Family Ties and Organizational Design: Evidence from Chinese Private Firms[*]

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Abstract

Analyzing data from a unique survey of managers of Chinese private firms, we investigate how family ties with firm heads affect managerial compensation and job assignment. We find that family managers earn higher salaries and received more bonuses, hold higher positions, and are given more decision rights and more job responsibilities than non-family managers in the same firm. However, family managers face weaker incentives than professional managers as seen in the lower sensitivity of their bonuses to firm performance. Our findings are consistent with the predictions of a principal-agent model that incorporates family trust and endogenous job assignment decisions. We show that alternative explanations, such as taste-based favoritism, succession concerns, and risk attitudes, are unlikely to drive our key results.

Keywords: Family Firm, Incentives, Authority, Job Assignments, China
JEL Classification: D64, D86, L23, M52

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1 Introduction

According to a recent study, family firms account for 65-80% of all businesses worldwide (Gersick et al., 1997). In many developing countries, family firms have been a major mobilizer of capital, enterpreneurship, and employment. It is well-known that the bulk of South and East Asian firms owned and controlled by overseas Chinese are family firms. In modern China, private enterprises did not gain legal status until the late 1980s but since then have flourished. Most of China's private businesses, which now account for more than one third of China's GDP, are family owned or controlled. Family ownership also is highly prevalent in developed countries. A conservative estimate is that in the US family businesses generate 12 percent of GDP and 15 percent of employment (Shanker and Astrachan, 1996). Among S&P 500 corporations, about one third are controlled by families (Anderson and Reeb, 2003).

Despite their ubiquitousness, only very recently have family firms become a popular topic in economics. Recent papers have examined the extent of family ownership and control in publicly traded firms (La Porta, Lopez-Silanes, and Shleifer, 1999; Claessens, Djankov, and Lang, 2000; Faccio and Lang, 2002), the effect of family ownership on firm performance (Anderson and Reed, 2003; Perez-Gonzalez, 2006), the role of family trust in avoiding managerial agency costs (Ilias, 2006), and the way in which the legal environment and capital market development affect family businesses (Burkart, Panunzi, and Shleifer, 2003; Bhattacharya and Ravikumar, 2003). Bertrand et al. (2008) examine how family relationships affect the organization, governance, and performance of business groups in Thailand. Bennedsen et al. (2007) analyze an extensive dataset of Danish private firms to investigate how family structure affects firm succession decisions and firm performance. Using country-, industry-, and firm-level data, Philippon and Mueller (2009) find that family ownership is more common in countries in which labor relations are more problematic.

Thus far, few studies have closely examined the internal organization of family firms.[1] It thus remains unclear how family relationships affect managerial compensation, incentive contracting, authority allocation, and job assignments, and whether managers who belong to the founding family are treated differently than professional managers. In these aspects, family firms remain

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[1] Chami (2001) and Bandiera et al. (2009) are two notable exceptions. We will discuss these two papers later.

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largely a black box. This paper attempts to fill this gap by investigating the role of family ties in the internal workings of the firm.

To organize our thinking on the relationship between family ties and the internal organization of a firm, we first develop a simple principal-agent model that explicitly incorporates family trust between the firm head and managers with which he shares family ties.[2] We find that the firm head optimally pays a family manager a higher salary, but gives her weaker incentives than a professional manager who is otherwise identical to the family manager. However, the family manager works harder than the professional manager because her interests are more aligned with those of the firm head. Next, we explicitly consider the firm head's job assignment decisions, and find that he should assign the more important jobs to family managers. In other words, compared with professional managers with equal ability, family managers are expected to hold higher positions and have more decision rights and job responsibilities.

The main contribution of this paper is the empirical analysis, which utilizes data from a unique survey of Chinese private firms that we conducted ourselves. We sampled over 600 Chinese private firms with almost 1,600 senior managers (at the division manager level or above). The firm survey elicited detailed information about the family presence in the firm, its ownership structure, corporate governance, production and marketing activities, accounting information, and personal characteristics of the firm head. The interviews with managers elicited not only information about personal characteristics such as age, education, and work experience, but also detailed information about their family ties with the firm head, compensation, share-holding, incentives, decision rights, and job responsibilities. A unique feature of the dataset is that multiple managers were interviewed within each firm, some of whom had family ties with the firm head and some of whom did not. This enables us to examine the role of family ties in shaping the organizational design of a firm by using firm fixed-effect regressions to filter out the impact of unobserved firm (and firm head)characteristics.

Our empirical tests provide strong support for the theoretical predictions. There is a marked difference between family managers, that is, managers who are spouses or children of the firm head, and non-family managers. Family managers face weaker incentives but are better paid.

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[2]In this paper we refer to a firm head as "he" and a manager as "she", purely for expositional ease.

Bonuses are less responsive to firm performance for family managers than for non-family managers, but family managers enjoy larger bonuses and shareholding deals that cannot be explained by firm performance. We also find that after controlling for the personal characteristics of managers, family managers occupy higher positions in the firm, have more decision rights, and are assigned more job responsibilities than non-family managers. Overall, our empirical findings lend strong support to the agency model of family trust.

Next, we address the concern that alternative explanations, including taste-based discrimination favoring family members, succession concerns, and risk attitudes, are also consistent with our empirical results. In theory, discrimination should decline in the face of greater competition and also should hurt the performance of the firm; however we find no evidence to support these predictions. If firm heads plan for family managers to succeed them, they may feel less need to incentivize current compensation and may give family managers greater job responsibilities to prepare them for succession. However, we find that the main pattern of results hold as much or more when firm heads do not plan a family succession than when they do plan for family succession. Finally, family managers may have unobserved attributes that differ from non-family managers. If they are less risk averse or have greater ability, we would expect greater incentivization of compensation, which we do not find. If they are more risk averse, they will receive lower incentives and exert less effort, which should lead firm heads to assign them to jobs with fewer responsibilities, which is inconsistent with our results. Lower unobserved ability is similar to the discrimination argument. Thus, we conclude that alternative explanations are unlikely to drive our key findings.

Next, We further divide non-family managers into professional managers and relative managers, that is, managers who are relatives of the firm head but with weaker family ties than family managers. Interestingly, in contrast to the situation for family managers, there is little difference between relative managers and professional managers in terms of the responsiveness of bonuses to performance or their position, decision rights, and job responsibilities. The results suggest that the beneficial effect of trust may be smaller for relative managers than for family managers, which is consistent with a model in which there are costs associated with treating the firm head's family members and relatives preferentially. For example, the selection of managers who are family members or relatives rather than from the managerial market may limit the qualifications of the

chosen candidates and thus hurt firm profitability. In addition, if family and relative managers are treated preferentially, professional managers in the same firms will perceive worse career development prospects, reducing their morale. We indeed find that relative and family managers are less qualified with respect to observable characteristics than professional managers.

Our paper is closely related to two recent papers. Chami (2001) theoretically analyzes the effects of altruism, mutual trust, and family succession on the design of agency contracts. However, our paper differs from his in that we study other internal organizational design issues (i.e., job assignment) in addition to incentive contracting, and our main focus is empirical. Bandiera et al. (2009) consider a market for managerial talent where both firms and managers are heterogeneous. They find that family firms use managerial contracts that are less sensitive to performance and that more talented and risk-tolerant managers are matched with firms with steeper incentive contracts. While they compare managers in family and non-family firms, ours compares contracts with family and professional managers within the same firm.

The rest of the paper is organized as follows. Section 2 presents a theoretical model and derives some testable hypotheses. Section 3 describes the survey and data and the differences between family and non-family managers. In Section 4, we present the empirical specifications and results. Section 5 concludes.

2   Theoretical Analysis and Empirical Hypotheses

The most important element of family relationships in the internal organizational design of a family firm is trust (Burkart, Panunzi, and Shleifer, 2003; Ilias, 2006). Trust between the firm head and his family managers that is fostered by family ties and long-term relationships is presumed to reduce agency and monitoring costs. In this section, we present a simple model to analyze how family trust affects a firm's optimal contract design and derive several testable hypotheses.[3]

Consider a principal-agent model in which the principal (here the firm head) hires a risk-averse agent (a manager). The firm's revenue V is given by

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[3] Chami (2001) theoretically analyzes how altruism (where the principal internalizes to some extent the agent's payoff, but not vice versa), trust ("mutual altruism"), and family succession affect optimal contract design. In his model, these three factors all improve the standard incentive contract in a qualitatively similar way, and hence are empirically indistinguishable. We focus on family trust, our formulation of which is similar to that of Chami. We use a simple model that incorporates the authority and job design activities of the firm head to derive some testable implications.

$$V = a + bx + \epsilon, \tag{1}$$

where a and $b > 0$ are constants, x is the manager's effort, and ϵ is a mean zero random variable with a variance of σ^2. The parameter b can be interpreted as a measure of the manager's ability or the importance of his work to firm revenue. The manager's effort is unobservable to the firm head and is privately costly to the manager; her effort cost is γx^2, where $\gamma > 0$ is a positive constant. We suppose that the firm head offers the manager the linear incentive contract

$$W = \alpha + \beta V, \tag{2}$$

where α is the fixed salary independent of performance, and β measures the intensity of the manager's incentives. A larger β means that the manager's pay is more sensitive to firm performance.

As in the standard principal-agent model, we suppose that the firm head is risk neutral and the manager is risk averse. Specifically, the firm head's "intrinsic" payoff is the expected net profit of the firm, which can be expressed as

$$\pi = EV - EW = (1 - \beta)(a + bx) - \alpha. \tag{3}$$

The manager's "intrinsic" payoff is given by the following mean-variance utility function:

$$u = EW - \gamma x^2 - \lambda Var(W) = \alpha + \beta(a + bx) - \gamma x^2 - \lambda \beta^2 \sigma^2, \tag{4}$$

where λ is a positive constant that measures the manager's degree of risk aversion.

To analyze how family trust affects incentive contracting, we suppose that when the manager is a member of the firm head's family, the firm head and the manager care about each other's intrinsic payoff.[4] Specifically, the firm head's payoff is given by

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[4] This formulation of family trust stresses the interest alignment feature of trust, that is, that family members care about each other's interests. An alternative view of family trust is that because of close interactions and long term relationships, a firm head knows a family manager better, which leads to better monitoring of the manager by the firm head and a higher likelihood of the family manager refraining from shirking because of possible sanctions from other family members. In other words, trust implies lower agency and monitoring costs. Intuitively, these two views of family trust will have the same implications for incentive contracting, namely, that family managers should receive lower incentive pay but exert more effort. However, the second view is more difficult to formulate theoretically and harder to test empirically, as we do not have observations over time to determine the dynamic effects of family ties.

$$\Pi = \pi + \delta u, \tag{5}$$

and the manager's payoff is given by

$$U = u + \delta \pi, \tag{6}$$

where $\delta \in [0, 1)$ is a parameter that measures the degree of family trust between the firm head and the manager. When $\delta = 0$, we are back to the standard principal-agent model, which corresponds to the hiring of professional managers. Thus, to determine the effect of family trust on incentive contracting, we only need to compare the cases in which $\delta = 0$ and $\delta > 0$. Note that for simplicity, we assume that the firm head and the manager assign equal weight to each other's intrinsic payoff. This symmetry can be easily relaxed with no discernible effect on the qualitative results.

The manager's reservation utility is $\bar{U}$. The firm head designs an optimal contract to maximize his total payoff Π subject to the usual incentive compatibility and participation constraints for the manager.

The manager chooses the level of effort that maximizes his total payoff U, as given by Equation (6). It can be verified that the manager's optimal effort is given by[5]

$$x = \frac{[\delta + (1 - \delta)\beta]b}{2\gamma}. \tag{7}$$

Intuitively, the manager will exert more effort if the marginal product of effort (b) is higher, if the incentive intensity (β) is greater, if family trust (δ) is stronger, or if the cost of effort (γ) is smaller. Equation (7) is an incentive compatibility constraint facing the firm head. For the professional manager (when $\delta = 0$), the optimal effort is simply $\beta b / (2\gamma)$.

The participation constraint is the following.

$$(1 - \delta)\alpha = \bar{U} + \gamma x^2 + \lambda \beta^2 \sigma^2 - [\delta + (1 - \delta)\beta](a + bx), \tag{8}$$

where x is the optimal effort given in Equation (7).

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[5] All of the derivations in this section are contained in the technical appendix.

The firm head chooses (α, β) to maximize Π, subject to the constraints of Equations (7) and (8). Solving the maximization problem, we can derive the optimal incentive intensity:

$$\beta = \frac{(1-\delta)^2 b^2}{(1-\delta)^2 b^2 + 4\lambda\gamma\sigma^2}. \tag{9}$$

When $\delta = 0$, we obtain $\beta = b^2/(b^2 + 4\lambda\gamma\sigma^2)$. Regardless of whether the manager is a professional manager (i.e., $\delta = 0$) or a member of the firm head's family (i.e., $\delta > 0$), the firm head must make a tradeoff between incentives and insurance, as in the standard moral hazard problem. This tradeoff leads to the standard comparative static result from the agency literature: the optimal incentive intensity increases in the manager's ability or marginal product of managerial effort (b), but decreases in the manager's degree of risk aversion (λ), the cost of managerial effort (γ) and the degree of uncertainty (σ^2).

When $\delta > 0$, it is easy to see from Equation (9) that β is decreasing in δ. There are two reasons for this result. The first is that because the firm head cares about the family manager's welfare, he internalizes some of the cost of the risk to the family manager and thus decreases the incentive intensity to reduce this cost. The second is that because the family manager cares about the firm head's welfare, she exerts greater effort even without explicit incentives. This result implies that, all else being equal, the optimal incentive intensity for family managers is smaller than that for professional managers. Empirically, here "all else being equal" means controlling for the personal characteristics of the managers (e.g., age, education, gender, and experience) and the jobs that they are assigned (e.g., position, decision power, and job responsibilities). In the empirical analysis, we focus on bonuses as a measure of incentive intensity. We can thus test the following hypotheses.

Hypothesis 1: *All else being equal, the bonuses of family managers are less sensitive to firm performance than those of professional managers.*

Using Equation (8), we can solve for the optimal salary α. It can be verified that as long as $\bar{U}$ is sufficiently large relative to the other parameters of the model, α is increasing in δ. As the managers in our sample are experienced senior managers, their alternative job options $(\bar{U})$ are likely to be relatively high paying, which leads to the following hypothesis:

Hypothesis 2:   *All else being equal, the fixed salary of family managers is larger than that of professional managers.*

By plugging Equation (9) into Equation (7), it can be shown that as long as $(1 - \delta)^2 b^2 < 4\lambda\gamma\sigma^2$, or equivalently, $\beta < 0.5$, then the manager's optimal effort x is increasing in δ. It is hard to believe that an individual manager will receive more than 50% of the entire firm's marginal revenue. In our sample, managerial bonuses are a very small portion of firm revenues, and managers usually hold only a tiny portion of the company's shares. Thus, at least in our context, it is safe to assume that $\beta < 0.5$, which implies that x increases in δ. Therefore, compared with professional managers, family managers work harder despite the fact that they have less powerful explicit incentive contracts.

Unfortunately, at least from the point of view of empirical testing, managerial effort is not observable even to firm heads, let alone to researchers. We thus use an indirect test by looking at the jobs that are assigned to managers. The standard principal-agent model focuses on incentive contracting for the agent, but does not address the issues of the agent's position, decision rights, or job responsibilities. We therefore devise the following means of incorporating the firm head's job assignment decisions into our model.

Suppose that there are two managerial jobs in the firm, one of which is more important than the other. Further suppose that there are two managers, a family manager and a professional manager, who apart from their family ties to the firm are otherwise identical. One manager can perform one job only, and thus the firm head must decide which job should be assigned to the family manager and which to the professional manager. For simplicity, suppose that the firm head is able to observe two performance measures, namely, V_1 and V_2, defined by[6]

$$V_i = a + b_i x_i + \epsilon_i; \quad i = 1, 2,$$

where x_i is the effort by the manager assigned to job i, and ϵ_1 and ϵ_2 are iid random variables. Let $b_1 > b_2$ so that job 1 is more important than job 2. The interpretation is that for the same managerial effort level, job 1 will generate a higher expected value to the firm than job 2.

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[6]If there is only one observable performance measure for the whole firm, e.g., $V = a + b_1 x_1 + b_2 x_2 + \epsilon$, then we will obtain qualitatively similar results, but the analysis will become much more involved.

We label the job assignment mode "A" ("B") if the family manager is assigned job 1 (job 2). The firm head first makes a decision about the assignment of the jobs and then designs incentive contracts for the two managers. The managers then exert their effort. Given the job assignment mode, the equilibrium outcome can be found in exactly the same way as in the basic model. We can thus write the firm head's total expected payoff under job assignment mode A as

$$\Pi^A = \Pi(b_1, \delta) + \Pi(b_2, 0), \tag{10}$$

where $\Pi(b_1, \delta)$ ($\Pi(b_2, 0)$) is the firm head's expected payoff in the solution in which the family manager (professional manager) is assigned job 1 (job 2). These two terms can be directly derived from the basic model by replacing b with the corresponding b_i and taking the corresponding value of δ. Similarly, we can calculate the firm head's total expected payoff under job assignment mode B as

$$\Pi^B = \Pi(b_1, 0) + \Pi(b_2, \delta). \tag{11}$$

It can be shown that $\Pi(b, \delta)$ is supermodular in b and δ (see Appendix for proof). According to Milgrom and Shannon (1994), this implies that $\Pi^A > \Pi^B$. That is, all else being equal, the firm head will assign the more important job to the family manager. Here "all else being equal" means controlling for the personal characteristics of the managers (e.g., age, education, gender, and experience). As there are three proxies for job importance in our data, namely, position, decision rights, and job responsibilities, we can derive the following testable hypothesis.

Hypothesis 3: *All else being equal, family managers hold higher positions and have more decision rights and job responsibilities than professional managers.*

3 Data

3.1 Survey

The data that we use in this paper were collected by the authors in 2003 in an extensive field survey of Chinese private firms. We randomly sampled 640 private firms in Jiangsu and Zhejiang provinces, two of China's most developed coastal provinces, the first just north and the other south

of Shanghai. A team of enumerators led by one of the authors visited firms in 13 randomly selected counties (cities) in the two provinces.

We chose Jiangsu and Zhejiang both because of cost considerations and because of the variation required for the empirical analysis. The private sectors in the two provinces are among the most developed in China, and there are large inter- and intra-province variations in firm characteristics. For example, Zhejiang has been a center for private firms in China since the early 1980s, but Jiangsu only started to privatize its large collective and state sectors in the mid-1990s. There is also a good deal of heterogeneity across the regions within each province. There is substantial variation in the economic development and local institutional environments of the 13 counties in the sample. Firms were sampled mainly from five industries, including the garment, textile, electronics, chemical, and machinery industries.

The questionnaires were designed by the authors after interviewing several dozen firms during pre-tests in 2002. Each questionnaire contained two components: a firm-level survey and a managerial interview. The firm-level survey consisted of two parts. In the first part, the enumerators conducted a face-to-face interview with the head of each firm (called "*yibashou*", or "the top controller"). For most of the firms in our sample, the firm head is also the largest owner of the firm. The firm head survey elicited detailed information on the characteristics of the firm (e.g., ownership structure, corporate governance, and production and marketing activities) and the personal characteristics of the firm head. The second part of the firm-level survey collected detailed accounting information about the firms for the three years between 2000 and 2002.

In the manager survey, we interviewed two or three middle or top managers (not including the firm head) from each firm. Upon arriving at each firm, the enumerator asked the firm head to provide a full list of all senior and middle managers of the firm, and our enumerator randomly chose two or three (depending on the size of the pool) for our manager interview. If the selected manager was absent, we conducted a 15-minute telephone interview, which was sufficient time to complete our short manager questionnaire.[7] Having information about multiple managers in each firm allows us to use firm fixed-effects regressions to filter out the impact of firm-specific and head-

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[7]Overall, the refusal rate for our firm survey is very low (less than 2%). In any case, selection at the firm level does not necessarily affect our results because we examine within-firm variation in our empirical tests. The number of refusals from managers when the firm head agreed to be interviewed is almost zero.

specific characteristics. The interviews not only elicited information on the personal characteristics of the managers (e.g., age, education, and work experience), but also produced detailed data on their family ties with the firm head. In addition, we obtained detailed information on each manager's compensation, share-holding, incentives, decision rights, and job responsibilities. In total, we have a dataset of about 1,600 managers, which is the main data source that is used for this study.

3.2 Firms and Firm Heads

To give a general picture of the sample, we first present some basic information about the firms and firm heads in Table 1. The firms are relatively young, with an average age of about 12 years, which reflects the fact that China only officially recognized the legal status of private companies in the late 1980s.[8] The firms are of medium size, and on average have assets of 67.7 million RMB (9.91 million US dollars), sales of 103 million (15 miilion US dollars), and 282 employees.

Consistent with anecdotal evidence, the private firms in our sample have a highly concentrated ownership structure and are generally owned or controlled by the firm heads or their families. On average, the firm head holds 64% of the company shares and the largest shareholder controls 66% of the company shares. The firm heads in our sample are relatively young (average age of 43), well educated (41% have a college degree), and predominantly male (95%).

Family members and relatives are heavily involved in these private firms, which is a common phenomenon in China. In our data over 82% of the firms have family members and relatives of the firm head in their employ. The average firm has more than three such employees, with the maximum being as high as 35. Not surprisingly, more than half of these family members or relatives hold managerial positions.

We construct three measures of firm performance: return on assets (ROA, measured as firm profits divided by total assets), return on sales (ROS, measured as firm profits divided by total sales; also called profit margin), and profits per employee (PPE, measured as profits divided by total employment). The summary statistics of these three variables can be found in the first panel of Table 1. The firms in our sample have a mean ROA of 0.10, a mean ROS of 0.05, and a mean PPE of 11,100 yuan.

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[8]Before 1987, only private firms with not more than 8 employees (called "*getihu*", or "household firms") were legally allowed.

3.3 Manager Characteristics

Our main focus in this paper is on the sample of managers, the summary statistics for which are provided in Table 1. On average, the managers are about 39 years old (four years younger than the firm heads) and 77% are male. Interestingly, the managers are substantially less likely to have a college degree than the firm heads (30% versus 41%). On average, they have about 7 years of managerial experience in the firm.

In the empirical analysis, our main measure of managerial incentives is the responsiveness of bonuses to firm performance. In Chinese private firms, the compensation for middle or higher level managers is usually composed of two parts: the base salary and a bonus payment.[9] The base salary depends on a manager's seniority and position in the firm, but is not directly related to firm performance. The bonus payment is a variable component of the yearly salary, which is linked to the overall performance of the firm as well as the divisional performance if it can be measured with reasonable accuracy. The base salary is paid to managers on a monthly basis while the bonus payment occurs at the end of the year. Thus, the bonus payment in Chinese private firms is very similar to pay for performance in the incentive contract literature. A typical manager's earnings in our sample totaled 64,000 RMB, about 70% of which was base salary and 30% of which was bonus payments.[10] The high bonus to base salary ratio (over 45%) indicates a high incentive intensity for managers. It is also worth noting that these compensation variables vary considerably. For instance, total annual earnings vary between five thousand and 2.83 million RMB, with a standard deviation of 0.17 million RMB, almost three times the mean.

In addition to incentive pay, managers sometimes also hold shares in the firm. In our dataset, most managers (about 70%) do not hold company shares, and average shareholding is relatively small (3.58%). Many personal and historical factors can influence whether and to what extent managers hold shares, such as who provided original capital for the firm, local guidelines for firm privatization, firm succession plans, etc. Whereas annual bonuses provide short-term incentives, shareholding can be thought of as providing long-term incentives for managers.

A distinct feature of our survey is that we obtained information on the positions, decision

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[9]See Kato and Long (2006) for more details about managerial compensation in Chinese firms.

[10]In Table 1, the sum of the average salary and bonus does not equal the total earnings due to different observations for these variables. The percentages are calculated using the same sample for all three variables.

rights, and job responsibilities of managers, which allows us to examine factors beyond those generally modeled by contract theory. The position rank of the managers in our sample has four levels (0-3) that correspond to division managing director (0), division manager (1), vice-president (2), and president (3). In the sample, only 7% of the managers are presidents,[11] and the majority (72%) are positioned at the vice-president and division manager levels.

In examining decision rights, our survey focuses on the four dimensions of hiring and firing employees, determining the salaries of subordinates, making investment decisions, and making decisions on ownership structure changes. The decision rights in each dimension are measured on a scale of 0-4, where 0 = no decision rights, 1 = minor decision rights, 2 = moderate decision rights, 3 = major decision rights, and 4 = full decision rights. As shown in Table 1, the average scores for all of these rights are below 2, which suggests that an average manager is not a major decision-maker where important firm issues are concerned. To capture the fact that a manager has rights in several dimensions, we define a variable that we call "aggregate decision rights" that equals the sum of the four individual rights. The mean of this variable is 5.57, which suggests that an average manager does indeed have decision-making power in more than one dimension (the highest score for a single dimension is 4).

Another important aspect of organizational design is assigning job responsibilities to managers. In our survey, job responsibilities are classified into five categories: personnel department, marketing and procurement, production and R&D, accounting, and head office. A dummy variable is defined for each category that equals 1 if a manager is assigned that job and 0 otherwise. The proportion of managers in charge of production and R&D is the highest (48%), whereas only 20-30% of managers are tasked with each of the other responsibilities. We also create an aggregate variable, "scope of job responsibilities," that equals the sum of the five job responsibility indicators. The mean of this variable is 1.53 for the sample, which suggests that a typical manager is in charge of one and a half departments.

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[11]If a non-head manager is the president, then the head is the chairman of the board of directors.

3.4 Family versus Non-family Managers

A key definition for our study is that of family manager. In the survey we directly asked about the relationship between the manager and the firm head. We define "*family managers*" as managers who are close family members (including spouses, children and siblings) of the firm head, "*relative managers*" as those who are part of the extended family but not a close family member of the firm head, and "*professional managers*" as those who do not have any family ties with the firm head.[12] "*Non-family managers*" include the latter two kinds of managers. We focus on comparing family managers with non-family managers, but also examine whether relative managers are different from family members as a robustness check. In our sample, 16% of the managers are family managers, 11% are relative managers, and the remaining 73% are professional managers.

We compare the family and non-family managers in terms of personal characteristics, compensation, shareholding, position, decision rights, and job assignments and report the results in Table 2. The t-test for the difference allows unequal variances for the two groups. Compared with non-family managers, family managers are older (40.03 versus 38.89), more likely to be female (0.28 versus 0.22), less likely to have a college education (0.25 versus 0.31), and more experienced in management (7.71 versus 6.73). These differences are all statistically significant.

More interestingly, Table 2 reveals marked differences in the contracting and authority variables. The total compensation of the family managers is more than double that of the non-family managers (116,300 RMB versus 54,800 RMB), and there is a substantial difference in both basic salaries and bonuses. Family managers also hold more company shares (12% versus 2.2%). In terms of position, the average family manager is a vice-president of the firm (with a position level of 1.94), whereas the average non-family manager is only a division manager (with a position level of 1.13). Moreover, compared with non-family managers, family managers have more decision rights (8.42 versus 5.05) and a larger scope of job responsibilities (2.21 versus 1.44). All of these differences are statistically significant.

These simple statistics reveal remarkable differences between family and non-family managers in Chinese private firms. These differences are generally consistent with our theoretical hypotheses.

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[12]Family managers do not include spouses of children, due to the concern that marriage decisions could be endogenous.

To provide more systematic tests, we turn to formal econometric tests.

4 Empirical Tests

In this section, we conduct a more rigorous analysis of how family ties affect organizational design by estimating empirical specifications that control for firm fixed effects. In particular, we test whether in comparison to professional managers, family managers have less powerful incentive contracts (Hypotheses 1); higher base salaries (Hypothesis 2); and higher positions, more decision rights, and greater job responsibilities (Hypothesis 3).

4.1 Incentive Intensity

In this subsection, we test Hypotheses 1, which states that bonuses of family members are less sensitive to firm performance than those of professional managers. Specifically, we estimate the following equation:

$$y_{ij} = \beta_0 + \beta_1 F_{ij} + \beta_2 \pi_j + \beta_3 F_{ij}\pi_j + \delta x_{ij} + \gamma u_j + \epsilon_{ij}, \tag{12}$$

where the dependent variable y_{ij} is the bonus of manager i in firm j; F_{ij} is a dummy variable that equals one if manager i in firm j has family ties with the firm head, and zero otherwise; and π_j is a measure of firm j's performance. The vector of variables x_{ij} are a set of controls that includes the manager's gender, age, age squared, education, and management experience. The firm-level characteristics are represented by a vector of variables u_j, which may include variables such as firm size, profitability, the firm head's ability, and industry and regional characteristics.

The key to the empirical test is the coefficient β_3 on the interaction term between the family manager indicator variable F_{ij} and the firm performance measure π_j, which captures the difference between family and non-family managers in the sensitivity of bonuses to firm performance. Hypotheses 1 suggests that $\beta_3 < 0$.

One concern about estimating (12) is that some of the variables in u_j are unobservable, which may cause bias in the estimates of β_3. Our survey design allows us to deal with this problem by using a fixed-effects model. Although the firm-level data is cross-sectional, we interviewed multiple managers for each firm. We can thus eliminate the impact of all firm-level factors u_j by taking the

difference between (12) and its firm mean, leading to the following empirical specification:[13]

$$y_{ij} - \bar{y}_j = \beta_1(F_{ij} - \bar{F}_j) + \beta_3(F_{ij} - \bar{F}_j)\pi_j + (x_{ij} - \bar{x}_j)\delta + (\epsilon_{ij} - \bar{\epsilon}_j), \tag{13}$$

where $\bar{y}_j$ represents the mean of y_{ij} for managers in firm j. The variables $\bar{F}_j, \bar{x}_j$ and $\bar{\epsilon}_j$ are similarly defined.

The estimates of Equation (13) as reported in Table 3 strongly support Hypothesis 1. Columns 1-3 report the regressions that use the log of bonuses as a dependent variable and ROA, ROS, and profits per employee as performance measures, respectively. The findings are consistent for all three regressions. Although the effect of family ties on bonuses is positive and statistically significant, the interaction effect is negative and significant. These results suggest that although family managers earn more bonuses than non-family managers, their bonuses are less sensitive to firm performance.

The difference in sensitivity is also large in size. For example, for a 1% increase in ROA, the response of bonuses to ROA for family managers is 2.2% smaller than for non-family managers. In contrast, family managers enjoy 36% more bonuses that cannot be explained by firm performance. Combining these findings, it can be concluded that a large portion of the bonuses of family managers is not contingent on firm performance. A plausible reason for this is that firm heads use non-contingent bonuses to disguise higher fixed payments to family managers to attenuate the concerns of non-family managers regarding nepotism.

The strong results supporting Hypothesis 1 survive several robustness checks.[14] First, one could argue that bonuses are less incentivized for family managers because family managers already are incentivized through greater shareholding. Although family managers hold greater shares on average than non-family managers, most family managers do not own any shares. To test whether this is an important concern, we add shareholding and its interaction with firm performance to the base specification. As with job characteristics, the coefficient on the interaction of shareholding and firm performance is never statistically significant. Controlling for shareholding reduces slightly the estimated magnitude of the responsiveness of bonuses to firm performance (by 10-20%) but does not change the results in any qualitative manner.

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[13]While we can control for many important managerial characteristics, there still may be unobserved heterogeneity of individual managers for which we cannot adequately control. To fully address this source of potential bias would require longitudinal data which are unavailable for this study.

[14]Results are not all reported due to space limitations but are available from the authors upon request.

Second, a related concern in the bonus-to-performance sensitivity regressions is that the two parts of the key interaction term, firm performance and being a family manager, could be proxying for other firm or manager characteristics. To address this issue, we rerun the regressions in columns (1)-(3) adding more interaction terms as controls. First, we add an interaction term between the family manager variable and firm size. Next, we add interaction terms between the firm performance measures and other manager characteristics (sex, age, age squared, college degree, managerial experience, and position). Finally, we add both sets of interactions as well as interactions between family size and other manager characteristics. In all cases, the magnitude of the coefficient on the interaction term are similar in magnitude and in nearly all cases they remain statistically significant.

Third, one might be concerned that differences between family and non-family managers in the sensitivity of bonuses to firm performance could be due to differences in the job characteristics of family and non-family managers. To check whether this is the case, we estimate versions of Equation (13) in which we include as an additional control each of our three main job characteristic variables (position level, aggregate decision rights, and scope of job responsibilities) and its interaction with firm performance. In no cases are the interactions of the job characteristic and firm performance variables statistically significant, and including the additional controls has no systematic effect on the magnitudes of the coefficients of interest.[15]

Finally, as a falsification test, we also run the same set of regressions using the log of base salary as the dependent variable. As the base salary generally should not be contingent on performance, something may be wrong with our empirical specification if the interaction term is found to remain significantly negative. However, the regression results reported in the last three columns of Table 3 are consistent with our expectation. The coefficients on the interaction terms in columns (4) to (6) are not significantly different from zero.

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[15]Controlling for position has no discernible effect, controlling for control rights slightly reduces the sensitivity of bonuses to firm performance, and controlling for job scope slightly increases the sensitivity of bonuses to firm performance.

4.2 Base Salary

Next, we test Hypothesis 2, namely, that the base salary of family managers is larger than that of non-family managers. Again, we estimate a fixed-effects model that is specified as

$$y_{ij} - \bar{y}_j = \beta_1(F_{ij} - \bar{F}_j) + (x_{ij} - \bar{x}_j)\beta_2 + (\epsilon_{ij} - \bar{\epsilon}_j), \tag{14}$$

where y_{ij} represents the base salary of manager i in firm j and $\bar{y}_j$ is the average of this variable for each firm. This specification is idential to Equation (13) but without the interaction term.

The regression results, which are reported in column 1 of Table 4, show that the base salary of family managers is larger than that of non-family managers, which provides strong support for Hypothesis 2. Note first that the family manager dummy is significant at the 1% level and that the magnitude of the coefficient is large: the base salary of family managers is 34% higher than that of non-family managers. Not surprisingly, a manager's position is an important determinant of salary. An increase in one position level is associated with an increase in base salary of approximately 17%. Male managers are paid substantially more. The age effect takes an inverted U-shape. A simple calculation based on the estimated coefficeints on age and age squared in column (1) shows that the base salary increases with age until a manager reaches 45 years of age and then declines thereafter. A somewhat surprising result is that both college education and managerial experience have no significant effect on the base salary level.

One concern in interperting the higher base salary of family managers is that family and non-family managers may be in charge of different divisions that have different compensation packages. In other words, the family manager dummy may simply be picking up divisional differences in compensation and shareholding. To address this issue, we add a set of division dummy variables as controls in the regression. The results continue to support Hypothesis 3: the coefficients on the family manager dummy are all statistically and economically significant (column 4). The newly added division dummies show that the base salary in the divisions of production and R&D, and marketing and procurement is significantly higher than in the other divisions.

For completeness, we also estimate Equation (14) using the log of bonuses and the percentage of shareholding as dependent variables, even though our theory does not make any direct predictions regarding these variables. Shareholding increases long-term incentives but also likely reflects many

other considerations related to sourcing of initial capital, succession plans, etc.[16] Interestingly, family managers have higher bonuses and greater shareholding. The magnitudes are also large: family managers receive 18.6-22.2% more bonuses (columns 2 and 5) and about 6% more shares (columns 3 and 6) than non-family managers. We also find that although managerial experience in the firm does not help a manager get higher salary, it does increase his shareholding. A one-year increase in managerial experience increases shareholding by 0.2 percentage points.

4.3 Decision Rights, Job Responsibilities, and Position

We next test Hypothesis 3 by investigating whether family ties affect the responsibilities and positions of managers. In Table 5, we report the results of the fixed-effects regressions with three dependent variables: aggregate decision rights, scope of job responsibilities, and position level.[17] For each of the three job characteristic variables, we estimate one specification with controls for manager characteristics only (columns 1-3) and another in which we also control for the other two job characteristics (columns 4-6).

Consistent with the theoretical predictions of Hypothesis 3, family managers have more decision rights than non-family managers (3.30 more than the sample mean of 5.57), are in charge of more divisions or departments (0.69 more than the sample mean of 1.53), and hold higher positions (0.84 higher than the sample mean of 1.27). Each of the job dimensions has salience; after controlling for the other job characteristics, the differences in the decision rights, scope of job responsibilities, and position level of family versus non-family managers becomes smaller (2.08, 0.33, and 0.48, respectively) but remain highly statistically significant. Looking at the other independent variables, one interesting finding is that female managers are given fewer decision rights and hold lower positions than their male counterparts, although their job responsibilities are not different from those of male managers.

Family managers may have more decision rights or job responsibilities than non-family man-

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[16] Ideally shareholding can be used for a proxy for long-term incentives, and we can examine the sensitivity of shareholdings to firm performance, as we did for bonuses. But unfortunately our dataset only contains information on the "stock" of shares held by managers, and no information on the change of shareholdings. So it is impossible to know how shareholdings held by managers respond to firm performance.

[17] Although some of our dependent variables are categorical, we use the linear probability model in order to include the fixed effects. Applying the linear probability model to categorical response variables can cause unreasonable predicted values and heteroscadestic error terms. However, as we are only interested in the predictions surrounding the sample means, unreasonable predications are highly unlikely, as argued by Woodridge (2002, p.455) and Moffit (1999, p.1376-77). To deal with the heteroscadesticity issue, we use the Eicker-Huber-White robust standard errors.

agers in certain dimensions but not in all dimensions, but our use of aggregate variables for decision rights scope of job responsibilities does not enable us to examine such subtleties. To address this issue, we run the same regressions as in columns (1) and (2) in Table 5 except that the dependent variables of "aggregate" decision rights and job responsibilities are replaced by the individual decision rights and job responsibilities. To save space, for each dependent variable, we only report the coefficient on the family manager dummy in each regression.

Table 6 shows that family members have more authority in all four decision areas. The estimated coefficients for the family manager dummy are positive and significant in all cases. Comparing the magnitudes of the coefficients, we find that family managers have relatively more authority in making decisions on salary setting and structural changes. As a robustness check, we put the five job responsibility dummies in the decision rights regressions to control for the effect of functional areas on authority assignment, and find that our main results still hold.

Table 6 also presents some interesting results on the effect of family ties on the assignment of job responsibilities. Chinese private firms are more likely to use professional managers for positions such as production and R&D, which require technical skills and are easier to monitor. In contrast, they tend to use family managers in key business departments such as marketing and procurement, which are directly related to the cash flow of the firm and are harder to monitor. They also let family members head the personnel division (in charge of hiring, firing and promotion) and the CEO office (assisting the CEO in dealing with all important matters), which are very powerful divisions. Family ties have no significant effect on the likelihood of being assigned to the accounting office, perhaps reflecting competing concerns. Accounting offices require a certain degree of technical skill, for which professional managers may be better, but they also deal with the cash flow and financial reporting of the firm, which are harder to monitor.

To summarize, we find marked differences between family and non-family managers that are consistent with the theoretical predictions summarized in Hypotheses 1-3. Compared to non-family managers, the bonuses of family managers are less sensitive to firm performance, and their base salary is higher. Family managers also hold higher positions and have more decision rights and more job responsibilities. Moreover, family managers are more likely to head divisions such as sales and procurement, personnel, and the CEO office, and less likely to be in charge of knowledge-intensive

divisions such as production and R&D.

4.4 Selection and the Costs of Preferential Treatment

It is relatively straightforward to show using our theoretical model that the strength of family ties with a manager has an ambiguous impact on firm performance. Family ties help performance by eliciting greater effort from managers but can hurt firm performance because the firm head cares not just about firm profits but also the utility of managers.[18]

One limitation of the theoretical model is that it completely overlooks additional potential costs of hiring family members that are likely to be present in real-world contexts. First, although family members are more trustworthy from the viewpoint of the firm head, they are likely to be less qualified for managerial jobs than non-family managers given the limited talent pool within the family. Table 2 provides some evidence for this generalization, showing that family managers are significantly less educated than non-family managers. Giving family members more authority thus may directly hurt the profitability of the firm. Moreover, favoring family members out of concern for their utility will create resentment among non-family managers, thereby reducing their morale.

Although we do not model these costs theoretically because of their complexity, they may play an important role empirically. If the costs of favoring family members are taken into account, then the fact that family members are indeed hired as managers and given greater authority and higher positions suggests that the beneficial effects of family trust dominate the potential costs.

However, the effect of family trust may not dominate in all situations, especially when trust between the manager and the firm head is weaker, such as with relative managers. The firm head has some trust in relatives (i.e., $\delta > 0$ in (5) and (6)), but likely not to the same degree as with family members. From this perspective, all else being equal, one would expect the treatment that relative managers receive to be somewhere between that received by family members and that received by professional managers. On the cost side, our data show that relative managers are less qualified than family managers, with less education and managerial experience (Tables 2 and A1).

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[18]Recall that a firm's profit is given by $\pi = EV - EW = (1-\beta)(a+bx) - \alpha$. We have shown that β is decreasing in δ and x is increasing in δ; thus the first term is increasing in δ. However, α is also increasing in δ. More specifically, α contains the term $\bar{U}/(1-\delta)$ that obviously increases in δ. Thus, if $\bar{U}$ is very large, then π will be decreasing in δ, but if $\bar{U}$ is not too large, then π will be increasing in δ When job assignment is taken into account, the firm's total profit under the optimal mode is $\pi^A = \pi(b_1, \delta) + \pi(b_2, 0)$. Clearly, δ only appears in the first term, which is the profit generated by the family manager, and thus the effect of δ on π or π^A is ambiguous.

Thus, favoring relative managers may be even more costly than favoring family managers. Due to the smaller benefit and larger cost, relative managers are likely to enjoy less favorable treatment than family managers.

To examine whether the response of incentives to performance for relative managers is different from that for professional managers, we run the same set of regressions but with a new variable, a "relative manager" dummy, which indicates whether the manager is a relative of the firm head. The coefficients on the family manager dummy, the relative manager dummy, and their interaction terms with firm performance are reported in Table 7, with each row representing a regression with a different dependent variable.

Interestingly, in contrast to the results for family managers, incentives for relative managers do not differ much from professional managers. The coefficients on the relative manager dummy and its interaction term nearly always lack statistical significance.[19] The only exception is that relative managers have significantly less shareholding than professional managers. According to our previous argument, these results suggest either that their is little trust between firm heads and relatives, or that there are large costs of treating relatives differently, or both. The lack of difference between relative and professional managers also justifies our focus on managers with a close family relationship with firm heads in the main empirical analysis.

5   Alternative Explanations

We find that family status plays a significant role in the organizational design of firms. We interpret this role of family ties as a result of mutual trust between firm heads and their family members in management teams. However, there may be other interpretations for the different treatment of family and professional managers. In what follows, we discuss three potential alternative hypotheses.

5.1   Taste-Based Favoritism/Discrimination

Family heads may prefer to surround themselves with family members and display taste-based discrimination a la Becker against non-family members (Becker, 1971). They pay family members

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[19]We have also checked whether relative managers are any different from professional managers in the assignment of individual decision rights and job responsibilities, and find no significant differences in any of these dimensions.

more and give them more powerful positions with greater authority simply out of favoritism. Such discrimination is likely to lead to inefficiencies which will persist as long as competitive pressures are not too strong. With intense competition, firms that discriminate inefficiently are less likely to survive. This alternative interpretation has two empirical implications. First, in more competitive industries, we would expect less discrimination and a smaller effect of family status on the allocation of compensation and authority. Second, taste-based discrimination against non-family members implies that the efficiency of the firm will be compromised. If this is the case, we should expect firms with family managers to be less profitable than non-family firms.

We conduct empirical tests to assess these two empirical implications. First, we examine the impact of industry-level competition on the extent of favoritism in family-run firms. We first calculate the Herfindahl index for each industry (at the four-digit level) in 2001 and interact this concentration measure with the family manager indicator in the key regressions in Tables 3-5.[20] We expect the coefficient on this interaction term to be positive, meaning that in a more concentrated (less competitive) industry, family ties will have a greater impact on compensation and job responsibility and authority. Table 8 shows that the coefficient on the interaction term is small and statistically insignificant in all regressions and even negative in some regressions. Meanwhile, the effect of the family manager indicator remains significant in most cases. This suggests that taste-based favoritism/discrimination, even if it exists, does not drive our results.

Second, we test whether the strength of the family in a firm has any effect on the financial performance of the firm. We turn to the firm-level data, and examine five measures of firm performance: employment growth, log sales, return on assets, return on sales, and profits per employee. The extent to which a firm is a family firm is captured by the ratio of family members and relatives in the management team. In the survey, we asked the firm head the following question "How many family members and relatives are in the management?" This survey question does not differentiate family members from relatives. All of the regressions include industry and region dummies to control for industry- or region-specific factors.

The OLS regression results, which are reported in Table 9, show that the presence of family

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[20] The Herfindahl index for each industry is calculated using data from the Industrial Enterprise Survey conducted annually by China's National Bureau of Statistics. This survey includes all industrial establishments in China with annual sales exceeding 5 million RMB.

in the management has no effect on firm performance. Notice that the sign of the estimated coefficients on the share of managers who are family or relatives is positive in all five regressions, although statistically insignificant. This suggests that firms with strong family involvement are not "inferior" to those with less family presence. Among the control variables, only the firm size variables (log assets and log employment) have a significantly positive impact on performance in most cases.

One potential concern with the OLS estimation is that the presence of family and relatives in the management of a firm may be endogenous because it may be correlated with other unobserved factors that affect performance. To address this concern, we employ instrumental variable (IV) estimation. The instrument is the size of the family of the firm head normalized by the size of the management team. Family size is defined as the number of siblings and children of the firm head. It is a plausible IV because it is positively correlated with the number of family managers but should not affect firm performance directly. Of course, family size could also be correlated with financing capacity and consequently firm size, which may affect firm performance. To reduce potential bias, we includen firm size as a control variable in the IV regressions. Results are reported in Table 10, and further confirm the OLS results. Column (5) in Table 10 shows that firms with stronger family presence even yield significantly more profits per empolyees. Table 10 also reports F-tests for the first-stage regressions. The instruments are somewhat weak, but are highest (above 8) in the three profitability regressions. Overall, there is no convincing evidence of a negative effect of family presence on firm performance, which suggests that taste-based favoratism or discrimination is unlikely to explain our results.

5.2 Family Succession

The significant role of family managers in private firms could be driven by succession concerns rather than mutual trust. If family members are expected to take control of the firm in the future, firm heads may give them more responsibilities in the firm to help prepare them for the top job, and also expect them to exert greater effort. This could justify a higher salary and reduce the need to incentivize compensation.

Our survey data contain information on succession considerations of firm heads. The ques-

tionaire asks the incumbent CEO the following question: "Are you going to transfer ownership of the firm to your family members?"There are three possible responses: 1) very likely; 2) likely; and 3) unlikely. About 39 percent of firm heads in the sample answered "very likely" or "likely". We also know whether firm control was passed over to a family member in the firm's history. Nearly 20 percent of firms experienced at least one succession, among which 22 percent of the time control was transferred to a family member. This means that only 4 percent of the firms have experienced family succession in the past. We define family-succession firms to be firms for which the firm head answers 1) or 2) to the family succession question, or if the firm has experienced a family succession in the past. Using these categories, we split the sample into two subsamples: family succession firms and non-family-succession firms.[21] We then conduct regressions separately on the two subsamples and compare the coefficients on the family firm manager variable.[22]

The results are reported in Table 11. The regression specifications are exactly as before, but run separately on the two subsamples. To save space, we only report the estimated coefficients on the family manager variable.

The main finding is that even when the firm head does not plan a family succession, as before family managers have higher salaries, bonuses, and shareholding, and have higher-rank positions with more responsibilities and more decision rights. These differences are even greater (except for decision rights) when the firm head plans a family succession, but the differences in the coefficients in the two subsamples are relatively small in magnitude and in nearly all cases are not statistically significantly different from zero.

Table 12 reports results on the effect of family status on incentive intensity for two sub-samples. For both subsamples, the coefficients on the interaction terms between family manager and firm performance are negative, meaning that family managers have bonuses which are less sensitive to firm performance. However, interestingly, only for non-family-succession firms are coefficients on the interaction terms statistically significantly different from zero.

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[21]Family succession firms have 669 managers among which 207 managers, or 31 percent, are family members. In contrast, non-family succession firms have 859 managers, of which 188 managers, or 22 percent, are family members.

[22]Removing firms with previous family succession out of the "family succession" sample does not change our basic results.

5.3 Unobserved Heterogeneity

Besides differing in trustworthiness, family and non-family managers may also differ in other dimensions that may affect pay sensitivity to performance. In particular, they could differ in unobserved ability or in risk aversion.

If family managers have higher ability than non-family managers, then we would expect their pay to more incentivized. Higher ability corresponds to a greater value of b, which by equation (9) implies greater incentive intensity. However, the empirical results deliver the opposite result–that the incentives of family managers is less intense. If family managers have lower ability, this is equivalent to the case of descrimination discussed earlier.

With respect to risk preferences, there are two potential ways in which selection might operate. The first is the inheritability of preferences. If this is the case, family managers may have risk preferences similar to those of the firm owner. There is some evidence based on studies of twins by psychologists that risk attitudes have a biological inheritable component. Preferences for risk of children are correlated with preferences for risk of parents (Dohmen et al., 2005). Since firms in the sample are relatively young (the average age is less than 12 years), the current owner generally is also the founder. In the 1980s and early 1990s when most firms in the sample started up, there was strong ideological and institutional discrimination against private ownership (Li et al., 2008). Being an entrepreneurs at that time required courage and high risk tolerance. If such traits are inherited, we should expect family managers to be less risk averse than non-family managers, which in turn means that their pay should be more incentivized and responsive to firm performance. This prediction is obviously not supported by our empirical results.

The second channel is sorting (Bandiera et al., 2009). Family members who work for the family business may be less venturesome and seek security in the family firm rather than compete in the open market, taking advantage of the altruism of firm heads. If this were the case, then family managers would have flatter compensation profiles as we observe in the data. But our model also predicts that those with greater risk aversion would be given less responsiblity and decision rights.[23] The evidence presented in Section 4 shows that family managers in fact have more responsibility

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[23]Incentive intensity β will be lower when the manager has higher risk aversion λ. The lower λ leads to lower effort level. Due to the complementarity between effort and job assignment, the manager should be assigned less important jobs.

and decision rights. This suggests that unobserved differences in risk aversion is unlikely to explain the differences we observe between family and non-family managers.

Furthermore, family members who are risk averse and seek protection in the family business are likely to have lower ability.[24] If this is the case, family firms which have risk averse, lower ability family managers should perform worse than non-family firms.[25] However, as shown in Tables 9 and 10, there is no evidence of a negative impact of family managers on firm performance.

6 Conclusion

Using a unique dataset of Chinese private firms that contains detailed information about multiple senior managers in each firm, we investigate how family ties with the firm head affect the internal organization of firms. We find strong evidence that family ties affect managerial compensation, incentive contracting, shareholding, position, decision rights, and job responsibilities. In particular, we find that despite the fact that family managers earn higher salaries and larger bonuses, their pay-for-performance sensitivity is weaker than that of professional managers. This result is consistent with the prediction of our agency model, which highlights the role of family trust. Another interesting result that emerges from our analysis is the difference in the importance of family ties with core family members and with relatives. Whereas the former are treated much more favorably than professional managers, the latter seem to enjoy little advantage over professional managers. While these results may also be influenced by alternative explanations, such as taste-based favoritism, succession concerns, and unobserved heterogeneity, we show that even if such explanations have merit, they are unlikely to be the driving force for our results.

Overall, we provide strong evidence that family ties play an important role in shaping the internal organization of firms. However, we also caution that due to data limitations, we are unable to tackle all of the endogeneity issues, which awaits future data collection and research.

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[24] There is some evidence showing that (cognitive) ability is positively related to risk tolerance (Frederick, 2005).

[25] Bandiera et. al (2009), analyzing the matching between managers and firms, shows that less talented and more risk averse managers are matched with family firms, resulting in the worse performance of the firms.

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7 Appendix: Theoretical Analysis of the Model

From Equation (6), the manager's total payoff can be rewritten as

$$U = u + \delta\pi = (1-\delta)\alpha + (\beta + \delta - \delta\beta)(a + bx) - \gamma x^2 - \lambda\beta^2\sigma^2 \tag{15}$$

Maximizing the above payoff function gives the manager's optimal effort as in Equation (7).

From Equation (5), the firm head's total payoff can be rewritten as

$$\Pi = \pi + \delta u = -(1-\delta)\alpha + (1 - \beta + \delta\beta)(a + bx) - \delta\gamma x^2 - \delta\lambda\beta^2\sigma^2$$

Using Equation (8), we have

$$\Pi = (1+\delta)[a + bx - \gamma x^2 - \lambda\beta^2\sigma^2] - \bar{U} \tag{16}$$

Note that the expression in the square bracket is simply the total revenue minus the manager's effort cost and risk cost. Using Equation (7) and solving the firm head's maximization problem, we obtain the optimal incentive intensity β as expressed in Equation (9). The comparative statics of β that give rise to Hypotheses 1 and 2 are straightforward.

Note that

$$
\begin{aligned}
\delta + \beta - \delta\beta &= 1 - (1-\delta)(1-\beta) \\
&= 1 - \frac{4\lambda\gamma\sigma^2}{(1-\delta)b^2 + 4\lambda\gamma\sigma^2/(1-\delta)}
\end{aligned}
$$

It is easy to check that when $(1-\delta)^2 b^2 < 4\lambda\gamma\sigma^2$, or equivalently, when $\beta < 0.5$, then $(1-\delta)b^2 + 4\lambda\gamma\sigma^2/(1-\delta)$ is increasing in δ. Then $\delta + \beta - \delta\beta$, and hence the optimal effort x in Equation (7), is increasing in δ.

Turning back to Equation (8), we have

$$\alpha = \frac{\bar{U}}{1-\delta} - \frac{[\delta + (1-\delta)\beta]a}{1-\delta} + \frac{4\lambda\gamma\sigma^2\beta^2 - (\delta + \beta - \delta\beta)^2 b^2}{4\gamma(1-\delta)}$$

It is hard to determine definitely whether the last two terms are increasing or decreasing in δ. However, the first term is clearly increasing in δ. When $\bar{U}$ is sufficiently large, then α should be increasing in α, which yields Hypothesis 3.

Using Equations (9) and (7), we can calculate the firm head's expected payoff in the optimal solution from Equation (16). Write this payoff as $\Pi(b,\delta)$. We now derive the properties of $\Pi(b,\delta)$. First, we write the manager's optimal effort x as a function of (β, b, δ). It is easy to see that

$$\frac{\partial x}{\partial \beta} = \frac{(1-\delta)b}{2\gamma} \qquad \frac{\partial x}{\partial b} = \frac{\delta + \beta - \delta\beta}{2\gamma} \qquad \frac{\partial x}{\partial \delta} = \frac{(1-\beta)b}{2\gamma}$$

From Equation (16), we have

$$\frac{d\Pi}{db} = \frac{\partial \Pi}{\partial b} + \frac{\partial \Pi}{\partial x}\frac{\partial x}{\partial b} + \frac{\partial \Pi}{\partial \beta}\frac{\partial \beta}{\partial b}$$

By the Envelope Theorem, the last term equals zero. Thus,

$$
\begin{aligned}
\frac{d\Pi}{db} &= (1+\delta)[x + (b - 2\gamma x)\frac{\partial x}{\partial b}] \\
&= (1+\delta)[\frac{(\delta + \beta - \delta\beta)b}{2\gamma} + (1 - \delta - \beta + \delta\beta)b\frac{\delta + \beta - \delta\beta}{2\gamma}] \\
&= \frac{(1+\delta)(\delta + \beta - \delta\beta)(2 - \delta - \beta + \delta\beta)b}{2\gamma} \\
&\equiv \frac{(1+\delta)q(2-q)b}{2\gamma}
\end{aligned}
$$

where $q \equiv \delta + \beta - \delta\beta$. We already know that q is increasing in δ.

Clearly Π is increasing in b. More importantly, since $q < 1$, so $q(2-q)$ is increasing in q and hence increasing in δ. Therefore, we have

$$\frac{\partial^2 \Pi}{\partial b \partial \delta} > 0$$

By Theorem 6 of Milgrom and Shannon (1994), then $\Pi(b,\delta)$ is supermodular. This means that for $b_1 > b_2$ and $\delta > 0$,

$$\Pi(b_1, \delta) + \Pi(b_2, 0) > \Pi(b_2, \delta) + \Pi(b_1, 0)$$

Or, in other words, $\Pi^A > \Pi^B$. An intuitive way of seeing the above inequality is as follows:

$$\begin{aligned}
\Pi^A - \Pi^B &= \Pi(b_1, \delta) - \Pi(b_2, \delta) - [\Pi(b_1, 0) - \Pi(b_2, 0)] \\
&= (b_1 - b_2)\partial\Pi(b, \delta)/\partial b - (b_1 - b_2)\partial\Pi(b, 0)/\partial b \\
&= (b_1 - b_2)\frac{\partial^2\Pi}{\partial b \partial \delta} \\
&> 0
\end{aligned}$$

Table 1: Descriptive Statistics

Variables	N	Mean	Std.	Min	Max
Firm and Firm Head information					
Firm age	614	11.88	9.84	1	54
Asset (million RMB)	518	67.7	367.1	0.35	7333.6
Sales (million RMB)	505	103	643.5	0.35	8748
Employment	526	281.6	396.1	16	4352
Return on assets (ROA)	446	0.10	0.103	-0.25	3.58
Return on sales (ROS)	452	0.05	0.12	-1.48	0.96
Sex of firm head	637	0.95	0.23	0	1
Age of firm head	606	43.44	7.87	23	72
Firm head having college education	627	0.41	0.49	0	1
Percentage of shares held by current firm head	525	0.64	0.29	0.02	1
Percentage of shares held by the largest shareholder	556	0.66	0.25	0.03	1
Number of family members and relatives working in the firm	564	3.34	4.14	0	35
Number of family members and relatives working in the management	519	1.84	2.27	0	20
Manager information					
General					
Sex	1536	0.77	0.42	0	1
Age	1460	39.10	9.23	19	73
college degree dummy	1550	0.30	0.46	0	1
Years of management experience	1538	6.90	5.87	0	34
Family manager indicator (1=yes)	1528	0.16	0.37	0	1
Relative manager indicator (1=yes)	1528	0.11	0.31	0	1
Compensation and Shareholding					
Total pay (10,000 RMB)	1131	6.40	16.68	0.5	283
Salaries (10,000 RMB)	1395	4.66	15.97	0.2	240
Bonuses (10,000 RMB)	1136	2.12	4.30	0	90
Percentage of shareholding	1409	3.58	9.02	0	50
Contract dummy (1=sign a formal contract)	1445	0.63	0.48	0	1
Position Level					
Position level (scale 0-3, with 3 the highest)	1522	1.27	0.86	0	3
Decision Rights					
Hiring and firing (scale 0-4, with 4 highest)	1432	1.76	1.13	0	4
Setting the salary of subordinate (scale 0-4, with 4 highest)	1429	1.59	1.04	0	4
Firm investment (scale 0-4, with 4 highest)	1427	1.32	0.95	0	4
Structure change (scale 0-4, with 4 highest)	1363	0.96	1.09	0	4
Aggregate decision rights	1351	5.57	3.43	0	16
Job Responsibilities					
Personnel Department(yes=1, no=0)	1593	0.22	0.41	0	1
Marketing and procurements (yes=1, no=0)	1593	0.31	0.46	0	1
Production and R&D (yes=1, no=0)	1593	0.48	0.50	0	1
CEO office (yes=1, no=0)	1593	0.27	0.45	0	1
Accounting office (yes=1, no=0)	1593	0.25	0.44	0	1
Scope of job responsibilities	1593	1.53	1.07	0	5

Table 2: Comparison between Family and Non-family Managers

Variables	Non-family managers	Family managers	Difference
	(1)	(2)	(3)=(2)-(1)
General			
Sex	0.78	0.72	-0.06**
	(0.01)	(0.03)	(0.03)
Age	38.89	40.03	1.13*
	(0.27)	(0.57)	(0.63)
College degree dummy	0.31	0.25	-0.07**
	(0.01)	(0.03)	(0.03)
Years of managerial experience	6.73	7.71	0.98**
	(0.17)	(0.35)	(0.39)
Compensation and Shareholding			
Total pay (10,000 RMB)	5.48	11.63	6.15**
	(0.39)	(2.46)	(2.49)
Salaries (10,000 RMB)	3.81	9.41	5.60***
	(0.38)	(1.88)	(1.92)
Bonuses (10,000 RMB)	1.83	3.78	1.95***
	(0.87)	(0.68)	(0.69)
Percentage of shareholding	2.16	12.03	9.87***
	(0.18)	(1.14)	(1.15)
Authority			
Position level (scale 0-3, with 3 the highest)	1.13	1.94	0.81***
	(0.02)	(0.06)	(0.06)
Aggregate decision rights	5.05	8.42	3.37***
	(0.10)	(0.22)	(0.24)
Scope of job responsibilities	1.44	2.21	0.78***
	(0.03)	(0.09)	(0.09)

Note: The numbers in parentheses are standard errors.

Table 3: The Effect of Family Ties on the Sensitivity of Compensation to Firm Performance

	Dependent variable					
	Bonuses (log) (1)	Bonuses (log) (2)	Bonuses (log) (3)	Salaries (log) (4)	Salaries (log) (5)	Salaries (log) (6)
Family manager (FM)	0.360***	0.389***	0.236**	0.155*	0.317**	0.200**
	(2.91)	(3.49)	(2.55)	(1.83)	(2.38)	(2.52)
FM*ROA	-2.241*			0.605		
	(-1.90)			(1.43)		
FM* ROS		-3.294**			-0.802	
		(-2.19)			(-0.55)	
FM* profits per employee			-0.015**			0.002
			(-2.12)			(1.42)
Sex	0.2000***	0.206***	0.203***	0.181***	0.197***	0.195***
	(3.04)	(3.26)	(3.13)	(2.90)	(3.15)	(3.09)
Age	0.046**	0.047**	0.041**	0.036*	0.033	0.036*
	(2.16)	(2.18)	(1.95)	(1.65)	(1.52)	(1.69)
Age squared	-0.0006**	-0.0006**	-0.0005**	-0.0003	-0.0004	-0.0004
	(-2.31)	(2.30)	(-2.07)	(-1.40)	(-1.34)	(-1.47)
College Degree	-0.058	-0.060	-0.061	0.045	0.050	-0.046
	(-0.90)	(-0.93)	(-0.94)	(0.73)	(0.78)	(0.74)
Years of managerial experience	0.006	0.005	0.004	-0.005	-0.006	-0.005
	(0.76)	(0.70)	(0.49)	(-0.84)	(-0.95)	(-0.88)
Position level	0.123***	0.117***	0.126***	0.195***	0.174***	0.190***
	(3.53)	(3.36)	(3.59)	(5.20)	(4.30)	(4.98)
Observations	785	800	786	946	961	938
R-squared	0.14	0.15	0.14	0.17	0.14	0.17

Note: Numbers in parentheses are t-statistics based on robust standard errors. Significance level equals 0.1 0.05 and 0.01 are noted by *, **, and ***.

Table 4: The Family Ties and Compensation and Incentive Contracting of Firm Managers

Independent variables	Dependent variables					
	Log of salaries (1)	Log of bonuses (2)	Share-holding (3)	Log of salaries (4)	Log of bonuses (5)	Share-holding (6)
Family manager	0.340***	0.222***	6.105***	0.327***	0.186**	5.886***
	(3.93)	(2.96)	(4.45)	(3.76)	(2.50)	(4.22)
Sex	0.218***	0.165***	0.021	0.176***	0.151***	-0.063
	(4.11)	(2.99)	(0.02)	(3.35)	(2.71)	(-0.07)
Age	0.045**	0.039**	0.120	0.042**	0.036*	0.171
	(2.40)	(2.07)	(0.55)	(2.22)	(1.91)	(0.77)
Age squared	-0.0005**	-0.0005**	-0.001	-0.0005*	-0.0004*	-0.002
	(-2.15)	(-2.08)	(-0.53)	(-1.91)	(-1.90)	(-0.66)
College Degree	0.062	-0.049	-0.334	0.078	-0.035	-0.332
	(1.08)	(-0.84)	(-0.46)	(1.35)	(-0.61)	(-0.45)
Years of managerial experience	-0.006	0.002	0.202***	-0.002	0.000	0.200***
	(-1.15)	(0.27)	(2.59)	(-1.25)	(0.04)	(2.59)
Position level	0.174***	0.107***	2.815***	0.118***	0.059*	2.707***
	(5.33)	(3.47)	(5.51)	(3.47)	(1.73)	(5.17)
Production and R&D				0.169***	0.095*	-0.491
				(3.10)	(1.87)	(-0.69)
Accounting office				0.049	0.095	0.443
				(0.78)	(1.61)	(0.45)
Marketing and procurements				0.178***	0.238***	1.917**
				(3.88)	(4.74)	(2.41)
Personnel department				0.014	0.047	-1.440
				(0.25)	(0.84)	(-1.48)
Head office				0.009	-0.045	0.757
				(0.18)	(-0.90)	(1.09)
Constant	-0.490	-0.206	-4.266	-0.523	-0.240	-5.793
	(-1.35)	(-0.55)	(-1.00)	(-1.42)	(-0.65)	(-1.32)
Observations	1266	1036	1269	1266	1036	1269
R-squared	0.17	0.11	0.19	0.19	0.16	0.21

Numbers in parentheses are t-statistics based on robust standard errors. Significance levels of 0.1, 0.05, and 0.01 are noted by *, **, and ***.

Table 5: Family Ties and Decision Rights, Job Responsibilities and Positions of Managers

Independent variables	Dependent variables					
	Aggregate decision rights	Scope of responsibility	Position level	Aggregate decision rights	Scope of responsibility	Position level
	(1)	(2)	(3)	(4)	(5)	(6)
Family manager	3.300***	0.689***	0.835***	2.083***	0.331***	0.483***
	(10.23)	(5.92)	(10.93)	(6.46)	(2.61)	(5.51)
Sex	1.044***	0.159*	0.392***	0.759***	-0.041	0.213***
	(4.09)	(1.87)	(5.55)	(3.07)	(-0.46)	(2.98)
Age	0.327***	0.061**	0.082***	0.212***	0.024	0.047**
	(3.79)	(2.13)	(3.89)	(2.65)	(0.83)	(2.27)
Age squared	-0.004***	-0.0007*	-0.001***	-0.002**	-0.0003	-0.0005**
	(-3.60)	(-1.94)	(-3.61)	(-2.55)	(-0.72)	(-2.09)
College	0.240	0.086	0.022	0.209	0.059	-0.015
	(1.03)	(1.02)	(0.32)	(0.91)	(0.67)	(-0.22)
Years of managerial experience	0.573**	0.007	0.016***	0.045*	-0.005	0.009
	(2.38)	(0.91)	(2.57)	(1.86)	(-0.68)	(1.43)
Position level				0.962***	0.264***	
				(5.96)	(4.70)	
Aggregate decision rights					0.075***	0.074***
					(4.96)	(6.15)
Scope of job responsibilities				0.538***		0.146***
				(4.95)		(4.60)
Constant	-2.995*	-0.044	-1.021**	-2.096	0.290	-0.661
	(-1.76)	(-0.08)	(-2.41)	(-1.34)	(0.51)	(-1.62)
Observations	1259	1413	1381	1235	1235	1235
R-squared	0.31	0.08	0.23	0.34	0.20	0.32

Numbers in parentheses are t-statistics based on robust standard errors. Significance levels of 0.1, 0.05, and 0.01 are noted by *, **, and ***.

Table 6: The Effect of Family Ties on the Assignment of Individual Decision Rights and Job Responsibilities

Dependent Variables: Decision Rights in	Coefficient of Family Managers	Dependent Variables: Job Responsibilities	Coefficient of Family Managers
Hiring and Firing	0.528*** (4.81)	Personnel Department	0.150*** (2.94)
Setting the salary of subordinates	0.719*** (7.37)	Marketing and Procurement	0.187*** (3.56)
Firm investments	0.523*** (6.32)	Production and R&D	-0.099* (-1.84)
Structural Change	0.641*** (5.80)	CEO Office	0.092** (1.97)
		Accounting office	0.061 (1.17)

All the regressions control for the manager's sex, age, age squared, college, years of management experience and position level. Numbers in parentheses are t-statistics based on robust standard errors. Significance levels of 0.1, 0.05, and 0.01 are noted by *, **, and ***.

Table 7: The Differences between Family and Relative Managers

Dependent variables of different regression models	Coefficients on variables			
	Family manager (1)	Family manager *ROA	Relative manager (2)	Relative manager *ROA
Log of bonuses	0.347*** (2.76)	-2.148* (-1.78)	-0.045 (-0.45)	-0.352 (-0.48)
Log of total pay	0.331*** (3.91)		0.011 (0.14)	
Log of salaries	0.340*** (3.88)		0.001 (0.01)	
Log of bonuses	0.220*** (2.89)		-0.015 (-0.21)	
Shareholding	5.745*** (4.24)		-3.307*** (-3.14)	
Position level	0.844*** (10.92)		0.088 (0.97)	
Aggregated decision rights	2.352*** (7.15)		-0.046 (-0.13)	
Scope of job responsibilities	0.382*** (3.35)		-0.072 (-0.64)	

All the regressions except for the regression with position level as dependent variable include constant terms and control for the manager's sex, age, age squared, college, years of management experience and position level. Numbers in parentheses are t-statistics based on robust standard errors. Significance levels of 0.1, 0.05, and 0.01 are noted by *, **, and ***.

Table 8: Competition and the Role of Family Ties in the Organizational Design

Dependent variables of different regression models	Coefficients on variables			
	Family manager	Family manager *Concentration	Family manager *ROA	Family manager *ROA*Concentration
Log of bonuses	0.327 (1.43)	-0.0002 (-0.03)	-2.667 (-1.38)	0.039 (0.87)
Log of salaries	0.400*** (3.26)	-0.004 (-1.39)		
Log of bonuses	0.156 (1.49)	0.003 (0.77)		
Shareholding	3.22*** (3.32)	0.000 (0.00)		
Position level	0.779*** (7.68)	0.004 (1.19)		
Aggregated decision rights	2.408*** (6.02)	-0.002 (-0.17)		
Scope of job responsibilities	0.361** (2.37)	0.003 (0.60)		

All the regressions except for the regression with position level as dependent variable include constant terms and control for the manager's sex, age, age squared, college, years of management experience and position level. Numbers in parentheses are t-statistics based on robust standard errors. Significance levels of 0.1, 0.05, and 0.01 are noted by *, **, and ***.

Table 9: The Effect of Family Presence in the Management on Firm Performance: OLS Regressions

	Dependent variables				
	Employment growth (1)	Log of sales (2)	Return on assets (3)	Return on sales (4)	Profits per employee (5)
Family presence in the management	0.109 (0.88)	0.158 (0.60)	0.218 (0.74)	0.077 (0.79)	4.251 (1.59)
Assets (log)		0.597 (9.49)***	0.04 (2.10)***	-0.006 (-0.77)	0.612 (2.89)***
Employment (log)	0.088 (1.77)*	0.325 (3.90)***			
Firm age	-0.010 (-3.85)***	-0.002 (-0.30)	-0.000 (-0.68)	-0.000 (-0.55)	-0.028 (-1.94)*
Constant	-0.128 (-0.52)	-0.127 (-0.32)	0.143 (2.12)**	0.069 (1.20)	-4.255 (-2.14)**
Observations	319	323	293	293	291
R-squared	0.15	0.67	0.06	0.09	0.18

All regressions have controlled for industry and region dummies. Numbers in parentheses are t-statistics based on robust standard errors. Significance levels of 0.1, 0.05, and 0.01 are noted by *, **, and ***.

Table 10: The Effect of Family Presence in the Management on Firm Performance: IV Regressions

	Dependent variables				
	Employment growth (1)	Log of sales (2)	Return on assets (3)	Return on sales (4)	Sales per employee (5)
Family presence in the management	0.719 (0.57)	-0.671 (-0.50)	0.315 (0.73)	0.243 (1.61)	6.526 (1.75)*
Assets (log)		0.585 (8.23)***	-0.042 (-2.02)**	-0.003 (-0.40)	0.585 (2.81)***
Employment (log)	0.121 (1.24)	0.296 (2.97)***			
Firm age	-0.009 (-3.97)****	-0.002 (-0.39)	-0.000 (-0.60)	-0.000 (-0.65)	-0.027 (-1.89)*
Constant	-0.390 (-0.61)	2.099 (2.97)***	0.323 (2.00)**	0.029 (0.47)	-4.240 (-2.35)**
Observations	291	294	269	269	267

First-Stage Regressions

	Dependent variable: Family presence in the management				
	(1)	(2)	(3)	(4)	(5)
Family size relative to the size of management team	0.062 (2.05)**	0.076 (2.58)***	0.108 (2.88)***	0.108 (2.88)***	0.109 (2.84)***
Partial R2	0.015	0.023	0.050	0.050	0.050
F-statistic on the excluded instrument	2.68	3.97	8.29	8.29	8.05

All regressions have controlled for industry and region dummies. In the first-stage regressions, only the coefficient on the excluded instrument is reported. Numbers in parentheses are t-statistics based on robust standard errors. Significance levels of 0.1, 0.05, and 0.01 are noted by *, **, and ***.

Table 11: Family Ties and Compensation, Shareholding and Authority of Firm Managers, Using Two Subsamples

Dependent Variables	Subsample	Coefficient of core family manger	R-squared	N
Log of total pay	I	0.395***	0.19	414
		(3.10)		
	II	0.290**	0.26	614
		(2.44)		
Log of salaries	I	0.438***	0.12	510
		(3.14)		
	II	0.234**	0.21	751
		(2.43)		
Log of bonuses	I	0.265**	0.07	415
		(2.15)		
	II	0.215**	0.16	616
		(2.14)		
Proportion of shareholding	I	7.746***	0.24	512
		(3.95)		
	II	4.294**	0.15	755
		(2.26)		
Position level	I	0.916***	0.23	554
		(8.29)		
	II	0.742***	0.23	822
		(6.82)		
Aggregated decision rights	I	2.161***	0.39	497
		(5.15)		
	II	2.439***	0.27	735
		(4.81)		
Scope of job responsibilities	I	0.416**	0.19	554
		(2.53)		
	II	0.385**	0.15	822
		(2.44)		

Note: Sample I represents the sub-sample of all family-succession firms, and II represents the sub-sample of all non-family succession firms. All the regressions except for the regressions with position level as dependent variable include constant terms and control for the manager's sex, age, age squared, college, years of management experience and position level. Numbers in parentheses are t-statistics based on robust standard errors. Significance level equals 0.1 0.05 and 0.01 are noted by *, **, and ***.

Table 12: Family Ties and the Sensitivity of Compensation to Firm Performance, Using Two Subsamples

	Dependent variable: Bonuses (log)					
	Sample I	Sample II	Sample I	Sample II	Sample I	Sample II
Family manager (FM)	0.269	0.495***	0.484**	0.355***	0.231*	0.293**
	(1.57)	(2.72)	(2.29)	(2.77)	(1.65)	(2.40)
FM*ROA	-0.984	-3.524**				
	(-0.65)	(-1.97)				
FM* ROS			-4.490	-2.295**		
			(-1.44)	(-2.59)		
FM* profits per employee					-0.016	-0.017**
					(-1.26)	(-2.00)
Observations	306	479	311	489	303	938
R-squared	0.10	0.21	0.13	0.20	0.10	0.17

Note: Sample I represents the sub-sample of all family-succession firms, and Sample II represents the sub-sample of all non-family succession firms. All the regressions except for the regressions with position level as dependent variable include constant terms and control for the manager's sex, age, age squared, college, years of management experience and position level. Numbers in parentheses are t-statistics based on robust standard errors. Significance level equals 0.1 0.05 and 0.01 are noted by *, **, and ***.

Table A1 Comparison between Relative and Professional Managers

Variables	Professional managers (1)	Relative managers (2)	Difference (3)=(2)-(1)
General			
Sex	0.78	0.77	-0.02
	(0.01)	(0.04)	(0.04)
Age	39.06	37.60	-1.46*
	(0.29)	(0.76)	(0.81)
College degree dummy	0.33	0.21	-0.11***
	(0.01)	(0.03)	(0.03)
Years of managerial experience	6.86	5.84	-1.02**
	(0.18)	(0.40)	(0.44)
Compensation and Shareholding			
Total pay (10,000 RMB)	5.65	4.28	-1.36***
	(0.44)	(0.28)	(0.52)
Salaries (10,000 RMB)	3.64	5.07	1.43
	(0.36)	(1.72)	(1.76)
Bonuses (10,000 RMB)	1.85	1.62	-0.23
	(0.10)	(0.17)	(0.20)
Percentage of shareholding	2.28	1.17	-1.11***
	(0.20)	(0.27)	(0.33)
Authority			
Position level (scale 0-3, with 3 the highest)	1.12	1.18	0.06
	(0.02)	(0.07)	(0.07)
Aggregate decision rights	5.06	4.94	-0.12
	(0.10)	(0.32)	(0.33)
Scope of job responsibilities	1.44	1.40	-0.04
	(0.03)	(0.08)	(0.09)