CASH HOLDINGS, AGENCY CONFLICTS AND THE PERFORMANCE OF LISTED FAMILY FIRMS IN GERMANY[#]

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Abstract. We use a novel approach to study agency costs of family firms. Adopting the concept of the "marginal value of cash" proposed by Faulkender and Wang (*2006, Journal of Finance*) we find a generally positive relationship between founding family influence and the (marginal) valuation of cash holdings. The family firm cash valuation premium is present, even when studying reduced samples excluding (i) firms more likely to be financially constrained or (ii) firms with high investment opportunities and thereby less prone to free cash flow agency costs. When we analyse future operating performance, we find that family firms are more efficient in translating additional cash into future operating results. Our results provide additional evidence that founding families mitigate the free cash flow agency problem.

Keywords: Family Firms, Firm Performance, Corporate Governance, Germany
JEL Classification: G30, G32, G34

1. Introduction

Family firms are in the focus in many economies around the world. In fact, as reported by *La Porta et. al* (1999), in 27 countries worldwide even among publicly listed firms with at least USD 500 million in market capitalization (in 1999 terms) more than every second firm is family controlled. And firms where families are heavily engaged are becoming even more important with the rise of emerging markets, leading "*The Economist*" to declare, family firms are here to stay (*The Economist* 2015).

With family firms representing an important organizational form, the question about the importance (and influence) of family engagement on firm performance is a subject of a broad line of research. A key issue here are the agency conflicts associated with family ownership. Family engagement may mitigate or intensify the well-known agency conflicts of listed firms (Baker, Anderson, and Bennedsen 2010).

With this paper we aim to contribute to this debate. Therefore, we use a novel approach to study agency costs in family firms. While existing studies mostly approach the issue by directly examining operating or market-based measures of firm performance, we proceed in a more indirect way. Specifically, we examine differences in the valuation of cash holdings between (various types of) family and non-family firms. As differences in the valuation of cash holdings are (*ceteris paribus*) associated with differences in agency costs, in effect our approach appears to represent a more direct way to study agency costs in family firms.

Technically, we adopt the concept of the "marginal value of cash" proposed by Faulkender and Wang (2006). Faulkender and Wang use a long-term event study approach to measure value implication of (additional marginal) cash holdings. We extend the model of Faulkender and Wang such that it allows us to study differences in the cash valuation between (various types of) family and non-family firms. The event study character of the concept makes it particularly interesting for corporate governance studies, as it allows bypassing many of the standard reverse causality arguments.

We find a generally positive relationship between founding family influence and the (marginal) valuation of cash holdings. The family firm cash valuation premium is present, even when studying reduced samples, excluding (i) firms more likely to be financially constrained or (ii) firms more prone to free cash flow agency costs. When we analyse future operating performance, we find positive that family firms are more efficient in translating additional cash into future operating results. Our results provide additional evidence that founding families mitigate the free cash flow agency problem.

For the empirical analysis we proceed in *four* steps. *First*, we derive the marginal value of cash for the average German firm in our sample, implementing a portfolio fixed effects model, which we believe to be more flexible in capturing heterogeneous exposure to common risk factors. We then introduce founding family influence, first without other blockholders, then including other blockholders. In addition, we distinguish between active and passive founding family influence. Based on the implemented model, founding family firms are subject to marginal value of cash premium of EUR 0.18 vs. the average firms in our sample. When taking into account other blockholders, the premium does not change. This result implies there being no additional governance "benefit" of blockownership, beyond founding family influence. However, we do find that the influence of active founding families is measured higher. For

founding families having an active member of the family on the management board yields an extra EUR 0.46 assigned to the marginal value of cash by the market vs. the average sample firm.

Second, to counter the danger of simply capturing a founding family marginal cash valuation premium due to financial constraints, we identify firms particularly likely to be exposed to financial constraints (based on the Kaplan-Zingales-Index) and specify a model in which we use a financial constraints dummy to determine the marginal value for those firms not financially constrained. In addition we conduct a sample split. In both approaches we measure a positive and significant influence of founding families on the marginal value of cash.

In a *third* analysis we respond to potential biases arising from observations being aligned with free cash flow agency costs. We therefore use investment potential to measure free cash flow agency costs, assuming firms with high investment potential will be associated with low free cash flow agency costs. *Vice versa* firms with limited or no investment potential would be associated with high free cash flow agency costs. Based on the proxies proposed in the literature, we conduct a sample split on the median of the average market-to-book ratios by 10 industry classifications of Fama and French. In a second specification, we split the sample and run the same specifications in a subsample for low and for high investment potential. We conclude that our results are robust and still present, even when looking at a subsample of "firm-year observations", particularly prone to free cash flow agency costs.

In a final analysis, we look at the future operating performance and founding family influence. In a novel approach, we take account of any direct influences of founding families, but in addition propose an indirect influence, via a "more prudent" handling of cash resources. We measure a positive founding family impact on the operating performance of companies in our sample. This effect is robust when controlling for industry and time effects, as well as industry and year group effects. We furthermore estimate a General Method of Moments regression, to capture the times-series nature of performance, as well as potential endogeneity.

Overall our results are consistent with the view that founding family presence within the governance system of firms is beneficial. A marginal value of cash premium for founding family firms, as documented with this analysis, suggests founding families alleviate inherent agency costs, by providing a stable anchor promoting longer-term oriented decision-making. The reduction in agency costs is particularly pronounced for active founding families. In addition, via a more "prudent" handling of cash resources, our estimations yields a positive operating performance impact.

The rest of the paper is structured as follows: Chapter 2 provides a theoretical background and elaborates the hypothesis to be analysed empirically. Chapter 3 describes the dataset underlying our empirical analysis, presents the variables used and reports descriptive analysis. In chapter 4, we then introduce our methodological approach and present the results of the analysis. The last part concludes with a summary of the results, provides an outlook and open questions.

2. Family firm literature and our hypotheses

In this part of the paper start by providing a brief overview of the family firm and cash holding literature in section 2.1, as a foundation for developing our hypotheses in section 2.2.

2.1. Founding families and cash holdings in previous research

The importance of family influence on firm decisions is linked to a wider corporate governance debate motivated by determining the influence of outside blockholders in general (Shleifer and Vishny 1986; Becht, Bolton, and Röell 2003). One particular point of focus is deriving useful insights on whether outside blockholders provide a positive governance impact via active monitoring, or whether they contribute to the agency problems inherent in the separation ownership and control (see *Jensen* (1976)), especially, by misusing their additional insight and power to extract private benefits (Shleifer and Vishny 1989).

While research in the family firm space has investigated family firm ownership and in particular its influence on firm performance, results have been contradictory. While the majority of studies, based on larger companies, documents higher firm performance with founding family ownership ((R. C. Anderson and Reeb 2003; Villalonga and Amit 2006), others counter noting the selection problem inherent in their samples (Miller et al. 2007). When using a samples accounting for selection, superior performance of family firms is not prevalent, except, when the firm is led by a lone founder. Others document a contradicting view on family firms performing worse compared to non-family firms (Bloom and Reenen 1997; Bennedsen et al. 2007). Also in Germany family firms and their performance have been under empirical investigation (Andres 2008; Achleitner et al. 2009), finding better performance of founding families in the samples under investigation. Nevertheless, also here results differ[1]. *Kohl and Rapp* (2013) examine outside compliance for family firms, using the German Corporate Governance Code, and document founding family firms having much lower compliance levels, with high compliance levels correlated to lower performance, leading to the conclusion, that the market values the family itself as a governance institution.

When analysing family firm performance, a significant element to understanding firm performance is given by the distinction between management and ownership (R. C. Anderson and Reeb 2003; Villalonga and Amit 2006; Edmans 2014). Hence differentiating between family managed firms and family owned firms may lead to different results.

In terms of literature on cash holdings, there is also a wide body of research. A popular starting point is the questions why do firms hold cash, rather than exhausting their investment opportunities. One fundamental argument put forward by Myers and Majluf (1984) is that asymmetric information makes external financing costly. However, contrasting the benefits of holding cash, is the free cash flow problem (M. C. Jensen 1986), where managers are interested in expanding cash holding levels as a mean to increase their power. The ability of management members to access cash holdings on a relatively easy basis, in

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[1] For instance *Andres* (2008) documents positive founding family influence on Tobin's Q, whereas *Achleitner et al.* (2009) find cannot confirm this result.

combination with cash being the most liquid part of the balance sheet, makes it particularly prone to agency conflicts (Myers and Rajan 1998).

One stream of empirical research suggests that controlling shareholders exploit corporate cash holdings, extracting private benefits at the expense of other shareholders, thereby weakening firm value (Ozkan and Ozkan 2004; Pinkowitz, Stulz, and Williamson 2006). For European countries, *Ferreira and Vilela* (2004) investigate determinants of cash holdings, with findings in contrast to the agency view, that countries with more active capital markets tend to have lower cash levels. *Opler et al.* (1999), show that smaller more risky firms tend to have larger cash holdings, compared to larger firms, that have better access to capital markets. *Ammann et. al.* (2011) also document higher cash levels for firms with weaker corporate governance characteristics. *Block and Lau* (2012) analyse absolute cash holdings in the US and report significantly higher holdings for founder led firms, compared to the average family firm.

In Germany cash holdings have been analysed, developing a model that predicts rising cash levels based on industry uncertainty (Baum, Schäfer, and Talavera 2006). While Ampenberger et. al. (2013) do not directly study cash holdings in Germany, they documents lower leverage ratios for founder led companies, likely to be at least partially driven by a higher preference for cash reserves.

A new methodology introduced to value cash holdings is not based on the reported levels. Rather than that, *Faulkender and Wang* (2006) implement a model, where unexpected changes in cash are measured against the annual return of the firm, taking into account leverage and cash position. They find a positive relation of firm value to changes in cash, which is decreasing in leverage and cash holdings of the previous period. The event study character of the concept makes it particularly convincing, as it allows bypassing many of the standard reverse causality arguments. Building on this, *Dittmar and Mahrt-Smith* (2007) develop their analysis, focusing both the value and the uses of cash for heterogeneously managed firms, finding a positive impact of good governance on the value of cash. As a last innovative approach within the marginal value of cash literature, *Huang et. al.* (2014) used the marginal value of cash to estimate the corporate governance impact of investment managers with ties to the portfolio companies management, finding a significant negative impact.

Analysing individual blockholders (Edmans 2014) as well as family blockholders (Baker, Anderson, and Bennedsen 2010) is seen as a promising field of research, with plenty of aspects on governance to explore. Based on the existing literature we intend to integrate methodology, from founding family firms' research, as well as the marginal value of cash holdings methodology.

2.2.   *Hypotheses development*

We now present the hypotheses we intend to test in our analysis, building on the research presented in the previous section. *First*, we look at the marginal value of cash and the influence of founding families on the marginal value of cash. *Second*, analysing whether any potential founding family influence is attributable to founding family firms being more financially constrained than other firms and lastly, when integrating the free cash flow agency problem.

2.2.1.   Hypotheses regarding founding family influence on the marginal value of cash

Here we want to test whether founding family firms have any influence on the firms, by looking at the marginal value of cash. With cash being the most prone item on the balance sheet to potential agency cost (Myers and Rajan 1998), any such costs should be measurable. We therefore formulate our first hypotheses as follows:

H1: *There is a positive relationship between the marginal value of cash and founding family influence*

A rejection of our first hypothesis, finding a significant positive influence of founding family ownership, would support the notion, that founding families act as active monitors, being perceived by the market as promoting long-term economically sensible strategies. Alternatively, significant and negative results for founding family influence would support the notion that founding families tend to act rather in their own interest, other than in the interest of all shareholders, thereby promoting their private benefits.

The next hypotheses integrates the perspective of a complete shareholder base. As founding family shareholders tend to be engaged in the company for a much longer timer horizon, often over several generations, it would be intuitive to think that they act in a more engaged way than other blockholders, potentially emotionally more attached to their company. On the other hand institutional investors may have developed much more pronounced governance techniques and capabilities, compared to a founding families dealing in most cases just with one company. To ensure other governance influences in the equation are not neglected, we therefore propose to test:

H2: *There is a founding family influence, independent of any influence by other Blockholders*

As founding family influence on the firms differs significantly, shown in previous studies (Andres 2008; Miller et al. 2007), when differentiating between different founding family influence channels, i.e. management board membership, supervisory board membership, and mere ownership stakes). We therefore pose:

H3: *Being actively engaged as a founding family member and owning an equity stake in the firm helps to align incentives and reducing agency cost, increasing the marginal value of cash and therefore the overall value of the company.*

2.2.2.   Financial constraints, the free cash flow agency costs and family firms

Considering that *Faulkender and Wang* (2006) document rising marginal values of cash with financial constraints, it is intuitive to ask whether founding family firms often, tending to be more financially constrained than other firms (Andres 2011; Schäfer, Stephan, and Mosquera 2015), just capture these differences in exposure to financial constraints. We hypothesise:

H5: *The presence of founding families within the ownership structure of a firm is constructive in offsetting agency costs on the marginal value of cash, even when looking at firms not financially constrained*

As a further widespread concept in the literature, the free cash flow agency costs (M. C. Jensen 1986) provide additional points for investigation. Especially when looking at cash, which can be used flexibly, thereby providing ammunition for conflicts of interest between principals and agents. We intend to test:

H6: *The presence of founding families within the ownership structure of a firm is constructive in offsetting agency costs on the marginal value of cash, even when looking at firms particularly prone to free cash flow agency costs*

3.   Sample description and descriptive analysis

This section describes the sample underlying the analysis and the variables used, before providing some descriptive trends on cash holdings in three steps. *First*, section 3.1 documents the sample construction process. *Next*, in section 3.2 we illustrate our classification scheme of family firms and present the evolution of cash holdings for family and non-family firms in Germany. *Third*, section 3.3 introduces our baseline empirical model. *Finally,* the last section presents the summary statistics of our variable in use.

3.1.   Sample construction

Our sample consists of all (active and inactive) firms that have been listed at least once in the German Prime Standard until 2012.[2] Within the sample, starting in 2001, up to 2012, we identify 584 individual stocks listed at least once in the Prime segment of Frankfurt Stock Exchange, resulting in 5,634 stock year observations. We remove 270 stock-year observations of firms issuing multiple share classes to avoid double counting. We exclude further 543 stock-year observations with foreign ISIN security identifiers, to avoid including firms headquartered outside of Germany. Another 168 firm-year observations are excluded due to special situations, i.e. mergers and acquisitions, insolvency or bankruptcy procedures. 44

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[2] The German Prime Standard contains the most liquid stocks in Germany. Listing requirements are inter alia quarterly reporting of financial statements following international accounting standards and publication of ad-hoc news in English. We use the constituent list provided by the Frankfurt Stock Exchange, on the last trading day of the year to track our sample firms.

firm year observations drop out due to segment change. This yields an initial sample of 4,609 firm-year observations.

Based on common practice, we then exclude further 606 firm-year observations, identified to have banks, insurance or financial trading functions as the underlying businesses, based on their 4-digit SIC code (excluding SIC-Codes starting with the number 60-65 and 67 following the conventions in previous studies (Ampenberger et al. 2013). We reduce the sample by a further 70 firm-year observations of firms identified as utilities (by SIC-Codes with numbers between 4900-4999) following the standard in the cash holding analysis literature (Faulkender and Wang 2006; Huang, Matsunaga, and Wang 2014). Avoiding observations from these industries will prevent biases, due to structural differences in financial services and utilities firms balance sheets, associated with the nature of their business.

Year	2001*	2002*	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Prime Standard firms	**446**	**452**	**454**	**459**	**464**	**485**	**504**	**497**	**476**	**473**	**461**	**463**	**5,634**
Double listings	23	23	23	22	22	22	22	22	22	23	23	23	270
Foreign ISIN	46	47	46	45	42	47	47	44	44	45	45	45	543
Special situations	0	0	2	15	19	12	17	29	23	33	11	7	168
Segment changes	0	1	1	2	2	1	1	1	5	8	10	12	44
Initial sample	377	381	382	375	379	403	417	401	382	364	372	376	4,609
Financials	41	42	45	45	48	54	59	58	55	54	52	53	606
Utilities	6	6	6	6	4	5	7	7	7	6	5	5	70
Relevant sample	330	333	331	324	327	344	351	336	320	304	315	318	3,933
Missing data	129	124	113	112	107	117	120	95	78	66	74	90	1,225
Final Sample	**201**	**209**	**218**	**212**	**220**	**227**	**231**	**241**	**242**	**238**	**241**	**228**	**2,708**

Notes: The table documents our sample selection process. We initially start by taking into account all Prime Standard firms listed firms (active and inactive) listed at least once in the Prime trading segment of Frankfurt Stock Exchange between 2001 and 2012. We remove all secondary listings (i.e. ordinary or preference shares) and ensure the firm is incorporated under German regulation by excluding all firms listed with a foreign ISIN identifier. Moreover, we exclude firms in special situations (e.g. M&A bankruptcy, insolvency or temporary delisting) and firms with segment changes to non-regulated markets. To ensure we have an unbiased sample of firms with "standard" corporate cash holdings, we additionally restrict our sample to non-financial or insurance businesses and exclude utilities. This yields 3,933 firm year observations. However, due to lacking accounting data (for one firm year we need at least two subsequent firm year observations, the final sample is 2,708 firm year observations.

* The Prime Standard was first established on January 1st, 2003, as a regulated trading segment on Frankfurt Stock Exchange to represent the most liquid companies meeting the publicity requirements. We expect the 2003 starting composition to be representative for 2002 and extrapolate constituents to 2001. For the years 2003 and following, we take the Prime Standard year-end composition.

Table 1: Sample selection process summary

For the remaining sample, 3,933 firm-year observations, we have hand collected ownership data from the Hoppenstedt Aktienführer and combine this with founding family information from firm's annual reports, Lexis-Nexis, Who-is who database, and further web and press searches. We then obtain accounting and capital market data from Thomson/Reuters Worldscope. Due to missing shareholder information or accounting data (note, due to the nature of our model we require at least two consecutive firm year observations), our final sample consists of 2,708 firm-year observations.

3.2. Measures of founding-family, outside ownership and evolution of cash holdings in Germany

Identifying family firms in our sample, we follow the concept of a *founding family* firm used in the literature by *Anderson and Reeb* (2003), *Villalonga and Amit* (2006), as well as *Andres* (2008) and others. Specifically, we require the founders of the company, the members of their family or their descendants to be either actively involved in managing the company, hold a mandate on the supervisory board or hold a significant stake in the company (Villalonga and Amit 2006).

To categorise firms in *founding family* vs. non-family firms requires a substantial amount of granular data on the firm's history, its founding, the founders, as well as their relatives and descendants. This information then needs to be linked to firms' current ownership structure, its management team and the supervisory board members. As no official database makes this data readily available, we have to construct a hand-collected data set by combining information of different sources. We proceed in three steps. *First*, we collect information of the foundation of the firm, and whenever the firms was not established by privatization, spin-off or similar, we identify the founders(s) and founding family members of each firm in our sample (using firms' annual reports, the Hoppenstedt Aktienführer database, Lexis-Nexis and Who-is-who database, request to investor relation departments, and further press and web searches). *Second*, we collect all voting rights larger than three percent for each firm by the end of the year and identify these shareholders by name using the Hoppenstedt Aktienführer[3]. *Third*, we identify all members of a firm's management and supervisory board. With this information, we define our founding family firms.

Following *Villalonga and Amit* (2006), we require founding families to hold a "significant" stake in their firm. Based on German law, owners with a combined 25% or more holdings in the firm have a blocking minority on substantial decisions.[4] Using this threshold provided by the regulatory setting and based on previous studies (Andres 2008; Achleitner et al. 2009; Ampenberger et al. 2013), we select a cut-off level of 25%. In addition, we classify any firm as a founding family firm, where the founders of the company, the members of their family or their descendants are either actively involved in managing the company or hold a mandate on the supervisory board, while owning a 5% stake.[5]

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[3] Since the year 2007 the minimum threshold for mandatory reporting of voting rights is three percent according to §21 WpHG. For the years prior to 2007 we are only able to collect voting rights exceeding the five percent threshold.

[4] According to the German Stock Corporation Act (AktG) important firm decisions as for instance extraordinary removal of supervisory board members (§103 Abs. 1 AktG), capital increases (§§182, 193 AktG), or the dissolution of the company ($ 262) require a qualified majority of (75%) of shareholders at the general meeting.

[5] Only recently, investors are required to report holdings crossing the 3% threshold with the regulator - "Bundesanstalt für Finanzdienstleistungsaufsicht" (BaFin). Up to 2007 the lowest notification threshold requiring notifications was 5%. Therefore, in order to be consistent, we neglect stakes smaller than 3%.

Family Criteria	Observations	As a % of Sample
All founding family firms (Combined)	1,307	48.3%
(1) Firms with "significant" founding family ownership	1,024	37.8%
(2) Firms with founding family members on the supervisory board	619	22.9%
(3) Firms with founding family members actively involved in the management	683	25.2%
(4) Passive founding family ownership	727	26.8%

Notes: This table documents our definition of founding family firms. We report the number of firms meeting our various founding family firm criteria ("significant" ownership stake of 25% or more, founding family supervisory board members owning more than 5%, as well as founding family management board members owning more than 5%) as well as the combined measure. The "As % of Sample" column is based on the full sample of 2,708 observations, derived in Table 1.

Table 2: Founding family observations in our sample

Comparing our founding family firm definition, it appears more restrictive than various fundamental founding family firm studies (R. C. Anderson and Reeb 2003; Villalonga and Amit 2006; Sraer and Thesmar 2007). However, when taking a geographical perspective, other Germany focused studies use the same methodology.

In sum, we identify 1,307 founding family firms in our sample, making up 48.3% of total observations. These firms have either:

1. Members of a founding family holding 25% or more of its equity
2. Members of the family on the supervisory board holding more than 5% of the firm's equity
3. Members of the family actively involved in the management holding more than 5% of the firm's equity

The number of firms and share in the sample are in line with figures documented in previous founding family research (Andres 2008; Achleitner et al. 2009; Kohl and Rapp 2013).[6] We further distinguish on the one hand, active founding family firms, which we consider firm's where the family is actively involved in the management of the company, meeting criteria (3) of the above. In total, we identify 683 firms, equivalent to just over a quarter of all sample firms with 25.2%. On the other hand, passive founding family firms are firms, which meet criteria (1) or (2). This meaning firms where the founding family holds a "significant" stake, or has members of the founding family with mandates on the supervisory board. Firms meeting these criteria sum up to 727 firm-year observations, equivalent to 26.8% of the sample.

Since cash holdings are a central element of our analysis, we now want to provide a brief overview of cash holdings in our sample. On aggregate cash holdings have risen from EUR 47bn to EUR 100bn. Looking at the average firm, cash holding grew from an initial EUR 230mn, to close to EUR 444mn, equal to a compound annual growth rate (CAGR) [7] of 6.1%[8]. Looking at the average liquidity as cash holdings in

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[6] While *Andres* (2008) reports a lower number of 37.5% in 1998, *Achleitner et al.* (2009) provide a year by year overview, where they document a sharp increase over the turn of the millennium, to about 55% of their sample, which then declines slightly in the years following 2001. Both studies using a similar founding family firm definition.

[7] Compound Annual Growth Rate

[8] Note, a rising trend is consistent with the trend in cash holdings on a global level (Giugliano 2015)

relation to total assets, this increase is also visible albeit with a lower impact, starting with 9.4% in 2001 and rising to 13.4% in 2012.
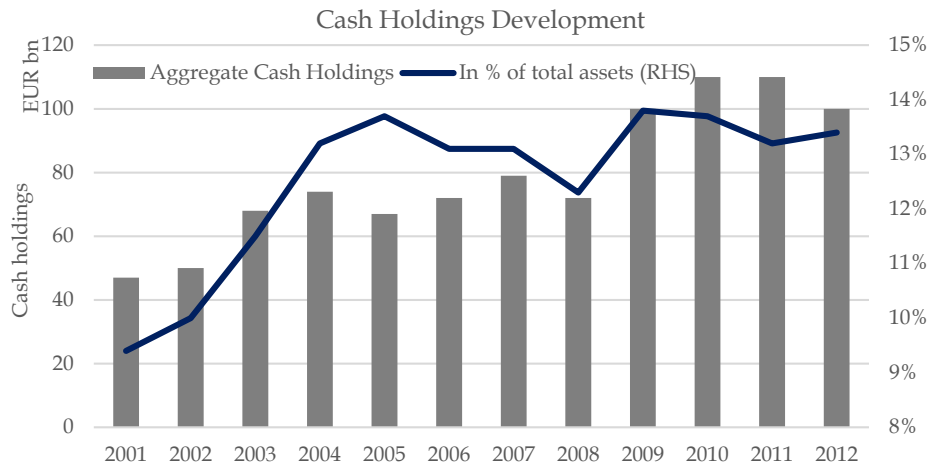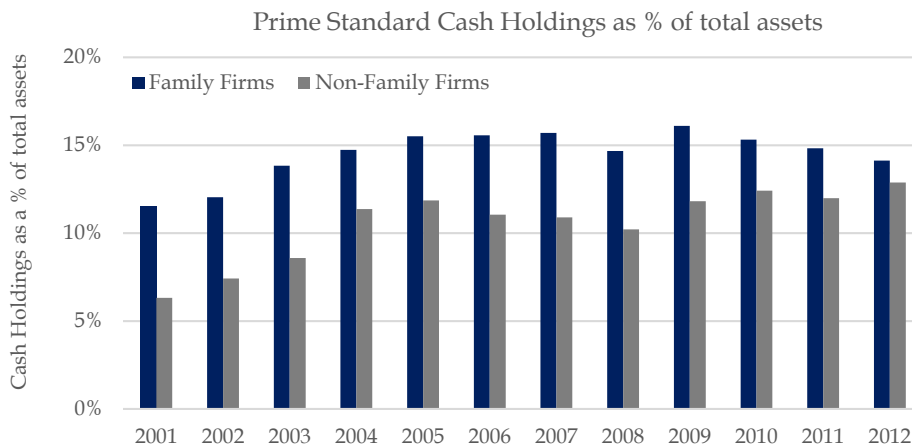

Notes: This figure documents the evolution of aggregate cash holdings over the sample period from 2001 to 2012, as well as cash as a % of total assets for the average firm

Figure 1: Evolution of cash holdings in Germany over the sample period

Separating founding family firms shows the growth rate was more pronounced for these firms. Here cash holdings increased from a much lower base, due to average firm size, with a starting balance in 2001 at just over EUR 100mn growing to over EUR 250mn in 2012, yielding a CAGR of 8.4%. This contrasts with a CAGR of non-family family firms of 2.8%, from EUR 420mn to EUR 568mn over the same period.

While cash holdings have witnessed a higher growth rate at founding family firms, the relative growth looking at the cash to asset ratio was much less pronounced. With asset levels of non-founding family firms decreasing on average, cash holdings to total asset ratios have increased at a faster pace than for founding family firms, which have increased their asset base substantially over the sample period.

Notes: This figure documents the evolution of cash holdings over the sample period from 2001 to 2012, for the average founding family and non-family firm in our sample.

Figure 2: Evolution of cash holdings in Germany over the sample period

Looking at Figure 2 in combination with Figure 1, these dynamics become apparent. Nevertheless, founding family firms still end up with higher cash holdings to asset ratios in 2014 (at 14.5%).

Considering the dynamics of corporate cash holdings, as well as their importance in the overall balance sheet structure, they become a crucial point of focus for research. With cash holdings witnessing the substantial growth around the world (Giugliano 2015) and within our sample, agency costs increase, according the free cash flow hypotheses (M. C. Jensen 1986). This then leads to the question, whether some forms of governance are superior to another, paving the way for our research setting. As outlined above close to 50% of all firms in our sample have a governance influence by their founding families. Inherent ownership structure of German firms thereby provides an ideal setting to examine the value of cash, for founding family firms and non-family firms.

3.3.   Introduction to our baseline empirical model

In this section, we now introduce the empirical baseline model. In order to estimate the additional value of cash, resulting from the unexpected change in cash, we follow the methodology introduced by *Faulkender and Wang* (2006). The event study character of the concept makes it particularly interesting for corporate governance studies, as it allows bypassing many of the standard reverse causality arguments. To then examine founding family influence and draw conclusions on the value / or costs assigned to founding family influence and governance by the market, we expand the original Faulkender and Wang model using ideas implemented by *Dittmar and Smitth* (2007) as well as *Huang et al.* (2014). As these authors integrated the influence of institutional block ownership in their models as a measure of governance influence on the marginal value of cash, we integrate *founding family* firm indicators. This leads to the following model:

Empirical Model 1:

$$r_{i,t} = \gamma_0 + \gamma_1 \frac{\Delta C_{i,t}}{M_{i,t-1}} + \gamma_2 \frac{\Delta E_{i,t}}{M_{i,t-1}} + \gamma_3 \frac{\Delta NA_{i,t}}{M_{i,t-1}} + \gamma_4 \frac{\Delta RD_{i,t}}{M_{i,t-1}} + \gamma_5 \frac{\Delta I_{i,t}}{M_{i,t-1}} + \gamma_6 \frac{\Delta D_{i,t}}{M_{i,t-1}} + \gamma_7 \frac{C_{i,t-1}}{M_{i,t-1}} + \gamma_8 L_{i,t} +$$

$$\gamma_9 \frac{NF_{i,t}}{M_{i,t-1}} + \gamma_{10} \frac{C_{i,t-1}}{M_{i,t-1}} * \frac{\Delta C_{i,t}}{M_{i,t-1}} + \gamma_{11} L_{i,t} * \frac{\Delta C_{i,t}}{M_{i,t-1}} + \gamma_{12} FFfirmDummy_{i,t} + \gamma_{13} FFfirmDummy_{i,t} * \frac{\Delta C_{i,t}}{M_{i,t-1}} + PFE_{i,t} + \varepsilon_{i,t}$$

One further adaption we undertake to make the model more parsimonious is reversing the adaption of the right hand side dependent variable. Previous cash holding analyses focused on the abnormal stock return of individual firm i at point t resulting out of unexpected changes in cash. The abnormal return being defined as the individual stock return $r_{i,t}$ less the firms Benchmark return $R^B{}_{i,t}$ ($R^B{}_{i,t}$ being the stocks Portfolio benchmark return constructed on Fama and Frenchs 25 size and book to market portfolios). Using the stock return of individual firm i,t against the portfolio benchmark returns i,t, *Faulkender and Wang* (2006) argue, enables capturing time series variation in risk factors and the cross-sectional exposure to those risk factors. Rather than using this common structure, we implement a portfolio fixed effects

specification, like *Gormley and Matsa* (2013) suggested as an alternative to adjustments of the dependent variable. We use portfolio fixed effects, establishing three size and book to market portfolios (Fama and French 1993), yielding in total nine annual size and book to market portfolios. With this approach, we expect to have a more flexible model in capturing unobserved heterogeneous exposure to common risk factors across time and firms affecting stock returns.

As previous research, we use the actual change in the level of cash holdings as a proxy for the expected change, assuming investors are expecting zero change (using stock returns, we are basing our analysis on investor expectation).[9] Deflating the expected values of these firm specific factors influencing returns (including $\Delta C_{i,t}$ by the lagged market value of equity, facilitates the interpretation of a Euro change in a variable then resulting in a Euro change in the value of the firm.

In this way we also interpret our coefficient γ_{13}. Once the firm meets the criteria of a founding family firm, the dummy takes the value one. The estimator reflects the impact of founding family firm ownership on the marginal value of the extra Euro generated by the firm. Therefore, if founding families have a positive impact on the firm's governance, its management and the way it handles its resources (especially cash) we would expect $\gamma_{13} > 0$. A positive γ_{13} is equivalent to a positive contribution to the marginal value of cash. On the other hand, if founding families have a negative impact, and tend to pursue other interests, not necessarily aligned with other shareholders, we would expect the founding families to have the opposite impact, as in $\gamma_{13} < 0$.

Further control variable are based on *Faulkender and Wang* (2006). Like in their original model we include $\Delta C_{i,t}$, as the change in the cash, $\Delta EBIT_{i,t}$ as the change in earnings, a measure of the firms operating performance before interest and taxes, $\Delta NetAssets_{i,t}$ as the firms change in net assets, being total assets, less the firms cash position, $\Delta R\&D_{i,t}$ as the firms change in research and development expenditure, $\Delta I_{i,t}$ as the firms change in interest expenditure, $\Delta D_{i,t}$ as the firms change in dividend payments, $C_{i,t-1}$ as the firms beginning of the period cash position, Leverage ($L_{i,t}$) using total debt and $\Delta NF_{i,t}$ as the firms change in net financing. In addition to the interaction term with our governance variables (founding family influence), we include the interaction terms $\Delta C_{i,t} \times C_{i,t-1}$ and $\Delta C_{i,t} \times L_{i,t}$ to account for the affects leverage and the existing cash position have on the marginal value of cash generated by the firm.

3.4. Summary statistics

In this section, we provide summary statistics of the variables described above. All variables are calculated using inflation adjusted variables, deflated using the Harmonised Index for Consumer Prices on a 2005 basis, as provided by Eurostat[10]. We trim all our firm-specific factors at the 1% tails annually, to reduce the impact of outliers. Since we analyse the 1-year change, all information required for each variable needs to

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[9] Assuming investors expect the level of Variable X not to change from period *t-1* to period *t*. Like *Faulkender and Wang* (2006) we check this assumption by implementing three measures of unexpected changes in cash (i.e. the change in cash vs. the average change in cash within the benchmark portfolio, as well as the expected change in cash based on specifications proposed by *Almeida* (2004). Our findings are robust.

[10] For details visit: http://ec.europa.eu/eurostat/de/data/database

be available for at least two consecutive years. We eliminate firm years for which net assets are negative, equity is negative or dividends are negative.

Variable	All Firms						Non-Family Firms		Family Firms		Δ & Significance	T-Statistics
	N	Mean	p25	p50	p75	sd	N	Mean	N	Mean		
$r_{i,t}$	2,708	-0.042	-0.319	0.049	0.324	0.583	1,401	-0.007	1,307	-0.078	0.071**	(3.15)
$r_{i,t} - R^B_{i,t}$	2,708	-0.009	-0.214	0.024	0.256	0.451	1,401	0.009	1,307	-0.027	0.036*	(2.08)
$\Delta Cash_{i,t}$	2,708	0.003	-0.038	0.000	0.045	0.155	1,401	0.005	1,307	0.001	0.004	(0.68)
$\Delta EBIT_{i,t}$	2,708	0.043	-0.034	0.010	0.055	0.388	1,401	0.033	1,307	0.054	-0.022	(-1.44)
$\Delta NA_{i,t}$	2,708	-0.044	-0.122	0.014	0.129	0.531	1,401	-0.034	1,307	-0.054	0.020	(0.99)
$\Delta R\&D_{i,t}$	2,708	-0.001	0.000	0.000	0.002	0.036	1,401	-0.002	1,307	-0.001	-0.001	(-0.46)
$\Delta Interest_{i,t}$	2,708	-0.002	-0.004	0.000	0.003	0.026	1,401	-0.003	1,307	-0.002	-0.001	(-1.13)
$\Delta Dividend_{i,t}$	2,708	-0.001	0.000	0.000	0.004	0.027	1,401	-0.002	1,307	0.000	-0.001	(-1.41)
$\Delta New Financing_{i,t}$	2,708	-0.017	-0.089	-0.001	0.066	0.316	1,401	-0.018	1,307	-0.015	-0.003	(-0.25)
$Cash_{t-1}$	2,708	0.206	0.053	0.124	0.265	0.257	1,401	0.192	1,307	0.221	-0.029**	(-2.87)
$Leverage_{i,t}$	2,708	0.541	0.045	0.262	0.670	0.879	1,401	0.594	1,307	0.484	0.109**	(3.24)
Fama French 10 Ind. Mean MtB Ratio	2,708	2.034	1.489	2.026	2.549	1.798	1,401	1.947	1,307	2.127	-0.180**	(-2.60)
KZ-Zingales Financial Constraints Index	2,695	-3.643	-2.920	-0.214	0.989	14.368	1,396	-2.700	1,299	-4.657	1.958***	(3.52)

Notes: This table provides summary statistics for the variables in our sample of firm-year observations for German Prime Standard listed firms over the period of 2001 to 2012. $r_{i,t}$ ist the individual firm $i's$ annual stock return in time t, with $r_{i,t} - R^B_{i,t}$ representing its abnormal return against the firms benchmark portfolio. All variables and each stock $i's$ annual return is deflated by lagged market value of equity (M_{t-1}). $Cash_{t-1}$ represents cash and cash equivalents, EBIT is operating earning (i.e. Earnings Before Interest and Taxes). $NA_{i,t}$ represents total asset less cash and cash equivalents. $R\&D_{i,t}$ is the firm's research and development expenditure, whereby we set missing observations to 0. $Interst_{i,t}$ is the firms interest expenditure, $Dividends_{i,t}$ are measured as common dividends paid, $Leverage_{i,t}$ is the firms market leverage ratio and $New Financing_{i,t}$ is the firms net inflows from increases / decreases in debt, sale, retirement or repurchases of equity. Δ stands for the difference of the above between time t and t-1, wherby t is the current period and t-1 one the lagged period. To conduct our analysis of constrained and unconstrained firms, we provide our computations of the KZ-Zigales financial constraint index. As a measure of investment opportunities, we take the market to book ratio, calculated as the market value of equity divided by the book value of equity, which we average of the 10 Fama French industry classifications.

Table 3: Sample summary statistics for the period between 2001 and 2012

In the summary statistics overview, we include the means for family and non-family firms as well as differences and the T-Statistics. The distributions of our variables, even with some variation, is comparable to the ones presented in previous studies.

4.   Empirical Results

This section presents our empirical analysis. We proceed in four steps. We start by analysing the marginal value of cash holdings for founding family firms Section 4.1. Next, we examine the value of cash holdings for family firms, taking into account financial constraints in 4.2. Third, we look at investment opportunities for firms, to examine if our results are influenced by potential free cash flow problems in Section 4.3. In the final section of this part we analyse future firm operating performance, to establish if founding family influence on the marginal value of cash actually has any impact on how the firm performs in the future. In each section, we describe the empirical design, present the results, as well as the robustness of the analyses.

4.1. The marginal value of cash and founding family firms

In this section, we analyse the marginal value of cash, with the aim of valuing the governance influence of founding family firms, based on the marginal value of cash methodology.

4.1.1. Empirical design

To determine whether founding families influence the marginal value of cash, we look at three alterations of our baseline model. Each specification adapts, to different corporate governance influences. First we use the *Faulkender and Wang* (2006) model to determine the marginal value of cash for the average corporate firm in our sample, using portfolio fixed effects[11], rather than the firms individual abnormal return against its Fama French portfolio. In a second step, we use our baseline model and interact $\Delta C_{i,t}$ with the founding family firm dummy, to establish whether founding family influence has any effect on the marginal value of cash. In a second alteration, we redraw the universe of blockholders, to not only capture founding family influences, but also account for other potential governance impacts of institutional or other large blockholders. We define other large blockholders as an indicator if the three largest blockholders (excluding founding families) own at least 25% or more in the company. This allows us to draw inference on whether the impact source is actually linked the founding family itself or rather other blockholders present in the shareholder base. In a third step, we then distinguish between active founding families and passive founding families. Active founding families being those with family members present in the management holding at least 5% or more in the company. Passive founding family firms being those firms meeting the two other founding family firm criteria we set in section 3.2. All models reported in section 4.1.2 are estimated using *White* (1980) heteroscedasticity-consistent standard errors, corrected for correlation across observations of any given firm.

4.1.2. Empirical Results

We report the results for our baseline model in Table 4. Using our first specification, where the change in cash is estimated to be worth EUR 0.89 for a firm in our sample with no leverage and starting cash balance of zero, also finds the expected negative influence of leverage and starting cash balance on cash when looking at the interaction terms ($\Delta C_{i,t}$ x $C_{i,t-1}$ and $\Delta C_{i,t}$ x $L_{i,t}$).

When taking into account the leverage and the starting cash balance of the average firm in our sample, this value is influenced negatively. This finding is consistent with the results of *Faulkender and Wang* (2006).

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[11] Based on *Fama and French* (1993) size and book to market portfolios, capturing common risk factors affecting individual stock returns, we introduce 9 annual size and book to market portfolios. Taking the firms size (market value of equity) and book to market ratio (book value of equity over market value of equity), we divide firms in three quantiles, yielding the nine annual portfolios to which individual stocks are then attributed to. With these portfolios we then introduce portfolio fixed effects in the model.

For the average firm we derive a marginal value of cash of € 0.79 (= €0.89 – (€ 0.074 * 54.1%) – (€ 0.258 * 20.6%)). Increasing levels of cash appear to have a stronger negative influence than leverage.

Specification Dependent Variable	I $r_{i,t}$	II $r_{i,t}$	II $r_{i,t}$	IV $r_{i,t}$
ΔCash	0.887***	0.727***	0.741***	0.754***
	[9.09]	[6.16]	[4.82]	[5.47]
ΔCash * Leverage	-0.074**	-0.062*	-0.063*	-0.062*
	[-1.99]	[-1.80]	[-1.80]	[-1.78]
ΔCash * Cash$_{t-1}$	-0.258**	-0.305**	-0.307**	-0.315**
	[-2.00]	[-2.43]	[-2.45]	[-2.54]
ΔCash * Dummy Founding Family		0.340***	0.329**	
		[2.65]	[2.12]	
ΔCash * Dummy Active FF				0.320**
				[2.09]
ΔCash * Dummy Passive FF				0.275*
				[1.87]
ΔCash * Dummy Blocks (exFF)			-0.028	-0.046
			[-0.16]	[-0.28]
Dummy Founding Family		-0.046**	-0.037*	
		[-2.45]	[-1.66]	
Dummy Active FF				-0.058**
				[-2.40]
Dummy Passive FF				-0.012
				[-0.54]
Dummy Blocks (ex FF)			0.019	0.020
			[0.83]	[0.91]
Firm Controls	Yes	Yes	Yes	Yes
Standard Errors	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering
Portfolio Fixed Effects	Yes	Yes	Yes	Yes
Observations	2,708	2,708	2,708	2,708
R²	0.495	0.498	0.498	0.499

Notes: This table reports estimates for our portfolio fixed effects marginal cash valuation model. Model (I) provides the implied marginal value of cash for the average listed corporate in the German Prime Standard. In models (II-IV) we introduce main variables, starting with founding family influence, *Dummy Founding Family* (Model II & III), *Dummy Blocks (exFF)* indicating whether the three largest shareholders combined hold more than 25% of the company's shares (III & IV). And then in specification (IV), we distinguish between active and passive founding family control. This allows us to derive inference on the impact of founding family influence on the marginal value of cash. We cover all firms having been listed once in the Prime Standard our sample period during between 2001 and 2012, incorporated in Germany. $r_{i,t}$ our dependent variable is the individual firm *i*'s annual stock return in time *t*. All variables and are normalised by lagged market values of equity (M_{t-1}). Cash$_{t-1}$ represents cash and cash equivalents, EBIT is operating earning (i.e. Earnings Before Interest and Taxes). $NA_{i,t}$ represents total asset less cash and cash equivalents. $R\&D_{i,t}$ is the firm's research and development expenditure, whereby we set missing observations to 0. $Interst_{i,t}$ is the firms interest expenditure, $Dividends_{i,t}$ are measured as common dividends paid, $Leverage_{i,t}$ is the firms market leverage ratio and $New\ Financing_{i,t}$ is the firms net inflows from increases / decreases in debt, sale, retirement or repurchases of equity. Δ stands for the difference of the above between time *t* and *t-1*, whereby *t* is the current period and *t-1* one the lagged period. Using these variables we control for firm specific risk factors driving stock returns. We additionally control for heterogeneous exposure to common risk factors using nine annual size and book to market portfolios. Standard errors are robust to heteroskedasticity and clustered at the firm level. Associated t-statistics are reported in brackets.

*, **, *** indicate significance at the 0.10, 0.05, 0.01 level, respectively.

Table 4: Founding family firms and the marginal value of cash

In model (II), we then introduce the influence of founding families, by using a founding family dummy. Here we measure a strong positive and significant influence, when founding families meeting our criteria (either founding family ownership of a "significant" ownership stake, and/or founding family representation on the supervisory board, owning at least 5% or more, and/or founding family members actively involvement in the management of the company owning at least 5% or more). Specifically, we derive a marginal value of cash around € 0.97 (= 0.727 – (€ 0.062 * 48.4%) – (€ 0.305 * 22.1%) + € 0.34). Note, we now use the average leverage ratio and starting cash balance averages of all founding family firms. The marginal value of cash, taking this undifferentiated perspective on founding family ownership, yields an

additional EUR 0.18 to the additional Euro for equity holders in founding family firms. We interpret this as a confirmation of our *first* hypothesis.

When accounting for other blockholders in model (III), we introduce the *Dummy Blocks (exFF)*. This takes the value one when the three largest blockholders (excluding members of the founding family) amount to more than 25% in the ownership of the company. We find the marginal value of cash unaffected by this measure. Institutional shareholder do not provide any additional value to the marginal value of cash in this specification. We again derive a marginal value of cash at € 0.97 (= 0.741 – (€ 0.063 * 48.4%) – (€ 0.307 * 22.1%) + € 0.329). As other "significant" blockholders do not appear to influence the marginal value of cash beyond the influence of founding families, we see our *second* hypotheses confirmed.

The real increase in the marginal value of cash is derived when accounting for different types of founding family influence. When distinguishing between active and passive founding families, we find a marginal value of cash at € 1.25 (= 0.754 – (€ 0.062 * 48.4%) – (€ 0.315 * 22.1%) + € 0.320 + € 0.275). This is assuming the company has active founding family members on the management team owning more than 5% of the company as well as the presence of passive founding family ownership. This result confirms our *third* hypotheses. The control variables are significant in the predicted directions.

4.1.3. Robustness Tests

In order to check the validity of our results, we challenge them in three (unreported) steps. Our key results prove robust under all these tests. *First*, we re-estimate our models with standard pooled OLS (excluding portfolio fixed effects) and find significant and economically similar marginal values of cash. *Second*, we implement the same model as previous authors, i.e. right hand side adjustments to firm stock returns, by subtracting the average portfolio benchmark returns, also here, we find very similar coefficients. In a *final* step, we use the unexpected changes in cash and find comparable results. While endogeneity concerns may exist due to self-selection, inducing reverse causality, when analysing blockholders and their influence on firm outcome (for further details see *Edmans* (2014)), we believe there is far less of an issue when examining founding families. These types of investors have a much deeper connection to the firms where they are invested and have accompanied them since the founding. The family maybe inclined to alter its position in the firm's equity due to varying performance. However, founding family ownership tends to be more stable and founding families hold their positions also during tough times, confirming the intuition, that founding family shareholders accompany firms over longer periods, thereby contributing to the success (Andres 2008).

4.2. *Financial constraints and the impact of founding family influence on the marginal value of cash*

In this section, we raise the question, whether the results in the previous section are mainly attributed to founding family firms being more financially constrained than other companies are. This is particularly relevant, with the marginal cash valuation literature (Faulkender and Wang 2006) reporting, that cash is more valuable to companies witnessing financial constraints. Founding family firms may be less flexible

in accessing the capital markets (either, because the family owners reject further dilution, or because of the size of family businesses being smaller than the average firms). Either channel may have a positive impact on the marginal value of cash, assuming that the starting balance of cash will be lower and leverage higher, for the average financially constrained company.

4.2.1. Empirical design

To test our first hypothesis in section 2.2.2, we follow three steps. *First*, we establish financial constraints criteria, which we use to differentiate between financially constrained and non-financially constrained firms. We then use two approaches to establish whether founding family influence is present even in the absence of financial constraints. We start by integrating a financial constraints dummy in the regression model presented in our baseline specifications (II & III). As a measure of financial constraints we use the Kaplan-Zingales-Index of financial constraints (Kaplan and Zingales 1997; Lamont, Polk, and Saa-Requejo 2001). We use the highest quartile of the index, as an identification of potential financial constraints to create an indicator. We interact the financial constraints dummy with the other corporate governance variables, the interactions with $\Delta C_{i,t}$ *x Dummy founding family*$_{i,t}$, an interaction between the dummy and $\Delta C_{i,t}$, as well as the dummy itself. In *second* step, we use the financial constraints dummy to split the sample into firms more likely to experience financial distress and "normal" healthy firms. All estimates are derived using *White* (1980) heteroscedasticity-consistent standard errors, corrected for correlation across observations of any given firm.

4.2.2. Empirical results

In this section, we report our results for the analysis of financial constraints on the marginal value of cash for founding family firms. The first specification on the right (IIa1) is identical to specification (II) reported in Table 4. We then use the above described financial constraints indicator, to isolated the impact of financial constraints on the marginal value of cash. The founding family influence on the marginal value of cash stays constant in its magnitude, between EUR 0.35 – EUR 0.40.

We then verify this result by conducting a basic sample split. The impact of founding families stays constant, at a 5% significance level, when looking at a subsample of firms less likely to experience financial constraints.

In specification (IIIa1) we then, like in specification (III) of Table 4, introduce a dummy for blockholdings, when the largest three shareholders (excluding founding family members) hold at least 25% of the any company's equity, or more. Like specifications (IIb1), we report a positive and significant effects of founding families (at 10% level), remaining after controlling for financial constraints. In addition here, we again split the sample into relatively unconstrained and constrained firms and see the results confirmed qualitatively. We interpret this evidence as a confirmation of our fourth hypothesis presented in section 2.2.2.

Specification	IIa1	IIb1	IIc1	IId1	IIIa1	IIIb1	IIIc1
Dependent Variable	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$
Full Sample (All) /Constrained (C) / Unconstrained (U)	All	All	U	C	All	U	C
$\Delta Cash$	0.727***	0.559***	0.612***	0.703***	0.619***	0.659***	0.639**
	[6.16]	[4.22]	[3.98]	[3.04]	[3.31]	[3.06]	[2.31]
$\Delta Cash$ * Leverage	-0.062*	-0.015	-0.047	-0.071	-0.019	-0.048	-0.079
	[-1.80]	[-0.30]	[-0.82]	[-1.06]	[-0.38]	[-0.82]	[-1.17]
$\Delta Cash$ * Cash$_{t-1}$	-0.305**	-0.273**	-0.301*	-0.151	-0.275**	-0.299*	-0.167
	[-2.43]	[-2.13]	[-1.92]	[-0.82]	[-2.16]	[-1.91]	[-0.93]
$\Delta Cash$ * Dummy Founding Family	0.340***	0.390**	0.378**	-0.015	0.342*	0.337	0.067
	[2.65]	[2.44]	[2.37]	[-0.05]	[1.71]	[1.63]	[0.21]
$\Delta Cash$ * Dummy Founder * Dummy Fin. Constraints		-0.272			-0.177		
		[-0.86]			[-0.49]		
Dummy FF * Dummy Financial Constraints		-0.014			-0.002		
		[-0.30]			[-0.03]		
$\Delta Cash$ * Dummy Financial Constraints		0.060			-0.042		
		[0.30]			[-0.16]		
Dummy Financial Constraints		-0.234***			-0.248***		
		[-7.35]			[-6.41]		
Dummy Blocks (ex FF) * Dummy Financial Constraints					0.028		
					[0.59]		
$\Delta Cash$ * Dummy Blocks (ex FF) * Dummy Fin. Const.					0.235		
					[0.59]		
$\Delta Cash$ * Dummy Blocks (exFF)					-0.121	-0.097	0.194
					[-0.63]	[-0.47]	[0.49]
Dummy Founding Family	-0.046**	-0.060***	-0.063***	-0.090*	-0.054**	-0.059**	-0.068
	[-2.45]	[-3.14]	[-3.23]	[-1.85]	[-2.30]	[-2.54]	[-1.31]
Dummy Blocks (ex FF)					0.013	0.008	0.052
					[0.57]	[0.34]	[1.02]
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Standard Errors	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering
Portfolio Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,708	2,708	2,025	670	2,708	2,025	670
R2	0.498	0.519	0.519	0.556	0.519	0.519	0.557

Notes: This table reports estimates for our portfolio fixed effects marginal cash valuation models (II & III) making some adjustments. To account for potential financial constraints family firms may be more prone to, we divide the sample into firms more likely to be prone to financial constraints using the Kaplan-Zingales-Index of financial constraints (Kaplan and Zingales 1997; Lamont, Polk, and Saa-Requejo 2001). Based on the index we define the top quartile as financially constrained. In models (IIa1 to IIIc1) we again integrate our main variables, starting with founding family influence, *Dummy Founding Family*. In Model IIIa1, we again integrate *Dummy Blocks (exFF)* indicating whether the three largest shareholders combined hold more than 25% of the company's shares. This allows us to derive inference on the impact of founding family influence on the marginal value of cash. We cover all firms having been listed once in the Prime Standard during the sample period between 2001 and 2012, incorporated in Germany. $r_{i,t}$ our dependent variable is the individual firm *i*'s annual stock return in time *t*. All variables are normalised by lagged market values of equity (M_{t-1}). *Cash$_{t-1}$* represents cash and cash equivalents, *EBIT$_{i,t}$* is operating earning (i.e. Earnings Before Interest and Taxes). *NA$_{i,t}$* represents total asset less cash and cash equivalents. *R&D$_{i,t}$* is the firm's research and development expenditure, whereby we set missing observations to 0. *Interst$_{i,t}$* is the firms interest expenditure, *Dividends$_{i,t}$* are measured as common dividends paid, *Leverage$_{i,t}$* is the firms market leverage ratio and *New Financing$_{i,t}$* is the firms net inflows from increases / decreases in debt, sale, retirement or repurchases of equity. *Δ* stands for the difference of the above between time *t* and *t-1*, whereby *t* is the current period and *t-1* one the lagged period. Using these variables we control for firm specific risk factors driving stock returns. We additionally control for heterogeneous exposure to common risk factors using nine annual size and book to market portfolios, to implement portfolio fixed effects. Standard errors are robust to heteroskedasticity and clustered at the firm level. Associated t-statistics are reported in brackets.

*, **, *** indicate significance at the 0.10, 0.05, 0.01 level, respectively.

Table 5: Founding family influence on the marginal valuation of cash, when isolating the impact of financial constraints

4.2.3.   Robustness tests

In order to check the validity of our results, we challenge them in three (unreported) steps. Our key results prove robust under all these tests. First, we conduct an OLS regression, confirming our results. Second, we use different measures as proxies for financial constraints. For example, when using Total Assets as a measure for financial constraints, the bottom quartile representing those firms more prone to financial constraints provides equivalent results. Finally, we use different ownership and control specifications and find robust results.

4.3.   *Free cash flow agency costs and the impact of founding family influence on the marginal value of cash*

In this section, we examine, whether we are capturing firms where free cash flow agency costs are particularly low. Founding family firms could in general be less prone to free cash flow agency costs, leaving our initial results meaningless. This means that, if we are capturing a genuine founding family influence in our specifications I to III, we have to be able find this influence even with firms more prone to free cash flow agency costs.

4.3.1.   Empirical design

To analyse if the baseline analysis is merely capturing free cash flow agency costs, we again proceed in two steps, like in the previous section. To include free cash flow agency cost (M. C. Jensen 1986) in our model, we use investment potential. When investment potential is high, we would assume free cash flow agency costs to be low. For firms who have relatively low investment potential, we would assume high free cash flow agency costs, as these firms have difficulties putting their cash resources to work. In practice, the investment opportunity set (IOS), as described by *Myers* (1977), is not readily observable. We therefore turn to proxies commonly used in the literature (Kallapur and Trombley 1999; Adam and Goyal 2008) and use the *market-to-book* ratio as our investment opportunity proxy. To avoid biases in our results we average the *market-to-book* ratio, per 10 Fama and French industry classifications (initial classifications proposed in *Fama and French* (1997). Compared to the last section we take a more balanced approach, and divide the sample along the annual median of industry average market-to-book ratios, taking the view that the IOS is much more balanced across our sample. Nevertheless, using the median across averages does lead to a slightly larger low investment opportunity supgroup of the sample.

Again, we proceed in two steps: *First*, we implement a comparable regression to II in specification IIb2, integrating a high investment opportunities dummy, to estimate the marginal value of cash for founding family firms while controlling for high investment potential. *Second*, we split the sample along the median average market-to-book ratio, to determine if founding family influence is still present, even if firms are characterised by low investment potential. All estimates are derived using *White* (1980) heteroscedasticity-consistent standard errors, corrected for correlation across observations of any given firm.

4.3.2. Empirical results

We now provide estimates for the influence of founding families on the marginal value of cash for firms with different investment potential profiles.

Specification	IIa2	IIb2	IIc2	IId2	IIIa2	IIIb2	IIIc2
Dependent Variable	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$	$r_{i,t}$
All Firms (All) / Low Investment Potential (L) / High Investment Potential (L)	All	L	H	All	L	H
ΔCash	0.727***	0.674***	0.711***	0.770***	0.640***	0.669***	0.776***
	[6.16]	[5.53]	[4.81]	[4.23]	[3.58]	[3.32]	[3.92]
ΔCash * Leverage	-0.062*	-0.055	-0.085	-0.060	-0.055	-0.087	-0.060
	[-1.80]	[-1.61]	[-1.62]	[-1.11]	[-1.59]	[-1.61]	[-1.10]
ΔCash * Casht-1	-0.305**	-0.315**	-0.309*	-0.283	-0.316**	-0.320**	-0.282
	[-2.43]	[-2.56]	[-1.95]	[-1.58]	[-2.58]	[-2.02]	[-1.56]
ΔCash * Dummy Founding Family	0.340***	0.424***	0.382**	0.259	0.457**	0.428**	0.254
	[2.65]	[2.73]	[2.52]	[1.20]	[2.40]	[2.25]	[1.09]
ΔCash * Dummy FF * Dummy High IP		-0.217			-0.285		
		[-0.80]			[-0.97]		
Dummy FF * Dummy High IP		0.047			0.038		
		[1.31]			[0.89]		
ΔCash * Dummy High IP		0.126			0.204		
		[0.67]			[0.85]		
Dummy High IP		0.044*			0.054		
		[1.80]			[1.61]		
Dummy Blocks (ex FF) * Dummy High IP					-0.020		
					[-0.45]		
ΔCash * Dummy Blocks (ex FF) * Dummy High IP					-0.169		
					[-0.50]		
ΔCash * Dummy Blocks (exFF)					0.066	0.090	-0.015
					[0.32]	[0.44]	[-0.05]
Dummy Founding Family	-0.046**	-0.070***	-0.065**	-0.026	-0.057*	-0.044	-0.028
	[-2.45]	[-2.79]	[-2.53]	[-0.91]	[-1.90]	[-1.50]	[-0.81]
Dummy Blocks (ex FF)					0.027	0.042	-0.005
					[0.94]	[1.43]	[-0.13]
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Standard Errors	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering	Firm Level Clustering
Portfolio Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,708	2,708	1,597	1,111	2,708	1,597	1,111
R2	0.498	0.501	0.541	0.494	0.502	0.542	0.494

Notes: This table reports estimates for our portfolio fixed effects marginal cash valuation model (II & III) making some adjustments. To account for potential free cash flow agency problems arising from low investment potential, we use the 10 Fama and French industry classification mean of the market to book ratio. Based on the median 10 Fama and French Industry classification mean market to book ratio, we split the sample into firms with high investment potential and low investment potential. In models (IIa2 to IIIc2) we again integrate our main variables, starting with founding family influence, *Dummy Founding Family*. In Model IIIa2, we again integrate *Dummy Blocks (exFF)* indicating whether the three largest shareholders combined hold more than 25% of the company's shares. This allows us to derive inference on the impact of founding family influence on the marginal value of cash. We cover all firms having been listed once in the Prime Standard during our sample period between 2001 and 2012, incorporated in Germany. $r_{i,t}$ our dependent variable is the individual firm *i's* annual stock return in time *t*. All variables are normalised by lagged market values of equity (M_{t-1}). $Cash_{t-1}$ represents cash and cash equivalents, $EBIT_{i,t}$ is operating earnings (i.e. Earnings Before Interest and Taxes). $NA_{i,t}$ represents total asset less cash and cash equivalents. $R\&D_{i,t}$ is the firm's research and development expenditure, whereby we set missing observations to 0. $Interst_{i,t}$ is the firms interest expenditure, $Dividends_{i,t}$ are measured as common dividends paid, $Leverage_{i,t}$ is the firms market leverage ratio and *New Financing*$_{i,t}$ is the firms net inflows from increases / decreases in debt, sale, retirement or repurchases of equity. Δ stands for the difference of the above between time *t* and *t-1*, whereby *t* is the current period and *t-1* one the lagged period. Using these variables we control for firm specific risk factors driving stock returns. We additionally control for heterogeneous exposure to common risk factors using nine annual size and book to market portfolios to implement portfolio fixed effects. Standard errors are robust to heteroskedasticity and clustered at the firm level. Associated t-statistics are reported in brackets.

*, **, *** indicate significance at the 0.10, 0.05, 0.01 level, respectively.

Table 6: Founding family influence on the marginal valuation of cash, when isolating the impact of investment potential (our measure for free cash flow agency costs)

Our estimates show, that when controlling for high investment potential (previously documented to have a positive effect on the marginal value of cash analysis), we still have a strong positive and significant founding family influence on the marginal value of cash (with an additional EUR 0.42 extra assigned to the additional Euro cash generated by the average founding family firm). This relationship is robust when reducing the sample to firms likely to have a lower investment potential.

When introducing the other blockholders dummy, i.e. *Dummy Blocks (exFF),* we control for the influence of other large shareholders besides founding family members. We again first introduce the high investment potential dummy, and find significant and positive founding family influences. This effect is robust when splitting the sample and only analysing the firms assumed to have a low investment potential (i.e. high free cash flow agency costs).

4.3.3. Robustness tests

We once more challenge our results by a battery of (unreported) robustness tests, to check the validity of our results. Our key results prove robust under all these tests. *First*, we use a different proxy for investment potential, implement the market-to-book asset ratio, also known as Tobin's Q. We also estimate a simple OLS excluding portfolio fixed effects. In a further step, we use other measures for ownership and control.

4.4. Cash generation, founding family firms and future operating performance.

In this section, we aim to provide additional evidence on the efficient monitoring hypothesis. We now analyse the impact of founding families on the future operating performance (Huang, Matsunaga, and Wang 2014). Plenty of previous research looks at the general performance of founding family firms (R. C. Anderson and Reeb 2003; Villalonga and Amit 2006; Andres 2008; Achleitner et al. 2009) amongst others. Usually the focus lies on Tobin's Q, or other operating performance measures such as return on assets, return on equity, or return on sales. To obtain a better understanding if founding families have a positive influence the governance of firms and thereby have a positive influence on these measures we test if current period *t's* change in cash in combination with the presence of founding families has any significant influence on the future operating performance.

4.4.1. Empirical design

Having conducted the analysis on the marginal value of cash holdings for founding family firms, we now test if the obtained results have any implications on the actual operating performance. Implementing the empirical design, we refer to the performance measures tested by *Dybvig and Warachka* (2015), who provide evidence, that Tobin's Q has considerable deficits, when used as a measure of performance. They provide alternative operating performance measures, including *Gross Margin* (i.e. Total Revenues less Cost of

Goods Sold) normalised by sales or total assets . We proceed in *three* steps. *First*, we measure the impact of our founding family firm indicator on our operating performance measure, as well as the founding family impact on the change in cash (also to be interpreted as the net cash generation of the firm). In a first specification, we use industry and time fixed effects. In an alternative second specification, we use cross industry and time group effects. *Second,* we additionally integrate other Blockholders in our regression (like in specification III), again first using industry and time effect, and in the fourth alternative specification using cross industry and time group effects. In a *third* approach, our last specification in Table 7, we use a *Geometric Methods of Moments* (GMM) model (Hansen 1982). Having additional time periods included in our model (with future values and lags), we on the one hand gain additional time series inference from the model. On the other hand we loose some of the observations. In addition to our corporate governance variables, based on previous research (R. C. Anderson and Reeb 2003; Andres 2008; Achleitner et al. 2009; Huang, Matsunaga, and Wang 2014) we use the natural logarithm of Net Assets (ln(*Net Assets*)), *Tobin's Q (Market value of assets / market value of equity), Leverage (Total Debt / market value of equity), CAPEX (Capital expenditure / Net Assets)* and *RnD / total sales* as our set of firm controls.

4.4.2. Empirical results

In the section, we report the results of founding family influence on cash and future operating performance. We find positive and significant impact of founding family influence on future operating performance (using future *Gross Profit$_{t+1}$* as our dependent variable), when looking at the interaction of our founding family indicator with the change in current periods cash position.

Dependent variable	Gross Profit$_{t+1}$	Gross Profit$_{t+1}$	Gross Profit$_{t+1}$	Gross Profit$_{t+1}$	Gross Profit$_{t+1}$
Estimation Method	**Pooled OLS**	**Pooled OLS**	**Pooled OLS**	**Pooled OLS**	**GMM**
Dummy Founding Family	0.024	0.027	0.013	0.016	0.0935**
	[1.26]	[1.37]	[0.67]	[0.81]	(2.077)
*ΔCash * Dummy Founding Family*	0.123**	0.112**	0.132**	0.128**	0.0788*
	[2.25]	[1.98]	[2.16]	[2.08]	(1.861)
Dummy Blocks (ex FF)			-0.023	-0.022	
			[-1.07]	[-1.01]	
*ΔCash * Dummy Blocks (ex FF)*			0.026	0.044	
			[0.47]	[0.81]	
ΔCash	0.040	0.038	0.031	0.019	
	[1.12]	[1.02]	[0.62]	[0.40]	
Cash(t-1)					-0.0965**
					(-2.322)
Casht-2	-0.056**	-0.058**	-0.056*	-0.058**	
	[-1.97]	[-1.98]	[-1.95]	[-1.97]	
Ln(Net Assetts)	-0.001	-0.002	-0.002	-0.002	-0.2195***
	[-0.28]	[-0.34]	[-0.34]	[-0.40]	(-6.537)
TobinsQ	-0.024***	-0.024***	-0.024***	-0.024***	0.0017
	[-5.74]	[-5.51]	[-5.76]	[-5.53]	(0.549)
Leverage	-0.012*	-0.013**	-0.012**	-0.013**	0.0021
	[-1.93]	[-1.98]	[-2.00]	[-2.07]	(0.217)
CAPEX	0.504***	0.489***	0.509***	0.493***	-0.1919
	[3.85]	[3.65]	[3.92]	[3.70]	(-0.951)
RnD/Sales	0.107	0.104	0.090	0.088	0.1614
	[0.52]	[0.51]	[0.44]	[0.43]	(0.907)
Gross Profit$_t$					0.2918***
					(4.969)
Industry Fixed Effects	Yes		Yes		
Time Fixed Effects	Yes		Yes		
Industry Year Fixed Effects		Yes		Yes	
Observations	2,186	2,186	2,186	2,186	1,659
IDs					257
Aj. R2	0.18	0.208	0.181	0.209	
Hanen P-Value					0.706
M2 P-Value					0.943

Notes: This table reports estimates for our pooled OLS model, analysing the influence of founding families on future operating performance, either directly or indirectly via the value of nat additionally generated cash. Our measure of operating performance is Gross Profit / Total Assets. We integrate our main variables, starting with founding family influence, *Dummy Founding Family*. In the third specification, we again integrate *Dummy Blocks (exFF)* (as in Model III when analysing the marginal value of cash), indicating whether the three largest shareholders combined hold more than 25% of the company's shares. Controlling for the influence of other potentially large shareholders, beyond founding families. As firm controls we include ln(Net Assets), TobinsQ (Market value of assets / market value of equity), Leverage (Total Debt / market value of equity), CAPEX (Capital expenditure / Net Assets) and RnD / total sales. The last specification is a General Method of Moments Specifications, which includes lags of the dependent variable and uses lags of the independent variables to establish endogeneity robust inference. Standard errors are robust to heteroskedasticity. Associated t-statistics are reported in brackets.

*, **, *** indicate significance at the 0.10, 0.05, 0.01 level, respectively.

Table 7: Founding family influence on the future operating performance

While we see the negative influence of larger cash positions on future operating performance, we see this as related to the free cash flow agency costs. However, the current periods change in cash is again positive, although insignificant. Only when interacted with our corporate governance variable, i.e. founding family firms, we see a positive influence. This shows a lasting founding family influence, not only directly on the marginal value of cash, but also indirectly, via a more "prudent" or efficient use of cash in relation to funding future operating performance.

5.   Summary and Conclusion

This study investigates the agency costs inherent in founding family influence on the governance of firms. Prior research has argued for worse founding family performance or higher founding family performance, often depending on the sample, region or definition of founding family criteria. While performance itself remains an interesting point of research, we aim to contribute to this debate by focusing on how agency costs are impacted by founding family influence. Therefore, we use a novel approach to study agency costs in family firms. While existing studies mostly approach the issue by directly examining operating or market-based measures of firm performance, we proceed in a more indirect way. Specifically, we examine differences in the valuation of cash holdings between (various types of) family and non-family firms. As differences in the valuation of cash holdings are (*ceteris paribus*) associated with differences in agency costs, in effect our approach appears to represent a more direct way to study agency costs in family firms.

Technically, we adopt the concept of the "marginal value of cash" proposed by *Faulkender and Wang* (2006). Faulkender and Wang use a long-term event study approach to measure value implication of (additional marginal) cash holdings. We extend the model of Faulkender and Wang such that it allows us to study differences in the cash valuation between (various types of) family and non-family firms. The event study character of the concept makes it particularly interesting for corporate governance studies, as it allows bypassing many of the standard reverse causality arguments.

We find a generally positive relationship between founding family influence and the (marginal) valuation of cash holdings. The founding family firm cash valuation premium is present, even when studying reduced samples, excluding (i) firms more likely to be financially constrained or (ii) firms more prone to free cash flow agency costs. When we analyse future operating performance, we find positive that family firms are more efficient in translating additional cash into future operating results.

Our evidence suggests that the presence of a founding family increases the marginal value of cash by on average EUR 0.18 compared to the average firm in our sample. This does not change when integrating other blockholders in our model. However, we do find a significantly larger influence on the marginal value of cash, for those founding families that also have members of the family actively engaged on the management board. Our results provide additional evidence that founding families mitigate the free cash flow agency problem.

While our results indicate positive founding family influence on the marginal value of cash and operating performance via cash, we believe heterogeneous family characteristics allow for plenty research potential, especially when considering heterogeneity of founding family firms and their definitions.

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