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**Ownership Structure, Performance and Determinants of Share
Diffusion in Family Businesses: Evidence from China**

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Abstract. It has long been debated about the impact of ownership structure on firm's performance. Most existing studies look at established companies in developed world where the market mechanism is well-developed. Listed companies are the most frequently used sample. While there are many benefits to use information of listed companies to study relationship between ownership and performance, an important part – family firms – has largely been neglected. This paper explores the impact of ownership structure on performance of family business in a context of under-developed market environment. Using a survey data of 296 private family firms in Ningbo City, China, we find both management and single largest shareholder's ownership is positively related to firm's performance. However, family's shareholding does not have significant impact on performance, suggesting different impact of management and family shareholding even if the former is part of the latter. Further inquiry on firm's willingness to give shares to managers who are not family members indicates that while nearly half of the firms are willing to provide shares to professional managers so as to align their interests to that of the owners, weak corporate governance mechanism and under-developed market may discourage such practice. Our findings support both agency theory and endogenous ownership theory to an extent, and reveal factors that may lead to or hold share diffusion among young family businesses in emerging market.

JEL classification: G30, G32, L20

Key words: ownership structure, firm performance, corporate governance, family business, agency cost, endogenous ownership, private firms in China, emerging market

1 Introduction

The debate on the impact of ownership structure on firm's performance and productivity can be dated back to the publication of Berle and Means's *The Modern Corporation and Private Property* (1932). Despite the importance of ownership structure in an organisation, there is no consensus regarding its effect on firm's performance. Besides, most studies use listed companies as sample for research. The benefits of such sample are obvious: publicly traded companies represent a segment of firms whose principal agent problem is most severe, datasets are readily available for virtually all researchers, and research can be duplicated or verified if needed. However, the most prevalent form of enterprise – small and medium family firms - has largely been neglected. It is worth noting that we here define family firms as businesses which same family holds dominating shares (more than 50 per cent), and top management is from the same family. In most cases, these firms are at their early stage of development. There are studies examining family ownership of established firms, most are publicly trade companies (e.g. La Porta et al 1998, Faccio et al 2001, Anderson and Reeb, 2003, 2004), some include both listed and unlisted companies (e.g. Maury 2006), but family share of those firms in those studies rarely exceed 50 per cent even in so-called “family controlled” firms, as only small proportion of shares are needed to control a firm in a diffused ownership structure. Family owned and controlled firms are still out of the radar of most researchers studying ownership structure. The reasons for the negligence, according to Lansberg, Perrow and Rogolsy (1988), are the idea that control of firms will eventually shift to the hands of professional managers, difficulties in studying both family and business system simultaneously, and the belief that work and family exist as distinct and self-contained systems. As argued by Daily and Dollinger (1992), those reasons do not have a sound ground, and over-reliance on large-firm samples may lead to difficulties in interpreting the results. They further suggested that small firms are preferred to study governance issues as they “tend to have a cleaner proximate environment than larger and more diversified firms” (p. 119).

Adding to their argument, we wish to argue that another benefit of studying family firms is the possibility of exploring the evolvement of ownership structure. A significant proportion of listed companies started as family business, and evolved into their current form with share diffusion. Even now, family control is still common in listed firms in developed world (Burkatal et al 2003). Therefore, understanding the link between ownership structure and performance in family firms will not only include an additional part of enterprise world, but also help us to understand the determinants of ownership structure change at firm's early development stage.

The lack of interest in family firm may also rest on the assumption that interests between managers and owners in family firms are highly aligned, and agency costs, if any, would be minimal. In this study, however, we wish to examine two separate, but inter-related issues: whether family shareholding and management shareholding play different roles on firm's performance, and what are the determinants for family firms to reward shares to professional managers who are non-family members. Since most family businesses are family-owned and operated at their early stage, it is not difficult to assume family shares are equivalent to

management shares, in other words, there is no need to treat family and management as two separate interest groups, as researchers do for listed company. However, this study shows that they do play different roles in influencing firm's performance despite the fact that there is a significant overlap between them. Given the low agency costs among family businesses, firms will not have much incentive to provide shares to managers who are not family members. Is that the case in family firms in China? If not, what are the factors that may influence family firm's decision to provide shares to professional managers?

The dramatic expansion of domestic private enterprises in China since the late 1970s has provided a unique opportunity to study ownership structure in family firms. Initially permitted only on the fringes of the economy, the domestic private sector was estimated to account for about one-quarter of gross domestic product (GDP) in 2005 (Yearbook of State's Industrial and Commercial Administration, 2005). Between 1990 and 2004, private sector employment increased by 322% from 22.74 million persons to 96.04 million persons. During the same period, private sector output grew in real terms from RMB76.4 billion to RMB1478.5 billion (1990 price), with an average annual growth rate of 23.57%.¹ Such an unprecedented growth has provided rich samples of family business development as many private enterprises in China started as family businesses.

Since their re-emergence, the development of China's private enterprises has been characterized by strong involvement of family members, resulting in the prevalence of family businesses among private enterprises. It is estimated that about 90% of total private enterprises are family businesses (Zhang et al, 2001, 2002; Gan, 2002). 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 (Zhang *et al*, 2001, 2002; Gan, 2002).

Built upon agency theory and endogenous ownership theory, this paper investigates the relationship between ownership structure and firm performance among family businesses through a survey of 296 private firms in Ningbo City, China. The major research questions we aim to answer are: First, whether family and management ownership display different impact on performance among family firms? Second, what are the factors that may lead to share diffusion? Thirdly, what are the determinants for family firm to reward shares to professional managers? Lastly, what are the motivations to or not to provide shares to managers who are outsiders.

The remainder of this paper is organized as follows. Section 2 is the literature review of agency theory and endogenous ownership theory. Section 3 briefly describes the general

¹ Calculations based on data from Statistical Year Book of China 1990-2005 and Yearbook of State's Industrial and Commercial Administration, 1991-2005.

development of private enterprises in Ningbo and provides an overview of the survey. Section 4 describes the data and definitions of the variables, and discusses the methodology for examining the relationship between ownership structure and firm performance. Section 5 presents the empirical results for the relationship between ownership structure and firm performance. Given the importance of management shareholding for improving firm performance, Section 6 presents the empirical results for the determinants of the ownership decision to give shares to management. Discussion and conclusion are then presented in Section 7.

2. Literature Review

2.1. Agency theory

It is commonly acknowledged that ownership structure, which is the basic factor of corporate governance within private firms, is very important to firm performance. While there is a large literature discussing ownership structure within a firm, agency theory is frequently cited as a foundation.

The principal-agent problem comes from hidden action (“moral hazard”) due to asymmetric information. According to Alchian and Demsetz (1972), the essence of a firm is that it permits people to work as a team. Team production occurs when an output is produced by the simultaneous co-operation of several team members. Thus, the agency problem inevitably arises in corporate governance, which describes the conflict of interests between owners/shareholders as the principals and managers as the agents. Consequently, residual control rights fall into the hands of management instead of the residual cash flow claimants. Jensen and Meckling (1976) further describe the cost of agency as the sum of monitoring expenditures incurred by the principal, bonding expenditures incurred by the agent (to guarantee that the agent will not take actions to harm the principal), and the value of the lost residual borne by the principal. In general, when ownership of a firm becomes more diffuse, the agency problem will be exacerbated due to the inability of relatively small shareholders to police the behaviour of management. The monitoring of managers by shareholders is also weakened by the well-known free-rider problem. Empirically, Murphy (1985), Ang et al. (1999), and Denis and Sarin (1999) find an inverse relationship between the manager’s ownership share and agency costs. To mitigate the problem of agency, an obvious remedy is to increase management shareholding, making the manager a significant residual claimant.

However, although it seems that a firm performs better when ownership is in the hands of management, the relationship between the ownership structure and firm performance is inconclusive. This debate dates back to Berle and Means (1932), who suggest that an inverse correlation exists between the diffusion of shareholding and firm performance. This is because managers’ interests do not coincide with the interest of shareholders so that corporate resources are not used for the maximization of shareholders’ wealth. This view has been supported by many scholars. Shleifer and Vishny (1986), McConnell and Servaes (1990) and Zingales (1995) find a strong positive relationship between ownership concentration and corporate performance in the United States and other market economies and attribute this result to the impact of better monitoring. In transitional economies, Xu and Wang (1997), and

Chen (2001) find a positive relationship between actual firm performance and ownership concentration for a sample of listed Chinese companies. Other studies also reach a similar result for Russia (Barberis et al., 1996) and for the Czech Republic (Claessens and Djankov, 1999). However, this poses a question: why do diffuse ownership structures survive over time, as has occurred in many Western enterprises?

2.2. Endogenous ownership theory

There is another stream of literature discussing the relationship between ownership structure and firm performance; that is, endogenous ownership theory, which emphasizes the role of market discipline. Demsetz (1983) argues that ownership structure is endogenously determined in equilibrium. The ownership structure of a corporation should be thought of as an endogenous outcome of decisions that reflect the influence of shareholders and of trading on the market for shares. Thus, there is not a monotonic relationship between firm performance and ownership structure. This view has been supported by some other scholars (Morck et al., 1988; Hermalin and Weisbach, 1988; Loderer and Martin, 1997; Cho, 1998; Himmelberg et al., 1999; Holderness et al., 1999). However, these studies use samples of large companies in market economies and hence restrict the endogenous ownership structure to be the outcome of a perfect market (Demsetz and Villalonga, 2001).

At first sight, endogenous ownership structure does not seem to be an accurate representation of firm structure in China (Xu and Wang, 1999; Chen, 2001). The reasons are: First, government initiated and dominated the transformation of ownership arrangement of state-owned enterprises (SOEs) and township-village-enterprises (TVEs). Second, shares cannot be freely traded, except for publicly listed companies and there are only a relatively few publicly listed private enterprises.

However, the dominant role of government and under-developed capital market in China does not necessarily negate the role of market as proposed by endogenous ownership. Demsetz and Lehn (1985) argue that firms with more stable prices, technology and market share need less managerial discretion and therefore managers can be monitored at a relatively low cost. In contrast, frequent changes in relative prices, technology, and market shares require timely managerial decisions concerning redeployment of corporate assets and personnel. The less stable a firm's environment, the greater the cost to the owner of maintaining tighter control. Hence, we hypothesize a less stable business environment should give rise to a more concentrated ownership structure. It is commonly acknowledged that the business environment in a developing market such as China is more volatile relative to many developed markets (Singh, 2003). As a result, the high concentration of ownership in China's private firms, particularly family businesses, seemly represents an appropriate governance form for private enterprises, subject to the constraints imposed by the current immature market system in which family members provide cheap and flexible resources to fill the void created by imperfect capital and labour markets. That is, the ownership structure of private firms corresponds to the market environment. Given the legal and regulatory environment in China, the ownership arrangements of China's private firms should not be treated exogenously.

3. Data

3.1. Sample Selection

We select Ningbo city of Zhejiang Province as the location for our survey. The reason to select this city is that it can provide representative sample to study our research questions. The development of private enterprises differs from regions in China, and three patterns have been identified. The Zhejiang pattern is featured by primitive self-accumulating capital where most private enterprises grew naturally from businesses run by an individual or a family. It differs not only from the Sunan pattern in Jiangsu province, where private enterprises are mainly spin-offs from state and collective enterprises, but also from the Pearl River Delta pattern in Guangdong province, where private enterprises are often promoted by Hong Kong, Macao and foreign capital. Therefore, private firms in Zhejiang province can be representative for family businesses with organic growth, and can best illustrate the evolution of ownership structure under market forces.

After more than two decades of development, Zhejiang has stayed at the forefront of private enterprise development in China, strongly contributing to the provincial economy. Domestic private enterprises contribute 55.1 per cent GDP in Zhejiang in 2004 (Zhejiang Statistical Yearbook, 2005). Between 1990 and 2004, total output of private enterprises increased from RMB 14.1 billion to RMB 471.9 billion (1990 price), with an average annual growth of 28.5% in real terms. During the same period, private sector retail sales grew at an average annual rate of 24.9%, and tax revenue from private enterprises grew at an average annual rate of 23.5%. Zhejiang was ranked first nationwide in terms of absolute numbers in each of these categories over seven years from 1998 to 2004 (Report of China's Citizen-run Enterprises, No.2, 2004, p.182). The average annual growth rates in Zhejiang for these three indicators are higher than the corresponding national average annual growth rates during the same period at 4.9%, 7.7%, and 4.5%, respectively (Report of China's Citizen-run Enterprises, 2004).

Ningbo, the second largest city in Zhejiang province, had a population of 5.53 million in 2004 (Zhejiang Statistical Yearbook, 2005). The development of private enterprises in Ningbo corresponds generally with that of private enterprises in the whole of Zhejiang province. Private enterprises are an important factor propelling economic growth in Ningbo. In 2004, the industrial output of private enterprises in Ningbo was RMB186.95 billion, accounting for 86% of Ningbo's total industrial output; the retail sales of private enterprises were RMB57.81 billion, accounting for 97% of Ningbo's total retail sales; taxation revenue from private enterprises was RMB5.58 billion, accounting for 35.05% of Ningbo's total taxation revenue and exports of private enterprises were US\$5.58 billion, accounting for 33% of Ningbo's exports (Report of Development of Ningbo's Private Enterprises, 2005).

3.2. Description of the survey

The survey was administrated by the first author to private enterprises in Ningbo between December 2005 and February 2006. The questionnaire was first translated into Chinese and translated back into English to ensure the accuracy of the original translation. Altogether 400

copies of questionnaires were distributed to privately-run enterprises (excluding individual businesses), with assistance from the Ningbo's Bureau of Industrial and Commercial Administration and the Association of Ningbo's Private Enterprises. By the end of the survey, 327 copies of the questionnaires had been collected, accounting for 82% of total distributed questionnaires. After removing incomplete questionnaires, there were 296 valid questionnaires, accounting for 91% of total collected copies or 74% of total distributed copies. All valid questionnaires were checked for accuracy twice prior to being entered into a database.

In this survey, we collected general information including the length of operation, the ownership type prior to current registration, ² legal form of the firm, main industry or sector the firm operates and the number of employees in the past three years. We specially asked the respondents to provide information of initial (at the beginning of operation) and current ownership structure. Since we can not obtain share price of those firms, we asked respondents to provide gross assets, sales revenue and net profits over the past three years. To examine firm's willingness to reward shares to professional managers, we asked "Do you plan to give shares of your firm to management personnel other than family members?" and listed five possible reason for "yes" and "no" answers respectively.

Table 1 Industrial Distributions of Ningbo's Private Enterprises and Survey Firms by the End of 2004

	Ningbo City		Survey Firms	
	firms	proportion	firms	proportion
Total firms	68,500		296	
Primary Industry	840	1.20%	8	2.70%
Secondary Industry	39,860	58.20%	163	55.07%
Of the total: Manufacturing	37,395	54.59%	152	51.35%
Construction	2,090	3.05%	10	3.38%
Tertiary Industry	27,800	40.60%	125	42.23%
Of the total: Wholesale and retail trade and catering service	17,590	25.68%	66	22.30%

Source: Report of Development of Ningbo's Private Enterprises (2005) and Researchers' Survey

In the sample of 296 firms from which valid results were obtained, there were 283 firms where families controlled at least 50% of the shares, accounting for 95.6% of the total. That is, most private enterprises in the sample were characterized as family businesses, as discussed in Section 1. In terms of legal form there were 97 solely-owned companies, 14 partnerships, and 185 limited liability companies in the surveyed firms, accounting for 32.8%, 4.7%, and 62.5%, respectively. None of the surveyed firms falls into the category of company limited by shares. The sector distribution of these 296 firms is consistent with that in Ningbo

² The main criterion to differentiate private enterprises from individually run business is that the number of employees hired. If a business hires more than 8 employees, it is classified as private enterprises.

as a whole, as shown in Table 1.

4. Data Specification and Methodology

Following the studies of Demsetz (1983), Demsetz and Lehn (1985), and Demsetz and Villalonga (2001), among others, we examine the relationship between firm performance and formal ownership structure by also taking into account factors such as firm age, firm size and the instability of the business environment. In the first empirical study which examines the role of ownership arrangements on firm performance we consider ownership in terms of the single largest shareholder, family shareholding, and management shareholding.

4.1 Data description and specification of variables

Table 2 Descriptive Statistics for the 296 Survey Firms

Variables	Definition	Mean	SD	Min	Max
AvPR (%)	Average profit to assets ratio in three years prior to the survey	4.1975	25.9170	-306.424	114.9124
T1 (%)	The largest shareholder	78.3586	21.7889	10	100
Family (%)	Family shares (including the largest shareholder and family members)	92.8711	17.9405	10	100
Management (%)	Shares of top management	58.6309	36.7944	0	100
Age (Year)	Years registered as a private firm	6.4466	3.3253	2.08	20.17
LnAsset	Natural log of average gross assets in three years prior to the survey (million RMB)	0.7971	1.5692	-4.1626	6.1257
Instability (%)	Standard deviation of sales in three years prior to the survey	630.6928	2,956.836	0.1637	25,166.12

4.1.1 Measurement of firm performance

Firm performance is measured by the average profit rate (AvPR) of the firm, which is defined as the annual average rate of net profits to gross assets over the three years prior to the survey.³ This variable is the dependent variable in the econometric model.

4.1.2 Ownership structure variables

To examine the role of ownership structure on firm performance, we break ownership structure into three types, as follows:

³ The profit rate is a better measure of firm performance than the market value measured by Tobin's Q because market value cannot be easily obtained for most Chinese private enterprises.

1) *The single largest shareholder (T1)*. This stands for the percentage of shares held by the single largest owner. This variable serves as a proxy for ownership concentration and was used in Chen's (2001) study of Chinese publicly listed companies and a number of other studies for similar countries.⁴ As shown in Table 2, the average shareholding of the largest owner is 78.36%, reflecting a high ownership concentration. This percentage primarily reflects the fact that most private firms in China are of relatively small size, which is not surprise given their relatively short history. The sample of 296 firms comprises 97 solely-owned companies, as discussed above.⁵ In general, previous studies have found a positive relationship between ownership concentration and firm performance in developing countries, which is attributed to the impact of better monitoring (Barberis et al., 1996; Xu and Wang, 1997; Claessens and Djankov, 1999; Chen, 2001). On this basis, a positive relationship between firm performance and the single largest shareholder (T1) is expected.

2) *Percentage of shares jointly owned by the largest owner and each of his/her family members (Family)*. This variable corresponds to the definition of family business and can be used to explain the non-separation of ownership and control. As shown in Table 2, the average shareholding jointly owned by the largest owner and his/her family members (Family) is 92.87%, reflecting a high concentration of family ownership.

There is a sizeable literature that examines the effect of family ownership on firm performance. Fama and Jensen (1983) note that combining ownership and control allows concentrated shareholders to exchange profits for private rents, while Demsetz (1983) argues that such owners may choose non-pecuniary consumption and thereby draw scarce resources away from profitable projects. However, Demsetz and Lehn (1985) note that combining ownership and control can be advantageous, as large shareholders can act to mitigate managerial expropriation. James (1999) posits that families have longer investment horizons, leading to greater investment efficiency.

Using data for the United States, Morck et al. (2000) find that continued founding-family ownership is an organizational form that leads to poor firm performance. In contrast, McConaughy et al. (1998), and Anderson and Reeb (2003) find that family-controlled firms perform better than non-family firms. Their explanation for this finding is that family relationships improve monitoring while also providing incentives that are associated with better firm performance. Using data for developing countries, Faccio et al. (2001) studied family firms in East Asian companies and reported that family control leads to wealth expropriation in the presence of less than transparent financial markets, thus harming firm performance. However, Faccio et al. (2001) uses a sample of large corporations with a relatively low proportion of family shares. Khaemasunun (2004) argues that family firms in Thailand perform better because they are relatively small in size, and family members working in the firm tend to attach importance to firm performance since they have a high proportion of the total shares. This argument might be true for Chinese private firms because

⁴ For example, see studies by Faccio et al. (2001) for East Asian countries, including Hong Kong, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan and Thailand, and Dogan and Smyth (2002) for Malaysia.

⁵ According to the legal definitions of Chinese private enterprises, the total ownership shares in a solely-owned company are held by the single shareholder.

families (including the largest shareholder and his/her family members) have a very high proportion of the total shareholding in the sample. Therefore, a positive relationship between family ownership (Family) and firm performance is expected.

3) *Percentage of shares owned by senior management (Management)* refers to the percentage of shares owned by CEOs, deputy CEOs, general managers, and deputy general managers. As shown in Table 2, the average shareholding of top management in the sample is 58.63%, which is also high. Jensen and Meckling (1976) stress that managers act in their own self-interest and argue that managers perform better the higher their ownership stake within the firm. The higher the percentage of shares owned by management, the harder managers will work to improve firm performance, which leads to an increase in firm value and hence an increase in the managers' private wealth. The agency problems in emerging markets are more severe than in developed economies due to the absence of strong legal protection and other governance mechanisms (La Porta et al., 1998). Dyck and Zingales (2004) study private benefits of control around the world and find that higher private benefits of control are associated with less developed capital markets and more concentrated ownership. In the case of China, Chen (2001) finds that an increase in management shareholding improves firm performance for publicly listed companies. All these findings suggest that increasing management shareholding is an obvious remedy to mitigate the problem of agency. On this basis, we expect a positive relationship between firm performance and management shareholding.

4.1.3 Control variables

Firm age, beginning from the date the firm registered as a private enterprise (Age). Ang et al. (1998) argue that due to the effects of a learning curve and survival bias older firms are likely to be more efficient than younger ones. Thus firm performance should improve with age. However, Chen (2001) finds that the performance of Chinese publicly listed companies decline with their listed age, mainly due to problems of adverse selection and moral hazard subsequent to listing. After classifying a sample of United States family firms as "young" and "old" based on whether the firm is under or over 50 years of age, Anderson and Reeb (2003) find both young and old family firms exhibit a significant and positive association between age and firm performance. They also point out that better firm performance is attributed primarily to the youngest firms in their sample because the new founders bring unique, value-adding skills to the firms that result in superior accounting performance and market valuations; that is, younger firms seem more efficient. As shown in Table 2, the average age of our sample firms was six years at the end of 2004, indicating that most private firms were established after the commencement of ownership reform of SOEs and TVEs at the Fifteenth Congress in 1997 and after the recognition of private enterprises in the Chinese Constitution in 1999. We include the firm's age to test whether firms with shorter histories have better performance. On the basis of the extant literature a negative relationship between firm age and firm performance is expected.

Firm size (LnAsset). This is measured by the natural logarithm of annual average total assets over the past three years. One argument is that firm size negatively affects not only firm

performance, but also ownership concentration (Demsetz, 1983; Demsetz and Lehn, 1985; Demsetz and Villalonga, 2001). Chen (2001) finds a negative correlation between firm size and firm performance in a sample of Chinese publicly listed companies and Anderson and Reeb (2003) reach the same result for a sample of family firms in the United States. An alternative argument is that firm size improves firm performance due to the importance of capital stock. Barth et al. (2005) recently found a positive relationship between firm size and firm performance in Norwegian family firms. Most private firms in China are relatively small, as shown in Table 2. Larger private firms may exhibit better performance because capital resources are critical for the development of private firms (Sun and Wong, 2002). In China, larger firms are better placed to access capital and banks are more ready to lend to large firms. This would suggest a positive relationship between firm performance and firm size for Chinese private firms.

Instability of the business environment (Instability). Demsetz and Lehn (1985) identify the instability of a firm's performance as a factor determining ownership concentration. We use the standard deviations of changes in firm's sales revenue over the past three years to proxy the instability of the business environment. As shown in Table 2, the instability indicator is quite large with a mean of 631 in a range of 0.16 to 25,166. This strongly implies that the business environment in China is volatile. Under these circumstances there is a need for the firm's owners (as well as managers) to concentrate their shareholdings, because the owners and managers of Chinese private firms are generally not separated. Therefore, we expect that a more stable business environment will be reflected in improved firm performance. That is, we expect a negative relationship between firm performance and the instability of the business environment.

4.2 Econometric methodology

To examine the relationship between firm performance and ownership arrangements, an Ordinary Least Squares (OLS) model is employed:

$$AvPR = \alpha + \beta_1 DTO + \beta_2 Age + \beta_3 LnAsset + \beta_4 Instability + \mu_i,$$

where α is the intercept; $\beta_1 \dots \beta_4$ are the regression coefficients to be estimated; μ_i is the random error term; and DTO is a vector of three different types of ownership shares; that is, the shares owned by the single largest owner (T1), the shares jointly owned by the largest owner and family members (Family), and the shares owned by top management (Management). The OLS estimation will take into account multicollinearity and heteroskedasticity, as discussed below.

4.2.1 Correlations of variables

To assess potential bias due to multicollinearity, we examine the pair-wise correlation coefficients between each pair of variables. Gujarati (1995, pp.335-336) suggests that multicollinearity is of concern if the simple correlation is higher than 0.6 and a serious problem if the simple correlation is higher than 0.8. In their seminal study of firm performance and ownership structure in the United States, Demsetz and Lehn (1985) run

separate models when the simple correlation between ownership variables is 0.71. More recently, Demsetz and Villalonga (2001) consider multicollinearity to be a problem requiring remedy when the simple correlation is greater than 0.6.⁶

Table 3 Correlation Matrix

	AvPR	T1	Family	Management	Age	LnAsset	Instability
AvPR	1						
T1	0.0878	1					
Family	0.0828	0.6811	1				
Management	0.1888	0.2460	0.3525	1			
Age	0.0211	0.3150	0.1176	0.1442	1		
LnAsset	0.2613	-0.2585	-0.1183	0.2134	-0.0789	1	
Instability	0.2680	-0.0667	-0.0755	0.0650	-0.0569	0.5008	1

Table 3 shows the correlation matrix for the sample used here. The only simple correlation in excess of 0.6 is between the single largest shareholder (T1) and family shareholding (Family). To address the issue of multicollinearity in our study, the effect of these two ownership variables will be estimated separately. Therefore, we perform two hypothesis tests with the ownership structure variables. In the first OLS regression, the ownership variables include the single largest shareholder (T1) and top management shareholding (Management); in the second OLS regression, the ownership variables include family shareholding (Family) and top management shareholding (Management). Among these three ownership variables, top management shareholding (Management) will be examined in both tests.

4.2.2 Heteroskedasticity

Models employing cross-sectional data may be affected by heteroskedasticity. This problem is especially serious when we use a sample including firms with large differences in size and in variance of sales, as shown in Table 2. After checking for heteroskedasticity using the Breusch-Pagan / Cook-Weisberg test in the two OLS regression models described above, we find these OLS models are affected by heteroskedasticity, as shown in Table 4. Our diagnostic testing shows that each test rejects the null hypothesis of constant variance for fitted values of the average profit rate. To address the problem of heteroskedasticity in the OLS regression, we employ a robust regression model with White's heteroskedastic consistent t-statistics.

Table 4 Breusch-Pagan / Cook-Weisberg Test for Heteroskedasticity of OLS

Ho: Constant variance		
Variables: fitted values of		
AvPR	First OLS with T1 and Management	Second OLS with Family and Management

⁶ In terms of the measurement of firm performance, Demsetz and Villalonga (2001) present no regression models using the accounting profit rate because the simple correlation between Tobin's Q and the accounting profit rate was 0.61 in their study.

		Management
Chi2(1)	266.64	201.88
Prob>Chi2	0.000	0.000
Results	Reject H0	Reject H0

5. Empirical Results of the Relationship between Ownership Structure and Firm Performance

5.1 Empirical results

The results of above two OLS regressions testing the relationship between ownership structure and firm performance are reported in Table 5.

Table 5 The Relationship between Firm Performance Measured as Average Profit Rate (AvPR) and the Ownership Variables (T1, Family, and Management)

OLS with robust standard errors	AvPR	
T1	0.1446011* (1.95)	
Family		0.1073285 (1.23)
Management	0.0777436** (2.36)	0.0811907** (2.34)
Age	-0.0687814 (-0.15)	0.1445348 (0.33)
LnAsset	2.955494* (1.86)	2.494881** (2.27)
Instability	0.0015675*** (2.80)	0.0016789*** (3.00)
Constant	-14.59993* (-2.49)	-14.51778* (-1.81)
R ²	0.1260	0.1193
F-statistic	8.36	7.85
P-value	0.000	0.000

Notes: ***, **, * stand for significant at 1%, 5%, and 10% level respectively. t-statistics are in parentheses.

The coefficient on the single largest shareholder (T1) is positive and significant in the OLS model with robust estimation, suggesting that large shareholders may help reduce agency costs caused by the principal-agent problem in private enterprises, and hence are better for firm performance. The finding here is consistent with many studies for developing countries, as discussed above. In the survey of the 296 firms, the average shareholding of the single largest owner increased from 74.63% when starting a private business to 78.36% by the end of 2004.

Top management shareholding (Management) has a statistically significant positive coefficient in both of the firm performance regression, which is consistent with expectations. That is, increasing the proportion of shares owned by top management might significantly

strengthen managers' incentive to improve firm performance. In our sample, the top management shares increased from 54.93% at the beginning of private business start-up to 58.73% by 2004, showing a steady increase in management control.

The results suggest that larger firms perform better, indicating that agency costs do not increase when the firm grows larger. This is true particularly because most private firms are small, while at the same time capital resources are vital for their development, meaning that increasing firm size with more capital improves firm performance. This result underscores the importance for private firms to seek more physical capital.

Interestingly, there is a statistically significant positive relationship between firm performance and the instability of the business environment in both OLS models, contradicting our prediction. Demsetz (1983), Demsetz and Lehn (1985), and Demsetz and Villalonga (2001) argue that changes in business circumstances, which are defined as the standard deviations of monthly stock market rates of return or annual accounting profit rates, are not beneficial for the performance of firms. However, those studies use sample firms from mature markets such as the United States, which have a relatively stable business environment. Hence their argument may not be appropriate for developing markets. There are two possible reasons for our different results here. The first reason is that the business environment in a developing market such as China is more volatile relative to many developed markets. Su and Fleisher (1998) and Rogers (2004) find that returns in Chinese stock markets are relatively volatile. Moreover, Su and Fleisher (1998) argue that higher average returns are associated with larger exposure to risks in Chinese publicly listed companies, and Khaemasunun (2004) argues that higher returns are associated with higher risks in Thai family firms. These studies use the changes in market returns as an indicator of instability, which is the same as in the Demsetz studies except that different results are obtained. The instability indicator in our model refers to the changes in sales, and the positive relationship between firm performance and changes in sales suggests that increases in sales, rather than stable sales, contributes more to better firm performance. That is, firms experiencing a greater increase in sales revenue exhibit better performance.

The second reason, more importantly, comes from the essence of endogenous ownership theory, which is that the market environment affects the ownership structure. When the business environment is relatively volatile, decisions need to be made more quickly and flexibly in response to market fluctuations (Yeung, 2000). Our findings show that a higher ownership concentration is associated with a more unstable business environment, which is consistent with endogenous ownership theory and indicates that private firms have to adopt an appropriate corporate governance mechanism to changing business circumstances. That is, ownership shares should be concentrated in the hands of decision-makers of the firm, i.e., the owner and the manager, since the owner and the manager are usually not separated in most private firms. Therefore, our results do not contradict orthodox ownership theory, but rather extend it to reflect conditions in developing markets.

Contrary to our expectation, family shareholding jointly owned by the largest owner and all

family members (Family) has no significant effect on firm performance in the OLS robust regression. This indicates that an increase in family ownership might not be beneficial to firm performance. The fact that family controlled businesses represent the majority of Chinese private firms seems inconsistent with this result. In the sample of 296 firms, the family shares jointly owned by the largest owner and his/her family members rose from 89.28% when starting as a private company to 92.87% in 2004. However, this evidence should be viewed with caution. The 3.59 percentage-point increases in family shares were a reflection of the increase in the single largest shareholder rather than an increase in the shares owned by his/her family members.⁷ Another reason was that private businesses were established at different times. However, the empirical result here is consistent with the wealth-expropriation argument by Faccio et al. (2001), as discussed in Section 4.1.2. This seems an accurate depiction of private firms in China when they grow larger.

Firm age (Age) does not have a significant effect on firm performance in both OLS models, which is contrary to our expectation. On the face of it, this result implies that both old and young firms exhibit the same level of efficiency (or inefficiency) in Chinese private firms. A possible explanation for this result is that most private firms in the sample are young and they have relatively short histories, while other factors such as firm size and business instability might be more influential in determining firm performance.

5.2 Reverse causality and control for growth opportunities

The results presented in Tables 5 may suffer from the problem of reverse causality. Because performance improvements are anticipated by insiders, i.e., the largest shareholder, family members and management, reflecting their information advantage, insiders are able to increase their share-holding. Therefore, this issue needs to be addressed.

5.2.1 Reverse causality between firm performance and ownership variables

Table 6 The Relationships between Ownership Variables (T1, Family, Management) and firm performance (AvPR)

OLS with robust standard errors	T1	Family	Management
Age	1.910242 ^{***} (6.00)	0.5552705 ^{**} (2.07)	1.709018 ^{**} (2.52)
LnAsset	-4.24035 ^{***} (-4.43)	-1.393015 (-1.40)	5.316277 ^{***} (3.27)
Instability	0.0004741 (1.08)	-0.0002566 (-0.63)	-0.0009864 [*] (-1.82)
AvPR	0.1213123^{**} (2.14)	0.0871072^{***} (3.11)	0.20957^{***} (3.00)
Constant	68.61531 ^{***} (25.43)	90.1982 ^{***} (36.84)	43.21927 ^{***} (9.06)

⁷ In the sample of 296 firms, there was an increase of 3.73 percentage points in the single largest shareholder from 74.63% to 78.36%, while the shares owned by family members except the largest shareholder experienced a downward trend with a decrease of 0.14 percentage points from 14.65% to 14.51%.

Number of firms	296	296	296
R ²	0.1791	0.0404	0.0934
F-statistic	18.99	4.21	9.55
P-value	0.0000	0.0025	0.0000

Notes: ***, **, * stands for significance level at 1%, 5%, and 10% respectively. t-statistics are in parentheses.

As shown in Table 6, the effects of firm performance (AvPR) on the single largest shareholder (T1), family shareholding (Family), and top management shareholding (Management) are statistically positive in the sample. The coefficients on these variables are significant at the 5%, 1%, and 1% level respectively. Thus, a problem of reverse causality exists between firm performance and the ownership variables in Table 5.

5.2.2 Control for growth opportunities

To overcome the problem of reverse causality, a proxy for growth opportunities is introduced in this subsection. For the example used here, growth opportunities (Growth) is defined as the average growth of sales revenue over the past three years prior to the survey, which is the same definition as in previous studies (Chen, 2001). In the empirical specifications reported in Table 7, the independent variables is the profit rate (AvPR), while the explanatory variables are the single largest shareholder (T1), family shareholding (Family), management shareholding (Management), growth opportunities (Growth), and other control variables (Age, LnAsset, Instability). The empirical specifications in Table 7 correspond to the models reported in Tables 5.

Table 7 Relationship between Firm Performance and Ownership Variables by Controlling for Growth Opportunities (Growth)

OLS with robust standard errors	AvPR	
T1	0.1385819 [*] (1.86)	
Family		0.1070568 (1.23)
Management	0.0711119 [*] (1.68)	0.0727299 [*] (1.65)
Growth	0.011298 (1.13)	0.0126145 (1.25)
Age	0.0457702 (0.10)	0.2616412 (0.59)
LnAsset	2.959583 ^{***} (2.61)	2.531531 ^{**} (2.31)
Instability	0.0015496 ^{***} (2.77)	0.0016538 ^{***} (2.96)
Constants	-15.00304 ^{**} (-2.55)	-15.35994 [*] (-1.91)

Number of firms	296	296
R ²	0.1299	0.1241
F-statistic	7.19	6.82
P-value	0.0000	0.0000

Notes: ***, **, * stand for significant at 1%, 5%, and 10% level respectively. t-statistics are in parentheses.

As shown, both the single largest shareholder (TI) and top management shareholding (Management) have a statistically significant positive coefficient in the first regression, which are significant at the 10% level, respectively. In the second model, while family shareholding (Family) has no significant effect on firm performance, the relationship between top management shareholding (Management) and firm performance is significantly positive (which is significant at the 10% level). Additionally, both firm size (LnAsset) and the instability of the business environment (Instability) have a significant effect on firm performance in these two regressions. In other words, even after introducing a proxy of growth opportunities (Growth) in the regressions in Table 5, the results are consistent with the previous findings.

5.3. Robustness of the results

Table 8 The Relationships between Firm performance Measured as Return over Sales (ROS) Ratio and Ownership Variables (T1, Family, and Management)

OLS with robust standard errors	ROS	
T1	0.1989445 ^{**} (2.35)	
Family		0.0062702 (0.06)
Management	0.1959317 [*] (1.69)	0.2548592 ^{***} (2.69)
Age	-0.1676201 (-0.31)	-0.2168694 (-0.81)
LnAsset	2.130348 [*] (1.66)	1.997617 [*] (1.65)
Instability	0.0018295 ^{***} (2.78)	0.0020031 ^{***} (3.06)
Constants	-15.24921 ^{**} (-2.21)	-24.67344 ^{***} (-2.65)
Number of firms	296	296
R ²	0.0805	0.0859
F-statistic	5.28	5.45
P-value	0.0002	0.0001

Notes: ***, **, * stands for significance levels at 1%, 5%, and 10% respectively. t-statistics are in parentheses.

An assumption of above analysis in Table 5 is that the specifications and proxies adequately

capture the appropriate attributes. The results are also robust to an alternative measurement of firm performance, the return over sales (ROS) ratio, which is defined as the annual average rate of net profits to sales revenue over the three years prior to the survey. The results are reported in Table 8, where each of the variables has the same signs and similar statistical significance as those reported with AvPR as the measure of firm performance in Table 5. In other words, the robust check confirms the findings as discussed above.

6. The Determinants of Giving Ownership Shares to Management outside the Family

The empirical study in the previous section shows the importance of management for improving firm performance. In practice, family managers might lack sufficient management skills, thus reducing the profitability of family firms. Barth et al. (2005) find that Norwegian family-owned firms are less productive than non-family-owned firms and attribute this finding to the skill-gap between family managers and outside professionals, which is consistent with the argument about the specialization of agents.⁸ Therefore, family firms may recruit outside professionals to management. There are many studies discussing firm performance by classifying the managers of family firms into two groups, i.e., from the owner's family or outside the owner's family (Anderson and Reeb, 2003; Barth et al., 2005). Given the fact that most private firms in China are characterized by family businesses and that there is a high degree of centralization of power in the hands of the owner (Schlevogt, 2001), this raises a question: under what conditions would the owner of the firm give ownership shares to its managers from outside the owner's family? To answer this question, we use a probit model to examine the determinants of willingness to give ownership shares to management personnel outside the owner's family.

6.1. The determinants of willingness to give ownership shares to professional managers outside the owner's family

In answering the question "Do you plan to give shares in the firm to management personnel other than family members?", 141 owners answered "yes" while 155 owners answered "no," accounting respectively for 47.6% and 52.4% of the total 296 firms. In the probit model here, the dependent variable, i.e., the willingness to give ownership shares to managers outside the owner's family (GM), is a binary variable set equal to 1 if the answer is "yes" and set equal to zero otherwise. The control variables are family shareholding (Family), firm age (Age), firm size (LnAsset), the instability of the business environment (Instability), and the average profit rate (AvPR), which are defined as in Section 4. The results are reported in Table 9.

Table 9 The Probit Regression for the Determinants of Giving Ownership Shares to Management outside the Family (GM)

Probit regression	GM
Family	0.000609 (0.14)
Age	0.0232396 (1.03)

⁸ For example, Demsetz (1997) argues that the two main reasons to use agents are to take advantage of economies of scale and specialization.

LnAsset	0.0691885 (1.18)
Instability	0.0001283** (2.20)
AvPR	-0.0192099** (-2.46)
Constant	-0.29085 (-0.68)
Number of firms	296
Log likelihood	-194.77082
Pseudo R ²	0.0492
LR chi2(5)	20.14
Prob>chi2	0.0012

Notes: ***, **, * stands for significance levels at 1%, 5%, and 10% respectively. z-statistics are in parentheses.

Conceptually, the proportion of family shareholding may be an important factor determining the willingness to give ownership shares to managers outside the owner's family. If the family holds a solid control position, it would grant ownership shares to hired managers without being concerned about losing control and would treat such share-granting as an incentive plan. In contrast, if the family's share proportion is at, or lower than, a certain critical point, it would not grant any shares to the hired managers simply because of the cost of losing control. This also indicates that the impact of the family's equity position is not linear and has a switch point. However, as shown in Table 9, the relationship between family shareholding and GM is statistically insignificant, indicating that the family's share position does not affect the willingness to give ownership shares to managers outside the owner's family. One possible explanation is that in the sample of 296 firms, there are 241 firms (including 97 solely-run enterprises) with a total family shareholding of 100%. This meant that there is a very high concentration of family ownership with the mean at 93%, as shown in Table 2. In other words, there is very little variation in the data to find a switch point for the impact of the family's equity position. This result reflects the lack of variation in the data collected.

The positive relationship between GM and the changes in business environment (Instability), which is significant at the 5% level, shows that the owners of the firm will be more likely to give shares to managers outside the family under conditions of increasing instability in the business environment, confirming the findings in the previous section.

Although they argue that there is no systematic relationship between management shareholding and firm performance, Demsetz and Villalonga (2001) point out that firm performance is at least as likely to affect ownership structure as ownership structure is to affect performance. This is also supported by our probit model results where there is a negative relationship between GM and firm performance (AvPR), which is significant at the 5% level, indicating that management shareholding is perceived by firm owners as a critical factor for better firm performance. In other words, when the firm performs worse, the owners will be more likely to give ownership shares to managers outside the family, thus

strengthening managers' incentives to improve firm performance. This finding is consistent with the argument by Claessens and Djankov (1999) that profitability affects ownership structure in the Czech Republic, and with findings for Norwegian family firms by Barth et al. (2005) that professional managers are called for in difficult times while family owners enjoy maintaining control in good times or in good firms. Therefore, the second test of the willingness to give ownership shares to management outside the owner's family is also consistent with endogenous ownership theory.

6.2. Reasons for giving, or not giving, ownership shares to professional managers

The model in previous section allows us to identify determinants of family firms to give shares to professional managers who are non-family members. However, it does not provide answers as what are the motivations for such share diffusion. To examine the motivations in great depth, we listed five reasons each for respondents who either chose "yes" or "no". Table 10 summaries their choices. Among 141 firms who planned to give shares to professional managers, the most important reason is to "facilitate a convergence of interests between owners(s) and manager(s)" (42 firms, or 29.8%), the next choice is "manager(s) will be more responsible if they have shares in the firm" (38 firms, or 27%). These answers indicates that family firms are fully aware of principal agent issues in their businesses, and are willing to provide shares to professional managers to align their interests with the owners, or make decisions that are in best interests of the owners (be more responsible). On the other hand, for the 155 firms who did not plan to proceed with non-family member share scheme, the major reasons listed are "it may create disputes within the firm" (50 firms, or 32.3%), and "harder to dismiss underperformed managers" (49 firms, or 31.6%). Such answers indicate the weakness of corporate governance mechanism among family firms. In a company governed by modern corporate mechanism, it is difficult to imagine the small shares held by professional managers will create disputes between managers and owners, or even lead to incapability of dismissing under-performed managers. In other words, the weak governance mechanism can be the major obstacle to implement share awarding scheme to professional managers among family firms.

Table 10 Reasons for Giving, or Not Giving Ownership Shares to Professional Management outside the Owner Family

Reasons	Giving Ownership Shares		Not Giving Ownership Shares	
	firms	proportion	firms	proportion
Total	141		155	
It facilitates a convergence of interests	42	29.80%		
Manager(s) will be more responsible	38	27.00%		
It shares the risk between owner(s) and manager(s)	17	12.00%		
It reduces managerial turnover	24	17.00%		
It improves decision making	20	14.20%		
The profits should be restricted to the owner(s)			16	10.30%
Concerned about the loyalty and capability of the			16	10.30%

manager(s)				
Paying a high salary is enough to motivate management			24	15.50%
Hard to dismiss the manager(s) if they under-perform			49	31.60%
It would create disputes within the firm			50	32.30%

7. Discussions and Conclusions

This paper examines the relationship between ownership structure and performance of family firms in a context of under-developed market mechanism. This study suggests that the impact of ownership structure is more complicated than previously understood. Ownership arrangements such as placing ownership concentration in the hands of the largest shareholder and management shareholding exhibit significant effects on firm performance, which is consistent with agency theory. On the other hand, the economic environment is an important determinant of ownership arrangements, which is consistent with endogenous ownership theory. More precisely, this study suggests there are a lot in common between agency theory and endogenous ownership theory.

There are two related empirical tests in this paper. The first test shows that not only does the distribution of ownership rights have an impact on firm performance, but also the type of large shareholders is an important determinant of firm performance. An increase in ownership concentration in the single largest shareholder or in top management shareholding contributes to better firm performance. Thus, the combination of ownership and control is good for corporate governance in family firms, which provides an explanation for why family business remains a form of corporate governance for small and medium enterprises. The second test supplements the first by examining what determines whether firm owners give shares to professional managers. The results show that willingness to give ownership shares to outside professionals is negatively related to firm performance, confirming the effect of management shareholding on firm performance.

In summary, this paper has made contribution to the literature in three aspects: First, we separate three interest groups in family firms: single largest shareholder, management and family, and proves that their roles on performance are different. This finding challenges the widely accepted assumption that the interests of management and owners in family firms are aligned, and there is no need to treat them separately. The fact that family shares do not have significant impact on performance indicates that passive holding does not improve firm's performance, as suggested by Maury (2006) Second, we explore the determinants of providing shares to professional managers who are non-family members, and reveal that unstable market and declining profitability are the most important factors that lead to such share diffusion. This finding suggests that rewarding shares is used by family firms as a powerful mechanism to cope with situations beyond their capacity. It somehow also explains why the longer a firm operates; the more likely it has a diffused ownership structure, given that firms are likely to experience more unstable market conditions in a longer timeframe. Third, we further explore the motivations of rewarding professional managers with shares. On one hand, our findings confirm that aligning interests of managers and owners is still the

major motivation for such practice, as predicted by agency theory. On the other hand, our findings highlight the importance of governance mechanism in implementing share incentive scheme of professional management.

We are also aware limitations of this study. We only have a relatively small sample and only cover one city. Inevitably, we have problems associated small samples. Besides, China is a developing country where market and corporate mechanism is still in the process of development. As a result, our findings may have limited application in other parts of the world, and outcomes of this study need to be interpreted in such a context. The limitation of the small sample also highlights the need for further research.

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