

Family-Owned Firms and Stock Returns: Evidence from the Chinese Stock Market

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Abstract

We examine stock return performance of Chinese family-firms vs. Nonfamily-firms, and the impact on family-firm returns of firm size, having a founder as CEO, and levels of family ownership. We model returns with the Capital Asset Pricing Model (CAPM), the Fama-French 3-factor model [1], and a new 5-factor model we modified from Miralles-Marcelo, Miralles-Quirós [2], which adds factors for debt and illiquidity. In previous studies, though the prevalence is for family-firm outperformance, the results have been mixed. Using CAPM or the Fama-French 3-factor model, we find that family-firms outperform nonfamily-firms, but with the 5-factor model that outperformance vanishes, and this is robust to controlling for the GFC. For the founder CEO, firm size and family ownership considerations, again previous research has been mixed. With CAPM and Fama-French 3-factor models, we find that founder CEOs outperform nonfounder, large firms outperform small firms, and higher family ownership outperforms lower ownership. However, with the 5-factor model, only size remains as having significant impact. This study helps to reconcile conflicting results in previous research.

Keywords

Family vs. Nonfamily Firms, Chinese Stock Market, CAPM, 3-Factor Model, Panel Regression

1. Introduction

Since 1978, China's economy has undergone a huge transformation from being a planned economy to a market-oriented economy. According to the Chinese Family Business Survey and Analysis Report (2014), this market-oriented economy has encouraged development of a free market and the number of private firms increased dramatically between 2009 and 2015, from 6.64 million to

70 million. Furthermore, the percentage of family-owned firms in the Chinese Shanghai-A-share market increased from 22% to 32% between 2007 and 2016. Expectations are that the number of listed and non-listed private enterprise companies will continue to increase in the future. This was emphasized in the October 2017, 19th Communist Party Congress meeting. Chairman Xi stated that China will push ahead with market-oriented reforms, and that the government will support the development of private firms and stimulate the vitality of all types of market entities [3]. With the increasing number of private firms, there will also be more family-owned firms as more than 90% of Chinese private firms are controlled by families. As a result, the role that family-owned firms play in the Chinese stock market is attracting considerable attention from researchers and investors.

There are two main motivations for why family firms might outperform non-family firms. First, according to behavioral theory regarding the ownership and management of family and non-family-owned firms, family-owned firms control higher cash flow rights than non-family-owned firms. This is driven by singular leadership and sustainable development [4]. In addition, family-owned firms are more likely to use interpersonal and value-based skills to make them more competitive and, when it comes to maximizing profits, they put the accumulation of wealth as a priority [5]. Therefore, it is significant for founders of family firms to make decisions which can make development sustainable from a long-term perspective [6]. Also, family-owned firms are concerned with their socio-emotional wealth, and family members prize their firm's reputation, its history, the continuation of its values and the perpetuation of the family dynasty [7]. As a result, family members may maximize their wealth by divesting external shareholders of their shares [8]. This can, however, lead to a lack of information transparency within a family business.

Secondly, based on agency theory, the separation of ownership and control in public firms can result in managers pursuing their own interests at the expense of shareholders' interests [9]. Since family shareholders' wealth is closely tied to their firms, they have more incentive to minimize agency problems by making optimal managerial decisions and bequeathing to the next generation [5].

There have been quite a few family vs. non-family studies done in various countries, both within and outside of China. In general, the results are quite mixed due to different sample countries, different time-periods, and different methodologies in particular return generation models.

It is the purpose of this paper to reconcile some of these results, with a common time frame that includes the GFC, incorporates control variables that have been used in other studies, and compare across three different methodologies. To our knowledge, this is the first study to be similarly comprehensive. The main issues we address are: Family firms vs. Non-family performance, the impact of firm size, the impact of the CEO being the founder, and the impact of the level of family share ownership.

Most of the studies find that family-run firms outperform non-family firms. [2] [5] [8] [10] [11]. Lipiec [12] also finds that family firms outperform non-family, but only during crisis (he studies the GFC period); before and after the crisis, non-family firms outperform. A few studies find that non-family firms outperform family firms, but in response to specific events—Chang, Wu [13], Wong, Chang [14], and Sirmon, Arregle [15]—in response to innovations, venturing announcements, and threat of imitation, respectively. Fahlenbrach [16] and Adams, Almeida [17] find that founder CEO's outperform, while Villalonga and Amit [18] finds that family firms are better off only when the founder is the CEO or Chairman. Anderson and Reeb [5] and [19] find that family CEO's have positive influence, but Miralles-Marcelo, Miralles-Quirós [2] finds no effect from a family CEO.

As to size, the results are quite mixed. Isakov and Weisskopf [20] and Adams, Almeida [17] find that large family firms outperform small firms, but Anderson and Reeb [5] and Lipiec [12] find the opposite, with Miralles-Marcelo, Miralles-Quirós [2] finding that the family vs. non-family outperformance is particularly strong for small firms.

These and other studies have found a few other interesting effects with respect to social awareness and risk. Dyer and Whetten [21] find that family firms have higher Corporate Social Responsibility (CSR) than non-family firms, and Gómez-Mejía, Haynes [22] finds that family firms are more risk averse.

Within China, the studies are similarly mixed in results. Ding, Zhang [23] find that family-owned firms perform significantly better than state-owned enterprises. This outperformance was especially significant in agricultural and light industries, where family firms have had a presence longer than in other industries which have until recently been strictly state-owned enterprises.

Chinese family-owned firms may also be influenced by religious belief. Du [24] suggests that religious entrepreneurs in Chinese family-owned firms are more likely to participate in political affairs, which may potentially provide political advantages. In a similar vein, Yang and Jiang [25] shows that policy uncertainty has a significantly negative effect on a firm's performance, yet participation in political affairs tends to mitigate this impact. Further, Xu, Yuan [26] finds that founders of family-owned firms who have a solid government relationship are more likely to appoint a second-generation family member as chairman, CEO, or director, which, in turn, could reduce transfer costs, improving firm performance.

Cai, Luo [27] also finds that family firms outperform, but in particular that family CEOs have a positive impact. They suggest this is because family member CEOs can mitigate conflict between family owners as the interests between them are highly aligned, and this can enhance a firm's performance. However, Luo and Liu [28], which also includes a GFC year in their data sample, finds that family-CEOs did not have a significant effect on abnormal returns.

Agency costs have been addressed in some of the studies. Chang, Wu [13] contends that family-owned boards had a significantly negative relationship with a firm's abnormal returns, due to the hiring of unqualified employees simply because they are family members. Wong, Chang [14] shows that institutional ownership has a positive effect on family-firm performance, due to mitigating the negative effects of agency costs and nepotism in family-owned firms.

A study by Cao, Cumming [29] specifically examines the one-child policy, finding that it has negatively affected founders' expectations of going public, which, in turn, has reduced family firms' reinvestment rates. Moreover, it has also led to high agency costs due to the decreased probability of descendants inheriting positions. In contrast, such costs decrease by 14% if adult children work in family-owned firms.

From all of these studies, it is clear there is a wide variety of findings. Some of this disparity is due to different regions, but even in the Chinese studies there is ambiguity. Some of the studies have included the GFC, some have controlled for firm size, but others have not (shown by Xie and Qu [30] to be important in the Chinese market). Many of the studies have used the Fama-French 3-factor model, while some have used a single-factor model such as CAPM. What the current study does is use a time period which includes the GFC, controls for size, and compares the impact of 3 different return generation models—CAPM, the Fama-French 3-factor model [1], and borrowing from Miralles-Marcelo, Miralles-Quirós [2], develops a new 5-factor model.

2. Definition of Family-Owned Firms

Anderson and Reeb [5] examines the level of equity ownership of the founding family and/or the presence of family members on the board of directors, but does not put a minimum limit on the threshold for family ownership. Villalonga and Amit [18] define a family-owned firm as being one where family members own at least 20% of shares. Anderson, Reeb [31] requires that a firm's founder or a member of the family should own at least 5% of the firm's equity, but does not require that the CEO is family. On the contrary, Fahlenbrach [16] defines a family-owned firm as one having a founder or co-founder as CEO.

Chang, Wu [13] concentrates on directed voting and cash-flow rights, requiring that for a firm to be defined as a family-owned, the family must have at least 20% of the firm ownership and at least half of the seats on the board. If a family-owned firm establishes a partnership with other family-owned firms, then the real controlling right belongs to the family with the largest amount of ownership or to their legal representatives. Barontini and Caprio [8] states that a firm can be defined as family-owned when at least 10% of ownership rights and more than 51% of direct voting rights are owned by family members.

In this study, we define a firm as family-owned whenever a founder and/or family members control at least 51% of voting rights and 10% of ownership rights.

3. Sample Data and Methodology

3.1. Data

The data used in this research is from firms listed on the Chinese Shanghai-A share market obtained from the CSMAR's database, with monthly data from December 2006 to November 2016. We require at least 24 months of returns, and that a firm is consistently either family or non-family during our sample period. Following Barontini and Caprio [8] and others, we exclude financial firms. Our final sample consists of 1041 publicly listed firms. Finally, to account for the impact of outliers, the sample has been winsorized, dropping the top and bottom 1%.

3.2. Research Hypotheses

As noted above, family-owned firms have higher ownership by family members and most have singular leadership [4]. Therefore, the owners of family firms are more likely to bring interpersonal and value-based skills to make their firms more competitive, which may, in turn, generate higher stock performance than non-family-owned firms. Therefore, the expectation is that there will be abnormal returns for family-owned firms. This leads to the below hypothesis:

Hypothesis 1: *Family-owned firms outperform non-family-owned firms.*

The owners of family-owned firms, particularly founder-CEOs, treat their firms' wealth as a symbol of personal wealth [5]. As a result, they pay attention to decisions that affect the long-term, stable growth of the firm in the public market, which may improve the firm's ability to create potential investment opportunities. The expectation is that family firms with founder-CEOs will obtain abnormal returns. Thus:

Hypothesis 2: *Founder-CEOs of family-owned firms outperform non-founder-CEOs of family-owned firms.*

Of the studies we have reviewed on the Chinese stock market, most find that larger-size has a positive effect on a firms' performance. The expectation is that larger family-owned firms have higher stock performance than smaller family-owned firms. Therefore, the third hypothesis is:

Hypothesis 3: *Bigger family-owned firms outperform smaller family-owned firms.*

Family-owned firms show stronger performance when family owners have high levels of ownership. This is because family members in such firms have the incentive to make optimal development strategies for the long-term [27]. Therefore, the expectation is that family firms with higher levels of family ownership produce higher stock returns than family firms with low levels of family ownership. This leads to the fourth hypothesis:

Hypothesis 4: *Family-owned firms with high levels of family member ownership outperform family-owned firms with low levels of ownership.*

3.3. Research Methodology

Many empirical studies of the U.S., European and other markets have used the

Capital Asset Pricing Model (CAPM) and the Fama-French Three-Factor model (e.g. Fama and French [32]; Guermat [33]; Lam, Li [34]). Overall, these studies have shown that the Fama-French Three-Factor Model has higher explanatory power than the basic CAPM model, but they have not been widely examined in the Chinese market.

Miralles-Marcelo, Miralles-Quirós [2] has noted the sensitivity of family firms to debt and illiquidity. As also noted by Amihud [35], illiquid stocks are more sensitive to market illiquidity, so we expect that family firms will likely be more sensitive to this. Miralles-Marcelo, Miralles-Quirós [2] also describe how debt may help explain returns, particularly for small firms, in light of the above mentioned agency issues (also described in Bhandari [36] and Fama and French [37]). Therefore, following Miralles-Marcelo, Miralles-Quirós [2], we add these two variables to the Fama-French model to create a new Five-Factor Model. The illiquidity metric is from Amihud [35], measured originally as absolute value of return/volume; we found this to be very small in our sample, so we used the natural log of this ratio. As with Miralles-Marcelo, Miralles-Quirós [2], the debt metric is the average of debt and market value for each stock.

To examine our hypotheses, we compare outperformance using three models: CAPM, the Fama-French 3-factor model, and our new 5-factor model. We use panel data methodology to allow investigation into individual securities, rather than potentially inducing bias with portfolios of firms stratified in some way¹. We employ this with random firm effects, as random effects models can include time invariant variables, and in our sample the family or nonfamily designation is time invariant; with fixed firm effects these variables are absorbed by the intercept.

3.3.1. Individual Impact of Family vs. Non-Family on Stock Returns

As noted earlier, we use three different models to examine the question of whether family firms outperform non-family—CAPM, Fama-French 3-Factor, New 5-Factor.

The Capital Asset Pricing Model (CAPM)

$$r_{i,t} = \alpha_i^{NonFam} + \alpha_i^{Fam} D_i^{Fam} + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (1)$$

Fama-French Three-Factor Model

$$r_{i,t} = \alpha_i^{NonFam} + \alpha_i^{Fam} D_i^{Fam} + \beta_i R_{m,t} + s_i SMB_t + h_i HML_t + \varepsilon'_{i,t} \quad (2)$$

New Five-Factor Model

$$r_{i,t} = \alpha_i^{NonFam} + \alpha_i^{Fam} D_i^{Fam} + \beta_i R_{m,t} + s_i SMB_t + h_i HML_t + \delta_i Debt_{i,t} + \lambda_i Illiq_{i,t} + \varepsilon''_{i,t} \quad (3)$$

where:

¹To conserve space we do not report it here, but we also ran time series regressions using these models on portfolios, in a similar vein to 2. Miralles-Marcelo JL, Miralles-Quirós MdM, Lisboa I. The stock performance of family firms in the Portuguese market. Applied Financial Economics, 2013; 23(22): 1721-32. Results are consistent with the panel data conclusions. Our results are available on request.

r_{it} : $R_{it} - R_{ft}$ is the excess stock return at time t

$R_{m,t}$: $R_{m,t} - R_{ft}$ is the excess market return at time t ,

SMB_t is the difference between returns on small- and large-stocks with approximately the same weighted-average book-to-market equity at time t ,

HML_t is the difference between returns on high- and low-BE/ME stock with approximately the same weighted-average size at time t [1],

$Debt_{it}$ is the total debt/total market value at time t ,

$Illiq_{it}$ is the ratio of absolute stock return divided by its volume at time t [35],

D_i^{Fam} is a dummy variable which equals 1 when the firm is a family-owned firm and otherwise 0, and

α_i^{Fam} is the risk-adjusted return difference between family and nonfamily.

3.3.2. The Effects of Founder-CEO, Size and Ownership Levels Based on Individual Securities

Our next step is to examine the issues posed in hypotheses 2-4. For this we replace the family dummy in the above regressions with the appropriate dummy, as in: Founder-CEO (=1 if CEO is the founder), Size (=1 if firm size greater than median), Ownership (=1 if family owns more than 50% of shares).

$$r_{i,t} = \alpha_i^{Other} + \alpha_i^{Fam(Founder/Size/Ownership)} D_i^{Fam(Founder/Size/Ownership)} + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (4)$$

$$r_{i,t} = \alpha_i^{Other} + \alpha_i^{Fam(Founder/Size/Ownership)} D_i^{Fam(Founder/Size/Ownership)} + \beta_i R_{m,t} + s_i SMB_t + h_i HML_t + \varepsilon'_{i,t} \quad (5)$$

$$r_{i,t} = \alpha_i^{Other} + \alpha_i^{Fam(Founder/Size/Ownership)} D_i^{Fam(Founder/Size/Ownership)} + \beta_i R_{m,t} + s_i SMB_t + h_i HML_t + \delta_i Debt_{i,t} + \lambda_i Illiq_{i,t} + \varepsilon''_{i,t} \quad (6)$$

Then $\alpha_i^{Fam(Founder/Size/Ownership)}$ is the risk-adjusted return difference between these family firms and other family firms.

3.3.3. The Effects of the Global Financial Crisis

For each of equations above, we add a dummy for GFC (=1 for years 2008-2010) and an interaction term for family and GFC. The GFC dummy is a control; the interaction term, $Fam * GFC$, will reveal how family firms contribute during the GFC.

4. Empirical Results

4.1 Sample Description

Table 1 summarizes the sample structure of this research. It presents the number of family-owned and nonfamily-owned firms, the mean excess return for each and the difference in mean excess return for each year. On average, there are 998 firms per year, 23% of which are family-owned. Family-firms returns are significantly higher than nonfamily-firms in 4 of the 10 years. It is notable that three of these significant differences occurred during the GFC, consistent with the observation of Lipiec [12], that family firms outperform during a crisis.

Table 2 presents the summary statistics of the risk factors analyzed in this

Table 1. Sample structure.

Year	Number of firms		Excess return				Capitalization		
	Fam	NFam	Fam	NFam	Difference	<i>t</i> -statistic	Fam	NFam	Difference
2007	184	633	0.03	0.03	-0.0003	-0.06	4.18	12.20	-8.03
2008	182	640	-0.12	-0.12	-0.004	-0.78	3.81	17.13	-13.32
2009	183	645	0.04	0.03	0.01***	2.90	3.86	14.40	-10.54
2010	184	660	-0.03	-0.04	0.006**	2.04	5.78	16.62	-10.84
2011	214	666	-0.07	-0.08	0.005**	2.13	6.99	16.79	-9.80
2012	230	677	-0.08	-0.08	-0.0004	-0.13	5.72	13.53	-7.81
2013	231	675	-0.03	-0.03	0.002	0.87	6.51	13.16	-6.65
2014	246	688	-0.03	-0.03	0.002	0.75	7.75	13.93	-6.18
2015	322	700	0.01	-0.01	0.02***	4.95	12.95	24.62	-11.68
2016	322	698	-0.04	-0.04	0.001	0.39	12.12	20.61	-8.49
Mean	229.8	668.2	-0.03	-0.04	0.004		6.97	16.30	-9.33

Notes: *, ** and *** denote significance at the 5% and 1% levels at a two-tail test, respectively. For each year, this table presents the number of family-owned and non-family-owned firms included in the sample, the mean excess return for each group of firms, and their differences. The last row presents the mean values over the sample period. Capitalization units are CNY billion.

Table 2. Descriptive statistics.

<i>Panel A: descriptive statistics</i>					
	Rm	SMB	HML	Debt	Illiquidity
Mean	0.01	0.01	0.002	0.60	-21.43
Minimum	-0.25	-0.14	-0.16	0.01	-29.32
25th Percentile	-0.05	-0.01	-0.03	0.14	-22.37
Median	0.01	0.02	0.002	0.32	-21.33
75th Percentile	0.06	0.05	0.02	0.72	-20.40
Maximum	0.27	0.13	0.18	4.37	-11.57
SD	0.09	0.05	0.04	0.77	1.53
Skewness	-0.26	-0.51	0.32	2.68	-0.36
Kurtosis	0.83	0.77	3.65	8.26	0.52
<i>Panel B: correlation coefficients</i>					
	Rm	SMB	HML	Debt	Illiquidity
Rm	1.00				
SMB	0.02	1.00			
HML	0.19	-0.37	1.00		
Debt	-0.03	-0.02	0.00	1.00	
Illiquidity	-0.12	0.00	0.02	-0.17	1.00

Panel A presents descriptive statistics, namely mean, median, minimum, SD and skewness and kurtosis, for all five control variables in this research: the market risk factor, the size (SMB), book-to-market (HML), leverage factor (Debt), and aggregate market illiquidity (Illiquidity). Panel B demonstrates the correlation coefficients matrix for all five control variables.

study: market excess return, size, book-to-market ratio, debt ratio and illiquidity. Panel A shows the descriptive statistics of these five factors. Due to the small illiquidity values, this research has used the natural log instead of raw illiquidity. Panel B presents the correlation coefficients between these five control variables.

4.2. Panel Data Analysis

4.2.1. Outperformance by Family-Owned Firms

The first test is to determine in broad terms if family firms outperform nonfamily firms. **Table 3** reports results for the 3 models used, with *Fam* being the variable of interest. For the CAPM and Fama-French Three-factor models, the family firms outperform nonfamily firms by 0.5% and 0.6%, respectively, both significant at the 1% level. However, with the Five-Factor model including Debt and Illiquidity, both significant at 1% (negative and positive, respectively, as we would expect), the significance of *Fam* vanishes, suggesting that Illiquidity accounts for much of the outperformance.

4.2.2. Outperformance by Three Categories of Family-Owned Firms

For all categories, coefficients on the control variables are as expected, and consistent with previous research (e.g. Xie and Qu [30]). When a founder is the CEO, those firms outperform others under both the CAPM and 3-factor models, as with all family firms, but again not with the 5-factor model (see **Table 4**). Comparing this with the family vs. nonfamily results of **Table 3**, this suggests that the Debt and Illiquidity impact on family firms dominates results, whether the CEO is the founder or not.

Large family-owned firms outperform small family firms with all 3 models (**Table 5**), significant at the 1% level. As before, with the 5-factor model, Debt is significantly negative and Illiquidity is significantly positive. Family ownership is

Table 3. Effects of individual family-owned firms: panel data—firm RE.

	Intercept	Fam	Rm	SMB	HML	Debt	Illiquidity	Adj. R ²
<i>Panel A. CAPM Model</i>								
Coefficient	−0.04***	0.006***	1.02***					36.14%
<i>t-stat.</i>	(−98.85)	(6.27)	(241.28)					
<i>Panel B. Fama-French Three-Factor Model</i>								
Coefficient	−0.06***	0.005***	1.02***	1.01***	−0.17***			47.70%
<i>t-stat.</i>	(−139.03)	(6.69)	(260.99)	(131.45)	(−17.95)			
<i>Panel C. New Five-Factor Model</i>								
Coefficient	0.11***	0.0005	1.05***	1.01***	−0.2***	−0.005***	0.008***	49.95%
<i>t-stat.</i>	(22.25)	(0.62)	(269.68)	(133.33)	(−21.36)	(−10.02)	(33.50)	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels at a two-tail test, respectively. This table reports the panel data regression results on firm performance, using three models. In all cases, the dependent variable is firm return excess of the risk-free rate, *Fam* is a dummy variable = 1 if the firm is family owned, *Rm* is market excess return, *SMB* and *HML* are the size and growth/value factors for the Fama-French 3-factor model, *Debt* is total debt divided by the total assets, and *Illiquidity* is the average return divided by total monthly volume (both at market level). There are 103,410 observations over the period 12/2006 to 11/2016.

Table 4. Effects of founder CEO in family-owned firms: panel data—firm RE.

	Intercept	FdrCEO	Rm	SMB	HML	Debt	Illiquidity	Adj. R ²
<i>Panel A. CAPM Model</i>								
Coefficient	−0.04***	0.004**	1.01***					32.19%
<i>t-stat.</i>	(−28.29)	(2.25)	(110.70)					
<i>Panel B. Fama-French Three-Factor Model</i>								
Coefficient	−0.06***	0.004**	1.01***	1.12***	−0.39***			47.47%
<i>t-stat.</i>	(−43.28)	(2.19)	(123.31)	(68.04)	(−20.07)			
<i>Panel C. New Five-Factor Model</i>								
Coefficient	0.12***	0.002	1.04***	1.11***	−0.43***	−0.01***	0.008***	50.90%
<i>t-stat.</i>	(12.02)	(1.32)	(130.40)	(70.08)	(−22.82)	(−7.68)	(17.35)	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels at a two-tail test, respectively. This table reports the panel data regression results on firm performance, using three models. In all cases, the dependent variable is firm return excess of the risk-free rate, *FdrCEO* is a dummy variable = 1 if the CEO is also the founder, *Rm* is market excess return, *SMB* and *HML* are the size and growth/value factors for the Fama-French 3-factor model, *Debt* is total debt divided by the total assets, and *Illiquidity* is the average return divided by total monthly volume (both at market level). There are 25,905 observations over the period 12/2006 to 11/2016.

Table 5. Effects of firm size in family-owned firms: panel data—firm RE.

	Intercept	BigFam	Rm	SMB	HML	Debt	Illiquidity	Adj. R ²
<i>Panel A. CAPM Model</i>								
Coefficient	−0.05***	0.02***	1.01***					32.47%
<i>t-stat.</i>	(−42.61)	(10.65)	(110.96)					
<i>Panel B. Fama-French Three-Factor Model</i>								
Coefficient	−0.06***	0.01***	1.01***	1.12***	−0.39***			47.64%
<i>t-stat.</i>	(−61.17)	(9.41)	(123.50)	(68.14)	(−19.90)			
<i>Panel C. New Five-Factor Model</i>								
Coefficient	0.15***	0.02***	1.04***	1.10***	−0.43***	−0.008***	0.01***	51.24%
<i>t-stat.</i>	(14.8)	(13.29)	(131.1)	(70.11)	(−22.73)	(−6.86)	(20.37)	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels at a two-tail test, respectively. This table reports the panel data regression results on firm performance, using three models. In all cases, the dependent variable is firm return excess of the risk-free rate, *BigFam* is a dummy variable = 1 if the firm size is greater than the median of all family firms, *Rm* is market excess return, *SMB* and *HML* are the size and growth/value factors for the Fama-French 3-factor model, *Debt* is total debt divided by the total assets, and *Illiquidity* is the average return divided by total monthly volume (both at market level). There are 25,905 observations over the period 12/2006 to 11/2016.

also positive and significant for CAPM and the 3-factor model, but not for the 5-factor model (Table 6).

In terms of our hypotheses, the results are a bit mixed. For hypothesis 1, that family firms outperform nonfamily firms, for CAPM and the 3-factor model, we cannot reject. However, with the 5-factor model we find no significant evidence that family firms outperform. For hypothesis 2, that family firms with a founder CEO outperform other family firms, we cannot reject that family firms outperform under CAPM or the 3-factor model, but again with the 5-factor model we find no significant evidence that firms with founder CEOs outperform. For

Table 6. Effects of ownership level in family-owned firms: panel data—firm RE.

	Intercept	HiOwner	Rm	SMB	HML	Debt	Illiquidity	Adj. R ²
<i>Panel A. CAPM Model</i>								
Coefficient	-0.04***	0.005**	1.01***					32.19%
<i>t-stat.</i>	(-44.16)	(2.18)	(110.70)					
<i>Panel B. Fama-French Three-Factor Model</i>								
Coefficient	-0.05***	0.004**	1.01***	1.12***	-0.39***			47.47%
<i>t-stat.</i>	(-66.78)	(2.03)	(123.31)	(68.04)	(-20.07)			
<i>Panel C. New Five-Factor Model</i>								
Coefficient	0.12***	0.001	1.04***	1.11***	-0.43***	-0.01***	0.008***	50.90%
<i>t-stat.</i>	(12.12)	(0.63)	(130.62)	(70.20)	(-22.86)	(-7.74)	(17.30)	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels at a two-tail test, respectively. This table reports the panel data regression results on firm performance, using three models. In all cases, the dependent variable is firm return excess of the risk-free rate, *HiOwner* is a dummy variable = 1 if the family share ownership is greater than 50%, *Rm* is market excess return, *SMB* and *HML* are the size and growth/value factors for the Fama-French 3-factor model, *Debt* is total debt divided by the total assets, and *Illiquidity* is the average return divided by total monthly volume (both at market level). There are 25,905 observations over the period 12/2006 to 11/2016.

hypothesis 3, that large family firms outperform small family firms, we cannot reject under all 3 models. For hypothesis 4, that higher ownership leads to out-performance, under CAPM and the 3-factor model the ownership impact is significantly positive, but under the 5-factor model it is not significant.

4.2.3. Impact of the Global Financial Crisis (GFC)

Lipiec [12] finds that family-owned firms in Warsaw perform significantly better than non-family-owned firms during a crisis period. Following this line of thought, we now examine if there is different performance of Chinese family firms relative to nonfamily firms during the GFC. For each of the 3 models, and each of the 4 hypothesis tests, we add a dummy variable $GFC = 1$ during years 2008-2010, inclusive, and an interaction term for family firms during the GFC – $Fam * GFC$ (see **Tables 7-10**).

In nearly all cases, for both the models and categories considered, we find results largely similar to those that do not consider the GFC. As before, the 5-factor model suggests that *Debt* and *Illiquidity* are important, but now after addressing the GFC, we reject hypotheses 1, 2 & 4 under the 5-factor model. However for *Size*, we still find that large family firms outperform small family firms, even after addressing the GFC, with a coefficient of 2%, significant at the 1% level.

5. Conclusions

We examine monthly returns of family and nonfamily firms on the Shanghai Class-A shares exchange, over the period Dec. 2007 to June 2016, using 3 return generation models: the CAPM, the Fama-French 3-Factor model, and a new model adapted from a model by Miralles-Marcelo, Miralles-Quirós [2], adding *Debt* and *Illiquidity* metrics to the FF 3-factor model. We compare family vs.

nonfamily directly, and then compare large family firms to small family firms, family firms with a founder CEO to those with a non-founder CEO, and family firms with high levels of family ownership to those with lower levels. We then compare all of the above with dummies for the GFC.

We find that family-owned firms significantly outperform nonfamily-owned firms under the CAPM and Fama-French models, but not under the new Five-Factor model, suggesting that illiquidity exposure accounts for most of that outperformance. As family firms on average are nearly 1/3 the size of nonfamily firms, this makes sense.

Table 7. Effects of individual family-owned firms: panel data—firm RE, with GFC.

	Intercept	Fam	Rm	SMB	HML	Debt	Illiquidity	GFC	Fam * GFC	Adj. R ²
<i>Panel A. CAPM Model</i>										
Coefficient	-0.047***	0.007***	1.03***					0.012***	-0.003	36.24%
<i>t-stat.</i>	(-89.44)	(6.58)	(241.62)					(11.88)	(-1.38)	
<i>Panel B. Fama-French Three-Factor Model</i>										
Coefficient	-0.06***	0.006***	1.02***	1.01***	-0.17***			-0.002**	-0.002	47.71%
<i>t-stat.</i>	(-117.09)	(6.14)	(258.85)	(131.31)	(-18.10)			(-2.13)	(-0.98)	
<i>Panel C. New Five-Factor Model</i>										
Coefficient	0.11***	-0.0001	1.04***	1.01***	-0.20***	-0.005***	0.008***	-0.005***	0.001	49.96%
<i>t-stat.</i>	(22.86)	(-0.10)	(267.44)	(133.47)	(-21.73)	(-10.65)	(33.89)	(-5.53)	(0.60)	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels at a two-tail test, respectively. This table, similar to **Table 3** but with GFC, reports the panel data regression results on firm performance, using three models. In all cases, the dependent variable is firm return excess of the risk-free rate, *Fam* is a dummy variable = 1 if the firm is family owned, *Rm* is market excess return, *SMB* and *HML* are the size and growth/value factors for the Fama-French 3-factor model, *Debt* is total debt divided by the total assets, and *Illiquidity* is the average return divided by total monthly volume (both at market level), *GFC* is a dummy variable = 1 during years 2008-2010. There are 103,410 observations over the period 12/2006 to 11/2016.

Table 8. Effects of founder CEO in family-owned firms: panel data—firm RE—with GFC.

	Intercept	FdrCEO	Rm	SMB	HML	Debt	Illiquidity	GFC	Fam * GFC	Adj. R ²
<i>Panel A. CAPM Model</i>										
Coefficient	-0.04***	0.006***	1.02***					0.01***	-0.004	32.24%
<i>t-stat.</i>	(-25.85)	(2.72)	(110.68)					(3.62)	(-1.09)	
<i>Panel B. Fama-French Three-Factor Model</i>										
Coefficient	-0.05***	0.004**	1.01***	1.13***	-0.40***			-0.006**	-0.002	47.51%
<i>t-stat.</i>	(-35.65)	(1.96)	(122.06)	(68.19)	(-20.27)			(-2.11)	(-0.61)	
<i>Panel C. New Five-Factor Model</i>										
Coefficient	0.13***	0.001	1.04***	1.11***	-0.44***	-0.01***	0.008***	-0.009***	0.002	50.94%
<i>t-stat.</i>	(12.55)	(0.51)	(129.25)	(70.29)	(-23.08)	(-7.83)	(17.73)	(-3.46)	(0.69)	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels at two-tail test, respectively. This table, similar to **Table 4** but with GFC, reports the panel data regression results on firm performance, using three models. In all cases, the dependent variable is firm return excess of the risk-free rate, *FdrCEO* is a dummy variable = 1 if the CEO is also the founder, *Rm* is market excess market excess return, *SMB* and *HML* are the size and growth/value factors for the Fama-French 3-factor model, *Debt* is total debt divided by the total assets, and *Illiquidity* is the average return divided by total monthly volume (both at market level), *GFC* is a dummy variable = 1 during years 2008-2010. There are 25,905 observations over the period 12/2006 to 11/2016.

Table 9. Effects of firm size in family-owned firms: panel data—firm RE, with GFC.

	Intercept	BigFam	Rm	SMB	HML	Debt	Illiquidity	GFC	Fam * GFC	Adj. R ²
<i>Panel A. CAPM Model</i>										
Coefficient	-0.05***	0.02***	1.02***					0.01***	-0.01	32.60%
<i>t-stat.</i>	(-38.60)	(11.26)	(111.05)					(6.57)	(-1.35)	
<i>Panel B. Fama-French Three-Factor Model</i>										
Coefficient	-0.06***	0.01***	1.01***	1.12***	-0.39***			-0.005***	0.003	47.65%
<i>t-stat.</i>	(-49.30)	(7.44)	(122.41)	(68.13)	(-20.01)			(-2.49)	(0.71)	
<i>Panel C. New Five-Factor Model</i>										
Coefficient	0.15***	0.02***	1.04***	1.11***	-0.43***	-0.01***	0.01***	-0.005	0.005	51.25%
<i>t-stat.</i>	(14.99)	(10.74)	(130.13)	(70.16)	(-22.84)	(-6.90)	(20.44)	(-2.64)	(1.35)	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels at a two-tail test, respectively. This table, similar to **Table 5** but with GFC, reports the panel data regression results on firm performance, using three models. In all cases, the dependent variable is firm return excess of the risk-free rate, *BigFam* is a dummy variable = 1 if the firm size is greater than the median of all family firms, *Rm* is market excess market excess return, *SMB* and *HML* are the size and growth/value factors for the Fama-French 3-factor model, *Debt* is total debt divided by the total assets, and *Illiquidity* is the average return divided by total monthly volume (both at market level), *GFC* is a dummy variable = 1 during years 2008-2010. There are 25,905 observations over the period 12/2006 to 11/2016.

Table 10. Effects of ownership level in family-owned firms: panel data—firm RE, with GFC.

	Intercept	HiOwner	Rm	SMB	HML	Debt	Illiquidity	GFC	Fam * GFC	Adj. R ²
<i>Panel A. CAPM Model</i>										
Coefficient	-0.04***	0.008***	1.02***					0.01***	0.01	32.25%
<i>t-stat.</i>	(-40.39)	(2.95)	(110.69)					(4.91)	(1.62)	
<i>Panel B. Fama-French Three-Factor Model</i>										
Coefficient	-0.05***	0.005**	1.01***	1.13***	-0.40***			-0.007***	0.007	47.51%
<i>t-stat.</i>	(-56.38)	(2.09)	(122.07)	(68.19)	(-20.27)			(-3.71)	(1.25)	
<i>Panel C. New Five-Factor Model</i>										
Coefficient	0.13***	0.001	1.04***	1.11***	-0.44***	-0.01***	0.008***	-0.007***	0.005	50.94%
<i>t-stat.</i>	(12.12)	(0.63)	(129.26)	(70.29)	(-23.08)	(-7.83)	(17.65)	(-4.37)	(0.90)	

Notes: *, ** and *** denote significance at the 10%, 5% and 1% levels at a two-tail test, respectively. This table, similar to **Table 6** but with GFC, reports the panel data regression results on firm performance, using three models. In all cases, the dependent variable is firm return excess of the risk-free rate, *HiOwner* is a dummy variable = 1 if the family share ownership is greater than 50%, *Rm* is market excess market excess return, *SMB* and *HML* are the size and growth/value factors for the Fama-French 3-factor model, *Debt* is total debt divided by the total assets, and *Illiquidity* is the average return divided by total monthly volume (both at market level), *GFC* is a dummy variable = 1 during years 2008-2010. There are 25,905 observations over the period 12/2006 to 11/2016.

For the “within family firms” tests, larger firms outperform small firms with all three models. However, the CEO being a firm founder and family ownership level only have significant (and positive) impact under the CAPM and 3-factor models, not in the 5-factor model, again implying a strong impact from debt and illiquidity.

The GFC does not have much impact on our results regarding family and nonfamily firms. The GFC itself was of course significant, but at the margin, the impact of family during the GFC was not significant. For CAPM and the 3-factor

model, we find results similar to before considering the GFC, but for the 5-factor model, only size has a significant effect.

Overall, our findings—particularly for the CAPM and Fama-French 3-factor models—corroborate the bulk of previous research, which shows that family firms outperform nonfamily firms, and that founder CEO's, large firms, and high ownership all play a part in outperformance. However, our addition of the 5-factor model helps to explain some of the contrary findings of other research, showing that size is the dominating factor in family firm outperformance.

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