Are Family Firms Better Performers during the Financial Crisis?

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Abstract

This paper examines whether family firms are better performers during the global financial crisis. Using a dataset covering firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France), and FTSE MIB 40 (Italy) during the period 2006-2010, I find that broadly defined family firms do not outperform non-family firms during the crisis. However, family firms with founder presence (as CEO, a board member or a significant blockholder) outperform non-family firms by 18 percent in Operating Return on Assets (OROA). Tobin's Q of founder firms, by contrast, does not exhibit any difference. I interpret the attenuation of the market value premium of founder firms as the result of high volatility of stock prices and investors' overreaction during the crisis (Veronesi, 1999; Glode *et al.*, 2010). Further research shows that during the global financial crisis, founder firms incur less administrative costs than non-family firms. Founder firms also invest less and enjoy better access to the credit market. My analysis suggests that the superior performance of founder firms is largely caused by less incentive to invest in risky projects with high likelihood of failure in order to boost earnings during the crisis. Furthermore, my results reveal that founder firms bear the least agency costs, and that Tobin's Q may not be the most appropriate measure of corporate performance during the financial crisis.

***JEL classifications*:** G01; G14; G32

***Key words*:** family firms, performance, founder, corporate governance, financial crisis

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Introduction

That family firms constitute a large proportion of national economies around the world is undeniable (for instance: La Porta, Lopez-de-Silanes and Shleifer for overall outlook, 1999; Anderson and Reeb in the US, 2003; Klein in Germany, 2000; Morck and Yeung in Sweden, 2003; Bennedsen *et al.* in Denmark, 2007; Claessens *et al.* in Eastern Asia, 2000). The prevalence of family firms gives rise to the question whether or not the family firm is a more efficient organizational form. Earlier empirical studies offer contradictory conclusions. In US public firms, for example, Holderness and Sheehan (1988) find that family firms have a lower Tobin's Q than non-family firms, while Anderson and Reeb (2003) report opposite findings. Empirical evidence in other countries is mixed and inconclusive (McConaughy et. *al.*, 1998; Morck *et al.*, 2000; Claessens *et al.*, 2002; Cronqvist and Nilsson, 2003).

More recent studies tend to render the conclusions that the outperformance of family firms is sensitive to the definition of family firms (for instance, Maury, 2006; Miller *et al.*, 2007), and that the founders of family firms play a central role in differentiating family firms from their counterparts in corporate performance. Active involvement of founders in top management (CEO) and monitoring as directors of the board is associated with superior corporate performance (Villalonga and Amit, 2006; Miller *et al.*, 2007).

Almost all existent literature, however, only focuses on corporate performance comparison between family firms and non-family firms in normal economic times or good market conditions. Studies are rather scant for periods of depression or recession. It is important to re-examine the performance of family firms and non-family firms during recession times because conventional economic rules may not be applicable during recession times. For instance, Kuppuswamy and

Villalonga (2012) report that corporate diversification is valuable to firms during a financial crisis (2007-2009), challenging the view of diversification discount since the late 1990s and the early 2000s. Secondly, in bad times, demand cuts from customers and credit constraints from financial institutions, especially for those firms which largely rely on debt financing, may amplify intrinsic organizational fragility which will be reflected in corporate performance. Lins, Volpin and Wagner (2011) argue that the relationship between blockholder control and firm value is more pronounced in the financial crisis because the adjustment to firm value made by the changing benefits and costs of blockholding[1] during the crisis.

The global financial crisis heralded by the Lehman Brother's bankruptcy in 2008 offers us an ideal setting for studying corporate performance of family firms versus non-family firms because, as Campello, Graham, and Harvey (2010) state, this crisis, differing from previous ones, originates from the subprime mortgage crisis (customer finance), spills over to the corporate domain, and can be viewed as an exogenous shock. Besides this, the large magnitude and global scale of the crisis enable us to conduct an international study rather than a regionally based research such as the studies conducted on the Asian financial crisis in 1997 (Mitton, 2002; Lemmon and Lins, 2003).

Using a detailed dataset from proxy filings of firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France), and FTSE MIB 40 (Italy) during the period 2006-2010, I

[1] On one hand, Blockholders are argued to get better access to internal and external financing (e.g. Wruck (1989), Hertzel and Smith (1993), Berglöf and Perotti (1994), Winton (1993), Stein (1997)), help in product markets (Khanna and Palepu (2000)), and offer monitoring (e.g. Shleifer and Vishny (1986), Admati, Pfleiderer and Zechner (1994), Burkart, Gromb and Panunzi (1997), Maug (1998), and Kahn and Winton (1998). These benefits may become more significant during the financial crisis. On the other hand, controlling blockholders also face a tradeoff between using firm funds to extract private benefits and using firm funds to make productive investment. In financial crisis, controlling blockholders' asset expropriation at the cost of minority shareholders may become more serious (e.g. Zingales (1994), and Shleifer and Vishny (1997)), given they think private benefits are more attractive.

aim at contributing to the literature by bringing new evidence from the current global financial crisis to bear on the debate whether family firms are an effective organizational form[2].

The second contribution of this paper is to enrich our understanding of the real effects of the financial crisis on firms. A growing body of literature reports significant decreases in investment during the crisis (for instance, Campello, Giambona, Graham, and Harvey, 2010; Duchin, Ozbas, and Sensoy, 2010; Ivashina and Scharfstein, 2010). However, all these studies hardly investigate how the impacts of the crisis on corporate performance[3] and investment differ between family and non-family firms. The results of my paper complement these studies and may be of interest to fund managers in portfolio firm screening during recession times.

In this paper, I pose two research questions. The primary question is: Do family firms outperform non-family firms during the global financial crisis? I find that whether I use the market performance measure (Tobin's Q) or the accounting performance measure (Operating Return on Assets (OROA)), broadly defined family firms, comprising 35 percent of the sample, have not significantly outperformed non-family firms during the crisis. However, family firms with active founder involvement (as CEO, a board member or significant blockholder) show significantly higher accounting performance by 18 percent relative to non-family firms during the crisis. The Tobin's Q of founder firms, by contrast, does not exhibit the same significant difference.

[2] Alchian (1950), Demsetz (1983) and Demsetz and Lehn (1985) launch the question why family ownership is not dominating if it is indeed a better organizational form.

[3] Lins, Volpin, and Wagner (2011) make an international study (excluding US firms) into the relationship between bolckholder and firm value during the global financial crisis. But they only focus on firms with family ownership concentration and bypass other family firms like founder-run firms or heir-run firms. My paper complements their research by offering a broader analysis on different types of family firms. US S&P 500 firms constitute the major body of the sample and I find results different from their findings.

Next, I explore the reasons for different findings of founder firms in accounting performance and market performance. On one hand, OROA computes yearly cash flow over the book value of total assets of a firm, which is less likely to be affected by spot stock prices. My results show that during the crisis, compared with non-family firms, founder firms have less administrative costs incurred. Moreover, they invest significantly less and have better access to credit market (Croci, Doukas and Gonenc (2011) find that family firms invest less in risky projects and credit markets are more prone to supply family firms with long-term debt). Unlike non-family firms, whose mangers are arguably myopic and have more incentive to over-invest in risky projects to boost current earnings (Andersen and Reeb, 2003) under the pressure of managerial dismissal in harsh economic conditions, founder firms are more long-term oriented and take a more conservative investment strategy during the crisis. Risky projects, especially those financed by short-term debt, are most likely to fail with financial constraints. As a result, over-investment may lead to project failure and further underperformance because of dry-out of bank loans in the crisis.

On the other hand, market performance is measured as Tobin's Q, which is mainly driven by market price of stocks. High volatility of stock prices features as one characteristic of recession times (Veronesi, 1999). In addition, investors are apt to be irrational and to overreact to bad market conditions during recession times (Glode *et al.*, 2010). Consequently, high volatility and investors' overreaction may attenuate value premium of founder firms.

My empirical evidences suggest that founder firms bear the least agency costs compared with other firms during the financial crisis. My results also suggest that during the crisis, when inventors tend to be irrational and stock price volatility is high, Tobin's Q may not be the most appropriate measure of corporate performance.

The remainder of my paper is structured as follows: Section 2 presents a review of related literature. In Section 3, I describe data and variables. In Section 4, I show my empirical findings with discussions and explanations in Section 5. Finally, I conclude in Section 6.

2. Family firms, founder value and the financial crisis

Family firms have been receiving more attentions from academia, policy makers and practitioners for at least two reasons: First, family firms prevail in national economy the world around. In US, for example, family firms comprise one-third of the S&P 500 and account for 18 percent of outstanding shares of capital market (Anderson and Reeb, 2003). Second, family firms, with ownership concentration in most cases, are a good subject for testing finance theories like agency theory (Berle and Mean, 1932; Jensen and Meckling, 1976). The key question of family firm research is whether family firms are an effective organizational structure to deliver superior performance relative to non-family firms and what characteristics of family firms determine the performance. Earlier literature has mixed and inconclusive results regarding this question (Holderness and Sheehan, 1988; McConaughy *et al.*,1998; Morck *et al.*, 2000; Claessens *et al.*, 2002; Cronqvist and Nilsson, 2003; Anderson and Reeb, 2003).

Current literature in family business turns to more fine-grained classifications of family firms to reconcile the conflicting evidences and tend to agree that performance examination is sensitive to different definitions of family firms (Maury, 2006). Family firms with active founder involvement as CEO or board members predict outperformance. Villalonga and Amit (2006) show that family ownership can gain value only when the founder acts as CEO of the family business or as the Chairman of the board. Similarly, Miller *et al.* (2007) make a distinction

between lone founder businesses where family members of the founder do not involve themselves in management or ownership, and true family businesses where family members do. The results show that only businesses with a lone founder outperform. By the same token, Adams *et al.* (2009) identify a positive causal effect of founder–CEOs on firm performance and report that founder–CEOs are more likely to step down from CEO position after periods of either unusually low or unusually high operating performances. These research studies suggest a positive view of founder value and the necessity of a more fine-grained family firm classification when conducting family business research.

Although a host of literature centers on performance examination of family firms vis-à-vis non-family firms in normal economic times or good market conditions, studies are almost missing about what the performance will be during depression or recession ages. The global financial crisis since 2008 gives us an opportunity of addressing this problem. The extreme market condition (both financial market and product market) during the crisis is more likely to amplify various factors that drive the performance of family business, making it unclear whether family firms can better handle an exogenous financial crisis on the balance of costs and benefits of family ownership, management and control.

On one hand, asset expropriation of minority shareholders by powerful controlling family shareholder might be more severe during the crisis, implying that family firms might under-perform. Unlike small diversified shareholders, who use market value rules to decide investments that maximize the value of the firms, large family shareholders, may derive greater private benefits from pursuing different investments, excessive compensations, and special dividends given their slumping capital incomes in the crisis (Fama and Jensen, 1985; Andersen and Reeb, 2003). Baek *et al.* (2003) document that chaebol firms with concentrated shareholding

by controlling families have a larger drop in their equity values during the Korea financial crisis (1997). Firms with disproportionate ownership structure (voting rights exceed cash flow rights) also experience lower returns. Lins, Volpin and Wagner (2011) use a non-US dataset consisting of more than 8000 firms from 40 countries and find that around the world family control is associated with lower firm valuation following a financial shock. In addition, family entrenchment and nepotism during the crisis may also hit firm values. Shleifer and Vishny (1997) suggest that one big cost of concentrated family ownership is from remaining unqualified family members to run the firm. Perez-Gonzalez (2006) and Bennedsen *et al.* (2007) evidence the performance drop of family succession, suggesting high costs of nepotism and unqualified family CEOs. During the crisis, when market conditions are harsh, unqualified management may bring more costs to family firms. Using a sample of 800 firms in eight East Asian countries during the Eastern Asian financial crisis, Lemmon and Lins (2003) show a significant lower value of firms with entrenchment managers by 10-20 percent relative to other firms[4].

On the other hand, however, superior performance of family firms might arise from the better alignment of interests between shareholders and managers in family firms (Andersen and Reeb, 2003). Interest conflict between long-term oriented owners and short-term oriented managers is highly costly when a crisis comes. For example, it is well known that managers have the incentive to take excessive risky projects when firm is close to bankruptcy because they get the upside gain of the excess risk but lose nothing from the downside failure. In the crisis, this situation is highly likely to happen. Moreover, myopic managers may over-invest in projects to boost current performance given the falling sales during the crisis. The overinvestment is highly

[4] Asian firms are known for bad Corporate Governance with weak legal protection of investors. Although Baek et al. (2003) and Lemmon and Lins (2003) give evidences of family ownership underperformance of Asian countries in the regional financial crisis in 1997, it is doubtable whether these results can apply to firms in Western countries with better Corporate Governance and institutional environment.

risky when financial instruments of the firms are not rich. Dry-out of short-term loans from banks with increasingly stringent lending policy might plague ongoing projects. Family firms with large shareholders as managers don not have such a problem. Villalonga and Amit (2006) document that founder-CEO firms, free from owner-manager conflict of interests, have the highest Tobin's Q among different types of family firms they have categorized. Another source of outperformance during the crisis might be reputation concerns of family owners with long-term commitment to family firms. Chen *et al.* (2010) find that family firms are less tax aggressive than their non-family counterparts. They interpret the findings as family owners' willingness to forgo tax benefits to avoid the potential penalty and reputation damage from an Internal Revenue Service audit. They also find that firms in need of external capital would exhibit even lower tax aggressiveness. Andersen and Reeb (2003) argue that banks or other financial institutions are more likely to deal with the same governing entities and practices like those in family firms with reputation concerns than in non-family firms. Croci, Doukas and Gonenc (2011) evidence that credit markets are more prone to supply family firms with long-term debt. During the crisis, when most firms encounter credit constraints, the established relationship with financial institutions could enhance operating performance of firms that do not forgo good investments because of financing problem.

To sum up, whether family firms outperform non-family firms in the financial crisis remains an open empirical question. In the following sections, I will provide empirical evidences to investigate this question.

3. Data and variables

3.1 Sample and sources of data

The sample consists of a panel of 3,286 firm-year observations, representing 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) with accounting data from 2006 through 2010. These firms play a vital role in Western industrialized economies. The primary industries of the sample firms span 61 different two-digit SIC codes. Noticing the change of index firm lists during the period 2006-2010, I only include those index firms in the 2011 lists, even if some of them may not stand in the index lists in a particular year.

My data collection process comprises three main phases. In the first phase, I compile a dataset to identify blockholders (big shareholders with at least 5 percent of outstanding shares), and board members and top management for each sample firm. I later use the dataset to define family firms. The source of the ownership and board data is Bureau van Dijk Orbis, which covers as many as 78.4 million private and public firms (in 2011) all over the world. It gives me historical ownership structure and information of board members and top managers of the sample firms.

In the second phase, I manually collect information on founding history of each firm from the following sources: (1) company official website; (2) Hoover's; and (3) web search about firm history and family running history. I use the collected information to identify founders, founding families and family member relationships and further to define family firms.

The last phase is to merge the information from the first two phases with accounting data from COMPUSTAT and other firm characteristic data (firm age data are from Bureau van Dijk

Orbis, and market value and stock return data are from Datastream). Table 1 describes the definitions of all variables in my research.

[Inset Table 1 here]

3.2 Definitions of different types of family firms

A key challenge for any analysis regarding family firms is the lack of a widely accepted definition[5] of what a family firm is (Bennedsen *et al.*, 2010). Previous work has shown that the results of empirical studies are highly sensitive to the choice of the family firm definition (Maury, 2006; Miller *et al.*, 2007). Taking this into account, I manage to involve a broad definition of family firms in my research and scrutinize the possible difference across various types of family firms with my findings. Specifically, my approach of definition covers the following 4 types of family firms:

1. Founder firms, defined as firms in which the founder/founders of the firms holds/hold a position/positions as a board member, or CEO, or a blockholder (at least 5 percent share holding).
2. Heir firms, defined as firms in which the heir/heirs (by blood or by marriage) of the founding family of the firms holds/hold a position/positions either as a board member, or CEO, or a blockholder (at least 5 percent share holding).
3. Family-owned firms, defined as firms in which one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns.

[5] Miller *et al.* (2007) give a comprehensive review of various definitions of family firms.

4. Leader/owner firms, defined as firms in which the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent.

When identifying founder(s) and heir(s) of a firm, following Villalonga and Amit (2006), I search from at least two sources of public information. The founder(s) may have founded either one sample firm or a predecessor firm of a sample firm. I regard founder(s) as people responsible for the firm's early growth and development of the business. Therefore, large owners taking control of a firm through a spin-off or a leveraged buyout are not founders in my definition.

When identifying large family firm investors in defining family-owned firms, following Villalonga and Amit (2006), I exclude investment management company investors, such as Fidelity (founded and controlled by Edward Johnson and his daughter, Abigail), or Franklin Resources (founded and controlled by brothers Charles and Rupert Johnson), whose funds act as large institutional investors in the sample firms. I disregard these funds as large family firm investors because the ultimate owners of these funds are a widely dispersed base of diversified investors, not the investment management companies *per se*.

3.3 Measure of firm performance

Following earlier studies, I mean to investigate both market performance and accounting performance of family versus non-family firms during the financial crisis. I use Tobin's Q as the market performance measure and interpret it as a measure of firm value. In my setting, Tobin's Q is calculated as market value of equity at the end of fiscal year plus book value of total liability (book value of total asset -book value of equity) divided by the book value of total assets at the end of fiscal year. Market value of equity is from Datastream, and book values of total assets and

equity are from COMPUSTAT. I use Operating Retunes on Assets (OROA) as accounting performance measure. It is Earnings before Interests and Taxes (EBIT) divided by the book values of total assets. Both EBIT and the book value of total assets are from COMPUSTAT. OROA is a natural measure of firm performance because it acts as a comprehensive proxy for a firm's cash flow before interest and taxes relative to its book asset, the earning generator (Bennedsen *et al.*, 2007). Unlike net income-based measure like Return on Assets (ROA), it is unaffected by the variation of capital structure, which determines corporate tax base. Unlike return on equity (ROE), it captures total assets rather than part of it.

3.4 Descriptive statistics

Table 2 shows two-digit SIC industry distribution of the sample firms. Because the main findings of this paper center on family firms and founder firms, I only list family firms (column 4), founder firms (column 5) and non-family firms (column 6) in this table. Although family firms are prevalent in national economy, they are not symmetrically distributed in every industry. Villalonga and Amit (2006) report family firms are not present in 13 two-digit SIC industries, and they are over-represent in some industries. In my sample, I find 11 two-digit SIC industries are free of family firms. My results of industry representation of family firms are comparable to the findings of Villalonga and Amit (2006) and Anderson and Reeb (2003). In addition, founder firms are concentrated in the industries like electronic and other electrical equipment (two-digit SIC code: 36) and business service (two-digit SIC code: 73). These results imply that controlling industries matters to econometric analysis.

[Insert Table 2 here]

Table 3 provides the descriptive statistics of main variables of the sample firms in the crisis year 2008. All ratio variables are winsorized at 1 percentile and 99 percentile. I again concentrate on family firms, founder firms and non-family firms. Please refer to Appendix 3 for the details of other subgroups of family firms.

Family firms constitute 35 percent of the sample, which is highly consistent with the findings of Villalonga and Amit (2006, 37 percent) and Andersen and Reeb (2003, 35 percent). On average, family firms and founder firms are significantly smaller and less leveraged at 1 percent level relative to non-family firms. The results are consistent with those of Ampenberger *et al.* (2011) and Villalonga and Amit (2006). The less leverage may imply the risk adverse characteristics of family firms. However, family firms and founder firms invest more and expend more significantly at 1 percent level. More importantly, founder firms exhibit more difference relative to non-family firms in employee number, firm age, research expense and depreciation and amortization. These findings suggest that founder firms are younger firms with fewer employees, and concentrated in high tech industries, which require intensive research and development investment. In terms of dependent variables OROA and Tobin's Q, I find that founder firms have significantly higher values compared with non-family firms in Tobin's Q, while they do not in accounting performance OROA. The data thus suggest that at the beginning of the crisis, family firms as a whole do not outperform non-family firms with respect to Tobin's Q and OROA. However, founder firms, a subgroup of family firms, are better performers in market value but not in operating profitability. I early argue that the financial crisis has a significant impact on real economy since 2009. The fiscal year choice (2008) may explain the different performance of founder firms in OROA and Tobin's Q relative to non-family firms. Appendix 3 evidences that all the other non-founder family firms: heir firms, family-owned firms

and leader/owner firms do not exhibit performance superiority relative to non-family firms in both OROA and Tobin's Q. These findings are consistent with those of Miller *et al.* (2007), suggesting founder firms' value premium. In the next section, I will use multivariate regressions to analyze the performance difference between family firms and non-family firms in a 5 year panel framework, which spans the period before and during the crisis, controlling for country, industry, and firm specific characteristics.

[Insert Table 3 here]

4. Do family firms outperform non-family firms in the financial crisis?

The principal objective of this paper is to examine whether family firms outperform non-family firms during the global financial crisis, and investigate the reasons for the possible outperformance. In this section, I will use several methods to show the main empirical results and to answer related questions.

4.1 Univariate difference in difference analysis

I start my analysis with univariate difference in difference test of OROA, and Tobin's Q. Again, I list the 2 performance measures of non-family firms, family firms and founder firms side before and during the crisis by side in Table 4.

[Insert Table 4 here]

My first step focuses on comparison between all family firms and non-family firms. I find that both accounting performance and market performance are not significantly different expect for two-year-mean of Tobin's Q before the crisis (2006-2007). The performance change across

the crisis for family firms and non-family firms are similar. These results imply that my broadly defined family firm group is not superior performers during the financial crisis.

Next, I focus on the comparison between founder firms and non-family firms. With respect to accounting performance OROA, the first striking result is that even in the crisis, founder firms' OROA does not drop significantly compare with before the crisis performance. To be specific, three-year-mean of OROA before the crisis is 0.116 versus 0.111 for two-year-mean during the crisis. By contrast, non-family firms during the crisis have a profitability shrink by 14 percent, while all family firms 12 percent. Additionally, founder firms significantly outperform non-family firms during the crisis by 16 percent, and the performance change before and during the crisis is also significantly different at 10 percent level. The findings provide the first evidence of founder firms' outperformance during the crisis.

The picture of Tobin's Q is somehow different. Although founder firms significantly outperform non-family firms both before and during the crisis, the magnitude of outperformance decreases when the crisis shocks firms. Prior to the crisis, founder firms outperform non-family firms by 0.607 in Tobin's Q. During the crisis, however, founder firms only outperform by 0.380, which suggests that the financial crisis reduces market value premium of founder firms. I notice that in the case of accounting performance OROA, the crisis tends to amplify the performance difference between founder firms and non-family firms from 0.005 (before the crisis) to 0.015 (during the crisis). The difference of OROA and Tobin's Q in magnitude change implies that the financial crisis may have a disparate effect on corporate cash flow based performance and market value based performance. I would use multivariate regressions to scrutinize the difference in the next sub-section.

4.2 Firm fixed effect estimation

First, I use firm fixed effect model to test whether family firms outperform non-family firms during the crisis. The econometric model is as follows[6]:

$$Y_{it} = \alpha + \beta_0 Family_i * Crisis_t + \beta_1 Crisis_t + X'_{it-1}\beta_2 + u_i + e_{it} \qquad (1)$$

Where Y_{it} is performance measure, referring to OROA or Tobin's Q. $Family_i$ is a dummy which equals one if one firm is a family firm. $Crisis_t$ is a dummy, denoting either *Crisis_acc*, which equals one if fiscal year is 2009 and 2010, or *Crisis_mkt*, which equals one if fiscal year is 2008, 2009 and 2010. $Family_i * Crisis_{it}$ is an interaction variable. β_0 is my interested coefficient. u_i is the firm fixed effect, and e_{it} is error term. X'_{it-1} is a vector of lagged control variables[7]. Following Andersen and Reeb (2003), Villalonga and Amit (2006) and Miller *et al.* (2007), I incorporate several control variables into my model: Firm size is the natural logarithm of the book value of total assets. Growth opportunities and advertising expense[8] are measured as research and development expenses over sales and advertising expense over sales respectively. Return volatility, the proxy for firm risk, is calculated as the standard deviation of monthly stock returns for the last 36 months. Capital structure is the ratio of debt to total assets. Investment is the capital expenditure over plant, property and equipment (PPE) at the end of last fiscal year. I also include firm age, and natural logarithm of employee number.

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[6] Following earlier research studies, I define variable $Family_i$, $Founder_i$ $Heir_i$, $Family_owned_i$ and $Leader_owner_i$ as a time invariant variable, indicating persistent family ownership, management and control. Because firm fixed effects absorb all firm level time-invariant effect, I drop the variable $Family_i$ from my fixed effect model. The firm fixed effect specification is also supported by Hausman test.

[7] I use lagged control variables to control for contemporary feedback effects between dependent variables and control variables.

[8] Following Millers *et al.*, I code missing data as 0, because public corporations have to report significant expenditures by law.

Table 5 illustrates that after controlling for firm fixed effect and time-variant firm specific characteristics, family firms, as broadly defined in the sample, do not significantly outperform non-family firms during the crisis. The insignificance is similar whether I use OROA or Tobin's Q as performance measure and consistent with early univariate analysis.

[Insert Table 5 here]

Next, I split family firms into 4 subgroups and involve 4 dummies in the fixed effect model. I aim to examine whether different groups perform differently during the crisis. The model I use is as follows:

$$Y_{it} = \alpha + \beta_0 Crisis_t + \beta_1 Founder_i * Crisis_t + \beta_2 Heir_i * Crisis_t + \beta_3 Family_owned_i * Crisis_t + \beta_4 Leader_owner_i * Crisis_t + X'_{it-1}\beta_5 + u_i + e_{it} \quad (2)$$

Where Y_{it} is performance measure, referring to OROA or Tobin's Q. $Founder_i$ $Heir_i$ $Family_owned_i$ and $Leader_owner_i$ are a dummy which equals one if one firm is a founder firm, heir firm, family-owned firm and leader/owner firm respectively. $Crisis_t$ is a dummy, denoting either *Crisis_acc*, which equals one if fiscal year is 2009 and 2010, or *Crisis_mkt*, which equals one if fiscal year is 2008, 2009 and 2010. $Founder_i * Crisis_{it}$, $Heir_i * Crisis_{it}$, $Family_owned_i * Crisis_{it}$, and $Leader_owner_i * Crisis_{it}$ are interactions variable. β_1 to β_4 are my interested coefficients. X'_{it-1} is the same vector of lagged control variables as model (1). u_i is the firm fixed effect. e_{it} is an error term.

Table 6 exhibits disparate pictures for accounting performance OROA and market performance Tobin'Q. Only founder firms show significantly superior performance in OROA

during the financial crisis, while they do not in Tobin's Q. In the case of OROA, the positive coefficient of *Founder* is significant at 5 percent level. It means on average, founder firms outperform non-family firms by 2 percent OROA during the crisis. The magnitude of outperformance accounts for as high as 18 percent of the mean OROA of non-family firms in 2009 and 2010. In contrast, when controlling for firm fixed effect and other time-varying factors, founder firms do not exhibit significant value premium, measured in Tobin's Q during the crisis. These results complement the works of Andersen and Reeb (2003), Villalonga and Amit (2006) and Maury (2006), and Miller *et al.* (2007) by providing new evidence suggesting that in recession times, market value premium of founder firms disappears, whereas accounting performance premium displays.

[Insert Table 6 here]

4.3 Endogeneity of founder status and other robustness tests

Although fixed effect estimation controls for unobservable time-invariant heterogeneity, time-variant heterogeneity may bias the estimates. Founder status is not randomly assigned to sample firms. I am unable to indentify an unbiased and consistent estimator, given underlying omitted determinants of selection into founder firms are correlated with outcome performances. Following Maury (2006), Villalonga and Amit (2006) and Miller *et al.* (2007), I adopt Heckman's two step treatment effect model[9] to tackle this issue.

The first step is to run a Probit regression of founder status on various controls used for the second treatment regression, plus two other variables: sales growth (Villalonga and Amit, 2006),

[9] Similar to Maury (2006) and Fahlenbrach (2009), I prefer Heckman's (1979) model to standard 2SLS estimator model because it estimates a Probit regression in the first stage, allowing for the dichotomous nature of the dummy Founder.

and cash holdings (Miller and Le Breton-Miller, 2005) to distinguish among founder firms and other firms. To meet exclusion restriction of identification, I add two more instruments to the first stage. The first instrument is Old firm, which is one if a firm is incorporated before 1960. Fahlenbrach (2009) first introduces this instrument[10] to analyze founder-CEO effect on investment and stock market performance. A firm set up before 1960 is most unlikely to have its founder(s) present at the firm given the average age of founder firms is 29 in my sample. The second instrument is US, equaling one if the headquarter of a sample firm is in the US. In my sample, as high as 82 percent of founder firms are US firms. When these two instruments are strongly correlated with founder firms, they have slim chance of affecting operating performance beyond the control variables in the second step treatment regression, whose econometric model is as follows:

$$Y_i = \alpha + \beta_0 Founder_i + \beta_1 Heir_i + \beta_2 Family_owned_i + \beta_3 Leader_owner_i + X_i^{'}\beta_4 + e_i \quad (3)$$

Where Y_{it} is the difference between average OROA of the period 2009-2010 and average OROA of the period 2006-2008. $Founder_i$ $Heir_i$ $Family_owned_i$ and $Leader_owner_i$ are a dummy which equals one if one firm is a founder firm, heir firm, family-owned firm and leader/owner firm respectively. β_0 is my interested coefficient. $X_i^{'}$ is a vector of control variables of fiscal year 2008. It includes firm size, growth opportunities, advertising expense firm risk, capital structure, firm age, and employee number. e_i is an error term.

In Table 7, the first-stage regression shows that founder firms are negatively related to Old firms, while positively related to US dummy and Ln cash, implying the legitimacy of instruments.

[10] Fahlenbrach uses 1940 as a threshold of old firms. However, his sample period is from 1995 to 2002. In my case, I use 1960 since my sample period is from 2006 to 2010.

In the second stage treatment regression, the coefficient of Founder is 0.047, significant at 5 percent level. The finding is consistent with that of former fixed effect model. The lambda statistic is statistically significant at 10 percent level, supporting existence of selection bias. Taken together, Heckman's model confirms founder firms' outperformance during the crisis.

[Insert Table 7 here]

As an alternative robustness test[11], I exclude financial firms from the sample and re-run firm fixed effect regressions. The results are consistent with those of full sample. The magnitude of coefficients highly resembles that from full sample fixed effect model (Please refer to Appendix 4 for details).

Finally, following Rosenbaum and Rubin (1983), Abadie and Imbens (2007) and Malmendier and Tate (2009) to minimize heterogeneity, I use nearest neighbor Propensity Score matching estimator[12] to construct a reliable non-family firm counterfactual for family firms and replicate fixed effect regressions (model (1) and model(2)). The results are highly consistent with those of full sample.

4. 4 Cross-country tests

In this sub-section, we consider whether country-level characteristics (for example, legal protection of shareholders, Corporate Governance system and other institutional environment) add explanatory power to our findings.

[11] I also use pooled OLS to check the outperformance of founder firms in OROA, using full sample. The results are highly consistent with those of fixed effect estimation (for brevity not reported).

[12] The matching variables are firm size, capital structure, investment and one-digit SIC industry classification in 2007, before the financial crisis.

I first divide the sample into Anglo-Saxon and Continental European groups by the legal origin (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1998) of the stock exchange country of a sample firm (in the sample, US S&P 500 and UK FTSE 100 firms are categorized into Anglo-Saxon group and the rest of the sample is Continental European group). The results (not reported for brevity) show that founder premium in OROA is only significant in Anglo-Saxon group, while Tobin's Q of founder firms is not significantly different from non-family firms whether I use Anglo-Saxon or Continental European sample. The latter is consistent with the case in full sample.

Next, I split the sample by US and non-US firms and find that the results are highly consistent with those in the first split of the sample above. Only US firms exhibit founder premium in OROA. Considering that 82 percent of founder firms are US firms and US firms constitute a large body of in the sample, I conclude that US founder firms mainly contribute to the explaining power of my findings.

I summarize this section by stating that when the financial crisis comes, broadly defined family firms are not superior performers. Only founder firms outperform other firms during the crisis in terms of OROA. However, market value premium of founder firms, which is widely documented in normal or good economic times in earlier studies, disappears. I will explain these phenomena in the next section.

5. Why do founder firms outperform in operating profitability, not in market valuation?

I start to explain the different performance of founder firms with respect to OROA and Tobin's Q during the financial crisis by analyzing the different algorithms of these two measures. OROA is a period cash flow divided by the book value of total assets at the end of a fiscal year. Therefore, it is a revenue based profitability measure driven by business strategy, operating efficiency, management skills, expense control and other firm level characteristics. On the contrary, Tobin's Q is computed as market value over book value of total assets. Because book value of a firm is persistent, Tobin's Q is mainly driven by market price of stocks (I use book value of total liability of debt plus market value of stocks as a proxy for market value of total assets). A large body of financial literature documents high volatility of stocker returns in recession times (for example, Veronesi, 1999). Table 8 clearly evidences that during the crisis, volatility of monthly return is as high as 12 percent, while only 6 percent in normal times. Economists tend to attribute high volatility to investors' uncertainty about the future growth of economy in bad times. In addition, investors are prone to be irrational and they overreact to bad market conditions during recessions (Glode *et al.*, 2010). In my context, I argue that in the recent financial crisis, high volatility tends to attenuate value premium of founder firms given investors' overreaction to bad market conditions and undervaluing stock prices. Univariate difference in difference analysis in Table 4 also supports my argument. Before the crisis, market value premium of founder firms is 0.607 and during the crisis, it declines to 0.380 by 35 percent. Moreover, market value drop before and during the crisis is 0.449 for non-family firms versus 0.664 for founder firms. Return volatility for founder firms in the crisis year 2008 is 0.112, significantly higher than non-family firms (0.098) in Table 3. I therefore ascribe founder firm

value premium vanishing to investors' irrational overreaction to bad market conditions and high volatility during recession times.

Next, I explain the reasons for accounting performance premium for founder firms during the crisis. I split OROA into 4 components according to the calculation formula:

OROA= EBIT/total assets=Sales/total assets – Costs of goods/total assets – Admin expense/total assets – Depreciation and Amortization/total assets.

[Insert Table 9 here]

I use firm fixed effect model similar to model (2) to examine which component(s) contribute(s) the accounting performance premium of founder firms during the crisis. The results in Table 9 show that among 4 components, only expense/total assets of founder firms is significantly lower during the crisis at 5 percent level. This suggests that founder firms do a better job in administrative expense control in the crisis, which results in a net profit premium. Previous studies (Morck *et al.*, 1988, 2000; Fahlenbrach, 2009, etc.) argue that founders bring differentially valuable skills to firms. "Founders may be inspiring leaders, great visionaries, or exceptionally talented scientists." (Villalonga and Amit, 2006). My findings suggest that in additional to above mentioned skills, founders serve as good expense controllers, leading firms to survive recession ages.

Besides efficient expense control during the crisis, I use fixed effect model to investigate other financial and investment strategy difference between founder firms and non-family firms, which may also affect accounting performance. I test the difference in capital structure, short-

term debt change, and ratio of capital expenditure to PPE between founder firms and non-family firms, controlling for multi variables[13]. Table 10 presents the results.

[Insert Table 10 here]

I find that founder firms invest significantly less (at 5 percent level) relative to non-family firms in the crisis. At the same time, however, founder firms have gained more short-term loan and aggregate level of debt is higher than non-family firms. The coefficients of *Founder*crisis_acc* in both regressions mean (column 2 and 3) that on average, founder firms during the crisis have a bigger increment of short-term debt by 431 mil US dollars relative to non-family firms and their capital structure is more leveraged by 0.8 relative to non-family firms. Recall that in Table 3 descriptive statistics, before the crisis[14] founder firms are less leveraged and invest more relative to non-family firms. The coefficients indicate that founder firms substantially change their investment and financial strategy during the crisis. I also find that cash flow and working capital of founder firms are similar to those of non-family firms[15]. If I assume that more short-term debt means better access to credit market, the fact that founder firms raise their debt level during the crisis suggests that founders firms have more financing resources than non-family firms in bad time, when financial institutions tighten credit granting. It is widely documented that non-family firm mangers are myopic and have more incentive to take risky projects to boost current earnings (Andersen and Reeb, 2003). The incentive is even more under the pressure of managerial dismissal in harsh economic conditions. In contrast, founder firms are more long-term oriented and take a conservative investment strategy during the crisis. Risky

[13] For the regression of investment, I follow Elull *et al.* (2010) to choose control variables. For the regression of capital structure and short-term debt change, I follow Antoniou *et al.* (2008) to choose control variables.
[14] 2008 is viewed as before the crisis for accounting performance examinations.
[15] I also test the difference in working capital and cash between founder firms and non-family firms to examine firm short-term financing instruments change, which may affect operating performance. However, I do not find significant differences.

projects, especially those financed by short-term debt, are most likely to fail with financial constraints. As a result, desperate over-investment during the crisis may lead to project failure and further underperformance because of dry-out of bank loans in the crisis.

In summary, the results show that during the financial crisis, founder firms have a better control of expense and make a more conservative investment strategy even though they may get better access to credit market than their counterparts. Less incentive of founder firms to over-invest in risky projects to boost current earnings in the crisis explain their outperformance. On the other hand, because market performance are mainly driven by stock prices, high volatility of stock returns and investors' overreaction to bad market conditions during the crisis may dilute market value premium of founder firms.

6. Concluding remarks

It is the prevalence of family firms all over the world that makes academics pay increasing attention to family business research. One central issue is to examine whether family firms are a superior organizational structure. Although a growing body of literature has made rigorous performance analyses between family firms and non-family firms in normal or good economic times, rather scant papers try to investigate the topic in recession times. This paper attempts to fill this knowledge void.

Constructing a detailed dataset from proxy filings of firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) from 2006 through 2010, I target contributing to the literature by conducting a performance examination between family

firms and non-family firms during the global financial crisis since Lehman Brother's bankruptcy in 2008.

I find that family firms, as broadly defined, comprise 35 percent of the sample. They do not significantly outperform non-family firms during the crisis whether I use market value measure (Tobin's Q) or accounting profitability measure (OROA). However, founder firms, as a subgroup of family firms significantly outperform non-family firms by 18 percent in accounting profitability measure during the crisis. Market performance of founder firms, by contrast, do not exhibit difference significantly. My interpretation of this phenomenon is that Tobin's Q is mainly driven by stock prices. High volatility and investors' overreaction during the crisis (Veronesi, 1999; Glode *et al.*, 2010) may attenuate market value premium of founder firms.

Further testing shows that during the crisis, relative to non-family firms, founder firms have less administrative costs incurred. Moreover, they invest significantly less and have better access to credit market. I ascribe outperformance of founder firms to less incentive to over-invest in risky projects with high probability of failure under financial constraints to boost current earnings in the crisis.

Taken as a whole, my results support widely-documented "founder premium" (for instance, Morck *et al.*, 1988, 2000; Fahlenbrach, 2009). Founders not only bring valuable skills in normal economic times, but also enable firms to weather the financial crisis with better expense control, more financial resource and conservative investment strategy. My results suggest that agency costs in founder firms are the least relative to other firms during recession times. The results also suggest that when inventors tend to be irrational and stock price volatility is high, Tobin's Q may not be the most appropriate measure of corporate performance.

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Table 1 Variable definitions

Variables	Definition
Crisis_acc	The accounting crisis year, a dummy variable, which is one if a fiscal year is 2009 or 2010. This variable indicates the years when the financial crisis significantly strikes real economy[16].
Crisis_mkt	The market crisis year, a dummy variable, which is one if a fiscal year is 2008, 2009 or 2010. This variable indicates the years when the financial crisis significantly strikes the financial market.
Family	A dummy variable, which is one if the sample firm is a family firm. Family firms are the sum of all the four subgroups of firms: (1) founder firms; (2) heir firms; (3) family-owned firms; and (4) Leader/owner firms. Please refer to the definitions of the four subgroups of family firms below.
Founder	Founder firms, a dummy variable, which is one if the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding).
Heir	Heir firms, a dummy variable, which is one if the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding).
Family_owned	Family-owned firms, a dummy variable, which is one if one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns.
Leader_owner	Leader/owner firms, a dummy variable, which is one if the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent.
OROA	Operating Retunes on Assets, defined as earnings before interests and taxes (EBIT) divided by the book values of total assets.
Tobin's Q	Market value of equity plus book value of total liability (book value of total asset -book value of equity) divided by the book value of total assets.
Difference in OROA	The difference between average OROA of the period 2009-2010 and average OROA of the period 2006-2008.
Size	Firm size, defined as the natural logarithm of the book value of total assets of a firm.

[16] The bankruptcy of Lehman Brother in September 22 2008 signals the coming of the global financial crisis. Financial market reacts immediately to the event of bankruptcy and stock prices slump. Appendix 1 evidences this picture. I therefore define the market the crisis years as year 2008, 2009 and 2010. However, the reaction of real economy lags behind the financial market. The crisis has a significant effect on real economy since 2009, which is supported by the national GDP growth rate in Appendix 2. So I define the accounting crisis years as year 2009 and 2010.

Table 1, continued	
Capital Structure	Debt to equity ratio, defined as the book value of total liability (book value of total asset - book value of equity) divided by the book value of total equity.
Investment	Ratio of Capital expenditure to Plant, Property and Equipment (PPE), defined as capital expenditure divided by the PPE of last fiscal year.
Ln employee	Natural logarithm of the number of employees the firm.
ROA	Returns on Assets, defined as net income divided by the book value of total assets.
Working capital growth	Yearly working capital growth rate, defined as increment of yearly working capital divided by working capital of last fiscal year.
Short debt change	Yearly short-term debt increment, defined as the difference between short-term debt this fiscal year and last fiscal year, measured in 1 billion US dollars.
Advertising	Adverting expense, defined as yearly advertising expense divided by sales.
Research	Research and development expense, defined as yearly research and development expense divided by sales.
Firm age	The difference between incorporation year and a fiscal year.
Return volatility	Firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months.
Ln cash	Natural logarithm of cash.
Sales growth rate	Yearly sales growth rate, defined as increment of yearly total sales divided by total sales of last fiscal year.
Tangibility	Tangible assets, defined as tangible assets divided by the book values of total assets.
Profitability	Lagged OROA, Operating Return on Assets of last fiscal year.
Dividend payout	Dividend divided by sales.
Non-debt tax shield	Depreciation and amortization divided by the book value of total assets.
Old firm	A dummy variable, which is one if the sample firm is incorporated before 1960.
US	A dummy variable, which is one if the headquarter of a sample firm is in the US.
Sales/asset	Ratio of sales to the book value of total assets.
Expense/asset	Ratio of selling, general administrative expense to the book value of total assets.
Cost/asset	Ratio of costs of goods to the book value of total assets.
Depreciation/asset	Ratio of depreciation and amortization to the book value of total assets.

Table 2 Industry distribution of family firms, founder firms and non-family firms

SIC code	Industry description	All firms	Family firms	Founder firms	Non-family firms	% family firms in the industry	% founder firms in the industry
10	Metal mining	11	6	1	5	55%	9%
12	Coal mining	5	0	0	5	0%	0%
13	Oil and gas extraction	29	10	6	19	34%	21%
14	Mining and quarrying of nonmetallic minerals, except fuels	1	0	0	1	0%	0%
15	General building contractors	6	5	2	1	83%	33%
16	Heavy construction, except buildings	3	2	0	1	67%	0%
17	Special trade contractors	1	0	0	1	0%	0%
20	Food and kindred products	27	14	0	13	52%	0%
21	Tobacco products	6	2	0	4	33%	0%
23	Apparel and other textile products	3	1	0	2	33%	0%
24	Lumber and wood products	2	1	0	1	50%	0%
25	Furniture and fixtures	2	1	0	1	50%	0%
26	Paper and allied products	6	0	0	6	0%	0%
27	Printing and publishing	5	2	0	3	40%	0%
28	Chemical and allied products	49	16	1	33	33%	2%
29	Petroleum and coal products	8	2	0	6	25%	0%
30	Rubber and miscellaneous plastic products	6	2	1	4	33%	17%
31	Leather and leather products	1	1	0	0	100%	0%
32	Stone, clay, and glass products	7	4	0	3	57%	0%
33	Primary metal industries	11	6	2	5	55%	18%
34	Fabricated metal products	5	0	0	5	0%	0%
35	Industrial machinery and equipment	24	8	4	16	33%	17%
36	Electronic and other electrical equipment	37	15	9	22	41%	24%
37	Transportation equipment	21	6	0	15	29%	0%
38	Instruments and related products	35	10	2	25	29%	6%
39	Miscellaneous manufacturing products	4	1	0	3	25%	0%
40	Railroad transportation	3	0	0	3	0%	0%
42	Trucking and warehousing	1	1	0	0	100%	0%
44	Water transportation	2	2	0	0	100%	0%
45	Transportation by air	4	1	1	3	25%	25%
46	Pipelines, except natural gas	1	0	0	1	0%	0%
47	Transportation services	5	3	0	2	60%	0%
48	Communications	29	14	6	15	48%	21%
49	Electric, gas, and sanitary services	55	2	0	53	4%	0%
50	Wholesale trade of durable goods	7	3	1	4	43%	14%
51	Wholesale trade of nondurable goods	8	2	2	6	25%	25%
52	Building materials and gardening	3	1	0	2	33%	0%
53	General merchandise stores	13	7	2	6	54%	15%
54	Food stores	6	3	0	3	50%	0%
55	Auto dealers and service stations	3	2	0	1	67%	0%
56	Apparel and accessory stores	8	4	3	4	50%	38%
57	Furniture and home furnishings	4	2	2	2	50%	50%
58	Eating and drinking places	6	1	0	5	17%	0%
59	Miscellaneous retail	7	3	2	4	43%	29%

Table 2, continued

60	Depository institutions	4	0	0	4	0%	0%
61	Nondepository institutions	7	1	1	6	14%	14%
62	Security and commodity brokers	11	3	3	8	27%	27%
63	Insurance carriers	32	12	6	20	38%	19%
64	Insurance agents, brokers, services	1	0	0	1	0%	0%
65	Real estate	1	1	0	0	100%	0%
67	Holding And Other Investment Offices	48	16	8	32	33%	17%
70	Hotels and other lodging places	7	4	1	3	57%	14%
72	Personal services	2	2	2	0	100%	100%
73	Business services	44	18	13	26	41%	30%
75	Auto repair, services, and parking	1	0	0	1	0%	0%
78	Motion pictures	1	1	1	0	100%	100%
79	Amusement and recreation services	1	1	0	0	100%	0%
80	Health services	5	0	0	5	0%	0%
82	Educational services	2	2	2	0	100%	100%
87	Engineering and management services	10	3	1	7	30%	10%
95	Admin-Environ Quality, Housing	1	0	0	1	0%	0%
	Total	658	232	85	426	35%	13%

Number and percent of firms by primary two-digit SIC code. Family firms are defined as the sum of all the four subgroups of firms: (1) founder firms; (2) heir firms; (3) family-owned firms; and (4) Leader/owner firms. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. The sample comprises 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists.

Table 3 Descriptive statistics of family firms, founder firms and non-family firms in 2008

	Non-family firms (I)			All family firms (II)			Founder firms (III)			Difference in Mean			
	Obs	Mean	Std.Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	(I)-(II)		(I)-(III)	
Size	428	9.602	1.535	230	9.206	1.321	85	8.931	1.356	0.396	***	0.671	***
Capital Structure	428	3.837	6.051	230	2.469	3.888	85	1.729	2.415	1.368	***	2.108	***
Investment	391	0.125	0.079	213	0.155	0.109	79	0.181	0.121	-0.030	***	-0.056	***
Ln employee	420	3.064	1.421	223	2.945	1.579	84	2.434	1.515	0.119		0.630	***
ROA	351	0.054	0.080	154	0.045	0.102	74	0.052	0.107	0.009		0.001	
OROA	425	0.110	0.080	229	0.110	0.082	85	0.110	0.094	0.000		-0.001	
Tobin's Q	419	1.632	1.000	222	1.713	1.088	83	1.886	1.238	-0.081		-0.254	**
Working capital growth	371	-0.291	2.530	205	-0.029	1.697	73	-0.072	1.026	-0.263		-0.219	
Short debt change	426	-0.070	1.993	229	0.015	1.181	85	-0.058	1.121	-0.085		-0.012	
Advertising	427	0.008	0.019	230	0.014	0.029	85	0.017	0.031	-0.006	***	-0.010	***
Research	427	0.028	0.056	230	0.030	0.061	85	0.045	0.076	-0.002		-0.017	**
Firm age	428	53.439	46.681	230	48.717	44.366	85	28.988	19.894	4.722		24.451	***
Return volatility	418	0.098	0.065	221	0.103	0.037	82	0.112	0.032	-0.005		-0.014	*
Ln cash	418	6.498	1.601	226	6.393	1.511	83	6.440	1.466	0.105		0.058	
Sales/asset	428	0.862	0.702	230	0.895	0.634	85	0.880	0.704	-0.033		-0.018	
Expense/asset	346	0.170	0.154	204	0.194	0.172	72	0.232	0.174	-0.025	*	-0.062	***
Cost/asset	428	0.570	0.600	230	0.563	0.536	85	0.527	0.580	0.007		0.043	
Depreciation/asset	414	0.035	0.022	221	0.037	0.022	80	0.042	0.028	-0.002		-0.007	**

This table reports means, standard deviations, and tests between means of non-family firms, family firms, and founder firms in 2008. Family firms are defined as the sum of all the four subgroups of firms: (1) founder firms; (2) heir firms; (3) family-owned firms; and (4) Leader/owner firms. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. Non-family firms are all remaining sample firms that do not fulfill my criteria of family firms. Size is the natural logarithm of the book value of total assets of a firm. Capital structure is the book value of total liability (book value of total asset - book value of equity) divided by the book value of total equity. Investment is capital expenditure divided by the PPE of last fiscal year. Ln employee is natural logarithm of the number of employees the firm. ROA is net income divided by the book value of total assets. OROA is earnings before interests and taxes (EBIT) divided by the book values of total assets. Tobin's Q is market value of equity plus book value of total liability (book value of total asset -book value of equity) divided by the book value of total assets. Working capital growth is yearly working capital growth rate, defined as increment of yearly working capital divided by working capital of last fiscal year. Short debt change is yearly short-term debt increment, defined as the difference between short-term debt this fiscal year and last fiscal year, measured in 1 billion US dollars. Advertising is yearly advertising expense divided by sales. Research is yearly research and development expense divided by sales. Firm age is the difference between incorporation year and a fiscal year. Return volatility is firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months. Ln cash is the natural logarithm of cash. Sales/asset is ratio of sales to the book value of total assets. Expense/asset is ratio of selling, general administrative expense to the book value of total assets. Cost/asset is ratio of costs of goods to the book value of total assets. Depreciation/asset is ratio of depreciation and amortization to the book value of total assets. The sample comprises 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists. Robust standard errors are reported in parentheses. Asterisks denote statistical significance at 10 percent (*), 5 percent (**) and 1 percent level (***) respectively.

Table 4 Performance before and during the crisis of family firms, founder firms and non-family firms

	Non-family firms (I)				All family firms (II)				Founder firms (III)				Difference in Mean			
	Obs	Mean		Std. Dev.	Obs	Mean		Std. Dev.	Obs	Mean		Std. Dev.	(I)-(II)		(I)-(III)	
OROA (before crisis, 2006-2008)	425	0.111		0.074	229	0.113		0.072	85	0.116		0.081	-0.002		-0.005	
OROA (during crisis, 2009-2010)	425	0.096		0.072	229	0.100		0.072	85	0.111		0.087	-0.004		-0.015	*
Difference in OROA (during-before)	425	-0.016	***	0.046	229	-0.014	***	0.050	85	-0.005		0.055	-0.002		-0.010	*
Tobin's Q (before crisis, 2006-2007)	413	2.205		1.321	221	2.438		1.465	83	2.811		1.749	-0.233	**	-0.607	***
Tobin's Q (during crisis, 2008-2010)	413	1.756		1.016	221	1.896		1.106	83	2.148		1.290	-0.125		-0.380	***
Difference in Tobin's Q (during -before)	413	-0.449	***	0.681	221	-0.541	***	0.764	83	-0.664	***	1.038	0.093		0.215	**

This table reports the means, standard deviations and tests between means of performance before and during the financial crisis of family firms, founder firms and non-family firms from 2006 through 2010. Family firms are defined as the sum of all the four subgroups of firms: (1) founder firms; (2) heir firms; (3) family-owned firms; and (4) Leader/owner firms. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. Non-family firms are all remaining sample firms that do not fulfill my criteria of family firms. OROA is earnings before interests and taxes (EBIT) divided by the book values of total assets. Tobin's Q is market value of equity plus book value of total liability (book value of total asset -book value of equity) divided by the book value of total assets. The sample comprises 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists. Robust standard errors are reported in parentheses. Asterisks denote statistical significance at 10 percent (*), 5 percent (**) and 1 percent level (***) respectively.

Table 5 Performance of family firms vs. non-family firms during the financial crisis

	Dependent Variable								
	OROA					Tobin's Q			
Crisis_acc	-0.024	***	-0.025	***	Crisis_mkt	-0.835	***	-0.816	***
	(0.003)		(0.003)			(0.072)		(0.073)	
Family*Crisis_acc	0.001		0.004		Family*Crisis_mkt	0.073		0.068	
	(0.004)		(0.004)			(0.094)		(0.095)	
Size	-0.024	***	-0.029	***	Size	-0.266	***	-0.267	***
	(0.008)		(0.008)			(0.071)		(0.075)	
Capital structure	0.001	*	0.001	*	Capital structure	0.008		0.008	
	(0.000)		(0.000)			(0.006)		(0.006)	
Ln employee	0.011		0.013		Ln employee	0.096		0.113	
	(0.009)		(0.009)			(0.118)		(0.119)	
Investment	-0.087	***	-0.104	***	Investment	-1.090	***	-1.131	***
	(0.029)		(0.029)			(0.348)		(0.365)	
Advertising			-0.477		Advertising			3.870	
			(0.357)					(3.159)	
Research			0.094		Research			0.810	
			(0.083)					(0.909)	
Firm age	0.005	***	0.004	**	Firm age	0.114	***	0.094	***
	(0.001)		(0.001)			(0.015)		(0.022)	
Return volatility			0.062		Return volatility			0.912	
			(0.046)					(0.589)	
_cons	0.085		0.174	**	_cons	-0.739		0.019	
	(0.082)		(0.080)			(0.944)		(1.184)	
Within R-sq	0.091		0.109		Within R-sq	0.237		0.239	
N	2082		2022		N	2038		2022	

This table reports results of firm fixed effect model regression of firm performance before and during the financial crisis from 2006 through 2010. Family* Crisis_acc is an interaction between variable Family and Crisis_acc. Crisis_acc is a dummy which is one if the fiscal year is 2009 and 2010. This variable indicates the years when the financial crisis significantly strikes real economy. Family*Crisis_mkt is an interaction between variable Family and Crisis_mkt. Crisis_mkt is a dummy which is one if fiscal year is 2008, 2009 and 2010. This variable indicates the years when the financial crisis significantly strikes the financial market. Family is a dummy variable, which is one if the sample firm is a family firm. Family firms are the sum of all the four subgroups of firms: (1) founder firms; (2) heir firms; (3) family-owned firms; and (4) Leader/owner firms. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. OROA is earnings before interests and taxes (EBIT) divided by the book values of total assets. Tobin's Q is market value of equity plus book value of total liability (book value of total asset -book value of equity) divided by the book value of total assets. Size is the natural logarithm of the book value of total assets of a firm. Capital structure is the book value of total liability (book value of total asset - book value of equity) divided by the book value of total equity. Investment is capital expenditure divided by the PPE of last fiscal year. Ln employee is natural logarithm of the number of employees the firm. Advertising is yearly advertising expense divided by sales. Research is yearly research and development expense divided by sales. Firm age is the difference between incorporation year and a fiscal year. Return volatility is firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months. The sample comprises 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists. Robust standard errors are reported in parentheses. Asterisks denote statistical significance at 10 percent (*), 5 percent (**) and 1 percent level (***) respectively.

Table 6 Fixed effect estimation of founder firm outperformance in OROA during the crisis

	Dependent Variable								
	OROA					Tobin's Q			
Crisis_acc	-0.024	***	-0.025	***	Crisis_mkt	-0.806	***	-0.785	***
	(0.003)		(0.003)			(0.069)		(0.070)	
Founder*Crisis_acc	0.017	**	0.017	**	Founder*Crisis_mkt	0.023		0.004	
	(0.008)		(0.008)			(0.166)		(0.171)	
Heir*Crisis_acc	0.001		0.001		Heir*Crisis_mkt	0.167		0.182	
	(0.006)		(0.006)			(0.130)		(0.131)	
Family_owned*Crisis_acc	-0.002		0.002		Family_owned*Crisis_mkt	-0.048		-0.057	
	(0.007)		(0.007)			(0.110)		(0.112)	
Leader_owner*Crisis_acc	-0.008		-0.010		Leader_owner*Crisis_mkt	-0.018		-0.021	
	(0.007)		(0.008)			(0.127)		(0.127)	
Size	-0.026	***	-0.030	***	Size	-0.267	***	-0.267	***
	(0.008)		(0.008)			(0.073)		(0.077)	
Capital structure	0.001		0.001		Capital structure	0.008		0.008	
	(0.000)		(0.000)			(0.006)		(0.006)	
Ln employee	0.011		0.014		Ln employee	0.101		0.118	
	(0.009)		(0.009)			(0.118)		(0.120)	
Investment	-0.081	***	-0.098	***	Investment	-1.065	***	-1.122	***
	(0.027)		(0.027)			(0.350)		(0.368)	
Advertising			-0.499		Advertising			3.855	
			(0.355)					(3.154)	
Research			0.110		Research			0.837	
			(0.082)					(0.917)	
Firm age	0.005	***	0.004	***	Firm age	0.114	***	0.094	***
	0.0015		0.00144			0.0148		0.02265	
Return volatility			0.063		Return volatility			0.930	
			(0.046)					(0.595)	
_cons	0.074		0.165	**	_cons	-0.782		0.010	
	(0.081)		(0.078)			(0.953)		(1.197)	
Within R-sq	0.097		0.114		Within R-sq	0.238		0.240	
N	2082		2022		N	2038		2022	

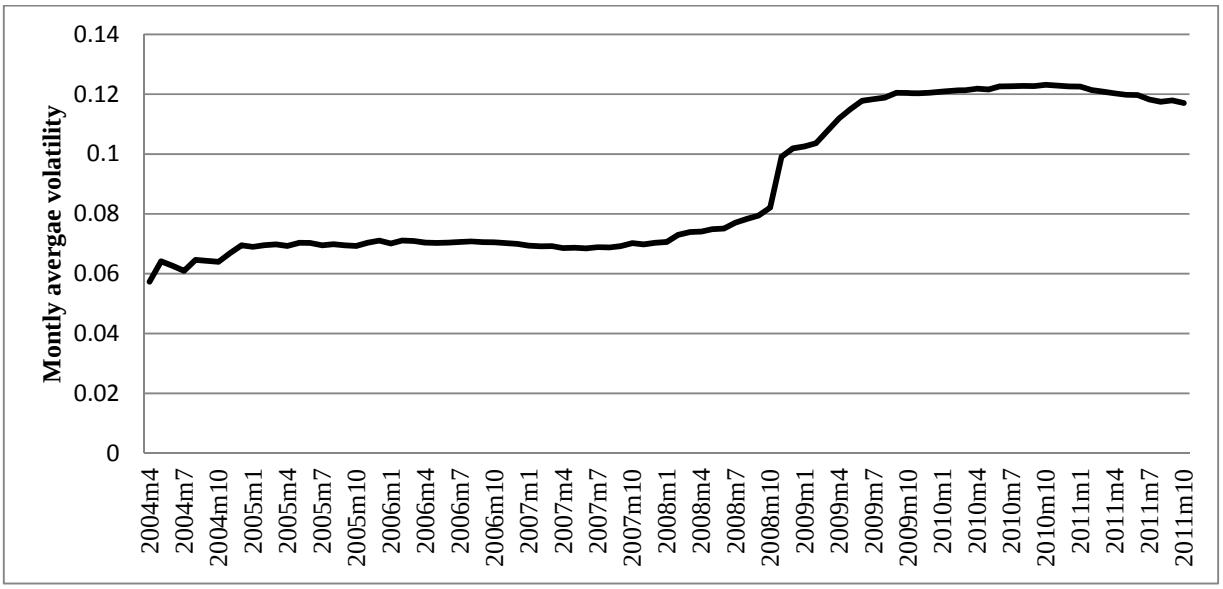
This table reports results of firm fixed effect model regressions of firm performance before and during the financial crisis from 2006 through 2010. Founder*Crisis_acc (Founder*Crisis_mkt), Heir*Crisis_acc (Heir*Crisis_mkt), Family_owned*Crisis_acc (Family_owned*Crisis_mkt) and Leader_owner*Crisis_acc (Leader_owner*Crisis_mkt) are interactions between dummy variable: Founder, Heir, Family_owned, or Leader_owner and dummy variable: Crisis_acc (Crisis_mkt). Crisis_acc is a dummy which is one if the fiscal year is 2009 and 2010. This variable indicates the years when the financial crisis significantly strikes real economy. Crisis_mkt is a dummy which is one if fiscal year is 2008, 2009 and 2010. This variable indicates the years when the financial crisis significantly strikes the financial market. Founder is a dummy which equals one if a firm is a founder firm. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir is a dummy which equals one if a firm is heir firm. Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family_owned is a dummy which equals one if a firm is a family-owned firm. Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader_owner is a dummy which equals one if a firm is a Leader/owner firm. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. OROA is earnings before interests and taxes (EBIT) divided by the book values of total assets. Tobin's Q is market value of equity plus book value of total liability (book value of total asset -book value of equity) divided by the book value of total assets. Size is the natural logarithm of the book value of total assets of a firm. Capital structure is the book value of total liability (book value of total asset - book value of equity) divided by the book value of total equity. Investment is capital expenditure divided by the PPE of last fiscal year. Ln employee is natural logarithm of the number of employees the firm. Advertising is yearly advertising expense divided by sales. Research is yearly research and development expense divided by sales. Firm age is the difference between incorporation year and a fiscal year. Return volatility is firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months. The sample comprises 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists. Robust standard errors are reported in parentheses. Asterisks denote statistical significance at 10 percent (*), 5 percent (**) and 1 percent level (***) respectively.

Table 7 Heckman two step estimation of founder firm outperformance in OROA during the crisis

First stage regression			Treatment regression		
Dependent variable: Founder			Dependent variable: Difference in OROA		
Old firm	-0.885	***	Founder	0.047	**
	(0.186)			(0.022)	
US	0.332	*	Heir	-0.001	
	(0.193)			(0.007)	
Sales growth rate	-0.606		Family_owned	0.003	
	(0.381)			(0.006)	
Ln cash	0.177	**	Leader_owner	-0.004	
	(0.074)			(0.007)	
Size	-0.112		Size	-0.005	**
	(0.089)			(0.002)	
Capital structure	-0.031		Capital structure	0.002	***
	(0.024)			(0.001)	
Ln employee	-0.137	**	Ln employee	0.002	
	(0.068)			(0.002)	
Investment	1.762	**	Investment	-0.074	***
	(0.803)			(0.027)	
Advertising	5.030	*	Advertising	0.322	***
	(2.678)			(0.092)	
Research	-1.226		Research	0.108	***
	(1.200)			(0.037)	
Return volatility	0.825		Return volatility	-0.130	***
	(1.113)			(0.036)	
_cons	-1.058	*	_cons	0.025	
	(0.637)			(0.017)	
			Heckman's lambda	-0.020	*
				(0.012)	
Pseudo R-sq	0.166		Wald	97	
N	567		N	567	

This table reports results of Heckman two step regression of firm performance before and during the financial crisis on founder dummy. Founder is a dummy which equals one if a firm is a founder firm. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir is a dummy which equals one if a firm is heir firm. Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family_owned is a dummy which equals one if a firm is a family-owned firm. Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader_owner is a dummy which equals one if a firm is a Leader/owner firm. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. Difference in OROA is the difference between average OROA of the period 2009-2010 and average OROA of the period 2006-2008.OROA is earnings before interests and taxes (EBIT) divided by the book values of total assets. Old firm is a dummy variable, which is one if the sample firm is incorporated before 1960. US is a dummy variable, which is one if the headquarter of a sample firm is in the US. Sale growth rate is yearly sales growth rate, defined as increment of yearly total sales divided by total sales of last fiscal year Size is the natural logarithm of the book value of total assets of a firm. Capital structure is the book value of total liability (book value of total asset - book value of equity) divided by the book value of total equity. Investment is capital expenditure divided by the PPE of last fiscal year. Ln employee is natural logarithm of the number of employees the firm. Advertising is yearly advertising expense divided by sales. Research is yearly research and development expense divided by sales. Return volatility is firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months. The sample comprises 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists. Robust standard errors are reported in parentheses. Asterisks denote statistical significance at 10 percent (*), 5 percent (**) and 1 percent level (***) respectively.

Table 8 Monthly average return volatility of the sample firms



Notes: This table shows the average monthly return volatility of the sample. Return volatility is firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months. Source: Datastream.

Table 9 Founder firm OROA premium investigation

	Dependent Variable							
	Sales/asset		Cost/asset		Expense/asset		Depreciation/asset	
Crisis_acc	-0.118	***	-0.085	***	-0.015	***	0.000	
	(0.013)		(0.010)		(0.003)		(0.001)	
Founder*Crisis_acc	0.015		-0.004		-0.011	**	-0.003	*
	(0.021)		(0.018)		(0.005)		(0.002)	
Heir*Crisis_acc	-0.004		0.005		0.001		-0.001	
	(0.021)		(0.016)		(0.005)		(0.001)	
Family_owned*Crisis_acc	0.025		0.015		0.003		0.001	
	(0.024)		(0.018)		(0.004)		(0.001)	
Leader_owner*Crisis_acc	-0.026		-0.012		-0.001		0.002	
	(0.022)		(0.018)		(0.005)		(0.001)	
Size	-0.059		-0.025		-0.011		0.006	**
	(0.039)		(0.034)		(0.005)		(0.002)	
Capital structure	0.002		0.000		0.001		0.000	
	(0.001)		(0.001)		(0.001)		(0.000)	
Ln employee	0.091	***	0.050	**	0.024	***	0.001	
	(0.030)		(0.022)		(0.006)		(0.002)	
Investment	-0.012		0.134		0.027		0.003	
	(0.120)		(0.103)		(0.019)		(0.006)	
Advertising	-1.330		-0.977		0.014		0.238	*
	(1.691)		(1.120)		(0.428)		(0.136)	
Research	0.135		-0.366		-0.021		0.019	
	(0.278)		(0.396)		(0.063)		(0.019)	
Firm age	0.013	**	0.016	***	0.000		-0.001	**
	(0.006)		(0.005)		(0.001)		(0.000)	
Return volatility	0.131		-0.044		0.149	***	0.001	
	(0.161)		(0.135)		(0.045)		(0.012)	
_cons	0.552	*	-0.124		0.205	**	0.024	
	(0.282)		(0.245)		(0.079)		(0.020)	
Within R-sq	0.144		0.107		0.095		0.065	
N	2022		2022		1765		2019	

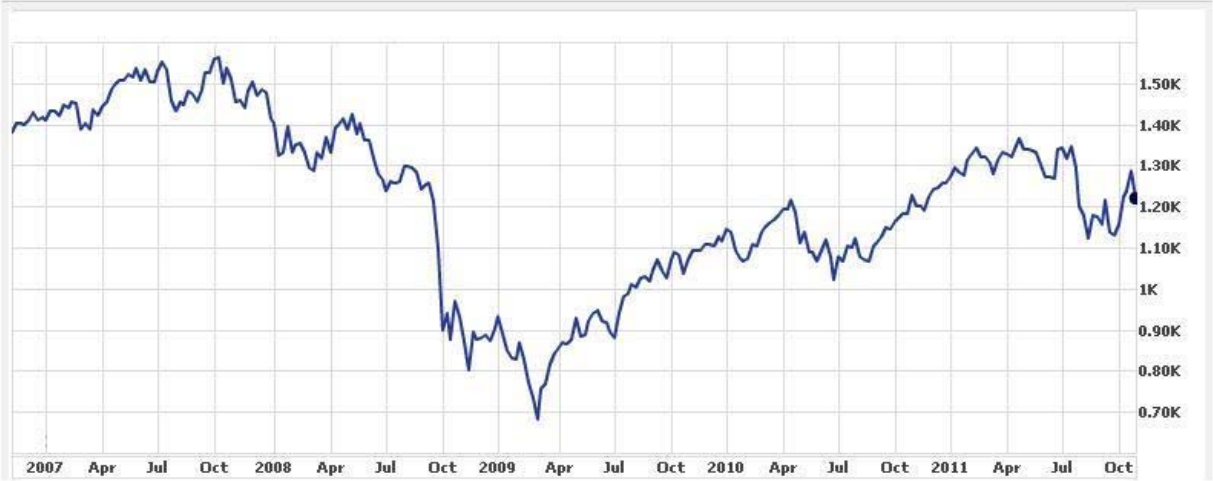
This table reports results of firm fixed effect model regressions of firm accounting performance before and during the financial crisis from 2006 through 2010. Founder*Crisis_acc, Heir*Crisis_acc, Family_owned*Crisis_acc and Leader_owner *Crisis_acc are interactions between dummy variable: Founder, Heir, Family_owned, or Leader_owner and dummy variable: Crisis_acc. Crisis_acc is a dummy which is one if the fiscal year is 2009 and 2010. This variable indicates the years when the financial crisis significantly strikes real economy. Founder is a dummy which equals one if a firm is a founder firm. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir is a dummy which equals one if a firm is heir firm. Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family_owned is a dummy which equals one if a firm is a family-owned firm. Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader_owner is a dummy which equals one if a firm is a Leader/owner firm. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. Sales/asset is ratio of sales to the book value of total assets. Expense/asset is ratio of selling, general administrative expense to the book value of total assets. Cost/asset is ratio of costs of goods to the book value of total assets. Depreciation/asset is ratio of depreciation and amortization to the book value of total assets. Size is the natural logarithm of the book value of total assets of a firm. Capital structure is the book value of total liability (book value of total asset - book value of equity) divided by the book value of total equity. Investment is capital expenditure divided by the PPE of last fiscal year. Ln employee is natural logarithm of the number of employees the firm. Advertising is yearly advertising expense divided by sales. Research is yearly research and development expense divided by sales. Firm age is the difference between incorporation year and a fiscal year. Return volatility is firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months. The sample comprises 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists. Robust standard errors are reported in parentheses. Asterisks denote statistical significance at 10 percent (*), 5 percent (**) and 1 percent level (***) respectively.

Table 10 Finance and investment strategy of founder firms during the crisis

	Dependent variable					
	Investment		Short debt change		Capital structure	
Crisis_acc	-0.018	***	-0.184		-0.124	
	(0.004)		(0.139)		(0.199)	
Founder*Crisis_acc	-0.021	**	0.431	**	0.807	*
	(0.010)		(0.184)		(0.447)	
Heir*Crisis_acc	-0.006		0.231		-0.101	
	(0.008)		(0.145)		(0.389)	
Family_owned*Crisis_acc	0.013	*	-0.077		-0.039	
	(0.007)		(0.160)		(0.211)	
Leader_owner*Crisis_acc	-0.012		-0.118		-0.609	
	(0.009)		(0.195)		(0.404)	
Size	0.003		-0.975	***	0.550	
	(0.008)		(0.287)		(0.435)	
Tobin's Q	0.019	***	-0.060		-0.121	
	(0.004)		(0.046)		(0.141)	
Ln cash	0.001					
	(0.002)					
Firm age	-0.002					
	(0.002)					
Profitability			0.004		-1.442	
			(0.446)		(1.314)	
Tangibility			-0.857		1.752	
			(0.642)		(1.350)	
Dividend payout			2.202		7.545	
			(1.563)		(6.291)	
Non-debt tax shield			9.969		16.399	*
			(8.592)		(8.725)	
Return volatility			-0.855		-9.565	*
			(3.399)		(5.200)	
_cons	0.180	**	9.656	***	-3.144	
	(0.087)		(3.186)		(4.884)	
Within R-sq	0.217		0.025		0.023	
N	2504		2430		2432	

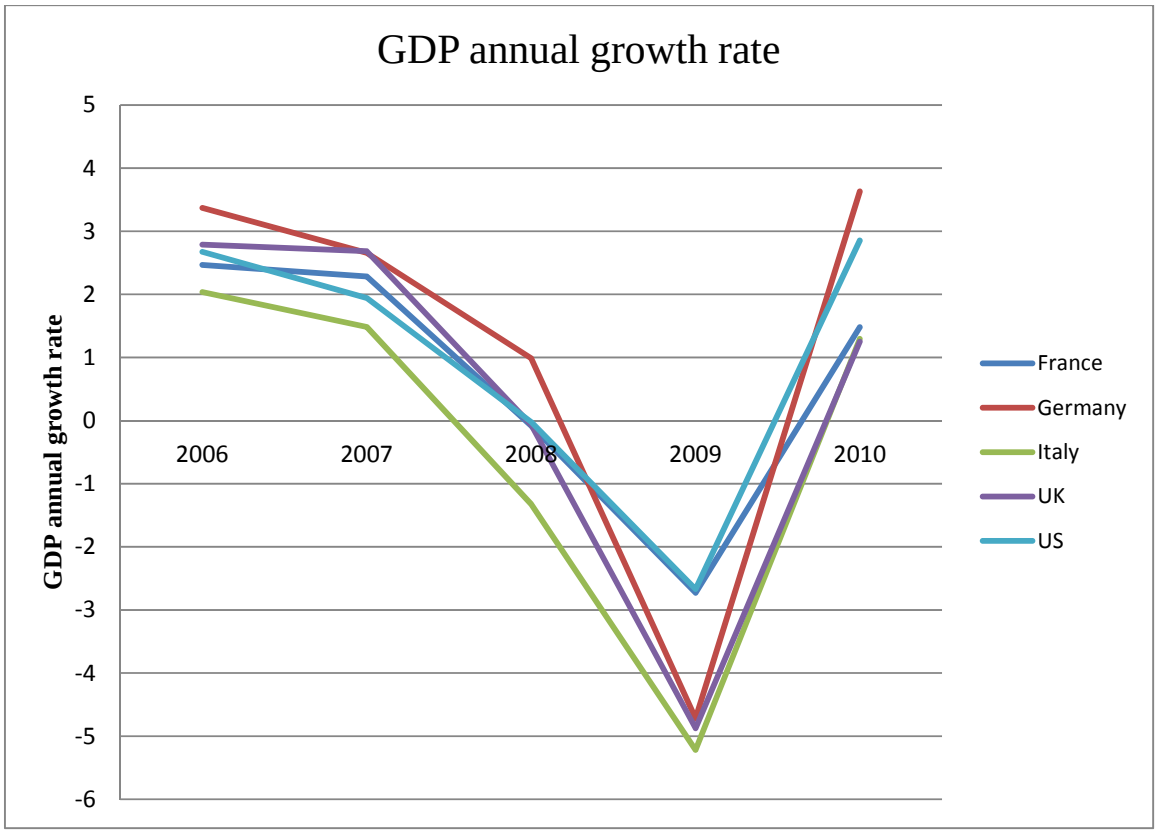
This table reports results of firm fixed effect model regressions of firm accounting performance before and during the financial crisis from 2006 through 2010. Founder*Crisis_acc, Heir*Crisis_acc, Family_owned*Crisis_acc and Leader_owner*Crisis_acc are interactions between dummy variable: Founder, Heir, Family_owned, or Leader_owner and dummy variable: Crisis_acc. Crisis_acc is a dummy which is one if the fiscal year is 2009 and 2010. This variable indicates the years when the financial crisis significantly strikes real economy. Founder is a dummy which equals one if a firm is a founder firm. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir is a dummy which equals one if a firm is heir firm. Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family_owned is a dummy which equals one if a firm is a family-owned firm. Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader_owner is a dummy which equals one if a firm is a Leader/owner firm. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. Investment is capital expenditure divided by the PPE of last fiscal year. Short debt change is yearly short-term debt increment, defined as the difference between short-term debt this fiscal year and last fiscal year, measured in 1 billion US dollars. Capital structure is the book value of total liability (book value of total asset - book value of equity) divided by the book value of total equity. Ln cash is the natural logarithm of cash. Size is the natural logarithm of the book value of total assets of a firm. Tobin's Q is market value of equity plus book value of total liability (book value of total asset -book value of equity) divided by the book value of total assets. Firm age is the difference between incorporation year and a fiscal year. Profitability is Operating Return on Assets of last fiscal year. Tangibility is tangible assets divided by the book values of total assets. Dividend payout is dividend divided by sales. Non-debt tax shield is depreciation and amortization divided by the book value of total assets. Return volatility is firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months. The sample comprises 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists. Robust standard errors are reported in parentheses. Asterisks denote statistical significance at 10 percent (*), 5 percent (**) and 1 percent level (***) respectively.

Appendix 1 S&P index slumps in September 2008



Source: Yahoo finance (finance.yahoo.com)

Appendix 2 GDP annual growth rate for the US, the UK, Germany, France, and Italy



Source: world Bank

Appendix 3 Descriptive statistics of heir firms, family-owned firms, leader/owner firms and non-family firms in 2008

	Non-family firms (1)			Heir firms (2)			Family-owned firms (3)			Leader/owner firms (4)			Difference in Mean					
	Obs	Mean	Std Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std.Dev.	Obs	Mean	Std.Dev.	(1)-(2)		(1)-(3)		(1)-(4)	
Size	428	9.602	1.535	74	9.308	1.068	159	9.259	1.376	132	9.184	1.401	0.294		0.344	**	0.418	***
Capital Structure	428	3.837	6.051	74	1.814	2.222	159	2.682	4.265	132	2.411	4.070	2.023	***	1.155	**	1.425	**
Investment	391	0.125	0.079	68	0.126	0.077	150	0.143	0.102	118	0.159	0.110	-0.001		-0.019	**	-0.035	***
Ln Employee	420	3.064	1.421	70	3.259	1.477	152	3.243	1.471	128	2.901	1.592	-0.194		-0.179		0.163	
ROA	351	0.054	0.080	49	0.071	0.068	92	0.041	0.102	93	0.047	0.099	-0.017		0.012		0.007	
OROA	425	0.110	0.080	74	0.116	0.072	158	0.113	0.078	131	0.111	0.078	-0.006		-0.003		-0.001	
Tobin's Q	419	1.632	1.000	73	1.598	0.693	151	1.748	1.194	128	1.743	1.267	0.034		-0.116		-0.111	
Working capital growth	371	-0.291	2.530	65	0.174	1.685	146	-0.101	1.627	113	-0.118	1.707	-0.465		-0.190		-0.173	
Short debt change	426	-0.070	1.993	74	0.000	0.951	158	0.109	1.172	132	0.124	1.018	-0.070		-0.179		-0.194	
Advertising	427	0.008	0.019	74	0.014	0.030	159	0.016	0.033	132	0.017	0.034	-0.006	**	-0.008	***	-0.009	***
Research	427	0.028	0.056	74	0.018	0.038	159	0.024	0.052	132	0.024	0.051	0.010		0.004		0.004	
Firm age	428	53.439	46.681	74	61.311	35.766	159	51.264	48.129	132	46.727	38.115	-7.872		2.175		6.712	
Return volatility	418	0.098	0.065	73	0.091	0.030	150	0.102	0.039	127	0.104	0.035	0.007		-0.004		-0.006	
Ln cash	418	6.498	1.601	73	6.196	1.487	156	6.364	1.644	128	6.364	1.494	0.303		0.134		0.134	
Sales/asset	428	0.862	0.702	74	1.027	0.665	159	0.900	0.557	132	0.912	0.637	-0.165	*	-0.038		-0.050	
Expense/asset	346	0.170	0.154	66	0.210	0.186	145	0.188	0.173	116	0.208	0.183	-0.041	*	-0.018		-0.039	**
Cost/asset	428	0.570	0.600	74	0.670	0.574	159	0.560	0.478	132	0.567	0.522	-0.100		0.010		0.002	
Depreciation/asset	414	0.035	0.022	72	0.039	0.023	156	0.036	0.021	125	0.037	0.024	-0.004		-0.001		-0.002	

This table reports means, standard deviations, and tests between means of non-family firms, Heir firms, and Family-owned firms and Leader/owner firms in 2008. Non-family firms are all remaining sample firms that do not fulfill my criteria of family firms. Family firms are defined as the sum of all the four subgroups of firms: (1) founder firms; (2) heir firms; (3) family-owned firms; and (4) Leader/owner firms. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. Size is the natural logarithm of the book value of total assets of a firm. Capital structure is the book value of total liability (book value of total asset - book value of equity) divided by the book value of total equity. Investment is capital expenditure divided by the PPE of last fiscal year. Ln employee is natural logarithm of the number of employees the firm. ROA is net income divided by the book value of total assets. OROA is earnings before interests and taxes (EBIT) divided by the book values of total assets. Tobin's Q is market value of equity plus book value of total liability (book value of total asset -book value of equity) divided by the book value of total assets. Working capital growth is yearly working capital growth rate, defined as increment of yearly working capital divided by working capital of last fiscal year. Short debt change is yearly short-term debt increment, defined as the difference between short-term debt this fiscal year and last fiscal year, measured in 1 billion US dollars. Advertising is yearly advertising expense divided by sales. Research is yearly research and development expense divided by sales. Firm age is the difference between incorporation year and a fiscal year. Return volatility is firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months. Ln cash is the natural logarithm of cash. Sales/asset is ratio of sales to the book value of total assets. Expense/asset is ratio of selling, general administrative expense to the book value of total assets. Cost/asset is ratio of costs of goods to the book value of total assets. Depreciation/asset is ratio of depreciation and amortization to the book value of total assets. The sample comprises 658 firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists. Robust standard errors are reported in parentheses. Asterisks denote statistical significance at 10 percent (*), 5 percent (**) and 1 percent level (***) respectively.

Appendix 4 Fixed effect estimation of founder firm outperformance in OROA during the crisis (non-financial firms)

	Dependent Variable								
	OROA					Tobin's Q			
Crisis_acc	-0.027	***	-0.026	***	Crisis_mkt	-0.827	***	-0.793	***
	(0.004)		(0.004)			(0.070)		(0.072)	
Founder*Crisis_acc	0.016	*	0.016	*	Founder*Crisis_mkt	0.020		0.001	
	(0.009)		(0.009)			(0.172)		(0.177)	
Heir*Crisis_acc	0.002		0.003		Heir*Crisis_mkt	0.163		0.185	
	(0.006)		(0.006)			(0.130)		(0.131)	
Family_owned*Crisis_acc	-0.003		0.001		Family_owned*Crisis_mkt	-0.043		-0.057	
	(0.007)		(0.008)			(0.109)		(0.111)	
Leader_owner*Crisis_acc	-0.009		-0.011		Leader_owner*Crisis_mkt	-0.008		-0.010	
	(0.008)		(0.008)			(0.127)		(0.126)	
Size	-0.036	***	-0.036	***	Size	-0.350	***	-0.321	***
	(0.010)		(0.010)			(0.098)		(0.099)	
Capital Structure	0.000		0.000		Capital structure	0.007		0.008	
	(0.000)		(0.000)			(0.007)		(0.007)	
Ln employee	0.016		0.016		Ln employee	0.147		0.160	
	(0.010)		(0.010)			(0.123)		(0.126)	
Investment	-0.070	**	-0.085	***	Investment	-1.167	***	-1.230	***
	(0.030)		(0.029)			(0.399)		(0.420)	
Advertising			-0.598	*	Advertising			5.067	
			(0.357)					(3.446)	
Research			0.119		Research			0.765	
			(0.081)					(0.886)	
Firm age	0.007	***	0.005	***	Firm age	0.125	***	0.085	***
	(0.002)		(0.002)			(0.016)		(0.026)	
Return volatility			0.044		Return volatility			1.934	**
			(0.067)					(0.760)	
_cons	0.084		0.155	*	_cons	-0.549		0.763	
	(0.084)		(0.083)			(1.068)		(1.361)	
Within R-sq	0.111		0.123		Within R-sq	0.247		0.252	
N	1909		1855		N	1869		1855	

This table reports results of firm fixed effect model regressions of firm performance before and during the financial crisis from 2006 through 2010, excluding financial firms. Founder*Crisis_acc (Founder*Crisis_mkt), Heir*Crisis_acc (Heir*Crisis_mkt), Family_owned*Crisis_acc (Family_owned*Crisis_mkt) and Leader_owner*Crisis_acc (Leader_owner*Crisis_mkt) are interactions between dummy variable: Founder, Heir, Family_owned, or Leader_owner and dummy variable: Crisis_acc (Crisis_mkt). Crisis_acc is a dummy which is one if the fiscal year is 2009 and 2010. This variable indicates the years when the financial crisis significantly strikes real economy. Crisis_mkt is a dummy which is one if fiscal year is 2008, 2009 and 2010. This variable indicates the years when the financial crisis significantly strikes the financial market. Founder is a dummy which equals one if a firm is a founder firm. Founder firms are firms where the founder/founders of the firm holds/hold a position as a board member, or CEO, or a blockholder (at least 5 percent share holding). Heir is a dummy which equals one if a firm is heir firm. Heir firms are firms where the heir/heirs (by blood or by marriage) of the founder/founders of the firm holds/hold a position either as a board member, or CEO, or a blockholder (at least 5 percent share holding). Family_owned is a dummy which equals one if a firm is a family-owned firm. Family-owned firms are firms where one individual or several members from the same family together hold more than 10 percent of outstanding shares either directly or indirectly through another family firm or fund which the individual or the family controls or owns. Leader_owner is a dummy which equals one if a firm is a Leader/owner firm. Leader/owner firms are firms where the CEO or a board member is simultaneously a significant shareholder with an outstanding ownership stake of at least 5 percent. OROA is earnings before interests and taxes (EBIT) divided by the book values of total assets. Tobin's Q is market value of equity plus book value of total liability (book value of total asset -book value of equity) divided by the book value of total assets. Size is the natural logarithm of the book value of total assets of a firm. Capital structure is the book value of total liability (book value of total asset - book value of equity) divided by the book value of total equity. Investment is capital expenditure divided by the PPE of last fiscal year. Ln employee is natural logarithm of the number of employees the firm. Advertising is yearly advertising expense divided by sales. Research is yearly research and development expense divided by sales. Firm age is the difference between incorporation year and a fiscal year. Return volatility is firm idiosyncratic risk, defined as the standard deviation of stock returns for the previous 36 months. The sample comprises 542 non-financial firms from S&P 500 (US), FTSE100 (UK), DAX 30 (Germany), CAC 40 (France) and FTSE MIB 40 (Italy) in the 2011 index company lists. Robust standard errors are reported in parentheses. Asterisks denote statistical significance at 10 percent (*), 5 percent (**) and 1 percent level (***) respectively.