CORPORATE CASH HOLDINGS AND THEIR IMPLICATIONS ON FIRM VALUE IN FAMILY AND FOUNDER FIRMS

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Abstract

This research investigates whether the presence of controlling founders and families has significant impact on the level of cash holdings,and their implications on firm value.The agency cost of cash holdings in founder firms is arguably less severe than family firms, due to founders' economic incentives, strong psychological commitment and superior knowledge, whereas family firms are exposed to adverse selection and moral hazard as a result of altruism. Results indicate that founder firms hold a significantly higher level of cash holdings than family firms. In addition, there is a positive interaction effect between founder management and cash holdings on firm value, suggesting the presence of founders as managers helps to mitigate the agency costs of cash holdings.

Keywords: Corporate Cash Holdings, Founder Firms, Family Firms, Agency Theory

JEL Classification: G32, O16

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Acknowledgments

1. Introduction

Recent empirical evidence around the world (Dittmar, Mahrt-Smith and Servaes, 2003; Ferreira and Vilela, 2004; Bates, Kahle and Stulz, 2009) show that corporations hold a substantial and increasing portion of their assets as cash.Cash is valuable as it provides funding for well-intentioned managers to invest in value-enhancing projects (Kalcheva and Lins, 2007), but is also risky as it provides opportunities for entrenched managers to engage in wasteful expenditure (Jensen, 1986; Harford, Mansi and Maxwell, 2008). How managers utilize firms' cash holdings can have a direct impact on firm value(Dittmar and Mahrt-Smith, 2007).Several theoretical models have been proposed to explain the variations in the level of corporate cash holdings and the relation between cash holdings and firm value. The most commonly used model is the agency model, which predicts that self-interested managers hoard cash at the expense of shareholders (Jensen, 1986).

Country-level shareholder protection, firm-level corporate governance and ownership structure have all been identified in the literature as affecting the agency costs of cash holdings(Dittmar et al., 2003; Kalcheva and Lins, 2007; Harford et al., 2008).

Using the index developed by La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) to measure shareholder rights, Dittmar et al.(2003) document a negative relation between the level of shareholder protection and the level of cash holdings across firms in 45 countries. They argue that in countries with weak shareholder protection, managers are able to hoard cash at the expense of shareholders. Pinkowitz, Stulz and Williamson (2006) further find that the relation between cash holdings and firm value is much weaker in countries with poor investor protection than it is in other countries. Likewise, Dittmar et al.(2007)investigate the relation between corporate governance and the value of cash holdings at the firm-level based on U.S. data. They also show that the value of cash holdings in poorly-governed

firms is significantly less than the value in well-governed firms. Harford et al.(2008) examine the relation between corporate governance and the level of cash holdings based on U.S. data, and find that in contrast to international evidence, U.S. firms with poor governance have lower levels of cash holdings.Instead of hoarding cash, weakly controlled managers in the U.S. are more likely to overspend on capital expenditures and acquisitions. They argue that with strong shareholder protection, excess cash holdings are too visible and increase the litigation risk for managers.

In relation to ownership structure, Ferreira and Vilela (2004) find that a higher ownership concentration discourages managers from holding excessive levels of cash. Ozkan and Ozkan (2004)document an incentive alignment effect at the low managerial ownership level but an entrenchment effect at the high managerial ownership level. They also show that the presence of controlling family shareholders is associated with a higher level of cash holdings, which they argue is a way to maintain family control. Kalcheva and Lins(2007)present cross-countryevidence that controlling family shareholders exploit weak external shareholder protection by holding a higher level of cash, which in turn leads tolower firm value.

The empirical evidence in the cash holding literatureshows that the presence of families as controlling shareholders is associated with higher levels of cash holdings, which leads to lower firm values(Ozkan and Ozkan, 2004; Kalcheva and Lins, 2007). In other words, controlling family shareholders use their dominating position to hoard cash at the expense of other shareholders. There are a number of questions which remain unanswered. First, the literature appears to suggest that the presence of controlling family shareholders exacerbates the agency cost of cash holdings. However, such a conclusion is inconsistent with the empirical evidence (Anderson, Mansi and Reeb, 2003; Villalonga and Amit, 2006)documented in family business studies which shows a lower level of agency conflicts in family firms. It is unclear whether the contradictory results are due to the unique nature of cash holdings, which are susceptible to manipulation, or whether the level of external shareholder protection alters the motivations and behaviours of controlling families. Second, the literature so far has not distinguished between founders and families as controlling shareholders (Miller, Le Breton-Miller, Lester and Cannella, 2007; Block, 2012).Miller et al. (2007) find thatfounder firms significantly outperform family firms. They argue that without the involvement of other family members, founder firms are less likely to suffer from the negative effects arising from family succession issues and conflicts among family members. Block (2012) finds that founder firms are associated with a higher R&D expenditure whereas family firms are associated with a lower R&D expenditure.These studies illustrate the importance of distinguishing founder from family firms in explaining corporate behaviour. Thus it is unclear whether the association between the presence of controlling shareholders and cash holdings documented in the literature is driven by the presence of founders, families, or both.Third, the literature mainly uses ownership levels as the proxy for family control. However in addition to being concentrated owners, founders and family members often serve as top officers in their firms, a number of studies (Anderson and Reeb, 2003a; Villalonga and Amit, 2006; Block, 2012) show that management and ownership have differential impacts on firm performance and corporate behaviours. Thus, it is important to differentiate the ownership and management dimension of founder and family firms and investigate their respective impacts on corporate cash holdings.

This study aims to provide empirical evidence on these issues by investigating whether in the U.S., where there is strong investor protection, the presence of controlling founders and familiesis associated witha higher level of cash holdings. If so, is the higher level of cash holdings associated with lower firm value? Moreover, this study distinguishes the management and ownership dimension of family andfounder firms and investigates its impacts on cash holdings.

Based on a sample of S&P 500 firms from 1994-2003, we find thatfounder firms on average hold a significantly higher level of cash holdings than family and widelyheld firms; family firms in contrast are not associated with a higher level of cash holdings compared to widelyheld firms. When family firms are managed by family members, the level of cash holdings is lower compared to widely held firms. In contrast to international evidence, the higher level of cash holdings infounder firms is not a result of cash hoarding at the expense of minority shareholders. Instead, we find that when founders serve as CEO or chairperson, the higher level of cash is associated with a higher firm value, which signals that, the presence of founders mitigates the agency cost of cash holdings.

The rest of the paper is organised as follows. Section 2 reviews the various theories of corporate cash holdings and discusses the empirical evidence in the cash holdings and family business literatures. Section 3 develops hypotheses in regards to the relation between family and founder firms and cash holdings. Section 4 describes the sample and outlines the empirical models used in this study. Section 5 provides descriptive statistics on the sample. Section 6 discusses the regression results and Section 7 concludes.

2. Theoretical Background

2.1. Theories on corporate cash holdings

Cash on the one hand is an available source of funding to managers to invest in capital expenditure, acquisition and R&D in order to enhance shareholder value, which is consistent with shareholders' interests. On the other hand, cash investment provides a very low rate of return and is highly susceptible to managerial manipulation, which is against shareholders' interests. Given its unique nature, it is important to understand the determinants and implications of corporate cash holdings.

Opler, Pinkowitz, Stulz and Williamson(1999) provide a number of theoretical models of corporate cash holdings:

1. Trade-off model

In determining the optimal level of cash, managers weigh the marginal costs and benefits of holding cash. The main cost of holding cash is the lower return earned from it, which is referred to as cost-of-carry (Dittmar et al., 2003). The benefits of holding cash are driven by two motives: transaction costs and precautionary. Based on the transaction costs motive, managers are likely to hold more cash if the cost of external funding and the opportunity cost of foregone investment is high. Based on the precautionary motive, the cost of external funding is also considered to determine the optimal level, but the main reason is to mitigate financial distress(Opler et al., 1999).

2. Financing hierarchy model

In contrast to the trade-off model, the financing hierarchy model suggests that there is no optimal level of cash. Managers are indifferent to cash or debt, and cash holdings are simply the residuals of the investment and financing decisions made by them(Dittmar et al., 2003). When firms have sufficient cash flows to finance new investment, they repay debts and accumulate cash. On the other hand, when firms lack internal funds to finance new investment, they draw down their accumulated cash and issue debt (Ferreira and Vilela, 2004).

3. Agency model

Due to agency conflicts between managers and shareholders, self-interested managers may hold cash to pursue their own interests at the expense of shareholders, for instance, instead of distributing cash back to shareholders, managers may invest the excess cash in projects with negative net present value or which are overpaid in acquisitions. Jensen (1986) suggests that self-interested managers have incentives to hold more cash in order to avoid capital market discipline.

Opler et al.(1999) provide empirical evidence to support the trade-off model based on U.S. data. They find that firms that are smaller, have higher level capital expenditure, higher growth opportunities, higher and more volatile cash flows and lower net working capital, hold more cash. These firm characteristics are all measures associated with the marginal costs and benefits of holding cash as suggested by the trade-off model. On the other hand, they find limited evidence to support the agency model of cash holding. Ferreira and Vilela (2004) largely support the empirical results of Opler et al.(1999) based on the data of 12 countries from the European Union. In addition, they document a negative relation between bank debt and cash holdings, which supports the notion that a close relationship with banks lessens the need to hold more cash for precautionary reasons. In contrast, Pinkowitz and Williamson (2001) find a positive relation between bank debt and cash holdings. Based on Japanesedata, they argue that the strength of the Japanese banks causes firms to hold large cash balances. The results indicate that the institutional environment also plays a major role in determining the level of cash holdings.

In relation to the agency model of cash holdings, the literature uses various governance indices as a proxy of agency cost. Using a sample of 11,000 firms from 45 countries, Dittmar et al. (2003) document a significant negative relation between shareholder protectionbased on the shareholder rights index developed by La Porta et al.(1998),and corporate cash holdings.Firms in countries with weak shareholder protection hold significantly more cash compared to firms that operate in countries with strong shareholder protection. They conclude that the severity of agency conflicts is a major determinant of the level of corporate cash holdings.Harford et al.(2008) re-examine the relation of corporate governanceand cash holdings in the U.S. Using the antitakeover index constructed by Gompers, Ishii and Metrick (2003) and the entrenchment index constructed by Bebchuk, Cohen and Ferrell (2009), they find that, in contrast to the international evidence, weakly controlled managers in the U.S. choose to spend cash quickly on capital expenditure and acquisitions rather than hoarding it. They argue that the results provide insights to the interaction between country-level shareholder rights and firm-level agency problems. Weakly controlled managers operating in countries with poor shareholder protection are able to hoard cash with limited consequences. In contrast, weakly controlled managers operating in countries with strong shareholder protection are unable to hoard cash because it is too visible. Instead,they quickly spend the cash on investments, which lowers the litigation risk but may destroy shareholder value.

Moreover, Pinkowitz et al.(2006)argue that if firms have a higher level of cash holdings at the expense of shareholders, then agency theories predict that the value of cash holdings should be discounted by shareholders. They find that the relation between cash holdings and firm value is weakened in countries with poor investor protection as managers have greater ability to extract private benefits from cash

holdings. Likewise, Dittmar and Mahrt-Smith (2007)also find that governance has a substantial impact on firm value through its impact on cash holdings in the U.S.; the value of cash holdings in poorly governed firms is significantly lower than in well-governed firms in the U.S. The results highlight the importance of corporate governance in determining the level of cash holdings and how cash holdings affect firm value, which is consistent with the agency costs explanation of cash holdings.

2.2 Ownership structure and corporate cash holdings

In addition to usingsome broad governance indices, the literature also uses ownership structure as a proxy for agency cost to investigate its impact on corporate cash holdings. A higher managerial and institutional ownership level may enhance the monitoring of self-interest behaviour, but the flipside is that higher ownership concentration may also encourage managerial entrenchment. Ferreira and Vilela (2004) document a negative relation between ownership concentration and the level of cash holdings across twelve countries from the European Union. They argue that a higher ownership concentration discourages managers from holding excessive levels of cash.Ozkan and Ozkan (2004) likewise document a negative relation between managerial ownership and cash holdings. They also find that firms with families as controlling shareholders are associated with higher cash holdings. They argue that relatively insufficient external discipline and lack of efficient monitoring by institutional investors in the U.K. allow entrenched managers and family shareholders to hold higher level of cash holdings.Kuan, Li and Chu (2011) also find that family firms hold a higher level of cash holdings than non-family controlled firms based on a sample of Taiwan firms. They further find that family firms with a larger separation of voting and cash flow right are associated with a higher level of cash.They argue that family firms are more likely to stockpile a higher level of cash in order to avoid the higher costs of external financing.Kalcheva and Lins(2007) provide international evidence on this issue and find that when external country-level shareholder protection is weak, the higher level of cash held by controlling managers is associated with lower firm values. The empirical evidence cited thus far suggests that the higher level of cash holdings in firms with controlling families/managers is a sign of management entrenchment. In contrast, Harford et al. (2008)find a positive relation between insider ownership and cash holdings in the U.S.. Rather than citing it as evidence of entrenchment, they argue that higher insider ownership discourages excessive spending on value-destroying investment. However, they do not distinguish between different types of insider shareholders.

The existing empirical evidence shows that when investor protection is weak, controlling families/managers use their dominant position to exploit minority shareholders by holding a higher level of cash, which in turn results in lower firm value. In other words, the empirical evidence suggests that the presence of controlling families/managers exacerbatesthe agency cost of cash holdings. This view appears to be in conflict with the empirical evidence documented in family business studies that postulates that the severity of agency conflicts in family firms is less thanin that in widely held firms.

2.3 Family and founder firms

Empirical studies(La Porta, Lopez-De-Silanes and Shleifer, 1999; Claessens, Djankov and Lang, 2000; Anderson and Reeb, 2003a; Barontini and Caprio, 2006) show that a significant proportion of listed corporations around the world can be classified as family firms. Compared to widely held firms that are characterised as with diffused ownership structure and separation of management and ownership (Jensen and Meckling, 1976), family firms are known as having concentrated owners with a large undiversified equity position(Anderson and Reeb, 2003a); have a long investment horizon(James, 1999; Anderson and Reeb, 2003b) and often have family members serving as top officers or board members of their firms(Villalonga and Amit, 2006). Existing studies show that the unique ownership structure in family firms has significant impact on its performance(Anderson and Reeb, 2003a; Barontini and Caprio, 2006; Villalonga and Amit, 2006; Martinez, Stohr and Quiroga, 2007; Andres, 2008; Fahlenbrach, 2009; Kowalewski, Talavera and Stetsyuk, 2010), cost of debt (Anderson et al., 2003),diversification (Anderson and Reeb, 2003b), earnings quality (Wang, 2006; Prencipe, Markarian and Pozza, 2008), financial disclosure (Ali, Chen and Radhakrishnan, 2007),and corporate downsizing (Stavrou, Kassinis and Filotheou, 2007; Block, 2010)when compared to widely held firms.

However, the validity of the empirical evidence onfamily firms, in particularly those based on U.S. data has been questioned. For instance, Fogel (2006) argues that the outperformance of family firms documented in some of the U.S. studies is mainly driven by the inclusion of some entrepreneurial firms in the samples. It is questionable whether those entrepreneurial firms should be classified as family firms.Carland, Hoy, Boulton and Carland(1984)and Litz (1995)argue that entrepreneurial firms may gradually evolve towards or away from family firms depending on the intention of the entrepreneur/founder. Lau (2010)proposes a requirement to have at least one family member,other than the founder, servingas a senior officer or director in order to differentiate family firms from entrepreneurial firms. Miller et al. (2007)formally classify those entrepreneurial firms without the

presence of other family members other than the founder as 'founder firms'. They find that after separating founder firms from family firms in the sample, family firms no longer outperform widely held firms. Block(2012)also separates founder and family firms, and finds that ownership by founders has a positive effect on R&D investment; in contrast family ownership is negatively associated with R&D investment.

Although family and founder firms are both characterised as having a substantial ownership stake and emotional ties with the firms, the recent empirical evidence (Miller et al., 2007; Block, 2012) shows that these two types of firms exhibitrather different corporate behaviours. This paper aims to investigate the impact of the presence of controlling families and founders on the levels and effects of corporate cash holdings.

3. Hypothesis development

3.1 Cash holdings in founder firms

Harford et al. (2008)show that with the presence of strong country-level shareholder protection, weakly controlled managers are more likely to engage in wasteful expenditure, resulting in a lower level of cash holdings. Comparing founder with widely held firms, there are several reasons to suggest that founder firms are less likely to engage in wasteful expenditure.

First, founders tend to own a substantial ownership stake in their firms;the concentrated ownership mitigates the agency cost arising from the separation of ownership and management(Villalonga and Amit, 2006). As a result, the incentive for founders to pursue wasteful opportunities for personal gain is relatively less than for professional managers (Nelson, 2003; Randøy and Goel, 2003). Second, in addition to economic interest, founders also have a strong psychological commitment to their firms. Being the one who invests time and energy to create and grow the firm, such investment leads the founder to be more strongly identified with the firm. As a result, the founder is more likely than professional managers to put the firm's goals ahead of personal interests(He, 2008).Third, founders possess superior knowledge about their firms. Being the longest tenure members of the firm, founders have intimate knowledge about the structure and strategy of their firms, so they are in a better position to take effective strategic decisions and capitalise business opportunities for their firms(Colombo and Grilli, 2010). For instance, Block (2012)shows that founder ownership not only is positively associated with the level of R&D investment, but is also positively associated with the level of R&D productivity. Fahlenbrach (2009)also finds that founder-CEO firms invest more in R&D, have higher capital expenditure and make more focused mergers and acquisitions. The

findings indicate that founders not only are willing to invest, but also able to invest efficiently.

Harford et al. (2008)argue that the reason weakly controlled managers engage in wasteful expenditure is because a high level of cash is likely to attract shareholders' attention. We argue thatthe economic incentives, strong psychological commitment and superior knowledge of founders contribute to lower agency conflicts, which enables them to convince the minority shareholders to allow them to retain a higher level of cash holdings in order to capture attractive investment opportunities. The availability of cash holdings and higher investment efficiency also helps to enhance firm value. As a result, we predict that the agency cost of cash holdings in founder firms is less than that in widely held firms.

H1a: The level of cash held by founder firms is higher than in widely held firms.
H1b: The relation between cash holdings and firm value is more positive for founder firms versus widely held firms.

3.2 Cash holdings in family firms

Family firms share a number of common characteristics with founder firms. Similar to founders, family members have substantial ownership in their firms, therefore they have strong incentives to monitor management in order to protect their economic interests(Anderson and Reeb, 2003a). Family members also have strong commitment to their firms whose success not onlyenhances their wealth, but also their reputation. The literature shows that family firms are less likely to downsize their workforce (Stavrou et al., 2007; Block, 2010)and are more likely to be socially responsible(Dyer and Whetten, 2006). These findings illustrate that families put in considerable effort to protect their reputation. As a result, like founders, families have strong incentives to curb wasteful expenditures, which in turn mitigate the agency cost of cash holdings.

However, compared to founder firms, we expect agency conflicts in family firms to be more severe. Family firms are more likely to suffer from the cost of altruism(Schulze, Lubatkin, Dino and Buchholtz, 2001). Altruism is identified as one of the sources of agency conflicts(Chrisman, Chua and Litz, 2004). Families as owners or managers are the leaders in their firms, but at the same time they are also parents to their children, therefore family owners or managers are likely to use their power to provide preferential treatment to their children and other relatives, for instance employment and perquisites(Schulze, Lubatkin and Dino, 2003). Altruism may help to align interests among family members and enhance communication and cooperation(Schulze, Lubatkin and Dino, 2002), but there are several potential downsides. First, altruism exposes family firms to

adverse selection as founders may appoint less qualified descendants as successors instead of non-family professional managers(Schulze et al., 2003; Bloom and Van Reenen, 2007).Morck and Yeung (2004) argue that control by heirs adversely affects corporate decision making as they might be less able and less hardworking compared to founders. Indeed, Perez-Gonzales (2006) provides empirical evidence that inherited control hurts performance in family firms. Second, altruism also promotes moral hazard among family members as it reduces the founders' ability to effectively monitor and discipline other family members(Schulze et al., 2001). Block (2012)argues that the level of R&D investment is lower in family firms compared to founder firms because the former has less effective monitoring. The finding is consistent with the view of Morck and Yeung(2004) that the presence of controlling families deters investments in innovation. The threat of adverse selection and moral hazard arising from altruism may lead to sub-optimal investment decisions by family firms, which in turn exacerbatesthe agency cost of cash holdings in family firms.

Ultimately, it is an empirical question of whether the positive aspects of the presence of controlling families outweigh the negatives aspects compared to widelyheld firms. Thus, in this study we only hypothesise family firms against founder firms. We argue that because of more severe agency conflicts arising from altruism, familyfirms may be more susceptible to wasteful expenditure. As a result we predict that the agency cost of cash holdings in family firms is higher thanthat in founder firms.

H2a: The level of cash held by family firms is lower than in founder firms.
H2b: The relation between cash holdings and firm value is less positive for family versus founder firms.

4. Sample and research design

4.1. Sample selection

We use a list of family firms in the S&P 500 published in BusinessWeek as of July 2003 as a starting point to identify founder and family firms. Data about the firms' ownership structure and management were collected from corporate proxy statements from the SEC Edgar database for the period 1994-2003. The data were further expanded and verified with information from Hoover's Handbook of American Business, Gale Business Resources, The Twentieth Century American Business Leaders Database at Harvard Business School, Forbes Lists of the 400 Richest Americans, Marquis' Who's Who in America, and information available on the firms' websites. Consistent with the literature, all financial firms (SIC 6000to 6999)

wereexcluded and the final sample is composed of 2,530 firm-year observations. The sample is comparable to other family business studies (Anderson and Reeb, 2003a; Villalonga and Amit, 2006; Wang, 2006; Ali et al., 2007).

4.2. Definitions of founder, family and widely held firms

In this paper, we classify the sample firms into three different types: founder, family and widely held firms. We further distinguish the management and ownership dimensions of founder and family firms. Following the definitions used in Block(2012), a founder-owned firm is a firm in which the founder has at least 5 per cent of the firm's common equity but no other family members are present as large shareholders.A founder-managed firm is a firm in which the founder serves as CEO or chairperson but no family member of the founder is involved as CEO or chairperson. A family-owned firm is a firm in which the founding family owns at least 5 per cent of the firm. If both the founder and other family members are owners of the firm, it is classified as a family-owned firm. A family-managed firm is a firm in which a member of the founding family (excluding the founder) serves as CEO or chairperson. Firms without founders or other family members as substantial shareholders or serving as CEO or chairperson are classified as widely held firms.

4.3. Empirical model

4.3.1. The level of cash holdings

To investigate whether the presence of founders and families affects the level of corporate cash holdings, we regress cash holdings against the family/founder indicator variables with the other firm characteristics as control variables. We follow the literature (Opler et al., 1999; Ferreira and Vilela, 2004; Ozkan and Ozkan, 2004; Harford et al., 2008) to use ordinary least square (OLS) regression with clustered standard errors at the firm-level to estimate the relation between ownership structure (family andfounder firms) and cash holdings controlling for firm characteristics.The regression model is derived as follows:

$$\text{Cash holding}_{i,t} = \alpha + \beta_1 \text{Family firm}_{i,t} + \beta_2 \text{Founder firm}_{i,t} + \beta_3 \text{Corporate governance indices}_{i,t} + \beta_4 \text{Institutional ownership}_{i,t} + \beta_5 \text{Size}_{i,t} + \beta_6 \text{Leverage}_{i,t} + \beta_7 \text{Working capital}_{i,t} + \beta_8 \text{Cash flow}_{i,t} + \beta_9 \text{R\&D}_{i,t} + \beta_{10} \text{Capex}_{i,t} + \beta_{11} \text{Acquisition}_{i,t} + \beta_{12} \text{Dividend indicator}_{i,t} + \beta_{13} \text{Firm risk}_{i,t} + \beta_{14} \text{Supershares}_{i,t} + \beta_{15} \text{Firm age}_{i,t} + \text{Industry dummies} + \text{Year dummies} + \varepsilon_{i,t} \quad (1)$$

The dependent variable of the regression is the level of cash holdings, which is defined as the natural log of cash and market securities divided by net

assets. Net assets is defined as total assets minus cash and market securities. The use of natural log is to correct the skewness of the variable as several previous studies (Opler et al., 1999; Harford et al., 2008) report that the mean of cash holdings is significantly higher than the median. The natural log of cash and market securities divided by sales is used as an alternative measure of cash holdings for the purposes of sensitivity analysis. The independent variables of the regression include the family and the founder indicator variables, which include the ownership and management indicator variables of family and founder firms. We predict the level of cash holdings of founder firms to be higher than widely held firms, so we expect β_2 to be significantly positive. Moreover, we predict that the level of cash holdings of founder firms to be higher than family firms, so we expect the β_2 to be significantly higher than β_1.

We follow Harford et al. (2008) to control for firm size, firm leverage, growth opportunities, cash flow, liquidity, cost of financial distress, the level of capital expenditure, the level of acquisition and whether the firm pays dividends, corporate governance variables and institutional ownership. Institutional ownership is included to control for monitoring from other large shareholders; the data are manually collected from the SEC Edgar database. Harford et al. (2008)find that firms' level of corporate governance is significantly associated with the level of corporate cash holding. We include two corporate governance indexes as control variables, which include the antitakeover index (GIndex) constructed by Gompers et al.(2003)and the entrenchment index (EIndex) constructed by Bebchuk et al. (2009). The indices were extracted from the authors' websites. In addition, we include an indicator variable of supershares, which takes the value of 1 if the firm issues shares that have a higher voting than cash flow rights; the data are manually collected from the SEC Edgar database. We use firm's beta as a proxy for firm risk; it is calculated as the firm's daily return regressed against the returns of the S&P 500 index; the data are retrieved from CRSP.We also control for firm age, as the prior family business studies (Anderson & Reeb, 2003a; Villalonga & Amit, 2006) show that the average firm age of family firms is significantly different from widely held firms; the data are collected from the firms' websites.

Other control variables are based on Opler et al. (1999), who investigate the determinants of corporate cash holdings. Firm size is measured as the natural log of sales. Firm leverage is measured as the ratio of total debt to total net assets. Cash flow ratio is measured as net income plus depreciation divided by total assets. Working capital ratio is used to proxy for liquidity, which is measured as current assets net of cash minus current liabilitiesdivided by total net assets. The ratio of R&D expenditure to sales is used to proxy for financial distress costs; R&D expenditure is set as zero if missing. The levels of capital

expenditure and acquisition are measured as capital expenditure and acquisition divided by total net assets and sales respectively. A dividend dummy variable takes the value of 1 if the firm pays a dividend. All financial data were extracted from Compustat and were winsorised at the 1 per cent level on each tail in order to minimise the effect of outliers.

4.3.2. *Cash holdings and firm value*

We follow Kalcheva and Lins(2007)to regress Tobin's Q ratio against an interaction between cash holdings and the various founder/family indicator variables in order to test whether the presence of controlling founders or families affects the relation between cash holdings and firm value. The regression model is derived as follows:

$$
\begin{aligned}
\text{Tobin's Q}_{i,t} = & \, \alpha + \beta_1 \text{Cash holdings}_{i,t} + \beta_2 \text{Family firm}_{i,t} \\
& + \beta_3 \text{Founder firm}_{i,t} + \beta_4 \text{Family firm} \times \text{Cashholding}_{i,t} + \\
& \beta_5 \text{Founderfirm} \times \text{Cash holding}_{i,t} + \beta_6 \text{Corporate} \\
& \text{governance indices}_{i,t} + \beta_7 \text{Institutional ownership}_{i,t} + \\
& \beta_8 \text{Size}_{i,t} + \beta_9 \text{Leverage}_{i,t} + \beta_{10} \text{Working capital}_{i,t} + \\
& \beta_{11} \text{R\&D}_{i,t} + \beta_{12} \text{Capex}_{i,t} + \beta_{13} \text{Acquisition}_{i,t} + \\
& \beta_{14} \text{Dividend indicator}_{i,t} + \beta_{15} \text{Firm risk}_{i,t} + \\
& \beta_{16} \text{Supershares}_{i,t} + \beta_{17} \text{Firm age}_{i,t} + \text{Industry dummies} \\
& + \text{Year dummies} + \varepsilon_{i,t} \qquad (2)
\end{aligned}
$$

The dependent variable is Tobin's Q ratio, which is measured as market value of equity less book value of equity plus book value of assets all divided by total assets(Kalcheva and Lins, 2007). The independent variables include the level of cash holdings, the indicator variables of family andfounder firms, the interaction variables between cash holdings and the indicator variables of family and founder firms, and other firm characteristics as control variables. We expect the presence of founders strengthens the relation between firm value and cash holdings, therefore we expect $\beta_5$to be significantly positive.

5. Descriptive statistics

Table 1 reports the descriptive statistics of the sample. The means of cash to net assets and cash to sales ratio are 0.18 and 0.15 respectively. The means of the level of cash holdings are comparable to the prior U.S. studies (Opler et al., 1999; Harford et al., 2008). Moreover, the means of both cash holdings measures are significantly higher than their medians, which indicate that the distribution of the level of cash holdings is highly skewed. In order to correct the skewness, the natural log of both cash measures is used for multivariate analysis. In addition to the measures of cash holdings, we also compute the descriptive statistics of a number of determinants of cash holdings documented in the literature, which include governance indexes, institutional ownership, leverage, market-to-book ratio, cash flow to assets ratio, working capital to assets ratio, R&D to sales

ratio, capital expenditure to assets ratio and   acquisition to sales ratio.

Table 1. Descriptive statistics

	Mean	Median	Standard deviation	25th percentile	75th percentile
Cash / net assets	0.186	0.051	0.364	0.016	0.177
Cash / sales	0.159	0.049	0.278	0.016	0.170
Founder management	0.179	0			
Founder ownership	0.013	0	0.052	0	0
Family management	0.105	0			
Family ownership	0.038	0	0.115	0	0
Institutional ownership	0.135	0.120	0.115	0.054	0.205
Eindex	2.323	2	1.378	1	3
Gindex	9.609	10	2.597	8	12
Assets (in millions)	9,053	4,132	13,027	2,044	10,691
Sales (in millions)	8,185	4,168	11,510	1,811	9,602
Leverage	0.259	0.255	0.167	0.142	0.362
Cash flow / net assets	0.13	0.117	0.118	0.075	0.166
Working capital / net assets	0.049	0.035	0.155	-0.039	0.142
R&D / sales	0.042	0.006	0.070	0	0.054
Capex /net assets	0.072	0.058	0.050	0.038	0.092
Tobin's Q	2.536	1.889	2.059	1.376	2.910
Acquisition / sales	0.032	0	0.084	0	0.024
Dividend dummy	0.699	1			
Firm risk	0.949	1	0.523	0.604	1.176
Supershares	0.057	0			
Firm age	67.569	67	44.134	26	98

This table provides summary statistics for the sample. Cash is cash and market securities. Assets and Sales are measured in millions. Net assets is calculated as Total assets minus cash. Leverage is calculated as short term debt plus long term debt divided by net assets. Cash flow is calculated as net income plus depreciation. R&D expenditure is set as zero if missing. Capex and Acquisition are the dollar value on capital expenditure and acquisition respectively. Working capital is calculated as current assets net of cash minus current liabilities. Tobin's Q is calculated as market value of equity less book value of equity plus book value of assets all divided by total assets. Dividend dummy is an indicator variable that takes the value of 1 if a firm pays dividends. Gindex is the antitakeover index developed by Gompers et al. (2003). Eindex is the entrenchment index developed by Bebchuk et al. (2005). Firm risk is calculated as the firm's daily return against the returns of the S&P 500 index. Supershares takes the value of 1 if the firm issues shares that has a higher voting than cash flow rights. Firm age is the number of years for which the firm has existed. Founder management is an indicator variable that takes the value of 1 if a founder serves as either CEO or Chairperson. Founder ownership is an indicator variable that takes the value of if a founder owns at least 5per cent of ownership. Family management is an indicator variable that takes the value of 1 if a family member serves as CEO or Chairperson. Family ownership is an indicator variable that takes the value of 1 if a family member owns at least 5per cent of ownership. Institutional ownership is the percentage of shares owned by institutions. All financial variables are winsorised at the 1per cent level on either tail.

In this sample, approximately 19 per cent of firms are classified as founder firms and 17 percent of firms are classified as family firms, the remaining 64 per cent of firms being widely held firms. The proportion of founder, family and widely held firms is comparable to the sample used in Miller et al. (2007). Table 2 reports the difference in means of firm characteristics among the three different categories of firms. In relation to the level of cash holdings, the cash to net assets and cash to sales ratio of founder firms are 0.45 and 0.36 respectively, which are significantly higher than those of both family and widely held firms. Founder firms are also younger, smaller, with lower leverage, have better cash flow, higher capital and R&D expenditure, pay less dividends and have better corporate governance based on Gindex and have higher firm risk compared to family and widely held firms.

On the other hand, family firms held less cash compared to widely held firms; family firms also have better corporate governance, lower institutional ownership, higher working capital and cash flow, pay higher dividends and invest less in R&D. The results reported in Table 3 show that although founder and

family firms are both characterised as firms with controlling shareholders, there are some major differences in their firm characteristics. The results also show that founder firms held significantly higher levels of cash compared to both family and widely held firms, which provides preliminary support to our hypotheses. However, given the differences in firm characteristics among the different types of firms and the evidence from the literature that the level of cash holdings is affected by those firm characteristics, it is unclear whether the higher level of cash holdings in founder firms is driven by the identity of controlling shareholders, or merely driven by the systematic differences in firm characteristics.

Table 2. Comparisons of firm characteristics in founder, family and widelyheldfirms

	Founder firms	Family firms	Widelyheld firms	Founder versus family	Founder versus widelyheld	Family versus widelyheld
	Mean	Mean	Mean	Diff. in Means		
Cash / net assets	0.457	0.107	0.127	0.35***	0.33***	-0.021*
Cash / sales	0.366	0.078	0.120	0.288***	0.246***	-0.042***
Eindex	1.906	1.982	2.542	-0.076	-0.636***	-0.560***
Gindex	8.623	9.327	9.983	-0.703***	-1.359***	-0.656***
Institutional ownership	0.125	0.083	0.152	0.042***	-0.027***	-0.069***
Size	7.924	8.381	8.472	-0.456***	-0.547***	-0.091
Leverage	0.192	0.250	0.281	-0.057***	-0.088***	-0.031***
R&D / sales	0.079	0.022	0.036	0.057***	0.043***	-0.014***
Acquisition / sales	0.037	0.036	0.029	0.001	0.008*	0.007
Working capital / net assets	0.037	0.089	0.042	-0.051***	0.004	0.047***
Cash flow / net assets	0.179	0.131	0.116	0.048***	0.063***	0.016***
Tobin's Q	3.588	2.47	2.239	1.118***	1.35***	0.231***
Capex / net assets	0.085	0.067	0.069	0.017***	0.016***	-0.002
Dividends / assets	0.006	0.024	0.016	-0.017***	-0.01***	0.008***
Firm risk	1.318	0.844	0.868	0.474***	0.45***	-0.024
Firm age	29.676	72.982	77.347	-43.306***	-47.671***	-4.365**

The differences in means of firm characteristics among founder, family and widely held firms are reported. All firm characteristics are defined in Table 2. Founder firm is a firm in which the founder is either the CEO or the chairman of the firm or the founder owns at least 5per cent of the ownership. Family firm is a firm in which a family member other than the founder is either the CEO or the chairperson of the firm or a family member owns at least 5per cent of the ownership. Widely held firm is a firm in which there is no founder or family member who serves as CEO or chairperson of the firm or owns 5per cent of ownership. The test of differences in means is based on the two-sample t test. ***, ** and * denote significance at the 1, 5 and 10 per cent levels respectively.

6. Regression results

6.1. The level of cash holdings

Table 3 reports the impact of controlling founders/families on the level of cash holdings.In Model 1, family and founder firms are combined into a single indicator variable, as in most of the existing studies (Anderson and Reeb, 2003a; Villalonga and Amit, 2006). The results show that the indicator variable is significantly positive at the 1 per cent significance level ($\beta = 0.189$, t = 3.56). Consistent with the literature (Ozkan and Ozkan, 2004; Kalcheva and Lins, 2007), the presence of controlling families/founders is associated with a higher level of cash holdings. In regards to firm characteristics, all variables are statistically significant with the expected signs consistent with the existing literature. Firms with higher institutional ownership, stronger shareholder rights (based on Gindex), lower cash flow ratio, lower working capital ratio, higher R&D ratio, lower acquisition ratio and no dividend payout on average held more cash compared to their counterparts. In addition, the level of cash holdings is positive associated with firm risk but negatively associated with firm age.When we use the natural log of cash holdings to sales as an alternative measure of cash holdings, the unreported results are qualitatively the same.

In Models 2 to 4, we separate family andfounder firms. In Model 2, we include two indicator variables to identify founder-managed and founder-owned firms.The coefficients of both indicator variables of founder firms are significantly positive at the 1 per cent level (β = 0.405, t = 5.71; β = 0.313. t = 3.42). The results indicate that the presence of founders as managers or owners is associated with a significantly higher level of cash holdings.In Model 3, we include two indicator variables to identify family-managed and family-owned firms. The coefficient of the family management indicator variable is significantly negative at the 1 per cent level (β = -0.339, t = -3.75), but the coefficient of the family ownership indicator variable is not statistically significant. The results indicate that in contrast to founder firms, the presence of family members as managers is associated with a significantly lower level of cash holdings. Family ownership on the other hand has no impact on the level of cash holdings. In Model 4, we include all four indicator variables of founder and family firms in order to compare the level of cash holdings across founder, family and widely held firms. Consistent with the results from Model 2 and 3, the presence of founders as managers or owners is associated with a significantly higher level of cash holdings whereas the presence of family members as managers is associated with a significantly lower level of cash holdings.

Overall, the results from Table 3 show thatfounder firms on average held a significantly higher level of cash holdings than family and widely held firms; as a result, Hypotheses 1a and 2a are supported. Moreover, we also find that family managed firms on average have a lower level of cash holdings compared to widely held firms. The results indicate that the identity of controlling owners is an important determinant of the level of cash holdings. Both founders and family members are concentrated owners but only the presence of founders is associated with a higher level of cash holdings. The next section will examine whether the presence of controlling founders or families has significant impact on the relation between cash holdings and firm value.

Table 3. The relation between ownership structure and the level of cash holdings. Dependent variable = level of cash holdings

	(1)	(2)	(3)	(4)
Founder or family firm	0.189 (3.56)***			
Founder management		0.405 (5.71)***		0.375 (5.26)***
Founder ownership		0.313 (3.42)***		0.313 (3.38)***
Family management			-0.339 (-3.75)***	-0.243 (-2.69)***
Family ownership			0.067 (0.84)	0.091 (1.14)
Institutional ownership	0.682 (2.92)***	0.705 (3.04)***	0.425 (1.82)*	0.664 (2.85)***
Eindex	0.017 (0.64)	0.017 (0.66)	0.002 (0.08)	0.017 (0.65)
Gindex	-0.07 (-5.28)***	-0.072 (-5.59)***	-0.067 (-5.17)***	-0.071 (-5.52)***
Size	-0.159 (-5.65)***	-0.16 (-5.71)***	-0.168 (-5.92)***	-0.162 (-5.82)***
Leverage	-0.988 (-5.14)***	-0.872 (-4.55)***	-0.99 (-5.15)***	-0.878 (-4.6)***
Cash flow / net assets	3.053 (13.6)***	2.892 (12.82)***	3.09 (13.62)***	2.877 (12.78)***
Working capital / net assets	-0.538 (-2.49)**	-0.423 (-2.02)**	-0.481 (-2.19)**	-0.397 (-1.91)*
R&D / sales	5.025 (10.91)***	5.3 (11.41)***	4.919 (10.48)***	5.206 (11.27)***
Capex / net assets	-0.789 (-1.44)	-1.006 (-1.83)*	-0.987 (-1.77)*	-0.962 (-1.74)*
Acquisition / sales	-1.14 (-4.17)***	-1.113 (-4.05)***	-0.979 (-3.56)***	-1.1 (-4.00)***
Dividend indicator	-0.359 (-5.44)***	-0.247 (-3.71)***	-0.307 (-4.53)***	-0.237 (-3.54)***
Firm risk	0.563 (9.42)***	0.534 (8.78)***	0.59 (9.86)***	0.539 (8.86)***
Supershares	0.115 (1.16)	0.194 (1.89)*	0.286 (2.7)***	0.267 (2.41)**
Firm age	-0.002 (-2.2)**	-0.001 (-1.42)	-0.003 (-3.45)***	-0.001 (-1.73)*
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
No. of observations	2,530	2,509	2,509	2,509
R-squared	0.546	0.558	0.549	0.559

This table examines the relation between ownership structure (Founder, family and widely held firms) and the level of cash holdings. For each model, cash holdings is regressed against the indicator variables of founder and family firms and the other firm characteristics variables. Cash holdings is calculated as the natural log of cash and market securities divided by net assets. Net assets is measured as total assets minus cash and market securities. Founder management is an indicator variable that takes the value of 1 if a founder serves as either CEO or Chairperson. Founder ownership is an indicator variable that takes the value of if a founder owns at least 5per cent of ownership. Family management is an indicator variable that takes the value of 1 if a family member serves as CEO or Chairperson. Family ownership is an indicator variable that takes the value of 1 if a family member owns at least 5per cent of ownership. Institutional ownership is the percentage of shares owned by institutions. Eindex is the entrenchment index developed by Bebchuk et al. (2005). Gindex is the antitakeover index developed by Gompers et al. (2003). Size is measured as the natural log of sales; Leverage is measured as short term debt plus long term debt divided by net assets; Cash flow is measured as net income plus depreciation; Working capital is calculated as current assets net of cash minus current liabilities; R&D is measured as the dollar value of R&D expenditure, and is set as zero if missing; Capex is measured as the dollar value on capital expenditure; Acquisition is measured as the dollar value on acquisition; Dividend indicator takes the value of 1 if a firm pays dividend in the financial year. Firm risk is calculated as the firm's daily return against the returns of the S&P 500 index. Supershares takes the value of 1 if the firm issues shares that has a higher voting than cash flow rights. Firm age is the number of years for which the firm has existed.For each regression, the first row is the coefficient on the independent variable and the second is the t-statistic. Standard errors are estimated with clustered errors at the firm-level. ***, ** and * denote significance at the 1, 5 and 10 per cent levels respectively.

6.2. Cash holdings and firm value

We use two different methods to investigate the impact of the presence of controlling founders/families on the relation between cash holdings and firm value. We first follow Kalchevaand Lins(2007)to regress Tobin's Q ratio as a proxy of firm value against the level of cash holdings, the indicator variables of founder/family firms, the interaction variables between the level of cash holdings and the indicator variables of founder/family firms, and other control variables of firm characteristics that may affect firm value. Table 4 reports the results of this regression. In Model 1, we combine founder and family firms as a group. Consistent with Kalchevaand Lins (2007), the level of cash holdings is positively associated with Tobin's Q ratio. Also, consistent with Villalonga and Amit (2006), the presence of controlling founders/families has a positive impact on Tobin's Q ratio. The variable of interest is the interaction variable between the level of cash holdings and the indicator variable of founder/family firms. The coefficient of the interaction variable is positively significant at the 1 per cent level (β = 0.159; t = 2.96), which indicates that on average the presence of controlling founders/families has a positive impact on the value of cash holdings.

In Models 2 to 4 we further investigate the impact of ownership and management of founder and family firms on the relation between cash holdings and firm value. In Model 2, we include the two indicator variables of founder firms. The results show that the coefficient of the indicator variable of founder management is significant positive at the 1 per cent level (β = 1.048, t = 3.78), which is consistent with the literature that the presence of founders as managers is associated with a higher Tobin's Q ratio. Moreover, the coefficient of the interaction variable between the level of cash holdings and founder management is also positively significant at the 1 per cent level (β = 0.284, t = 2.90). On the other hand, the coefficient of the indicator variable of founder ownership and the interaction variable between the level of cash holdings and founder ownership are statistically insignificant. The results show that the presence of founders as managers not only is associated with a higher firm value but also strengthens the relation between cash holdings and firm value.

In Model 3, we include two indicator variables of family firms. The results show that both the coefficients of the indicator variables of family management and family ownership are statistically insignificant, which is consistent with Miller et al. (2007)that after excluding founder firms, the firm value of family firms is not significantly different from widely held firms. Moreover, the coefficients of the interaction variable between the level of cash holdings and the indicator variables of family management and ownership are statistically insignificant. The results indicate that the presence of family members as managers or owners has no significant impact on the firm value as well as the relation between cash holdings and firm value.

In Model 4, we include all four indicator variables of founder and family firms. The results are largely consistent with Models 2 and 3. The coefficients of the indicator variable of founder management and the interaction variable between the level of cash holdings and the indicator variable of founder management are significantly positive; none of the other indicator variables of founder or family firms and their associated interaction variables is statistically significant. The results show that the relation between cash holdings and firm value is stronger in founder firms compared to family firms and widely held firms, which supports Hypotheses 1b and 2b.

Table 4. The relation between firm value, cash holdings and ownership structure. Dependent variable = Tobin's Q ratio

	(1)	(2)	(3)	(4)
Cash holdings	0.153	0.159	0.227	0.156
	(4.22)***	(5.17)***	(6.62)***	(4.63)***
Founder or family firm	0.577			
	(2.72)***			
Founder management		1.048		1.052
		(3.78)***		(3.71)***
Founder ownership		-0.007		-0.028
		(-0.02)		(-0.09)
Family management			-0.392	-0.019
			(-1.71)*	(-0.08)
Family ownership			-0.015	-0.113
			(-0.06)	(-0.44)
Cash holdings × founder or family firm	0.159			
	(2.96)***			
Cash holdings × Founder management		0.284		0.288
		(2.90)***		(2.91)***
Cash holdings × founder ownership		0.006		0.009
		(0.06)		(0.08)
Cash holdings × family management			-0.082	0.009
			(-1.45)	(0.14)
Cash holdings × family ownership			0.032	0.001
			(0.53)	(0.01)
Institutional ownership	-1.580	-1.483	-1.835	-1.57
	(-4.64)***	(-4.67)***	(-5.83)***	(-4.81)***
Eindex	-0.129	-0.123	-0.139	-0.129
	(-3.35)***	(-3.16)***	(-3.44)***	(-3.31)***
Gindex	-0.022	-0.028	-0.02	-0.028
	(-1.05)	(-1.33)	(-0.93)	(-1.33)
Size	-0.228	-0.221	-0.237	-0.227
	(-4.52)***	(-4.5)***	(-4.62)***	(-4.57)***
Leverage	-1.757	-1.656	-1.799	-1.663
	(-6.32)***	(-5.95)***	(-6.39)***	(-5.95)***
Working capital / net assets	-1.189	-0.981	-1.243	-0.973
	(-2.99)***	(-2.52)**	(-3.04)***	(-2.48)**
R&D / Sales	2.258	2.324	2.058	2.213
	(2.33)**	(2.39)**	(2.07)**	(2.25)**
Capex / net assets	2.511	2.439	2.733	2.44
	(2.56)**	(2.52)**	(2.7)***	(2.5)**
Acquisition / sales	-0.959	-0.98	-0.951	-0.955
	(-2.8)***	(-2.84)***	(-2.71)***	(-2.78)***
Dividend indicator	-0.000	0.032	0.002	0.049
	(-0.00)	(0.34)	(0.02)	(0.51)
Firm risk	0.421	0.374	0.434	0.373
	(3.08)***	(2.67)***	(3.19)***	(2.66)***
Supershares	-0.265	-0.167	-0.194	-0.129
	(-2.14)**	(-1.31)	(-1.61)	(-1.04)
Firm age	-0.000	0.000	-0.000	0.000
	(-0.180)	(0.500)	(-0.330)	(0.31)
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
No. of observation	2,522	2,501	2,501	2,501
R-squared	0.322	0.331	0.319	0.331

This table examines the relation between firm value, ownership structure (Founder, family and widely held firms) and the level of cash holdings. For each model, Tobin's Q ratio is regressed against cash holdings, the indicator variables of founder and family firms, the interaction variables between cash holdings and the indicator variables of founder and family firms and the other firm characteristics variables. Tobin's Q is calculated as market value of equity less book value of equity plus book value of assets all divided by total assets. Cash holdings is calculated as the natural log of cash and market securities divided by net assets. Net assets is measured as total assets minus cash and market securities. Founder management is an indicator variable that takes the value of 1 if a founder serves as either CEO or Chairperson. Founder ownership is an indicator variable that takes the value of if a founder owns at least 5per cent of ownership. Family management is an indicator variable that takes the value of 1 if a family member serves as CEO or Chairperson. Family ownership is an indicator variable that takes the value of 1 if a family member owns at least 5per cent of ownership. Institutional ownership is the percentage of shares owned by institutions. Eindex is the entrenchment index developed by Bebchuk et al. (2005). Gindex is the antitakeover index developed by Gompers et al. (2003). Size is measured as the natural log of sales; Leverage is measured as short term debt plus long term debt divided by net assets; Cash flow is measured as net income plus depreciation; Working capital is calculated as current assets net of cash minus current liabilities; R&D is measured as the dollar value of R&D expenditure, and is set as zero if missing; Capex is measured as the dollar value on capital expenditure; Acquisition is measured as the dollar value on acquisition; Dividend indicator takes the value of 1 if a firm pays dividend in the financial year. Firm risk is calculated as the firm's daily return against the returns of the S&P 500 index. Supershares takes the value of 1 if the firm issues shares that has a higher voting than cash flow rights. Firm age is the number of years for which the firm has existed. For each regression, the first row is the coefficient on the independent variable and the second is the t-statistic. Standard errors are estimated with clustered errors at the firm-level. ***, ** and * denote significance at the 1, 5 and 10 per cent levels respectively.

6.3 Robustness test

We also use the value regression model developed by Pinkowitz and Williamson (2007) to test the relation between firm value and cash holdings. The model was motivated by the value regression model developed by Fama and French (1998), which is derived as follows:

$$V_{i,t} = \alpha + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+1} + \beta_6 RD_{i,t} + \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+1} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+1} + \beta_{12} D_{i,t} + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+1} + \beta_{15} dV_{i,t+1} + \beta_{16} L_{i,t} + \varepsilon_{i,t} \qquad (3)$$

For each variable (X), X_t is the level of variable X in year t divided by the level of total assets in year t; dX_t is the change in the level of X from year t-1 to year t divided by the level of total assets in year t; dX_{t+1} is the change in the level of X from year t to year t+1 divided by the level of total assets in year t. V is the market value of the firm, which is measured as the sum of market value of equity (common stock price * shares outstanding at fiscal year-end) and book value of debt. E is earnings, which is measured as earnings before extraordinary items plus interest plus deferred tax credits plus investment tax credits, NA is net assets, measured as total assets minus cash and market securities, RD is R&D expenditure, which takes the value of zero if missing, I is interest expense, D is common dividends and L is liquid assets, measured as cash and market securities. In this regression β_{16} captures the value of cash holding as a function of firm value.

We modified the regression model above by including the founder and familyfirms' indicator variables and the interaction between cash holdings and founder and familyfirms' indicator variable. In addition, Dittmar and Mahrt-Smith (2007) argue that the value of cash is affected by corporate governance, so we also include GIndex, EIndex and institutional ownership as additional control variables. We also include firm risk, firm age and Supershares as additional control variables. The modified value regression model is as follows:

$$V_{i,t} = \alpha + \beta_1 E_{i,t} + \beta_2 dE_{i,t} + \beta_3 dE_{i,t+1} + \beta_4 dNA_{i,t} + \beta_5 dNA_{i,t+1} + \beta_6 RD_{i,t} + \beta_7 dRD_{i,t} + \beta_8 dRD_{i,t+1} + \beta_9 I_{i,t} + \beta_{10} dI_{i,t} + \beta_{11} dI_{i,t+1} + \beta_{12} D_{i,t} + \beta_{13} dD_{i,t} + \beta_{14} dD_{i,t+1} + \beta_{15} dV_{i,t+1} + \beta_{16} \text{Corporate governance indices}_{i,t} + \beta_{17} \text{Cash holdings}_{i,t} + \beta_{18} \text{Family firm}_{i,t} + \beta_{19} \text{Familyfirm}_{i,t} \times \text{Cash holdings}_{i,t} + \beta_{20} \text{Founder firm}_{i,t} + \beta_{21} \text{Founderfirm}_{i,t} \times \text{Cash holdings}_{i,t} + \beta_{22} \text{Firm risk}_{i,t} + \beta_{23} \text{Supershares}_{i,t} + \beta_{24} \text{Firm age}_{i,t} + \text{Industry dummies} + \text{Year dummies} + \varepsilon_{i,t} \qquad (4)$$

We predict that the presence of founders strengthens the relation between cash holdings and firm value, as a result, we expect β_{21} to be significantly positive.

The results from Table 5 are consistent with the results from Table 4. In Model 4 from Table 5, the coefficient of the interaction variable between cash holdings and founder management is positively significant at the 5 per cent level ($\beta = 0.096$, t = 1.99). On the other hand, the coefficients of the interaction variables between cash holdings and founder ownership, family management and ownership are not statistically significant. The results once again suggest that the presence of founders as managers strengthens the relation between cash holdings and firm value.

Table 5. The relation between firm value, cash holdings and ownership structure (robustness test). Dependent variable = market value of the firm

	(1)	(2)	(3)	(4)
Earnings / assets	7.125 (17.03)***	6.965 (16.47)***	7.304 (17.36)***	6.982 (16.47)***
dEarnings / assets t	0.921 (1.87)*	0.897 (1.82)*	0.824 (1.67)*	0.893 (1.81)*
d Earnings / assets t+1	4.409 (10.85)***	4.405 (10.83)***	4.526 (11.08)***	4.413 (10.84)***
d Net assets / assets t	1.289 (6.15)***	1.311 (6.24)***	1.274 (6.03)***	1.306 (6.21)***
d Net assets / assets t+1	0.357 (2.8)***	0.364 (2.86)***	0.332 (2.59)***	0.359 (2.82)***
R&D / assets	6.363 (8.18)***	6.501 (8.26)***	6.328 (7.99)***	6.546 (8.2)***
d R&D / assets t	9.691 (4.52)***	10.961 (4.98)***	10.977 (4.96)***	10.945 (4.97)***
d R&D / assets t+1	13.725 (8.73)***	15.115 (9.34)***	14.977 (9.2)***	15.151 (9.35)***
Interest / assets	-10.151 (-3.53)***	-8.828 (-3.08)***	-9.768 (-3.38)***	-8.745 (-3.04)***
d Interest / assets t	-8.099 (-1.4)	-8.232 (-1.42)	-6.87 (-1.18)	-8.267 (-1.43)
d Interest / assets t+1	-23.033 (-4.49)***	-21.597 (-4.19)***	-20.971 (-4.03)***	-21.377 (-4.13)***
Dividends / assets	20.197 (11.80)***	21.103 (12.30)***	20.062 (11.66)***	21.06 (12.2)***
d Dividends / assets t	12.426 (1.44)	12.264 (1.43)	13.442 (1.56)	12.015 (1.4)
d Dividends / assets t+1	22.427 (3.33)***	22.409 (3.35)***	22.218 (3.3)***	22.431 (3.35)***

d Market value / assets t+1	-0.024 (-1.27)	-0.033 (-1.74)*	-0.023 (-1.22)	-0.033 (-1.75)*
Cash holdings	0.166 (6.88)***	0.154 (7.03)***	0.192 (8.63)***	0.148 (6.21)***
Founder or family firm	0.298 (2.88)***			
Founder management		0.397 (3.14)***		0.399 (3.12)***
Founder ownership		0.383 (2.42)**		0.393 (2.45)**
Family management			-0.067 (-0.78)	0.085 (0.35)
Family ownership			0.03 (0.16)	0.059 (0.31)
Cash holdings × Founder or family firm	0.071 (2.35)**			
Cash holdings × founder management		0.096 (2.00)**		0.096 (1.99)**
Cash holdings × founder ownership		0.089 (1.53)		0.093 (1.59)
Cash holdings × Family management			-0.017 (-0.29)	0.015 (0.25)
Cash holdings × Family ownership			0.019 (0.38)	0.025 (0.47)
Institutional ownership	-0.586 (-2.64)***	-0.492 (-2.24)**	-0.703 (-3.18)***	-0.494 (-2.21)**
Eindex	-0.029 (-1.13)	-0.027 (-1.03)	-0.034 (-1.29)	-0.027 (-1.02)
Gindex	-0.025 (-1.79)*	-0.029 (-2.11)**	-0.025 (-1.77)*	-0.03 (-2.15)**
Firm risk	0.722 (11.3)***	0.71 (11.04)***	0.742 (11.52)***	0.712 (11.02)
Supershares	0.222 (1.97)**	0.27 (2.42)**	0.246 (2.12)**	0.257 (2.21)**
Firm age	-0.003 (-4.75)***	-0.003 (-4.34)***	-0.004 (-5.02)***	-0.003 (-4.31)***
Year dummies	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
No. of observation	2,467	2,446	2,446	2,446
R-squared	0.58	0.588	0.583	0.588

This table examines the relation between firm value, ownership structure (Founder, family and widely held firms) and the level of cash holdings based on the value regression model developed by Pinkowitz and Williamson (2007).The dependent variable of all models is the market value of the firm, which is measured as the sum of market value of equity (common stock price multiplied by shares outstanding at fiscal year-end) and book value of debt. The independent variables are: Earnings, measured as earnings before extraordinary items plus interest plus deferred tax credits plus investment tax credits; Net assets, measured as total assets minus cash and market securities; R&D expenditure, which takes the value of zero if missing; Interest is interest expense;Dividends is common dividends; Cash holdings is calculated as the natural log of cash and market securities divided by net assets. Founder management is an indicator variable that takes the value of 1 if a founder serves as either CEO or Chairperson. Founder ownership is an indicator variable that takes the value of if a founder owns at least 5per cent of ownership. Family management is an indicator variable that takes the value of 1 if a family member serves as CEO or Chairperson. Family ownership is an indicator variable that takes the value of 1 if a family member owns at least 5per cent of ownership. Institutional ownership is the percentage of shares owned by institutions. Eindex is the entrenchment index developed by Bebchuk et al. (2005). Gindex is the antitakeover index developed by Gompers et al.(2003). Firm risk is calculated as the firm's daily return against the returns of the S&P 500 index.Supershares takes the value of 1 if the firm issues shares that has a higher voting than cash flow rights. Firm age is the number of years for which the firm has existed.For each regression, the first row is the coefficient on the independent variable and the second is the t-statistic.***, ** and * denote significance at the 1, 5 and 10 per cent levels respectively.

7. Conclusion

In this study, we investigate whether the presence of controlling founders or families has significant impact on the level of cash holdings and the relation between cash holdings and firm value using the agency model. We find that founder firms on average hold a significantly higher level of cash holdings compared to family and widely held firms. Family firms, when managed by family members other than the founder,are associated with a lower level of cash holdings. Moreover, we find that when the founder serves as either CEO or chairperson, the higher level of cash holdings also contributes to a higher firm value, which indicates that the presence of founders as

managers helps to mitigate the agency costs of cash holdings.

Existing empirical evidence (Ozkan and Ozkan, 2004; Pinkowitz et al., 2006; Kalcheva and Lins, 2007) shows that controlling shareholders exploit weak external shareholder protection by extracting private benefits of cash holdings at the expense of minority shareholders. In this paper, we find that in an environment with strong external shareholder protection, there is no evidence to suggest that controlling shareholders hoard cash at the expense of minority shareholders. Firstly, family firms on average do not hold a higher level of cash holdings compared to widely held firms. To the contrary, our results show that family-managed firms hold a lower

level of cash holdings than widely held firms. Moreover, the presence of family members as owners or managers does not weaken the relation between cash holdings and firm value, which indicates that the presence of families as controlling shareholders does not exacerbate the agency cost of cash holdings. On the other hand, we find that founder firms on average hold a significantly higher level of cash compared to both family and widely held firms. We find that the higher level of cash holdings in founder-managed firms also contributes to a higher firm value. Rather than hoarding cash at the expense of minority shareholders, our results suggest that the presence of founders as managers utilize the available cash holdings efficiently in order to enhance shareholder value. Our results suggest that the economic incentives, psychological commitment and firm specific knowledge of founders help to mitigate the agency cost of cash holdings.

The main limitation for this study is that the sample is restricted to the largest listed firms in the U.S. Those firms are constantly subject to intense media scrutiny for their corporate actions and their investors enjoy arguably the strongest legal protection in the world. It is unclear that our results are applicable to other firms outside the sample used in this study. We leave it to future studies to examine whether the differences between founder and family firms are also applicable to smaller firms in the U.S, or firms in other countries. Moreover, this study finds that the agency cost of cash holdings in founder firms is lower than in family firms, but we did not investigate how founders utilize their cash holdings, future studies can explore whether the presence of founders enhances shareholder value through their investments in positive NPV projects or mainly through the avoidance of wasteful expenditures.

Consistent with the empirical evidence documented in Miller et al. (2007)and Block (2012), our findings highlight the importance of distinguishing founder from family firms. Although both founder and family firms are characterised as firms with controlling shareholders, only the presence of founders is associated with a higher level of cash holdings and strengthens the relation between cash holdings and firm value.Combining these two types of firms may provide misleading results. Existing empirical evidence shows that the presence of founders is associated with higher and more efficient investments, which in turn enhances firm values (Fahlenbrach, 2009), our findings further illustrate that founders stockpile cash as a source of funding in order to capitalise value-adding investment opportunities. However, when other family members are involved or when founders pass on the control to descendants, it appears that the competitive advantage also disappears. More research is required to understand the cause of differences between founder and family firms.

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