates the non-cooperative arrangement in a transitional and/or developing economic environment.*

Comparing (5) with (11), i.e., Agent 1's expected income under the non-cooperative and cooperative arrangements, we have

$$(22) \quad \Pi_1^s - \Pi_1^c = u_1^{-\alpha_1/[1-\alpha_1-(1-\rho)\alpha_2]} \times \left\{ \alpha_1^{\alpha_1} [(1-\rho)\alpha_2]^{(1-\rho)\alpha_2} 2^{(1-\rho)\alpha_2(1-\beta)/\beta} \right\}^{[1-\alpha_1-(1-\rho)\alpha_2]} \\ \times \left\{ \lambda_1^{(1-\rho)\alpha_2/[1-\alpha_1-(1-\rho)\alpha_2]} \times [1-\alpha_1-(1-\rho)\alpha_2] \times u_1^{-(1-\rho)\alpha_2/[1-\alpha_1-(1-\rho)\alpha_2]} \right. \\ \left. \times \left\{ -[1-\theta\alpha_1-(1-\theta)(1-\rho)\alpha_2] \times [\theta^{\alpha_1}(1-\theta)^{(1-\rho)\alpha_2}]^{1/[1-\alpha_1-(1-\rho)\alpha_2]} \times u_2^{-(1-\rho)\alpha_2/[1-\alpha_1-(1-\rho)\alpha_2]} \right\} \right\}.$$

The comparison of special cases between (15) and (21) is almost the same as (22) except it does not include the term $2^{(1-\rho)\alpha_2(1-\beta)/\beta}$ (which is positive and larger than 1) in the first brace. This implies that cooperation with both the government and family *Guanxi* is better than cooperation with only one type of *Guanxi*, as will be discussed further in Section 3.5. Considering the terms in the last brace of (22), we can prove

that $\Pi_1^s > \Pi_1^c$ when ρ is close to 1 while $\Pi_1^s < \Pi_1^c$ when ρ is small enough (see Tian (2000), pp.260-261). This result means that the non-cooperative arrangement dominates the cooperative arrangement when the quality of the economic environment is sufficiently high, and vice versa. In this model, the critical value of economic environment quality is

$$(23) \quad \bar{\lambda} = \left(\frac{u_1}{u_2} \right) (1-\theta) \theta^{\frac{\alpha_1}{(1-\rho)\alpha_2}} \left[\frac{1-\theta\alpha_1-(1-\theta)(1-\rho)\alpha_2}{1-\alpha_1-(1-\rho)\alpha_2} \right]^{\frac{1-\alpha_1-(1-\rho)\alpha_2}{(1-\rho)\alpha_2}}.$$

That is, when $\lambda_1 \leq \bar{\lambda}$, Agent 1 will choose the cooperative arrangement for profit maximization instead of the non-cooperative arrangement. The turning point in this model at which the cooperative arrangement switches to the non-cooperative arrangement is $\bar{\lambda}$.⁴

The above optimal solutions for the non-cooperative arrangement and the cooperative arrangement mean that the development pattern of private enterprises is endogenously determined, which will be further explored by Proposition 2. In other words, the optimal choice of arrangement is an efficient response to the economic environment. When the quality of the economic environment is low, the cooperative arrangement is optimal, i.e., the use of *Guanxi* ability is important and necessary for efficient production. On the other hand, when the quality of the economic environment is high, *Guanxi* ability is not a necessary input for production because production can be carried out with management and other marketed resources without *Guanxi*. This conclusion does not contradict standard theories, but rather extends them to take into account the role of the institutional environment.

3.4.2 Local optimum for the cooperation

We now focus on the cooperative arrangement of Chinese private enterprises since the economic environment in China is commonly characterized as developing or transitional.

⁴ The critical value of $\bar{\lambda}$ is the same as in Tian's (2000) model since this model is an extension of his model.

Proposition 2. *Given the Cobb-Douglas technology specified in (1), the ownership structure of private enterprises endogenously chosen in a developing economic environment is the cooperative arrangement.*

Under the cooperative arrangement, when the economic environment is imperfect to some degree and *Guanxi* ability is relatively more important than management ability, an optimal share θ^* can be chosen endogenously in a way that maximizes Agent 1's expected income Π_1^c . To find θ^* , we take the logarithm of both sides of (11), differentiate $\ln \Pi_1^c$ with respect to θ , and set it equal to zero. The first-order condition is

$$(24) \quad f(\theta) = [\alpha_1 - (1-\rho)\alpha_2]\theta^2 - 2\alpha_1[1-(1-\rho)\alpha_2]\theta + \alpha_1[1-(1-\rho)\alpha_2] = 0.$$

When $\theta=0$, $f(0) = \alpha_1[1-(1-\rho)\alpha_2] > 0$, and when $\theta=1$, $f(1) = (1-\rho)\alpha_2(\alpha_1-1) < 0$.

Thus, there is some $0 < \theta^* < 1$ such that $f(\theta^*) = 0$. Solving this problem, we have the optimal share θ^* , which is given by

$$(25) \quad \theta^* = \frac{\alpha_1[1-(1-\rho)\alpha_2] - \{\alpha_1(1-\rho)\alpha_2(1-\alpha_1)[1-(1-\rho)\alpha_2]\}^{1/2}}{\alpha_1 - (1-\rho)\alpha_2}.$$

Orthodox endogenous ownership theory suggests that ownership structure is endogenously determined in equilibrium, which means that the market responds to forces that create suitable ownership structures for firms. However, it restricts the endogenous ownership structure as the outcome of a perfect market. Therefore, some scholars argue that this theory is not applicable to the situation in China. In our model, however, the optimal share θ^* depends on the relative importance of management ability α_1 and *Guanxi* ability α_2 , as well as the degree of market perfection ρ . If we regard the share θ or $(1-\theta)$ as the residual right of claim, one important element of property rights, our model shows that the division of property rights allows people the option of combining “ownership” and control in any mixture that they wish, subject to their budget. Faced with such a situation, the private entrepreneur (Agent 1) can choose *Guanxi*-sharing (trust-sharing) cooperation with Agent 2, either with the

⁵ The same result can be obtained by solving (21) for the special cases—cooperation with government only or with family only.

government or the family, or with both. In short, Proposition 2 is complementary to and more specific than Proposition 1.

Proposition 3. *Under the cooperative arrangement and given the Cobb-Douglas technology specified in (1), the optimal share of Agent 1 (management ability) increases as the economic environment becomes more regular.*

Differentiating (25) with respect to ρ , we have

$$(26) \quad \frac{d\theta^*}{d\rho} = \frac{\alpha_1^{\frac{1}{2}} \alpha_2^{\frac{1}{2}} (1-\alpha_1)^{\frac{1}{2}}}{[\alpha_1 - (1-\rho)\alpha_2]^2 (1-\rho)^{\frac{1}{2}} [1 - (1-\rho)\alpha_2]^{\frac{1}{2}}} \\ \times \left\{ \frac{\alpha_1 + (1-\rho)\alpha_2}{2} - \alpha_1 (1-\rho)\alpha_2 - \alpha_1^{\frac{1}{2}} [(1-\rho)\alpha_2]^{\frac{1}{2}} (1-\alpha_1)^{\frac{1}{2}} [1 - (1-\rho)\alpha_2]^{\frac{1}{2}} \right\}.$$

Considering the term in the brace, which is equal to

$$\frac{\left\{ \alpha_1^{\frac{1}{2}} - [(1-\rho)\alpha_2]^{\frac{1}{2}} \right\}^2}{2} + \alpha_1^{\frac{1}{2}} [(1-\rho)\alpha_2]^{\frac{1}{2}} \times \left\{ 1 - \alpha_1^{\frac{1}{2}} [(1-\rho)\alpha_2]^{\frac{1}{2}} - (1-\alpha_1)^{\frac{1}{2}} [1 - (1-\rho)\alpha_2]^{\frac{1}{2}} \right\},$$

since $0 < \rho, \alpha_1, \alpha_2 < 1$ and $\alpha_1 + \alpha_2 < 1$, so that

$$\left\{ 1 - \alpha_1^{\frac{1}{2}} [(1-\rho)\alpha_2]^{\frac{1}{2}} - (1-\alpha_1)^{\frac{1}{2}} [1 - (1-\rho)\alpha_2]^{\frac{1}{2}} \right\} > 0, \text{ the term in the second brace is}$$

positive. Therefore, $\frac{d\theta^*}{d\rho} > 0$, which means that θ^* increases as ρ increases.

In other words, as the market environment improves, the optimal ownership share tends to be concentrated in the hands of management, no matter what kind of cooperative arrangement Agent 1 chooses cooperation with either the government or the family, or with both. This reflects the dynamic process of the development of private enterprises, and it is consistent with the tendency of many employee-joint-stock cooperatives in Wenzhou City, Zhejiang province, where share-concentration has continued to increase in the hands of the core shareholders, i.e., mainly core managers (Sun, 2000).

3.5 Ownership structure and management

3.5.1 Emergence of diffuse ownership structure

The above model shows that trust (*Guanxi*) is an important resource in a firm's production process, and it is better for a private entrepreneur to choose cooperation with *Guanxi* ability in an imperfect market, either government trust, or family trust, or both. Under the assumption of symmetry between government and family *Guanxi* in the CES specification, it is easy to show that the optimal allocation between government and family *Guanxi* is $G_g^* = G_f^*$; that is, government and family *Guanxi* are equally important. In addition, the profit of a private firm choosing only government *Guanxi* for cooperation is the same as that of choosing only family *Guanxi* for cooperation (see Section 3.3). Despite the differences between the green field private enterprises and TVEs, this may be a possible explanation for the argument made by many scholars that the efficiency of Chinese TVEs, in which the government plays an important role, is (at least) the same as that of private enterprises (Weitzman and Xu, 1994; Chang and Wang, 1994; Smyth, 1997, 1998, 2002).

Furthermore, the model also shows that when Agent 1 chooses both government and family *Guanxi* abilities for cooperation simultaneously, his expected income is bigger than that when choosing only one type of *Guanxi* ability for cooperation. To see this, comparing (11) of the general case and (21) of the special case under the cooperative arrangement, the difference between Agent 1's expected income is

$$\begin{aligned} \Delta \Pi_1^c &= \Pi_1^c - \Pi_1^{c'} \\ (27) \quad &= [1 - \theta\alpha_1 - (1 - \theta)(1 - \rho)\alpha_2] \left\{ \theta^{\alpha_1} (1 - \theta)^{(1 - \rho)\alpha_2} \alpha_1^{\alpha_1} [(1 - \rho)\alpha_2]^{(1 - \rho)\alpha_2} \right\}^{\frac{1}{1 - \alpha_1 - (1 - \rho)\alpha_2}} \\ &\quad \times u_1^{-\alpha_1 / [1 - \alpha_1 - (1 - \rho)\alpha_2]} u_2^{-(1 - \rho)\alpha_2 / [1 - \alpha_1 - (1 - \rho)\alpha_2]} \times \left\{ 2^{\frac{(1 - \rho)\alpha_2(1 - \beta)}{\beta[1 - \alpha_1 - (1 - \rho)\alpha_2]}} - 1 \right\}. \end{aligned}$$

Considering the last brace, since $0 < \rho, \alpha_1, \alpha_2, \beta < 1$, and $\alpha_1 + \alpha_2 < 1$, the term

$$\frac{(1 - \rho)\alpha_2(1 - \beta)}{\beta[1 - \alpha_1 - (1 - \rho)\alpha_2]} > 0, \text{ such that } 2^{\frac{(1 - \rho)\alpha_2(1 - \beta)}{\beta[1 - \alpha_1 - (1 - \rho)\alpha_2]}} > 1. \text{ Therefore, we have } \Delta \Pi_1^c > 0.^6$$

⁶ A similar result can be obtained by comparing (5) of the general case and (15) of the special case under the non-cooperative arrangement.

In other words, it seems better for a private entrepreneur to choose both *Guanxi* abilities for cooperation, although they are substitutes for each other. In practice a firm will seek help from the government even though it is a family business. This happens in cases when a private enterprise is not only a family business, but also has family members working in or connected to the government. It seems that such firms will be more successful than a “pure” family business, which has been the case in the Wenzhou model (Sun, 2000). Moreover, when we view *Guanxi* ability as allocated by many different agents, diffuse ownership (share θ of profit) seems to be inevitable, which is consistent with the existence of a diffuse ownership structure in many Zhejiang private enterprises in recent times. In short, in the above model the objective function is to maximize the whole profit of the firm, and the model predicts an increase in the number of private enterprises with a diffuse ownership arrangement.

3.5.2 Combination of endogenous ownership theory and agency theory

The property rights theory developed in the above model is an endogenous ownership theory which attempts to include the role of the institutional environment. In particular, the optimal ownership structure is related to the degree of imperfection of the economic environment (Propositions 1 and 2) as well as management ability (Proposition 3). It can be argued that there is a conflict between endogenous ownership theory and agency theory, because orthodox endogenous ownership theory implies that it does not matter whether ownership is in the hands of management, while agency theory argues that ownership is better in the hands of management. In our opinion, this does not represent a contradiction because what endogenous ownership theory emphasizes is the role of “market discipline,” i.e., the role of the economic environment. This is also the reason why Tian (2000) argues that improving the economic environment first is the appropriate procedure for privatization in transitional economies.

To sum up, the above model represents a combination of endogenous ownership theory and agency theory.⁷ That is, the optimal ownership of a firm depends on not only the economic environment, but also the role of management. From the

⁷ Of course, endogenous ownership theory and agency theory are, in essence, not contradictory. However, we emphasize their differences here.

perspective of the whole economy, the optimal ownership structure is determined by the market, while from the view of individual firms, ownership is better assigned to the agent with management ability when the economic environment improves. Therefore, the model developed here not only extends endogenous ownership theory to include an immature market, but also combines it with agency theory.

4 Why a Family Business Does Not Need Government Trust

The above model does not clearly explain the interplay between government and family trust. Therefore, in this section we present an additional but related model, showing that the interplay between government and family trust leads private enterprises to cooperate with family members in a developing or transitional market. In the following model we further consider the important role played by management in private enterprises, in which the manager maximizes the profit of family members instead of that of the whole firm. We show that a family business may not need to cooperate with the government.

4.1 A cooperative model of family business with the government

As explained earlier, the development pattern of Chinese private enterprises is primarily characterized by family businesses. This is true no matter whether they take the form of “pure” private firms or “red-hat” firms, and the estimation that family businesses account for 90% of all private enterprises is based on the broad definition of family business. In this section we define *family business* in a broad way, including solely-run, family-run, and family-holding private enterprises. This differs from the narrowly defined family business of the previous model in Section 3, but it corresponds to the definition adopted in most research in the literature (see, for example, Chandler, 1990; James, 1999; Gan, 2002). Therefore, the problem of cooperation with both government and family *Guanxi* by a private entrepreneur in the previous model becomes only a problem of cooperation with the government by a family business in this model. That is, the firm here has already cooperated with family *Guanxi*. However, the conclusions discussed in the previous model are used in this section, particularly the necessary input of *Guanxi* ability for the production process and specific firm profits.

4.1.1 The assumptions

We assume a broadly defined family business; that is, the firm has been using available family *Guanxi* ability G_f . Now suppose that there exists a profitable project, which requires further cooperation with government *Guanxi* ability G_g . The opportunity evaporates if the firm does not go ahead, that is, the delay of further cooperation reduces the project's profit. The required *Guanxi* can be realized only by cooperation with government *Guanxi* ability G_g . The question of whether this family firm cooperate with government now simply becomes whether to undertake the project.

We further assume that government *Guanxi* G_g is available and can be voluntarily obtained by a firm, so that the obtained government *Guanxi* $K_g > 0$, can be viewed as the monetary value of government *Guanxi*. This makes sense when we treat *Guanxi* as an intangible asset, which is similar to “reputation capital” described by Smyth (1997). Thus, the value of the firm increases when government *Guanxi* is incorporated. We also assume that the value of the firm's share equals their expected future profits conditional on whatever information the market has. Two types of profits are involved here: that of the original family business and that of the project. The profit of the family business may follow a distribution of $\tilde{\Pi}_0$, which represents the possible updated profit at a future date. The realization of $\tilde{\Pi}_0$ is denoted π_0 . The project profit follows a distribution of $\tilde{\Pi}_p$, and π_p is the realization of $\tilde{\Pi}_p$.

We assume that both π_0 and π_p are positive. This makes sense for the original profit because it is better to use *Guanxi* ability in an imperfect market, as seen in Proposition 1 of the previous model, and the firm here has used available family *Guanxi* as a broadly defined family business. It makes sense for the project opportunity because the project is definitely discarded if it turns out to have a negative profit.

Moreover, management is assumed to act in the interests of family members, i.e. the “old” owners before the start of project (Myers and Majluf, 1984; Myers, 2001). This is reasonable because a family business is viewed as an owner-cum-manager firm

(Fama and Jensen, 1983; James, 1999). Thus, the manager maximizes $V_f = V(\pi_0, \pi_p, K_g)$, the “intrinsic” profit of family owners conditional on the project-implement decision and knowledge of realizations π_0 and π_p . However, the true profit will not generally equal V_f , since the government only knows the distribution of $\tilde{\Pi}_0$ and $\tilde{\Pi}_p$, whether the project has commenced and gets a share of the realized future profit due to asymmetric information. If the project is not undertaken, the family owners retain the total profit of the family business, π_0 . If the project is undertaken, the family owners only get a share of the total profit, π' , the remaining goes to the government.

4.1.2 The model analysis

If the firm (family business), knowing the profit π_0 and the profit share π' , does not undertake the project, it forfeits the opportunity, so $V_f = \pi_0$. If it does undertake the

project, $V_f = \frac{\pi'}{\pi' + K_g}(K_g + \pi_0 + \pi_p)$. Family owners are better off if the firm chooses

cooperation with the government only when $\pi_0 \leq \frac{\pi'}{\pi' + K_g}(K_g + \pi_0 + \pi_p)$, or when

$\frac{K_g}{\pi' + K_g}\pi_0 \leq \frac{\pi'}{\pi' + K_g}(K_g + \pi_p)$, which means that the share of existing profits going

to the government is no more than the share of the increment to firm profits obtained by family owners. The condition can also be written as:

$$(28) \quad (K_g / \pi')\pi_0 \leq K_g + \pi_p.$$

Thus the line $(K_g / \pi')\pi_0 = K_g + \pi_p$ first divides the joint probability distribution of $\tilde{\Pi}_0$ and $\tilde{\Pi}_p$ into two regions, as shown in Figure 1.

INSERT FIGURE 1

At this stage, if the actual outcome (π_0, π_p) falls in region N' , the firm undertakes the project, i.e., further cooperation with the government. If the outcome falls in region N , the firm does nothing: it is willing to give up the profit of its investment opportunity rather than undertake the project for less than the share that it is really worth. Note that the joint probability distribution of $\tilde{\Pi}_0$ and $\tilde{\Pi}_p$ is restricted to the northeast quadrant of Figure 1. Region N' is at the top left of this quadrant. The firm is most likely to undertake the project when π_p , the realization of project profit, is high and π_0 , the original profit of the family business, is low. The lower π_0 is, the more attractive the project share of profit π' .

However, this is not the end of the story. Although further cooperation with the government increases the whole profit of a family firm, the family's share of profit cannot increase simultaneously with the whole profit of the firm, especially the profit created by government *Guanxi*.⁸ Instead, it can only be obtained through the realization of project profit, and part of this profit has to go to the government. Therefore, the profit of family owners V_f cannot be larger than the total profit

$\pi_0 + \pi_p$ if the project is undertaken; that is, $V_f = \frac{\pi'}{\pi' + K_g}(K_g + \pi_0 + \pi_p) \leq \pi_0 + \pi_p$, or

rearranging, $\pi' \leq \pi_0 + \pi_p$. This condition can also be written as:

$$(29) \quad \pi_p \geq -\pi_0 + \pi'.$$

This indicates that the project profit should be bigger than or equal to the net gains obtained by a family business after further cooperation with the government, since some parts of the project profit have to go to the government. Thus the line $\pi_p = -\pi_0 + \pi'$ further divides region N' into two regions, and converts the joint probability distribution of $\tilde{\Pi}_0$ and $\tilde{\Pi}_p$ into three regions, as shown in Figure 1.

4.1.3 When not undertaking the project

The direct result implied by the model is that the family firm may pass up good opportunities rather than cooperating with the government to undertake the project.

⁸ Needless to say, in many cases a family firm has to pay the costs before cooperating with the government.

Assuming that region N is not empty, i.e., there is some probability of not undertaking the project, then Figure 1 shows that all realizations of π_0 which fall in region N exceed π' , i.e., $\pi_0 > \pi'$.

Put another way, the reason a family firm decides not to undertake the project is that $\pi_0 > \pi'(1 + \pi_p / K_g)$, which follows from reversing and rearranging (28). Since $\pi_p / K_g \geq 0$, the decision not to undertake the project signals $\pi_0 > \pi'$. In other words, it signals that the true profit of family owners exceeds π' , the profit of family share if the project is undertaken. Since π_0 must exceed π' , then the true profit must fall if the firm decides to undertake the project.

Furthermore, the line $\pi_p = -\pi_0 + \pi'$ makes the previous region N' smaller by region n due to the constraint of (29). Thus region n can be interpreted as an additional region N , which is also a region where the project is not undertaken. In summary, region N' over the line $\pi_p = -\pi_0 + \pi'$ is the region of undertaking the project, while region N and region n are the regions where the project is not undertaken.

Note that both π_0 and π_p incorporate all information available to investors. They are rationally-formed, unbiased estimates of the intrinsic profit of the family firm. They reflect knowledge of the firm's decision rule as well as its decision. π_0 exceeds π' because investors rationally interpret the decision not to undertake the project as good news about the true profit of the firm. The result is intuitive in the sense that the manager of a family business acts in the interests of family members, and that the manager maximizes the true profit of family owners.

4.2 Turning back to the previous model

Now we return to the previous model in Section 3, using the analysis of the cooperative model of family business with the government. The profits in the previous model are explicit, but specific; that is, the original profit of the family business is $\pi_0 = \Pi_1^c$, as in (21), while the project profit of further cooperation with government *Guanxi* is $\pi_p = \Pi_1^c - \Pi_1^{c'} = \Delta \Pi_1^c$, as in (27), which is positive, as

discussed before. However, we need further analysis of π_0 and π_p to examine why a family business may not need to cooperate with government *Guanxi*, as proposed in the cooperative model in the previous section.

4.2.1 The dynamic movements of (π_0, π_p) from undertaking the project

First, taking logarithms of both sides of (21) and differentiating $\ln \pi_0$ with respect to ρ , we have

$$(30) \quad \frac{d \ln \pi_0}{d \rho} = \ln u_1 \times \left\{ \frac{\alpha_2 [2\theta\alpha_1 - (\alpha_1 + \theta)]}{[1 - \alpha_1 - (1 - \rho)\alpha_2][1 - \theta\alpha_1 - (1 - \theta)(1 - \rho)\alpha_2]} \right\}.$$

Since $\ln u_1 > 0$, $0 < \rho, \alpha_1, \alpha_2, \theta < 1$ and $\alpha_1 + \alpha_2 < 1$, $2\theta\alpha_1 - (\alpha_1 + \theta) < 0$, the numerator of the term in the brace of (30) is negative while the denominator is positive. Thus, $\frac{d \ln \pi_0}{d \rho} < 0$, which means that the profit of the family business decreases as the degree of market perfection ρ increases. In fact, $\pi_0 \rightarrow 0$ when $\rho \rightarrow 1$.

Similarly, taking the logarithms of both sides of (27) and differentiating $\ln \pi_p$ with respect to ρ , we have

$$(31) \quad \begin{aligned} \frac{d \ln \pi_p}{d \rho} = & \frac{\alpha_2 [2\theta\alpha_1 - (\alpha_1 + \theta)]}{[1 - \alpha_1 - (1 - \rho)\alpha_2][1 - \theta\alpha_1 - (1 - \theta)(1 - \rho)\alpha_2]} \\ & + \frac{2^D \ln 2}{2^D - 1} \times \frac{\alpha_2 (1 - \beta)(\alpha_1 - 1)}{\beta [1 - \alpha_1 - (1 - \rho)\alpha_2]^2}, \\ & \text{where } D = \frac{(1 - \rho)\alpha_2 (1 - \beta)}{\beta [1 - \alpha_1 - (1 - \rho)\alpha_2]}. \end{aligned}$$

Since $0 < \rho, \alpha_1, \alpha_2, \theta, \beta < 1$ and $\alpha_1 + \alpha_2 < 1$, the first term of the right-hand side is negative, the same as (30); and since $(\alpha_1 - 1) < 0$, the second term is also negative.

Therefore, $\frac{d \ln \pi_p}{d \rho} < 0$, i.e. the project profit also decreases as ρ increases. Also

$\pi_p \rightarrow 0$ when $\rho \rightarrow 1$.

Therefore, the dynamic movements of outcome (π_0, π_p) from undertaking the project, i.e., cooperation between the family business and government *Guanxi*, are shown in Figure 2. The original outcome (π_0, π_p) falls in region N' , it moves left and downwards towards the origin as ρ increases, and finally falls in region n . This result implies that when the market environment improves, the family business will not choose further cooperation with the government. This explains why no private firms are registered as “red-hat” firms in present-day China. However, the private entrepreneur still chooses cooperation with family at this stage in the model.

INSERT FIGURE 2

Summarizing the above analysis, we then have the following proposition:

Proposition 4. *When the manager acts in the interests of family, the family business may forgo good projects rather than cooperating with the government to implement them. Moreover, previous cooperation with the government will also be given up by “pure” family business when the economic environment improves.*

As argued by Lorenz (1999), there is no guarantee that cooperation will succeed, even when the circumstances appear to promise mutual gain. Proposition 4 not only confirms this argument, but further shows that previous cooperation with government trust (*Guanxi*) will fade as the market environment improves.

4.2.2 The decrease in cooperative profits

Furthermore, taking logarithms of both sides of (11), i.e., the profit of cooperation with both government and family *Guanxi*, and differentiating $\ln \Pi_1^c$ with respect to ρ , we have

$$(32) \quad \frac{d \ln \Pi_1^c}{d \rho} = \ln u_1 \times \left\{ \begin{aligned} & \frac{\alpha_2 [2\theta\alpha_1 - (\alpha_1 + \theta)]}{[1 - \alpha_1 - (1 - \rho)\alpha_2][1 - \theta\alpha_1 - (1 - \theta)(1 - \rho)\alpha_2]} \\ & + \ln 2 \times \frac{\alpha_2 (1 - \beta)(\alpha_1 - 1)}{\beta [1 - \alpha_1 - (1 - \rho)\alpha_2]^2} \end{aligned} \right\}.$$

Then comparing (32) and (30), which have similar structures, the second term in the brace of (32) is negative because $\alpha_1 - 1 < 0$. Therefore, we have

$$\left| \frac{d \ln \Pi_1^c}{d \rho} \right| > \left| \frac{d \ln \pi_0}{d \rho} \right| = \left| \frac{d \ln \Pi_1^{c'}}{d \rho} \right|, \text{ then } \left| \frac{d \ln \Pi_1^c}{d \ln \Pi_1^{c'}} \right| > 1.$$

In other words, the percentage change in Π_1^c is bigger than the percentage change in $\Pi_1^{c'}$, which means Π_1^c decreases faster than $\Pi_1^{c'}$. That is, the profit from cooperation with both government and family decreases faster than that from cooperation with only family when the economic environment improves. The rapid decrease in the profit from cooperation with the government seems to be the direct result of “mechanism degeneration” as described by Sun (2002),⁹ so that a family business will forgo cooperation with government *Guanxi*.

4.3 Corollary of the theoretical models

Some may argue that (21) also represents the profit of cooperation with the government only by the private entrepreneur, therefore, the above analysis is also valid for “red-hat” firms (or TVEs). That is, a “red-hat” firm (or a TVE) would continue to exist in China and would perhaps drive out family firms under a similar proposition. This argument may be true if the manager acts in the interests of existing owners (both the government and manager him or herself). However, it has been acknowledged that cooperation with the government typically entails a separation of ownership and control, where there is a conflict between the firm and the government. Given the agency problem, it is hard for the manager to act in the interests of both the government and him or herself. Thus, the analysis of the above cooperative model cannot be applied to a “red-hat” firm since the assumption that the manager acts in the interests of existing owners does not hold.

In contrast, there is good reason to believe that the manager will act in the interests of family members. That is, the second model also provides a justification for the distinction between family and government *Guanxi* within a firm, which is the key

⁹ “Mechanism degeneration” in Sun’s (2002) study refers to the trend whereby local governments shift from offering a “helping hand” to a “grabbing hand” and show a tendency to abuse their ownership rights over fake collectives. In Sun’s opinion, mechanism degeneration is an important reason for the fading out of local government ownership in Chinese TVEs.

underpinning idea of this paper. Combining the above analysis in this section with the discussion in Section 3, particularly Proposition 1, we reach the following corollary regarding the interaction of government and family *Guanxi*:

Corollary: *A private firm may prefer family trust (Guanxi) to government trust (Guanxi) for cooperation; that is, the prominence of family business can be explained by not only the improvement in the economic environment, but also the tendency for family trust (Guanxi) to replace government trust (Guanxi).*

5 Conclusion

This paper represents the first attempt to model the roles of government and family together within the same social cultural framework of trust (*Guanxi*) for the private enterprises in China. The theory of ownership structure developed in the above models takes into account the effects of an imperfect institutional environment. The first model illustrates endogenous ownership theory in which the optimal arrangement, i.e., non-cooperative or cooperative arrangement with trust (*Guanxi*) for private enterprises, is related to the degree of imperfection of the market environment, as well as the ability of management in those firms. It explains how institutional foundations of trust, particularly the roles played by government and family, are crucial for the development of private enterprises. The first three propositions discuss the optimal arrangements for the development of private enterprise in an imperfect market such as China. These propositions hold for any ownership share, including the optimal share θ^* , which maximizes Agent 1's expected income under the cooperative arrangement. The second model further confirms the importance of management in determining optimal ownership, but more importantly, it discusses the interplay of government and family *Guanxi* within the same configuration of general *Guanxi* ability in the production process. The last proposition and its corollary explain why family business is the most common ownership structure chosen by private enterprises and why direct involvement of the government in private businesses is fading out.

The prevalence of family businesses can be seen as a result of family trust replacing government trust in the firm's economic activities. The privatisation of the state-

owned firms may not be the immediate procedure to reach an efficient allocation of resources, rather the economic environment should be improved first. Alternatively, promotion of green field private enterprises with pure private ownership is an appropriate mechanism. For family business, the advantages of family *Guanxi* obviously outweigh the disadvantages in present-day China. The future development of private enterprises depends heavily on the interplay of market forces, the role of government, and the evolutionary cultural context. In China, since government policy places increasing emphasis on building a market economy and shifts towards a rules-based framework, the government is generally accepted as pro-reform and intends to cultivate a sound economic environment. Thus, when the market in China becomes more mature, private enterprises should adopt the appropriate form of ownership structure and corporate governance for changing circumstances. In the first model, the importance of family *Guanxi* ability will also finally be given up to “pure” management ability, as standard theories describe. However, the traditional cultural context seems to be not easily changed and family business may still exist into the future. At the same time, because family owners are not able to provide all the management skills themselves, except in the smallest firms (Gregory et al., 2000), the management decisions will also be surrendered to professional managers when the firm grows. Thus, family business will perhaps reflect a high probability of separation of ownership and control.

In summary, the theoretical models developed in this paper represent a combination of orthodox endogenous ownership theory and agency theory. These models provide plausible explanations for the development pattern of Chinese private enterprises; however, there are certain caveats that are worth noting. For the first model, the assumption of only two classes and a single profit function inevitably leads to a single dominant arrangement. In addition, the model describes a one-period non-cooperative game, but typically cooperative patterns are of a long-run nature. The exercise under the assumption of a repeated cooperative game needs further analysis. For the second model, the analysis is also based on certain restricted assumptions such as the manager acting in the interests of existing owner(s) and passive outside investor(s). Further research that relaxes these assumptions is also warranted.

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Figure 1 The Project Decision of the Family Firm

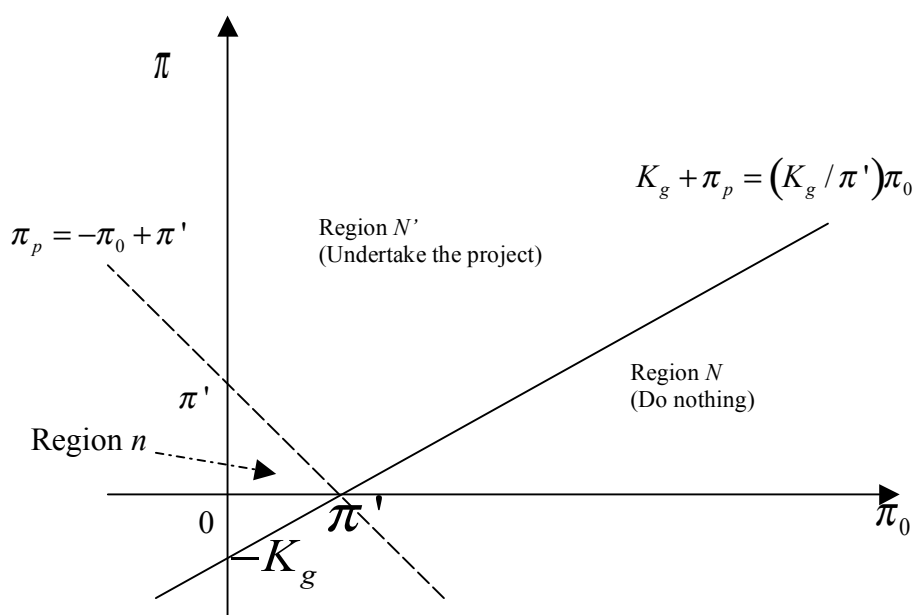


Figure 2 The Dynamic Movements of Outcome (π_0, π_p) as ρ Increases

