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Performance of German Family Firms During the Global Financial Crisis

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Abstract

Research on family firm performance has led to inconclusive results which is why scholars called for a differentiated consideration of family firms during exogenous shocks, where costs and benefits of the inherent ownership structure are assumed to be magnified. Following these calls, I use the Global Financial Crisis of 2007 – 2009 as a unique natural experiment where firms have been moved out of their equilibrium while ownership structure maintained constant in the near term. I differentiate between true family firms and lone founder firms and hypothesize that the firm performance of both ownership structures during the Global Financial Crisis is higher than for non-family firms. In a study of 178 firms listed in the German Prime Standard, I found that lone founder ownership was significantly associated with higher firm performance during the GFC, while showing no differences in performance during the period of stable economic conditions prior to the crisis. For true family ownership, in contrast, the results suggest a general tendency of superior performance during the steady-state pre-crisis period, but it could not be established that these firms outperformed other firms during the GFC. Analogously, I found that the presence of a family CEO in true family firms is beneficial for firm performance during stable economic conditions, but the advantageousness seems to vanish in times of severe financial distress.

Keywords: Family firm; ownership; governance; performance; crisis.

1. Introduction

Family firms represent the most dominant economic force worldwide, accounting for approximately 90% of all companies in the world (Aldrich & Cliff, 2003; La Porta, Lopez-de Silanes, & Shleifer, 1999). Family ownership is predominant in countries located in Continental Europe, Middle East, or Asia (Minichilli, Brogi, & Calabrò, 2016), but also plays a pivotal role in the United States, where family firms constitute 70 percent of all publicly listed firms (Sirmon & Hitt, 2003) and one third of the companies listed in the S&P 500 (Anderson & Reeb, 2003). This dominance might explain why scholars have devoted much attention to understanding the characteristics as well as consequential benefits and costs of family ownership in the last two decades (e.g. Anderson, Duru, & Reeb, 2009; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Maseda, Iturralde, Aparicio, Boulkeroua, & Cooper, 2019; Villalonga & Amit, 2006).

Within academic literature on family firms, a growing body of research has focused on the impact of family ownership on firm performance. However, findings on corporate performance of family firms so far have been inconclusive: On the on hand, researchers argued that family ownership is harmful for firm performance as the families might pursue private benefits of control at the expense of minority shareholders (Anderson & Reeb, 2003), the availability of financial and social resources may be restricted (Poletti-Hughes & Williams, 2019), and conflicts between economic and non-economic goals of the family might arise (Gómez-Mejía et al., 2007). On the other hand, firm performance might be enhanced due to reduced conflicts between ownership and management (Andres, 2008), the commitment to lead the firm as stewards in a collectivistic way (Chu, 2011), unique strategic resources (Allouche, Amann, Jaussaud, & Kurashina, 2008), and the benefit from long-term orientation (Gentry, Dibrell, & Kim, 2016) as well as unique values and norms of the family (Andres, 2008). In order to better disentangle the impact of ownership on firm performance, various researchers argued that the consideration of overall economic activity, specifically an economic downturn, will enrich corporate governance research and provide further insights into the ownership-performance relationship (e.g. Lins, Volpin, & Wagner, 2013; Minichilli et al., 2016; Saleh, Halili, Zeitun, & Salim, 2017;

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Zhou, Wang, & He, 2012). Specifically, they argued that, during an economic crisis, firms are moved out of their equilibrium while ownership structure maintains constant at least in the short-term. Thereby, an exogenous shock such as an economic crisis serves as a natural experiment where costs and benefits of the ownership structure are magnified. Therefore, this differentiated perspective might provide new insights, contributing to the long-lasting discussion as to whether certain ownership structures have an enhancing impact on firm performance.

In a study of 178 firms listed in the German Prime Standard, I analyzed how ownership structures affected firm performance during the Global Financial Crisis of 2007- 2009. I substantiate my hypotheses with prior academic research and argumentation referring to the agency theory, stewardship theory, resource based view, as well as the concept of socio-emotional wealth. Furthermore, I contribute to the debate of heterogeneity that has gained increasing attention in recent family firm literature (e.g. Arosa, Iturralde, & Maseda, 2010; Block, Jaskiewicz, & Miller, 2011; Maseda et al., 2019) by incorporating a differentiated perspective on how large the stake held by the family is, how actively the family is involved in the management of the firm, and whether the firm is owned and managed by a lone founder rather than by descendants or multiple family members of the founder. The results indicate that lone founder firms, where the firms' founders are large shareholders of the firm, do not exhibit superior effects during the steady-state pre-crisis period but seem to outperform during crisis, in times where the firms faced serious threats due to macroeconomic developments. In contrast, true family firms, where multiple members of the same family are large shareholders of the firm, show a superior performance during overall stable economic conditions but do not exhibit significant performance differences during the global economic crisis. Furthermore, while the presence of a family CEO in true family firms is observed to be beneficiary during stable economic conditions, the competitive advantage of a family CEO seemed to vanish during the GFC.

This thesis is structured as follows. In section 2, I provide a theoretical background of extant literature on firm performance of family firms and develop my hypotheses. Thereafter, section 3 describes the sample and how the data has been retrieved, explains the independent, dependent, and control variables, and finally describes the statistical model used to test the hypotheses. In section 4, the results of the statistical regression are outlined. Moreover, robustness tests and further empirical analyses are presented in this section. The findings are discussed in detail in section 5. In this section, I also outline implications for theory and practice as well as limitations and fruitful avenues for future research. In section 6, the thesis will be concluded.

2. Theoretical Background and Hypothesis Development

This section provides an overview of prior academic research on the performance of family firms in general and during difficult times such as the Global Financial Crisis. Thereafter, three hypotheses will be derived by suggesting how specific ownership structures influence firm performance. In order to disentangle the complex of multiple studies and observations proposing different, even contrasting results, heterogeneity regarding ownership, management involvement, as well as generational stage will be taken into account. This section proceeds as follows: First, an overview of existing academic research studying the effect of family firm ownership on firm performance will be outlined and the underlying argumentation referring to different academic theories and concepts will be analyzed. Furthermore, heterogeneity among family firms and its effect on firm performance will be introduced in this chapter. Second, the Global Financial Crisis will be introduced and hypotheses on how family firms have performed during such an economic downturn will be developed.

2.1. Family Ownership and Firm Performance

The impact of family firm ownership has been studied extensively in numerous studies (Astrachan & Zellweger, 2008) . However, despite the multitude of academic research during the last three decades, it has remained a controversial topic as results from studies all over the world produced different and even contrasting results with regard to the question as to whether family firms show superior performance than other types of firms (Martínez, Stöhr, & Quiroga, 2007). Referring to widely accepted academic theories and concepts such as *Agency Theory, Stewardship Theory, the Resource Based View (RBV), or the concept of Socio-emotional Wealth (SEW)*, this section seeks to provide a comprehensive overview of extant literature and a profound understanding of the mechanisms underlying the ownership-performance relationship.

2.1.1. Family Ownership and Negative Firm Performance

Several studies have provided evidence suggesting that family ownership affects firm performance negatively. Morck, Stangeland, and Yeung (2000) analyzed the financial performance of large Canadian family firms over a period of five years between 1984 and 1989 and found that family ownership is associated with poor financial performance when compared to widely held firms. Achmad, Rusmin, Neilson, and Tower (2009) also found that family firms show significantly lower performance than non-family firms by examining large listed Indonesian firms. Also Hamadi (2010) found that the presence of a first largest shareholder, specifically when it is a family organized as a voting block, has a significant negative effect on firm performance. In his study, Hamadi (2010) analyzed data of 147 Belgian listed firms covering a five-year-period between 1991 and 1996. In the remainder of this section, I will outline the underlying argumentation of why family ownership might affect firm performance negatively. Specifically, I will outline arguments related to agency theory, RBV, as well as the concept of SEW.

In publicly listed firms, ownership and control are usually separated, giving rise to conflicts between owners and managers running the company (Fama & Jensen, 1983; Jensen

& Meckling, 1976). This situation, where dispersed shareholders (principals) have to delegate control over a company to managers (agents) is also called type 1 principal-agent problem. This problem might be mitigated by concentrated ownership where the firm is managed and owned by the same shareholders and thus interests between principals and agents are aligned (Maseda et al., 2019). However, the presence of a large, block-holding family might give rise to a different conflict providing a possible explanation for the weaker performance of family firms: According to the agency theory influenced by Fama and Jensen (1983), a concentration of ownership might result in conflicts between the majority shareholders and minority shareholders, constituting the so called type 2 principal-principal problem. According to Shleifer and Vishny (1997), this type of agency conflict in some countries is more pronounced compared to the type 1 principal-agent problem. The next two paragraphs therefore outline in more depth how family owners might try to maximize their personal utility at the expense of firm performance, resulting in a disadvantageous shareholder structure compared to widely held firms with a dispersed ownership structure (Anderson & Reeb, 2003).

First, scholars argued that the combination of ownership and control allows family firms that hold a large stake in the company to exchange firm profits for private benefits (Anderson & Reeb, 2003; Shleifer & Vishny, 1997) and thereby expropriate minority investors (Faccio, Lang, & Young, 2001). For example, family owners might draw scarce resources away from firms' profitable projects in order to consume such resources privately (Demsetz, 1983). An expropriation of firm wealth might occur by families paying out excessive compensation, special dividends, or by related party transactions that turn out to be unfavorable not only for the firm but especially for other shareholders (Anderson & Reeb, 2003) and sometimes even for employees and creditors (Johnson, LaPorta, Lopez-de Silanes, & Shleifer, 2000).

Second, rather than pursuing the enhancement of shareholder value, family shareholders might strive for other achievements such as technological innovation or growth (Anderson & Reeb, 2003). Pursuing their own goals, family owners might also take sub-optimal investment decisions which are not in the best interest of other shareholders (Andres, 2008). Thereby, corporate performance of publicly listed firms, that is often measured as investors' return, might result to be lower.

Apart from arguments related to the agency theory, scholars refer to the RBV when trying to understand why family firms might show a weaker performance than their non-family counterparts. According to Barney (1991), every individual firm possesses heterogeneous resources and therefore can pursue different strategies to capitalize on its unique resources and build a sustained competitive advantage over other firms that have a different resource mix. Barney (2001) defines resources of a firm as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness" (p.101). As advantageous as these resources can be, it also means that firms that do not have access to resources to the same extent as their competitors might have a strategic disadvantage and therefore under perform when compared to their peers. The next two paragraphs will outline how family firms suffer from a scarcity of specific resources whereas non-family firms might not face such constraints.

First, with regard to financial capital, family firms suffer from limited access to financing which might result in inferior performance. On the one hand, equity financing might entail a dilution of control which the family, that might be emotionally tied to the firm, wants to avoid (Amihud, Lev, & Travlos, 1990; Faccio & Masulis, 2005; Ward, 2004). On the other hand, also debt financing is unattractive for family firms as they wish to preserve a balance sheet with a healthy leverage ratio and want to assure the firm's survival in the long-term (Dreux, 1990). High debt would increase the firm's vulnerability or bankruptcy risk which family owners again want to avoid as families often have the majority of their wealth invested in the firm (Anderson & Reeb, 2003) and therefore seek to minimize the business risk of their family firm (La Porta et al., 1999). Furthermore, higher vulnerability risk due to a high share of debt capital is avoided by family firms as often the firm employs other family members (Poletti-Hughes & Williams, 2019), the family well being of future generations might be at stake (Schulze, Lubatkin, & Dino, 2002), and the reputation following excessive borrowing might be compromised (Bartholomeusz & Tanewski, 2006).

Second, with regard to social capital, Anderson and Reeb (2003) argued that families often select top management positions exclusively from their relatives and therefore limit the pool of capable and qualified talent to a small number of people. This restriction of talent might then potentially lead to a competitive disadvantage and therefore inferior performance when compared to other firms. The reasoning behind that resource restricting action is that families want to provide employment opportunities for family members that might not find a similarly prestigious position (Poletti-Hughes & Williams, 2019) and because of the emotional pleasure families or founders experience when seeing their offspring managing the firm they established (Andres, 2008). The impact of family involvement in management on performance will be further examined in section 2.1.3 *Family Firm Heterogeneity and Firm Performance*.

A third concept that helps to better understand why family firms under perform compared to their non-family counterparts is the concept of SEW. According to the concept of SEW, the family is emotionally connected with the firm and actively seeks to maintain control and ownership driven by economic but also non-economic criteria such as the preservation of family identity and authority or the provision of employment opportunities for family members (Gómez-Mejía et al., 2007). This emotional attachment to the firm might result in a deterioration of firm performance, as it will be outlined in the following paragraph.

In general, Chu (2009) argued that in family firms there exist two distinct institutions that might not be compatible in every aspect and therefore restrain efficient operations in the firm: On the one hand, what today would be referred to as dimensions of SEW, the family institution reflects social ties, personal trust and assurance of care and nurturance of all the members belonging to the family. On the other hand, the business institution aims at economic rationality, effectiveness and efficiency. According to Chu (2009), the underlying set of values and norms of the two institutions are fundamentally different which is why financial performance, the single most important goal of the business institution, is lower compared to non-family firms where the family institution does not exist. For example, Allouche et al. (2008) argued that altruism among members of a family might potentially lead to lower firm performance and harm shareholder value. The family owning the firm refuses to dismiss managers who are family members but not capable of running the firm (Gomez-Mejia, Nunez-Nickel, & Gutierrez, 2001). This behavior might, for the moment, maintain peace within the family but will harm firm performance and ultimately shareholder value in the long term. A very famous illustration of SEW is the example of Spanish oil mills introduced by Gómez-Mejía et al. (2007). A few decades ago, these oil mills were primarily owned by entrepreneurial families. Gradually, the mills were offered membership of a cooperative. This membership would have mitigated financial risk and volatility, but it also would have resulted in a loss of family control and thus in a loss of SEW. Many Family businesses decided against joining the cooperative, attaching greater importance to independence and in return accepting financial performance hazards.

To summarize, the negative performance of family firms documented by several scholars could be explained by the private benefits of control (agency theory), the limited availability of financial and social resources (RBV), and the conflict of economic and non-economic goals between the family institution and the business institution (concept of SEW).

2.1.2. Family Ownership and Positive Firm Performance

Contrasting to the studies reviewed above, there exists a multitude of academic research suggesting that family ownership is positively associated with firm performance. One of the most cited articles analyzing family firm performance is the study by Anderson and Reeb (2003). Analyzing 403 publicly listed firms in the S&P 500, Anderson and Reeb (2003) concluded that, overall, family firms performed better than firms with different ownership structures. Similar results have been found by other scholars examining family firm performance in the United States (e.g. Anderson et al., 2009; Block et al., 2011; Chrisman, Chua, Kellermanns, & Chang, 2007). Furthermore, researchers found evidence of the superior performance of family firms all over the world: Allouche et al. (2008) found that Japanese listed family firms outperform their non-family counterparts. Andres (2008) provided evidence suggesting that German family firms not only are superior performer compared to widely held firms but also compared to all other types of firms with a large blockholder. Ben-Amar, Francoeur, Hafsi, and Labelle (2013) found a significant positive impact of family ownership on performance when studying family and non-family firms in Canada. Other scholars found a positive association between family firms and performance in Sweden (Bjuggren & Palmberg, 2010), Chile (Bonilla, Sepulveda, & Carvajal, 2010; Martínez et al., 2007), Taiwan (Chu, 2009, 2011), China (Ding & Zhang, 2008), or Spain (Maseda et al., 2019) Again, the underlying arguments that possibly explain these results will be outlined in the following, referring to agency theory, stewardship theory, RBV, as well as the concept of SEW.

The agency theory has been introduced earlier already. Whereas family firms might be prone to principal-principal conflicts, scholars argued that the combination of ownership and management, as it is often the case for family businesses, might be beneficial for firm performance (e.g. Anderson & Reeb, 2003). In 2013, van Essen, van Oosterhout, and Heugens stated that family blockholding can be seen as a remedy to agency problems. The following paragraphs will substantiate this argument in more detail and with the help of some specific examples.

First, when ownership and management are concentrated, owner-manager conflicts most likely fail to arise and therefore managerial entrenchment and expropriation can be avoided (Andres, 2008; Chu, 2009): In a situation where ownership and management are separated, managers could act in their own interest instead of the shareholders' interest. Managers could invest a company's resources in projects that are valuable for themselves even though there might be better investment alternatives that would maximize shareholder value (Shleifer & Vishny, 1989). For example, managers might engage in acquisitions that are harmful to shareholder value but potentially lead to an increase of the manager's salary due to the increase in the size of the firm (Gorton, Kahl, & Rosen, 2005). In family firms, where ownership and management often are combined, the monitoring of managers counteracts such opportunistic behavior (Van Essen, van Oosterhout, & Heugens, 2013). Chu (2009) argued that, since the objectives of owners and managers are aligned and the owning family not only controls the firm but is also the residual claimant of profits to be distributed, family firms might be an ideal form of organization.

Second, concentrated ownership reduces transaction costs and even creates economies of scale. For example, family ownership might be beneficial as large blockholders can develop specific capabilities to monitor a firm which other, more dispersed blockholders cannot (Ryan & Schneider, 2002). This is one of several examples showing that the presence of family blockholders can successfully reduce transaction costs (Black, 1990). Chu (2009), for instance, stated that one specific requirement of control is information and information does come at a price. In family firms, he argued, family shareholders have access to superior information and better knowledge of the business which facilitates control and reduces transaction costs. One example of such superior information is the general notion that family members get in

contact with and learn about the business from early childhood on (Kets de Vries, M., 1993).

It should be noted that, although the agency theory is widely accepted, well researched, and often referred to in academic family business literature, it is not completely undisputed. Chu (2011) argued that stewardship theory has been gaining more and more attention among family firm research more recently and is offering a different perspective on situational behavior that might even be contrary to agency theory. According to the stewardship theory, managers do not intrinsically follow their own interest at the expense of shareholders but place a higher value on responsible management of the firm (Davis, Schoorman, & Donaldson, 1997). According to Chu (2011), family firm managers then act as stewards, rather than agents of the firm and maximize their utility by collectivistic, pro-organizational behavior instead of self-serving, opportunistic behavior. He argued that a reasoning related to the agency theory and hence the explanation of performance differences therefore should be read with caution and that a potential superiority of family firms might rather originate from the commitment of stewards to manage the family firm than from redundant monitoring and governance mechanisms.

Scholars also substantiated the better performance of family firms referring to the RBV. Regarding social capital, researchers argued that family owners have experience and specific knowledge that is more likely to be passed on within generations of the family and therefore have a competitive advantage compared to firms with other shareholder structures (Andres, 2008). Allouche et al. (2008) argued that there is a special, intricate connection between the family and the business which induces organizational efficiency: Strategic resources are generated by the network of interactions between the productive activities of the business and the family. These strategic resources themselves can constitute a source of competitive advantage (Arrègle, Durand, & Véry, 2004). Specifically, the presence of family shareholders in the firm might be an intangible resource that enables the company to build long-term relations with various types of stakeholders such as employees, suppliers, customers, or banks (Chu, 2009).

With regard to technological resources, Zahra (2005) found that family-owned firms are widely recognized as a major source of entrepreneurial activities and technological innovation, showing a better ability to combine intangible and tangible resources to ensure innovativeness. It, therefore, is not only the availability of strategic resources but also the right use and ability to transform them into output. **?** found that family firms transform innovation input into innovation output with a higher conversion rate than other firms and, ultimately, show a higher innovation output compared to their non-family counterparts.

With regard to financial resources, it has been argued earlier in this paper that the limited access to capital through debt financing is a disadvantage and therefore affects performance negatively. Other scholars, however, argued differently: Allouche et al. (2008) concluded that the limited access to debt capital is positively associated with firm performance as financial risk and therefore the risk to lose control and face bankruptcy is reduced. Furthermore, Anderson, Mansi, and Reeb (2002) argued, contrary to the belief of restricted access to debt capital, that family firms have even facilitated access to debt financing as they enjoy a lower cost of debt. According to their study, family ownership constitutes an organizational structure that better protects the interests of creditors and bondholders. Therefore, family firms tend to have an ownership-specific advantage over other firms that might be manifested in superior firm performance.

Scholars also refer to the concept of SEW when trying to understand the positive impact of family ownership on firm performance. First, family firms are often characterized as having a long-term orientation and transgenerational intention where the business is seen as an asset that is going to be passed on to later generations and therefore the family inheritance is preserved (e.g. Allouche et al., 2008; Chu, 2009; Gentry et al., 2016). One potential effect of long-term orientation is the implementation of optimal investment policies in the long run (Stein, 1989). Firms with a longer investment horizon experience less managerial opportunism and do suffer less from short term pressures to boost current earnings (Stein, 1989). The efficient investment decisions of family firms are therefore assumed to be value enhancing (Andres, 2008). Furthermore, Allouche et al. (2008) argued that the long-term orientation of family firms induces families to attach greater importance to quality. Moreover, the long-term nature of family firms allows them to develop long-lasting ties and networks with other stakeholders (Anderson & Reeb, 2003).

Second, family shareholders share a certain set of values with the business institution which in return might enhance firm performance (Andres, 2008). With their set of values and norms, families create a social construction of trust, loyalty and altruism (Allouche et al., 2008). As a result, the family firm creates a favorable working environment resulting in lower employee turnover and might therefore enhance firm performance (Andres, 2008). Furthermore, the trust and loyalty is not only limited to the firm itself but also enriches relationships to other stakeholders, thereby the family realizes possible gains as they credibly commit to implicit contracts and agreements (Andres, 2008). Moreover, the desire to preserve the norms and values of the family institution and the business institution is accompanied by a reputational concern. Anderson and Reeb (2003) argued that the family's reputation is able to create long-term economic consequences for the company whereas firms with other shareholder structures might attach greater importance to the short-term performance.

To summarize, the positive performance of family firms documented by several scholars could be explained by reduced conflicts between ownership and management (agency theory), the commitment to lead the firm in a collectivistic way (stewardship theory), unique strategic resources (RBV), and the benefit from long-term orientation

and unique values and norms of the family (concept of SEW).

To complete the literature analysis on the association between family ownership and firm performance, two important points need to be made. First, it should be noted that a number of scholars could not identify performance differences between family firms and firms with other shareholder types: Analyzing non-financial Spanish listed companies during the period from 2003 to 2008,Sacristan-Navarro, Gomez-Anson, and Cabeza-Garcia (2011a) could not find any evidence that any type of ownership consistently and significantly impacts firm performance either positively or negatively. Other researchers came to similar conclusions analyzing data of family firms in Italy (Sciascia & Mazzola, 2008), India (Singal & Singal, 2011), and France (Sirmon, Arregle, Hitt, & Webb, 2008).

Second, the debate of heterogeneity within family firms has gained increasing attention in recent academic literature (e.g. Arosa et al., 2010; Block et al., 2011; Maseda et al., 2019; Perrini & Rossi, 2008; Zhou et al., 2012). Researchers have documented several dimensions of family firm heterogeneity that should be considered when examining family businesses qualitatively or quantitatively. Therefore, in the following, an entire section of this thesis will be devoted to this topic.

2.1.3. Family Firm Heterogeneity and Firm Performance

This section helps to better understand the underlying mechanisms of family firms by disentangling family firm status further. In the following, three aspects of heterogeneity are outlined in more detail. First, considering the magnitude of equity ownership helps to differentiate between low stakes of family ownership and situations where families own large shares of a firm. Second, family involvement in the management of the firm will be considered by analyzing how performance is affected when one or more family members are present on the management board. Finally, considering the generational stage, lone founder firms are differentiated from true family firms, where either several members of the family are active as shareholders or in the management of the firm or where one or more descendants of the founder own or manage the firm.

Miller, Le Breton-Miller, and Lester (2010) argued that ownership is a matter of degree and families that hold a large number of shares thus might behave differently than families possessing only a few voting rights. Reviewing extant literature, it turned out that some researchers found evidence suggesting that the relationship between family ownership and performance is indeed dependent on the magnitude of ownership: Anderson and Reeb (2003) found that first, with increasing family ownership, performance of S&P 500 firms increases but at around 31% family ownership, the inflection point of maximum performance, performance starts to decrease with increasing family ownership. They therefore suggested a non-linear relationship between performance and family ownership. If plotted in a graph, with firm performance on the y-axis and family ownership on the x-axis, the relationship would look like an inverted U shape. Analyzing a panel of 217 Polish companies, also Kowalewski, Talavera, and Stetsyuk (2010) found an inverted U-shaped relationship between family ownership and performance. Furthermore, in a meta-analysis based on a total sample of 748,569 firm year observations that have been derived from 162 studies covering 23 European countries, Van Essen et al. (2013) provided evidence suggesting that the relationship between ownership and firm performance has a form of an inverted U-shape. Moreover, De Massis, Kotlar, Campopiano, and Cassia (2013) again found that the impact of family ownership on firm performance is dependent on the magnitude of ownership and suggested a U-shaped relationship between family ownership dispersion and firm performance.

Those researchers suggesting a non-linear, U-shaped relationship between family ownership and firm performance, substantiated their findings with arguments from the agency theory that have been already introduced. Specifically, at a lower level of ownership, a positive alignment between the interests of shareholders and managers (reduced Type 1 principal-agent conflict) results in enhanced firm performance. With an increasing stake of ownership, however, minority shareholder expropriation through private benefits of control (Type 2 principal-principal conflict) might lead to a deterioration of firm performance again (e.g. Maseda et al., 2019; Van Essen et al., 2013). In short, the non-linear relationship between family ownership and performance is explained by the existence of two competing arguments from the agency theory that affect performance in its strongest form at different levels of family ownership.

Besides family ownership, great importance has been attached in recent academic research to the involvement of the family in the management of the firm. The presence of family CEOs and family members in the board of management is a widely recognized family firm characteristic (e.g. Anderson & Reeb, 2003) and implies active family management (Denis & Denis, 1994). By being a CEO or holding another top management position, a family member can impact the strategic direction of a firm (Pieper, Klein, & Jaskiewicz, 2008). Especially the position of a family CEO is worth analyzing in more detail as the CEO of the firm is generally considered the most powerful and important actor of the organization, having overall responsibility for the conduct and performance of the business (e.g. Minichilli, Corbetta, & MacMillan, 2010).

Several scholars suggested that firms, where family members are involved in the management of the firm, performed better than their non-family counterparts. Anderson and Reeb (2003) found that the profitability of a firm is enhanced when a family member holds the CEO position. Andres (2008) found that German family firms perform better if the family is actively involved in the firm, either in the supervisory or executive board. Other researchers found similar results analyzing data of family firms in Sweden (Bjuggren & Palmberg, 2010), Taiwan (Chu, 2011), Poland (Kowalewski et al., 2010), Italy (Minichilli et al., 2010), and Spain (Sacristan-Navarro et al., 2011a). The next four paragraphs will outline the underlying argumentation of these findings.

Scholars motivated the positive effect of family management referring to the same theories and concepts outlined earlier in this section. First, from an agency theory point of view, the family can more easily align their interests with the interest of the company (Anderson & Reeb, 2003). Also, because families often have the majority of their wealth invested in the firm, family CEOs show particular concern over the business and monitor its development (McConaughy, Walker, Henderson, & Mishra, 1998). Miller and Le Breton-Miller (2006) found that the presence of a family CEO is manifested in fewer short-sighted acquisitions, less downsizing actions, and a more long-term nature of capital expenditures and R&D expenses, suggesting that family CEOs focus more on long-term competitiveness and hence increase sustainable performance.

Second, scholars attributed the positive performance impact of family management to the fact that family executives often act as a steward of the organization (e.g. Chu, 2011). They therefore consider the firm as an extension of their well-being and maximize their utility achieving organizational objectives (Davis et al., 1997). The continuing prosperity of the firm is of such importance that they less likely follow self-serving objectives, thereby enhancing firm performance (Chu, 2011).

Third, referring to the RBV, scholars argued that a family CEO might bring specific knowledge, skills and attributes to the firm which again results in enhanced firm performance. Dyer (2006) argued that the understanding of the complexities of the business often has been gained in early years of the life and experiences from family members have been shared to younger generations, resulting in the development of human and social capital from which the organization can benefit. Because family CEOs are well acquainted with the firm, its established networks, and its corporate strategy (Chung, Lubatkin, Rogers, & Owers, 1987), CEO candidates within the family promote stability and profound expertise (Amran, 2012).

Finally, researchers also argued that family firms where family members are involved in the management of the firm do perform better due to the existence of SEW. Because family CEOs have an intention to pass over the firm to the next generation, they are more interested in the survival of the business (Sciascia & Mazzola, 2008). This might result in value maximizing investment behavior (Stein, 1989). Furthermore, family CEOs have a particular incentive to achieve high firm performance as the reputation of the entire family might be severely damaged and conflicts among the family shareholders might arise (Arrègle, Hitt, Sirmon, & Very, 2007). Moreover, family CEOs do often show an altruistic behavior that creates an atmosphere of trust and loyalty which in turn has a positive impact on firm performance (e.g. Minichilli et al., 2010).

However, research on the effect of family members involved in the firm's management on firm performance so far has been inconclusive. First, some scholars could not find any significant effect suggesting that the presence of a family CEO influences firm performance in either way (e.g. Block et al., 2011; Miller, Le Breton-Miller, Lester, & Cannella, 2007). Second, a growing amount of literature suggests that the relationship between the involvement of the family in the firm and firm performance is not linear and might be dependent on other factors. Maseda et al. (2019) found an S-shaped relationship between family ownership of board members and firm performance suggesting that the family's involvement in management might lead to a convergence of interests between family members and a strengthening of ties between the family and the business. Perrini and Rossi (2008) found that family management only affects firm performance positively when family ownership is low. In the case of high family ownership, the controlling family members might use their executive positions to extract private benefits and expropriate minority shareholders. Also De Massis et al. (2013) argued that family involvement only has a positive impact on firm performance when family ownership is moderate. Third, other researchers found even a negative relationship between family firm involvement and firm performance (e.g. Giovannini, 2010; Sciascia & Mazzola, 2008; Sindhuja, 2009; Wong, Chang, & Chen, 2010). The arguments substantiating a negative relationship between family involvement in management and firm performance will be outlined in the following two paragraphs.

First, from an agency point of view, family CEOs might pursue different objectives than those that would be value-maximizing for the shareholders. Family CEOs might use the firm's resources to the benefit of their families and thereby expropriate other shareholders (Block et al., 2011). Furthermore, family members present in the management often seek additional forms of compensation such as immaterial rewards or even reduce their efforts (Lubatkin, Schulze, Ling, & Dino, 2005) since they are not likely to be dismissed from their position for incompetent behavior (Block et al., 2011).

Second, families often restrict the occupation of top management positions to family members (e.g. Anderson & Reeb, 2003). In doing so, they can provide high-paying jobs to their offspring and gain utility in seeing their successors managing the business they established (Sacristan-Navarro et al., 2011a). However, family CEOs might not be as capable and talented as outside, professional CEOs (Schulze et al., 2002). Such behavior might also cause resentment by other, non-family executives (Gomez-Mejia et al., 2001). De Massis et al. (2013) argued that outside managers are beneficial for an organization as they bring business-specific knowledge and have better access to outside information and resources. Moreover, outside managers could be beneficial as they not only prevent negative practices of the family such as the extraction of private benefits but also could mitigate risks originating from family firms, for instance by mediating family disputes. In short, restricting the talent pool and forgoing possible benefits from outside managers might explain the negative relationship between firm performance and family involvement in management.

Besides the magnitude of ownership and the involvement of the family in the management of the firm, scholars also argued that the generation of family owning or managing

the business impacts firm performance. Reviewing many family firm definitions in extant academic literature from all around the world, Miller et al. (2007) noticed that many studies consider firms, in which there is involvement of only a lone founder, but no other family member, as a family firm, making it impossible to differentiate effects on performance that might originate from the individual structure of the firm. Only few researchers included lone founder firm as a separate shareholder structure in their analyses which is why research on the effect of lone founder ownership on firm performance is still tentative and not as numerous and fruitful compared with classical family business research. However, this differentiation is of major importance as approximately one-third of all family firms worldwide are managed by one or multiple founders, while the remaining two-thirds are managed by the descendants of the founding family (La Porta et al., 1999).

When analyzing data of 896 US-American companies between 1996 and 2000, Miller et al. (2007) found that only lone founder firms, companies where an individual is one of the founders of the firm with no other involvement of family members, outperform firms with other shareholder structures. The results of their study did not suggest performance difference between family firms, where more than one family member is involved, and firms with other types of ownership structures. Similarly, Villalonga and Amit (2006) provided evidence suggesting that family ownership only creates value if there is a founder CEO or if the founder serves as chairman of the board of directors with an external CEO in place. Barontini and Caprio (2006) found that the operating performance and market valuation of 675 European firms were higher if the firms were controlled by their founders. The result of the study by Anderson and Reeb (2003) indicated that the market performance of family firms was only better in case of the presence of a founder CEO or a professional, external CEO. The reasoning between the significant performance effect of a founder firm will be outlined in the following paragraphs.

First, researchers argued that lone founder firms show a different behavior because of their social context. The important stakeholders surrounding a lone founder firm are a diverse group of investors, venture capitalists, employees, customers, partners, and others (Donaldson & Preston, 1995) which all have primarily economic interests and demand high growth in return for their investments in an emerging company (Miller, Le Breton-Miller, & Lester, 2011). Greve, Hitt, Ireland, Camp, and Sexton (2003) argued that these stakeholders exert pressure on the lone founders aiming at the exploitation of economic opportunities, enhancement of customer service, successful positioning in the market, or out performance of competition. When addressing these pressures, the founders assume an entrepreneurial, individualistic role where the firm can be seen as an extension of the entrepreneurs themselves (Miller et al., 2011). Furthermore, lone founders might play an entrepreneurial role because they compare themselves with and see similarities to other entrepreneurs. Because of this entrepreneurial, growth-oriented role, the performance of lone founder firms is often associated with a typical strategy of growth characterized by innovation, expansion, and long-term investment (Miller et al., 2011).

Second, Morck (1988) argued that founder CEOs bring expertise and skills to the firm that enhance the value of the business. For example, founder CEOs are assumed to more likely possess technical and market expertise and a more organization specific knowledge (Fahlenbrach, 2009). Also Andres (2008) argued that the special influence and value-adding skills of founders result in enhanced performance of the firm. Moreover, founders might also benefit from experience of success and failure of previous entrepreneurial activities and based on that incorporate the learnings into the management of their businesses (Cope, 2011).

Third, researchers referred to the concept of SEW when trying to explain the founder effect on firm performance (e.g. Miller et al., 2011). Since the social approval and self image of the founder often is tied to the success of the business, the founder has an incentive to make capital investments that benefit the firm and maximize shareholder value (Kirzner, 1979) thereby enhancing firm performance. However, researchers also assumed less conflicts between the pursuit of economic goals of the firms and of non-economic goals of the family: Because lone founders do suffer less from succession issues and disputes within a family, firm performance is less likely to be weakened by family firm specific conflicts of interest (Miller et al., 2007).

To summarize, this section demonstrated how family firms differ within each other and how the distinct facets of a family firm affect firm performance differently. It is building on the preceding sections about the relationship between family ownership and firm performance primarily referring to arguments related to agency theory, stewardship theory, RBV, or the concept of SEW. The complexity of the relation between family ownership and firm performance has been outlined and the multitude of effects examined by researchers has been tried to disentangle. The last section demonstrated that, when analyzing the impact of family ownership on the performance of a firm, it should be taken into account how large the stake held by the family is (magnitude of ownership), how actively the family shapes the management of the firm (family involvement through board membership) and whether the firm is owned and managed by a lone founder rather than descendants or multiple family members of the founder (generational stage of family firms).

In order to consider the generational stage of the family business, for the remainder of this thesis, I differentiate between *Lone Founder Firms and True Family Firms* as their different social contexts may induce distinct behaviors which in turn might affect firm performance differently. In order to avoid any possible misunderstanding, true family firm(s) will be abbreviated by 'TFF' and lone founder firm(s) by 'LFF' respectively. Since there exists a multitude of definitions of a family firm in prior academic literature, finding a consensus on an exact definition is difficult (Miller et al., 2007). For the shareholder categorization within the course of this analysis,

I follow the definition of Miller et al. (2007) who suggested that a TFF is "one in which multiple members of the same family are involved as major owners or managers, either contemporaneously or over time" (p. 836). Furthermore, LFF were defined as "those in which an individual is one of the company's founders with no other family members involved, and is also an insider (officer or director) or a large owner" (Miller et al., 2007, p. 837). Following this logic, if family members are present in the company alongside the active founders, the firm is categorized as a true family firm.

2.2. Family Firm Performance during the Global Financial Crisis 2007 – 2009

2.2.1. Global Financial Crisis and Firm Performance in Germany

Minichilli et al. (2016) argued that the analysis of family firm-specific characteristics influencing the company's performance is subject to several contingencies such as the definition of TFF or LFF ownership as well as the selection of performance measures. In order to ensure the consideration of these contingencies, various robustness tests will be performed later in this thesis (see section *4.3 Robustness*). Besides these rather methodical elements, researchers also indicated that the time period considered in the analysis might play an important role (e.g. Miller et al., 2007). Therefore, recent academic research on TFF and LFF behavior has called for a more detailed consideration of potential contingencies such as the stage of national development and the financial situation of the economical context the firm is participating in (Minichilli et al., 2016).

Various researchers argued that the consideration of overall economic activity, specifically an economic downturn, will enrich corporate governance research that focusses on behavior of firms with specific ownership types: Lins et al. (2013) described a financial crisis as a natural experiment that moves firms out of their equilibrium while the ownership structure remains unchanged at least temporarily. Therefore, they further argued, it can be better observed how investors adjust their expectations of firm performance with distinct types of ownership structures. Saleh et al. (2017) noted that the consideration of a situation of financial distress is beneficial as it has direct implications for the decision-making process, which, in turn, is a function of corporate ownership structure. More specifically, Minichilli et al. (2016) argued that firms, when confronted with an economic downturn, show a more explorative attitude and hence fundamental decisions that directly affect firm performance, such as R&D investment, M&A activity or expansion strategies, can be observed. Summarizing the above mentioned argumentation, Van Essen, Strike, Carney, and Sapp (2015) described the crisis situation as magnifying both negative and beneficial characteristics of a TFF and LFF due to the fact that firms have been moved out of their equilibrium. Following these calls for a consideration of situational behavior, in this thesis, the performance of TFF and LFF shall be analyzed in the light of the Global Financial Crisis (GFC) of 2007 – 2009.

The GFC originated from a bubble in US-American real estate prices that was caused by loose monetary policy and global imbalances (F. Allen & Carletti, 2010). The availability of funds and the cheap credit contributed to the bubble and other factors such as high leverages in the banking sector, weak regulatory frameworks, and subprime mortgages exacerbated the effects of the bubble, resulting in a national financial crisis (F. Allen & Carletti, 2010). At that point in time, although the financial sector being under tremendous pressure, the real economy was not much affected. However, on September 15, 2008, the collapse of the American investment bank Lehman Brothers signaled international markets that there is serious concern about credit risk in the financial sector, resulting in investors re-assessing risk and withdrawing from markets (F. Allen & Carletti, 2010). The concern about the financial standing of banks and other institutions quickly spread all over the world and disrupted economic activity, resulting in negative firm performance and investor returns (Saleh et al., 2017). The velocity and magnitude of the global spreading were unseen, as never before a crisis of this extent had occurred in the context of well-advanced globalization and a complex financial system (Breitenfellner & Wagner, 2010). Moreover, massive risk-taking by financial institutions such as Lehman Brothers magnified the impact of the GFC (F. Allen & Carletti, 2010). Aboura and Wagner (2016) argued that uncertainty and volatility has a strong negative effect on asset prices and therefore the GFC led to sharp declines in equity prices, severely affecting the global economy. Some scholars argued that the impact on world trade and industrial manufacturing even exceeded the corresponding effect of the Great Depression in 1929, although it should be noted the comparability with that economic downturn is limited due to data availability and data quality as well as the completely different reactions of monetary and fiscal policymakers (Fonseca, 2011). In case of the GFC, it took massive bail-outs of banks and other palliative fiscal and monetary policies to prevent the global financial system from collapsing completely (Breitenfellner & Wagner, 2010).

In Germany, the economic system was deeply hit by the GFC. In 2008, the annual economic growth rate fell to 1.1% and in 2009 it even became negative, at -5.6% (The World Bank Group, 2019). Figure 1 shows the development of the Prime All Share Index over time from 2004 to 2018. The Prime All Share Index tracks the performance of the entire German Prime Standard segment. The German Prime Standard is a market segment of the Frankfurt Stock Exchange where the sample firms of this analysis are listed. In January 2004, the closing price was 1,515.27 and from there on the index continuously increased until the end of 2007 up to 200% of its base value in 2004. In 2008, the index began to decrease first slowly and then from mid-September 2008 on dropped drastically. The Prime All Share Index reached its lowest point in March 2009, where its value was 87% (1,325.13 pts.) compared to the base in January 2004. Thereafter, the economy slowly started to recover (Lins et al., 2013) and increased steadily until mid-2018 to a level of 347% compared to the initial base. In recent months, eco-

nomic development has decreased due to political conflicts destabilizing business activity all over the world (International Monetary Fund, 2019). Figure 2 provides a more detailed view on the development of the Prime All Share Index during the GFC in order to understand the macro-economic circumstances the firms inherent in the sample of this analysis had to face. The impact of the collapse of the investment bank Lehman Brothers on September 15, 2008, can be clearly seen. From mid-September 2008 to early March 2009, the Prime All Share Index dropped drastically by 43% from 2,340.05 pts. on the day before the Lehman bankruptcy to 1,325.13 pts. on March 6, 2009. After reaching this nadir, the German economy slowly started to recover as a result of the massively expansionary and fiscal policies (Funk, 2012). However, Figure 1 shows that, even 18 months after the bankruptcy of Lehman Brothers, the German Prime Standard was not able to recover to a pre-crisis level. Unemployment maintained on a higher level and indebtedness increased considerably in the aftermath of the GFC (Funk, 2012)

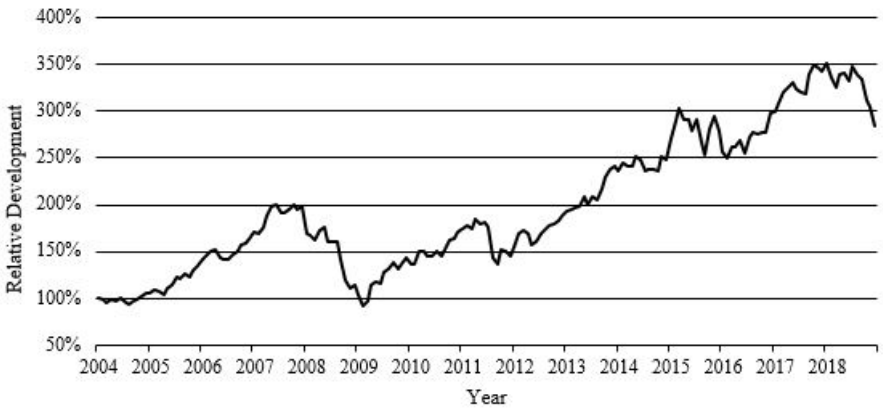
2.2.2. Firm Performance of TFF during the GFC

Academic research on how TFF coped with the GFC has led to inconclusive and even contradictory results (e.g. Arrondo-García, Fernández-Méndez, & Menéndez-Requejo, 2016). Using a large data sample of 8,500 firms from 35 countries, Lins et al. (2013) found that TFF under performed significantly during the GFC compared to firms with other shareholder structures. Specifically, buy and hold crisis period returns during this time in their study were 1.4 percentage points lower than for firms with a dispersed shareholder structure and even 3.3 percentage points lower than for firms with a controlling non-family blockholder. Lins et al. (2013) showed empirically that TFF also cut investment more relative to other firms and further suggested that these investment cuts are negatively associated with performance. Specifically, they found that TFF reduced their capital expenditures to assets ratio by 0.52 percentage points compared to other firms. Those firms in the sample that cut investment more were found to have greater stock price declines than other firms.

Researchers have referred to the agency theory when trying to explain the supposedly inferior performance of TFF during the GFC. Lins et al. (2013) argued that the GFC magnified the inherent conflict of interest between the family and outside shareholders. For example, in light of an economic recession, the survival of the family's economic interests is of greater importance and hence private benefits of control have become more costly to minority shareholders. Saleh et al. (2017) argued that the extreme volatility on global capital markets created panic among family shareholders because they often do not possess sufficiently diversified investment portfolios but rather have their wealth invested in the firm. The protection of the family's interest on the expense of other shareholders has been discussed comprehensively in the previous chapters of this thesis and the fact that these survival-oriented actions are especially predominant in times of crisis has been subject to extensive academic research, referring to it as the "tunneling" of resources out of the firm (e.g. Van Essen et al., 2015).

Other scholars, in contrast, provided evidence suggesting that TFF performed better than other firms during the GFC. Analyzing the entire population of industrial, listed TFF in Italy, Minichilli et al. (2016) found that TFF consistently and significantly outperformed other firms during the GFC. Specifically, they found that TFF did not show a significant performance difference to other firms during a ten-year-period from 2002 to 2012. During the GFC however, Minichilli et al. (2016) found that TFF achieved higher ROE and ROA than other Italian firms. Saleh et al. (2017) examined the financial performance (ROA and ROE) of 677 Australian firms during the GFC and found that TFF performed significantly better than firms with other shareholder structures. Analyzing a large data sample of 2,949 firms across 27 European countries, Van Essen et al. (2015) found that TFF significantly outperformed during the crisis but showed no significant differences to other firms during a period of stable growth (2004 – 2006). In their study, they used cumulative market-adjusted stock return as an indicator of market performance. Moreover, Van Essen et al. (2015) found that TFF are less likely to reduce their workforce or cut wages during both pre-crisis and crisis periods. Amann and Jaussaud (2012) provided evidence suggesting that TFF in Japan showed stronger resilience during the GFC, recovered faster and exhibited higher performance compared to firms with other shareholder structures. In their study, Amann and Jaussaud (2012) formed 98 carefully selected pairs of one Japanese TFF and one Japanese non-TFF and compared ROE, ROA, ROI, and net income of the respective firms. As outlined in the following two paragraphs, researchers have primarily referred to the concept of SEW and the RBV when trying to explain the supposedly superior performance of TFF during the GFC.

With regard to the concept of SEW, scholars argued that, during a crisis, family shareholders will reduce their emphasis on exploiting the family's SEW advantages and rather focus on short-term financial performance (e.g. Berrone, Cruz, & Gomez-Mejia, 2012). In more detail, prior academic research has suggested that under stable economic conditions, TFF prioritize SEW over pure economic rationality (Gómez-Mejía et al., 2007). However, Gomez-Mejia, Cruz, Berrone, and de Castro (2011) argued that with increasing external hazards, family shareholders more likely make strategic decisions resulting in a deterioration of SEW for the benefit of financial performance. Similarly, Patel and Chrisman (2014) found that TFF minimize risks and avoid aggressive investing in times where performance meets or exceeds aspirations but also accept more risks than other firms in situations where performance is below aspirations. The willingness to accept greater risks and make strategic choices might also be fueled by the emotional attachment and effective commitment of the family, management, employees, or other stakeholders to the firm (Berrone et al., 2012). Minichilli et al. (2016) argued that the emotional at-



Source: Thomson Reuters Eikon

Figure 1: Development of the Prime All Share Index 2004 – 2018

Source: Thomson Reuters Eikon

Figure 2: Development of the Prime All Share Index 2004 – 2018

tachment and the resulting extraordinary commitment helps firms to withstand external threats as all forces are concentrated to rescue the firm during the economic downturn and the controlling family will capitalize on their ability to make a fast decision. Furthermore, researchers argued that the long-term orientation of TFF is beneficial especially in times of financial distress. For instance, greater cooperation and implicit contracts with stakeholders favors the continuance of the firm (Van Essen et al., 2015).

Scholars also referred to the RBV when trying to explain the greater resilience of TFF during a crisis. On the one hand, the controlling family might be willing to prop up the TFF by injecting private financial resources in order to assure the long-term survival of the firm (Villalonga & Amit, 2010). Apart from their private assets, family shareholders might also provide financing via other firms under their control in order to maintain employment levels despite declines in market demand or competitiveness (Lins et al., 2013). On the other hand, family shareholders might enjoy privileged access to capital during periods of economic downturns compared to other firms (Minichilli et al., 2016). Crespí-Cladera and Martín-Oliver (2015) found that TFF have facilitated access to debt financing during crises as they more effectively build long-lasting and trusting relationships with business partners like financers.

To summarize, scholars consider the GFC as a natural experiment where inherent benefits and disadvantages of TFF ownership are magnified and hence contribute a further perspective to the long-lasting academic debate as to whether TFF outperform other firms or not. Although Lins et al. (2013) provided evidence indicating lower firm performance of TFF during the GFC, those results suggesting a positive association between TFF ownership and firm performance are predominant and have been substantiated referring to renown academic theories and concepts. To my knowledge, no academic study published in a relevant journal has con-

sidered the firm performance of TFF in Germany during the GFC. Therefore, following researchers that formulated similar hypotheses for different geographic settings (Amann & Jaussaud, 2012; Minichilli et al., 2016; Saleh et al., 2017), I hypothesize that during the GFC, TFF in Germany show a significantly higher financial performance than non-family firms.

> Hypothesis 1a: During the GFC, TFF ownership of firms listed in the German Prime Standard is associated with higher firm performance compared to firms with other shareholder structures.

2.2.3. Firm Performance of LFF during the GFC

The role of LFF has not been subject to academic research to the same extent as the role of TFF during periods of financial downturns (Zhou et al., 2012). Arrondo-García et al. (2016) examined a sample of 6,315 Spanish firms and found that firm performance during the GFC varied within the heterogeneous pool of family firms dependent on the generational stage of the firm. Specifically, first-generation firms exhibited higher growth, but increased their debt ratios and showed lower ROE compared to multi-generational family firms. Although not specifically analyzing LFF, the underlying theory explaining the behavior of first-generation family firms might be analogous to that of LFF. Studying non-financial firms in the S&P 500 during the GFC, Zhou et al. (2012) found that, while family firms, in general, outperformed other firms, especially LFF, a subgroup of family firms, contributed to the superior performance. Specifically, Zhou et al. (2012) suggested that the Operating Return on Assets (OROA) of LFF did not drop at all during the GFC compared to a pre-crisis level whereas the OROA of TFF declined by 14%, contributing to the relative outperformance of LFF. Moreover, their results revealed that LFF invested significantly less and had better access to debt financing during the GFC. The following two paragraphs will provide an overview of the underlying argumentation substantiating the findings suggested by researchers.

On the one hand, Arrondo-García et al. (2016) argued that younger firms have restricted access to resources and might not be able to ensure the survival of the firm during the crisis with the help of investments to the same extent than multi-generational TFF do. Furthermore, in their perspective, the emotional attachment and inexperience of founders result in an excessive commitment and risk-taking that ultimately is supposed to lead to inferior firm performance compared to TFF that exist for at least two generations. In such TFF, according to Arrondo-García et al. (2016), financial goals are increasingly important, especially during times of financial hardship, as the wealth of several family members is at stake. Moreover, Arrondo-García et al. (2016) expected LFF to have a disadvantage when entering a crisis as ownership is more concentrated and hence the founder's wealth is less likely to be diversified.

On the other hand, researchers argued that, on the contrary, the actions of TFF are impacted by greater emotional attachment and encumbered governance whereas LFF are free from kinship ties and therefore can make strategic decision faster and more efficiently, which is especially important during times of financial distress (Miller et al., 2007; Zhou et al., 2012). Furthermore, Zhou et al. (2012) argued that the focus on the lone founders in LFF plays a pivotal role in differentiating them from TFF and therefore firm performance might be enhanced. Specifically, LFF are free from owner-manager conflicts or conflicts among shareholders such as in TFF where disputes between family members might arise (Eddleston & Kellermanns, 2007; Villalonga & Amit, 2010).

To summarize, the literature on the impact of LFF ownership on firm performance during crises is scarce and inconclusive. To my knowledge, no study published in relevant journals has examined the performance of LFF during crisis within the German jurisdiction. After reviewing literature on LFF performance in general as well as during crisis periods, I hypothesize, based on the insights in literature and following the conjecture of Zhou et al. (2012), that, during the GFC, LFF in Germany show a significantly higher financial performance than other firms.

> Hypothesis 1b: During the GFC, LFF ownership of firms listed in the German Prime Standard is associated with higher firm performance compared to firms with other shareholder structures.

2.2.4. The Role of the Family CEO during the GFC

Although family management in general being subject regularly in prior academic literature, the role of family involvement in the management of the firm during a crisis has been analyzed by researchers only scarcely. In their study of 219 Italian firms, Minichilli et al. (2016) analyzed the interaction of ownership concentration and the presence of a family CEO in TFF. Interestingly, they found that while during periods of economic stability a TFF with a family CEO performs better if the family holds a large share of the firm, during a crisis this result is reversed. Specifically, they found that the ROA of Italian TFF during the GFC was higher when a family CEO was present and family ownership was not concentrated, thus the family was not a very large blockholder of the firm.

Minichilli et al. (2016) argued that governance mechanisms are optimized typically for steady-state conditions and during contingencies such as the GFC the expenses of given governance decisions might exceed their benefits. While having a family CEO in TFF might be beneficial during stable economic conditions due to the alignment of interests between management and owners (Anderson & Reeb, 2003), the CEO's behavior as a steward of the organization (Davis et al., 1997), the CEO's specific knowledge and skills (Dyer, 2006), or their emotional attachment and transgenerational intention (Sciascia & Mazzola, 2008), family CEOs might take advantage of the resource distribution during times of financial distress (Minichilli et al., 2016). Especially because their wealth is often tied to the firm, the concentration of ownership and management might induce family CEOs dur-

ing a crisis to extract capital out of the firm and thus ensure the survival of the family's wealth (Minichilli et al., 2016). As discussed earlier in this thesis, such behavior for the benefit of the family is at the expense of other, non-family shareholders and finally results in weaker firm performance. As the private benefits of control might be especially high during economic downturns, the cost of family involvement in the management might outweigh the advantages in these times.

To summarize, the impact on family involvement during crises on firm performance has not gained much attention in academic research yet. Although believed to be beneficial during times of stable economic conditions, I hypothesize, in line with Minichilli et al. (2016), that the costs of a governance mechanism entailing concentrated ownership and management outweigh the benefits during the GFC.

> Hypothesis 2: During the GFC, the presence of a family CEO in TFF listed in the German Prime Standard is associated with lower firm performance compared to the performance of TFF with an external CEO.

It should be noted that, with regard to LFF, extant academic literature most often has not differentiated within LFF regarding founder management or external management as the CEO position in an LFF is most often held by one of the founders. In my sample, as it can be seen in section 3.4 Independent Variable, in 15 out of 32 LFF, one of the founders was present as CEO. Therefore, a differentiated analysis within LFF will not lead to statistically relevant results. In fact, the LFF founder variable was omitted by the software used in the regression model due to multicollinearity. As a consequence, for the remainder of this thesis only the presence of a family CEO will be analyzed while the presence of a founder CEO or external CEO in a founder firm will be neglected.

3. Methodology

This section describes the composition of the sample used for the regression, the retrieval of data as well as the dependent, independent, and control variables. Furthermore, the analytical approach will be outlined.

3.1. Sample

My sample consisted of large German firms listed in the 'Prime Standard' at the Frankfurt Stock Exchange. The German market is selected because here a high number of family shareholders can be found (Fiss & Zajac, 2004). Furthermore, 85% of the German listed firms have at least one blockholder possessing voting rights of more than 25% (Andres, 2008). Therefore, Germany might be a suitable environment to explore the performance of family TFF and LFF. Moreover, the focus on only one specific market increases the comparability between the firms and their actions as for example the jurisdiction and legislative framework is the same. Prime Standard is the largest market segment with the highest transparency standards of the Frankfurt Stock Exchange. A listing in the Prime Standard is a requirement for the admission to one of Deutsche Börse's selection indices, such as DAX, MDAX, TecDAX, or SDAX (Deutsche Börse Group, 2019). In 2018, 319 Prime Standard instruments were included in this market segment. I received the initial dataset containing the firms listed in the Prime Standard from the WHU Chair of Family Business that before had reduced the sample to a total number of 279 individual companies: First, 17 prime standard instruments have been excluded as they constituted only preferred shares of companies that have listed both their ordinary and their preferred shares in the Prime Standard. Furthermore, 23 companies have been excluded within the process of data collection and processing due to data incompleteness or data corruption. Out of these 279 firms, 101 had their IPO after 2005 and therefore could not be considered in the analysis that compared firm performance during and prior to the GFC.

The final data set for the main hypothesis therefore contains 178 firms. The primary industries of the sample firms span nine different one-digit SIC codes including but not limited to services, manufacturing, real estate, wholesale trade, mining, agriculture or transportation. Table 1 summarizes the distribution of the sample firms according to the nine SIC codes. 50.6% of the firms in my sample are classified as manufacturers (SIC codes 2 and 3). The second-largest segment is services (27.1%) followed by Transportation & Public Utilities (7.9%). Figure 3 shows the age distribution of the firms present in my sample at the year-end of 2007, shortly before the crisis period. Although the majority of the firms (59.6%) have been founded less than 50 years ago, it is striking that some firms in the sample are several centuries old and thus might look back on many generations of firm history. The oldest firms in my sample were the pharmaceutical company Merck KGaA (founded 1668), followed by ceramics manufacturer Villeroy & Boch AG (1748), and Koenig & Bauer AG, manufacturer of printing presses (1817). Table 2 shows that the average age of the sample firm was 64.5 years with a median of 40 years.

With regard to the size of the sample firms at the respective period (2007), Table 2 shows that, while the average firm had a market capitalization of 5.21bn € ,the median market capitalization was only 0.32bn € . This calls for a deeper analysis, which is why Figure 4 plots the market capitalization of all sample firms. It can be clearly seen that there are few very large firms dominating the segment in terms of firm size. In total, the aggregated market capitalization of the 178 selected firms amounts to 928.14bn€ . Thereof, the five largest firms by market capitalization constituted 39.5% alone. In 2007, the largest firms in my sample by market capitalization were E.ON SE (91.97bn €) and Daimler AG (88.15bn €), whereas KPS AG (7.06m €) and SThilo Wenig&T AG (8.61m€) marked the lower end of the ranking by firm size.

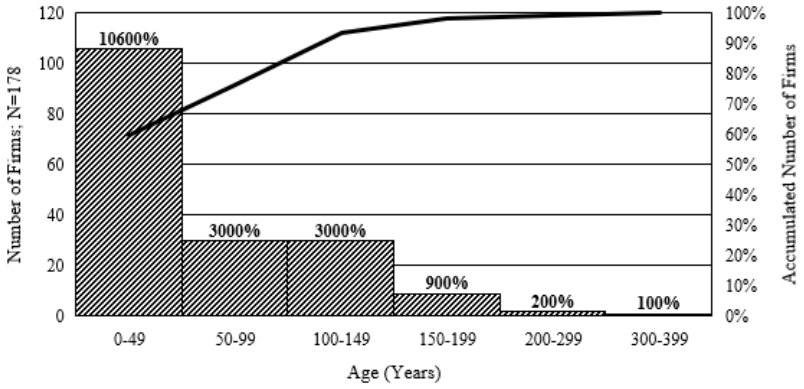
3.2. Data

The data compiled was obtained from multiple sources. All data collected covers the years 2003 – 2018. The list of the

Table 1: Sample Firm Industry Classification

Industry	SIC-Code	Number of Firms	Percentage Share
Agriculture, Forestry and Fishing	0	1	0.6%
Construction and Mining	1	6	3.4%
Manufacturing (I)	2	23	12.9%
Manufacturing (II)	3	67	37.6%
Transportation & Public Utilities	4	14	7.9%
Wholesale and Retail Trade	5	10	5.6%
Finance, Insurance, Real Estate	6	7	3.9%
Services (I)	7	40	22.5%
Services (II)	8	10	5.6%

Source: NAICS Association, Own Calculation



Source: Own Calculation

Figure 3: Age Distribution among Sample Firms

Table 2: Sample Firm Descriptive Statistics

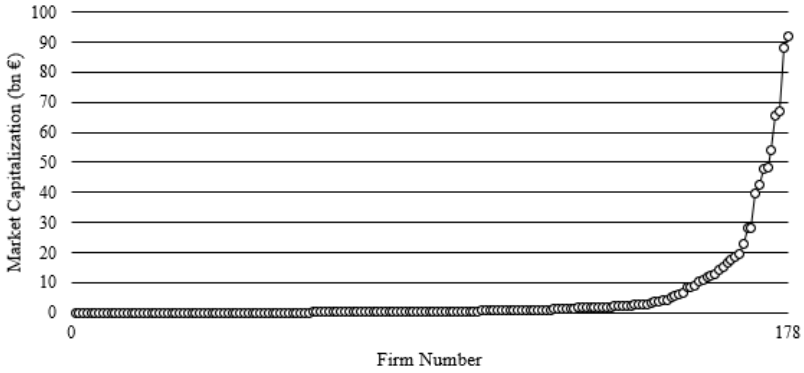
	N	Mean	25th pcl.	Median	75th pcl.	SD
Age	178	64.51	25.25	40.00	95.00	53.72
Market Capitalization (bn €)	178	5.21	0.08	0.32	1.93	14.26
Debt-to-Equity Ratio	178	56.58	16.32	43.04	83.49	153.28
Current Ratio	178	2.69	1.23	1.62	2.43	5.63
CF-to-Sales Ratio	178	-20.40	5.38	9.67	14.04	280.75

Source: Own Calculation

319 companies in the German Prime Standard was issued by Deutsche Börse Group (2019), the operator and owner of the Frankfurt Stock Exchange. Financial data of the firms in the sample such as return ratios, market capitalization, or other key financials was obtained by Thomson Reuters Eikon. An initial categorization of the shareholder structure of the firms has been provided to me by the WHU Chair of Family Business. The shareholder structure has been categorized with the help of the Amadeus database, which is a database of comparable financial and business information on Europe's largest 520,000 public and private companies by Bureau van Dijk / Moody's Analytics (Bureau van Dijk, 2019). The obtained data was manually checked for errors and, if necessary, completed using information from the companies' websites and annual reports. A more detailed description of the shareholder categorization can be found in section 3.4 *independent Variables*. CEO and founder information, as well as missing data, have been collected manually.

3.3. Dependent Variable

In order to test my hypotheses, a primary measure indicating firm performance has to be selected. Several researchers analyzing effects on firm performance found that their results



Source: Own Calculation

Figure 4: Distribution of Market Capitalization (2007)

were highly sensitive to the choice of the performance measure (e.g. Block et al., 2011). Therefore, it is important to first gain a deeper understanding of the different dimensions of performance measurement in order to determine which metrics are beneficial with regard to the analyses conducted in this thesis.

"Organizational performance is the ultimate dependent variable of interest for researchers concerned with just about any area of management" (Richard, Devinney, Yip, & Johnson, 2009, p. 719). In an extensive study reviewing every single article in in the *Strategic Management Journal, the Academy of Management Journal, Administrative Science Quarterly, Journal of International Business Studies, and the Journal of Management* of the last three years, Richard et al. (2009) found that in 29% of all articles organizational performance was included as a dependent, independent, or control variable. The performance measures in these articles ranged from profitability ratios, such as ROE, to broad subjective perceptions of performance, such as reputation, or specific outcomes determining success, like firm survival.

Although subjective performance measures like self-reports and Likert survey responses might provide a deeper understanding of how performance is achieved in individual organizations, in this quantitative thesis, objective measures of performance characterized by higher data availability and firm comparability shall be selected. Researchers generally categorize objective performance measures into three categories: Accounting measures, financial market measures, and mixed accounting and financial market measures (Richard et al., 2009).

Accounting measures are the most common means of determining firm performance (Richard et al., 2009). Due to the publication requirement of firm financials, data is readily available and can be collected in great quantities with the help of financial data service providers. Leading accounting measures that quantify firm performance are Return on Assets (ROA), Return on Equity (ROE), Return on Investment (ROI) or Return on Invested Capital (ROIC) but also sales growth, margins, or market share are often analyzed by researchers (Richard et al., 2009). However, scholars must be aware that accounting measures might be distorted by distinct accounting standards, human error, or deception. Richard et al. (2009) argued that the rules specified in accounting standards are not always corresponding to the actual underlying logic of firm performance. Moreover, accounting performance measures are rather backward-looking, focusing on historic activity more than on future performance (Keats, 1988).

The greatest strength of financial market measures, in contrast, is that these performance measures are forward-looking and consider expected future success and cash flows (Fisher & McGowan, 1983). Apart from expectations about the future, financial market-based measures also integrate intangible assets more effectively than accounting measures do (Richard et al., 2009). Therefore, financial market measures might more precisely depict the performance of an organization with core assets that might not be capitalized in its financials standards due to accounting regulations. Leading financial market measures are Earnings-per-share (EPS), Price-to-earnings ratio (P/E ratio), or total shareholder return (Richard et al., 2009). However, financial market measures also have limitations. Generally, share price movement is not only impacted by the actual performance of an organization but also reflects macroeconomic financial market volatility, momentum, or irrational investor's decisions such as herding behavior (Richard et al., 2009). Furthermore, financial market measures evaluate the organization as a whole and therefore the choice of such measures might not be appropriate when examining the performance impact of strategic decisions regarding individual products or business units.

Apart from pure accounting or financial market measures, there also exist mixed accounting and financial market measures. Richard et al. (2009). argued that such measures might constitute a good compromise as they balance the organization's risks, which are often not considered in account-

ing measures, against operational performance matters, that might not be reflected in financial market measures. One of the earliest and very popular hybrid measures is Tobin's q. It is the ratio of the market value of firm assets and its replacement cost (Tobin, 1969). In practice, because the estimation of the replacement value of a firm's assets is difficult, researchers calculate the ratio by dividing the market value of a firm's equity and liabilities by its corresponding book values. Other examples of mixed accounting and financial market measures are Altman's Z-Score predicting the probability of a firm's bankruptcy using accounting and stock market metrics (Altman, 1968) or the Economic value added (EVA) introduced by Stern, Stewart, and Chew (1995) adjusting accounting profits for the cost of capital.

To summarize, firm performance is not at all one-dimensional and the selection of the suitable performance measure is highly critical. According to Richard et al. (2009), in literature there can be observed three common practices by scholars that are spoilt for choice between the extant multitude of performance measures: First, a single measure is chosen based on a belief, supported by theory and evidence, that the relationship of this measure with firm performance exactly serves to analyze the underlying research question. Second, researchers decrease the significance of the choice of individual measures by testing the same independent variables with a set of different performance measures, thus testing different dependent variables. Third, scholars might aggregate several dependent variables to one proposition of a firm's performance comprising several performance dimensions.

For the purpose of this thesis, I chose to focus on the most suitable performance measure first and then also consider other measures during robustness tests, thereby combining the first and second approach outlined by Richard et al. (2009). Specifically, firm performance in the main regression analysis will be depicted by total shareholder return, constituting a financial market based performance measure. Later, the same independent variables will be tested using alternative performance measures, including accounting measures and mixed accounting and financial market measures. A more detailed description of these measures can be found in section *4.3 Robustness*

For the evaluation of the companies' performance, I followed other family firm researches (e.g. Miller et al., 2011) by using the total return for shareholders. In their study analyzing the prevalence of firm performance measures in strategy, economics, and finance literature, Richard et al. (2009) concluded that financial market measures are most often used and, above all, shareholder return is the single most preferred instrument representing an organization's performance.

The benefit of the total shareholder return is that it considers not only capital gains realized by stock price movements but also takes into account dividend pay-outs. In other words, it accounts for two categories of return: Dividends or distributions as well as capital appreciation representing the change in the market price of an asset. Specifically, the Thomson Reuters Total Return Index shows a "theoretical growth in value of a share holding over a specified period, assuming that dividends are re-invested to purchase additional units of an equity or unit trust at the closing price applicable on the ex-dividend date" (Aalto University School of Business, 2019, p. 8). Specifically, the return index (RI) is constructed as follows:

$$RI_t = RI_{t-1^*} \frac{P_t}{P_{t-1}} \tag{1}$$

except when t = ex-date of the dividend payment D_t then:

$$RI_t = RI_{t-1^*} \frac{P_t + D_t}{P_{t-1}} \tag{2}$$

Where
RI_t = return index on day t
$RI_{(t-1)}$ = return index on the previous day
P_t = price on the ex-dividend date
$P_{(t-1)}$ = price on the previous day
D_t = d dividend payment associated with ex-dividend date t

Where available, gross dividends are used and tax as well as re-investment charges are ignored. The price index and hence the return index is determined using adjusted closing prices. In case of new issues, return indices are initially based on annualized dividend until exact data on the actual payment of the first dividend becomes available.

The total return is accumulated over a time period from September 14, 2008, the day before the collapse of the investment bank Lehman Brothers until March 6, 2009, when the German Prime All Share Index reached rock bottom, as explained in section *2.2.1 Global Financial Crisis and Firm Performance.* I hereby use a timeframe that is very similar to that of other researchers examining effects on firm performance during the GFC (e.g. Lins et al., 2013). However, some researchers used different time spans in their analysis when examining the effect on performance during the GFC. For example, Van Essen et al. (2015) argued that the crisis period should include the beginnings of the real estate bubble in the US and therefore determined the period to be analyzed from 2007 to 2009. In order to consider such contingencies, I conducted my regression analysis using an alternative crisis period window. A more detailed description of this contingent analysis can be found in section *4.3 Robustness*.

In order to compare my results with a control period before the GFC, I determined the control window to cover the years 2005 – 2007, a period where there was little if any indication that a financial crisis with global extent was looming on the horizon (Lins et al., 2013). This control window hence does not overlap with either my crisis period from September 14, 2008, until March 6, 2009, or the crisis period used by other researchers, for instance, Van Essen et al. (2015) , who determined the crisis window to be 2007 – 2009.

Table 3 shows the accumulated shareholder return of the sample firms both during the crisis window and the control window prior to the crisis. The impact of the GFC can be clearly noted: Accumulated over the two-year period be-

tween January 1, 2005, and December 31, 2006, the shareholder return was on average 69.9%, demonstrating high economic growth. Some firms showed exceptional developments, for example, shareholders of the Capital Stage AG (nowadays Encavis AG) more than tripled their investments over two years, with a shareholder return of 366%. Only 13 out of 178 firms exhibited negative accumulated shareholder returns. During the crisis window, however, the shareholder return of all but 16 firms was negative. On average, shareholders lost 44.0% of their investments during a period of not even six months. The standard deviation during the crisis window was much lower compared to the control window, indicating that while firms showed very different performance behaviors during stable times, the economic downturn hit them rather equally. This is also suggested by the closer percentiles compared to those before the crisis.

3.4. Independent Variables

In order to test the hypotheses, family firm ownership has to be assessed. The shareholder structure provided by the WHU Chair of Family Business was determined as follows: Major shareholders that own at least 3% of the company's shares were manually categorized into families, state, financial institutions, private equity firms, other firms, and other individuals. In order to differentiate between TFF and LFF, I extended this shareholder structure by separating founders from other individuals who are not founders. In case families or lone founders held shares not only as a person but also through investment companies and other affiliated companies, these stakes were attributed to the respective family or individual in order to identify and label the ultimate shareholder. As a result, the owners of a firm were categorized into seven groups. In addition, the portion of shares in the hands of public investors holding less than 3% of voting rights was categorized as free float. It should be noted that the total percentage of ownership according to Amadeus sometimes exceeded 100% primarily due to ownership changes throughout the year or minor database errors.

In this study, voting rights, thus the percentage of shares held by an investor, determine the ownership of a firm. Throughout prevailing academic literature, most of the quantitative studies incorporating family ownership use a dummy variable based on a specific threshold of equity ownership or voting rights held by the family (e.g. Andres, 2008; Kowalewski et al., 2010; Sacristan-Navarro et al., 2011a; Villalonga & Amit, 2006). With regard to family ownership, Miller et al. (2010), for instance, argued that ownership is, of course, a matter of degree as the more shares are owned by a family, the more there is at stake and hence certain behaviors like for example the tendency towards acquisition changes. However, it is quite difficult to determine a particular threshold: While many studies use a threshold of 25% family ownership (e.g. Andres, 2008; Kowalewski et al., 2010) it is difficult to argue that for instance firms with 24% family ownership are fundamentally different than firms with 26% family ownership. Therefore, in alignment with other studies (e.g. Anderson & Reeb, 2003; Chu, 2009; Hamadi, 2010; Sciascia & Mazzola, 2008). I use ownership as a continuous variable in my main regression analysis. Nevertheless, in section *4.3 Robustness*, the regression analysis is repeated using dummy variables with various thresholds for ownership.

As already discussed in section *2.1.3 Family Firm Heterogeneity and Firm Performance*, TFF and LFF in this analysis are defined following Miller et al. (2007). The independent variable *TFF* therefore describes the percentage of voting rights (common shares) held by multiple members of the same family as of the end of the financial year 2007. The independent variable LFF describes the percentage of voting rights (common shares) held by the company's founder(s) with no other family members involved as of the end of the financial year 2007, respectively. Table 6 at the end of this section summarizes all variables and also provides a more detailed explanation of the variables concerning the ownership types state, financial institutions, private equity firms, other firms, and other individuals. Table 4 shows the distribution of ownership among the 178 sample firms according to the categorization introduced above. On average, 16.5% percent of all voting rights of the sample firms are in the hands of a family and 5.2% are owned by founders with no other family member involved. However, the averages are across all firms within the sample and therefore a differentiated perspective on only those firm including particular ownership types is required in order to permit qualitative assessments of the magnitude of ownership. Out of the 178 sample firms, 64 are classified as having TFF-shareholders. On average, these family shareholders hold 45.8% of voting rights, almost half of the companies' shares. Furthermore, 32 firms are classified as having LFF-shareholders where the founders, on average, possess 28.8% of voting rights. With regard to the other ownership types, it can be noted that more than half of the sample firms (93) have financial institutions as shareholders and on average the financial institutions hold 24.1% of voting rights. PE shareholders only hold 15.1% voting rights on average and state-ownership is the least common among the sample firms (present in 11 out of 178 firms). It should be noted that the sum of firms where a specific ownership type is present (373) by far exceeds the number of sample firms (178) as in most of the firms, multiple shareholder types are present. In order to incorporate family management into the regression analysis, the independent variable *Family - CEO* shall be introduced. The importance of including family management has been discussed extensively during the literature review. Therefore, it comes as no surprise that a multitude of researchers included family involvement as an independent variable into the analysis (e.g. Anderson et al., 2009; Andres, 2008; Minichilli et al., 2016; Sacristan-Navarro et al., 2011a; Sacristan-Navarro, Gomez-Anson, & Cabeza-Garcia, 2011b). Since the CEO is considered the most important powerful decision-maker in a company (Minichilli et al., 2010), I follow other researchers and include the family CEO as an independent variable in my regression model (e.g. Minichilli et al., 2016; Sirmon et al., 2008). Specifically, *FamilyxFamily - CEO* is designed as an interaction term where a dummy variable that is one, if

Table 3: Accumulated Shareholder Return of Sample Firms

	N	Mean	25th pcl.	Median	75th pcl.	SD
Accumulated Pre-Crisis Return 01.01.2005 – 31.12.2006	178	69.9%	36.7%	60.8%	89.0%	0.63
Accumulated Crisis Return 14.09.2008 – 06.03.2009	178	-44.0%	-61.0%	-41.2%	-22.6%	0.38

Source: Own Calculation

Table 4: Ownership Distribution among Sample Firms

	N	TFF	LFF	Other Individual	Financial Institution	PE	State	Other
Average % of equity ownership across all firms	178	16.5%	5.2%	3.5%	12.6%	3.7%	1.6%	10.9%
Number of firms where ownership type is present	178	64	32	47	93	44	11	82
Average % of equity ownership among firms with respective ownership type	n/a	45.8%	28.8%	13.2%	24.1%	15.1%	25.1%	23.6%

Source: Own Calculation

the CEO is a member of the family shareholders, and zero otherwise, is multiplied with the continuous variable TFF representing the percentage of voting rights held by the family. Correspondingly, the term *FamilyxExternal_CEO* represents the families' voting rights of a TFF where no family CEO, but an outside manager holds the CEO position.

As explained earlier, no differentiation with regard to the management involvement of founders in LFF is made as this will not lead to statistically relevant results. In fact, the LFF founder variable was omitted by the software used in the regression model due to multicollinearity.

Table 5 shows the presence of family and founder CEOs in the firms. Specifically, while around one third (34.4%) of all TFF have a family CEO, almost in half of the LFF (46.9%), one founder holds the CEO position. It is also interesting to note that when a family CEO is present, the average percentage of voting rights is higher than with an external CEO. This might be due to the fact that in large firms, equity ownership is more dispersed and external, professional CEOs are more common. It is especially notable that when there is no LFF CEO, the average percentage of voting rights by the founders is only 16.7%, compared to 42.5% ownership when an LFF CEO is present.

3.5. Control Variables

This study argues that family ownership affects firm performance. It therefore is important to ensure that the analysis takes other factors influencing firm performance into account. Consistent with previous studies on family firm performance (e.g. Lins et al., 2013; Minichilli et al., 2016; Van Essen et al., 2015), I therefore control for industry affiliation, past performance, firm age, firm size, leverage, and liquidity. Furthermore, I include ownership types other than TFF and LFF into the regression.

Other ownership types. In order to separate the effect originating from family or founder ownership and to better understand how ownership structure in general affects firm performance, I included the following ownership types in the regression. *Other-Individual* describe shareholders or their holdings which are controlled by a maximum of two non-relative individuals. *Financial-Institution* are banks, venture capital funds, insurance firms, mutual or pension funds, other funds or holding companies. Private equity firms (PE) are firms that exclusively engage in private equity activities. Also professionally-managed family offices are classified as PE as they are assumed to have a similar nature as classical PE firms (Estrodt, 2003). State describes government-controlled blockholders. Other describes all other shareholder types (except for free float), for instance foundations, cooperatives, anonymous investors or employees.

Industry affiliation (SIC). I expect that firms belonging to particular industries might show a different performance during a crisis than firms in other industries. In order to control for this industry effects, I grouped the companies in the sample using the first digit of the Standard Industrial Classification (SIC) code. The regression analysis therefore considers the following industries as control variables: Agriculture, Forestry and Fishing, Construction and Mining, Manufacturing, Transportation & Public Utilities, Wholesale and Retail Trade, Finance, Insurance and Real Estate, and Services.

Past performance (Pre-Crisis-Return). I expect that the

Table 5: Family Involvement in the Management of Sample Firms

	N	TFF	LFF
Number of firms where ownership type is present	178	64	32
Number of firms where ownership type is present and family member (founder) is CEO	178	22	15
Percentage of TFF (LFF) with presence of family CEO (founder CEO)	178	34.4%	46.9%
Average % of equity ownership by family (founder) with presence of family CEO (founder CEO)	178	48.7%	42.5%
Average % of equity ownership by family (founder) with external CEO	179	44.2%	16.7%

Source: Own Calculation

mere fact that firms that have performed better in the past might also lead to better performance during the regression period. In order to isolate that effect, I include the company's pre-crisis total return for shareholders between 2005 and 2007 in the main regression.

Firm age (ln-IPO). I expect that older firms perform better, as they tend to have greater management expertise, higher cash reserves, and might even have survived a crisis in the past. Especially after the first listing at the stock exchange, access to capital and supervision by shareholders due to transparency requirements is higher. Therefore, I include the natural logarithm of the firms' age since their IPO, the difference between the year of the IPO and the respective year of the regression period. The natural logarithm is used in order to improve the model fit by altering the scale of skewed variables, such as firm age and firm size.

Firm size (ln-Cap). I expect that larger firms might tend to perform better, especially during a crisis, because of greater management expertise or higher cash reserves. Smaller firms might lack the management expertise required to navigate a company through such challenging times. Therefore, I use the natural logarithm of the market capitalization in order to control for the firm size.

Leverage (DE_Ratio). I expect that higher leverage affects firm performance negatively as it tends to magnify profits in good times but also magnifies losses in bad times like the GFC (**?**). A firm that borrows heavily bears a higher risk of default compared with a less-leveraged firm due to high interest rates constituting fixed costs or the inability to raise additional capital due to the higher risk of over-indebtedness (Castanias, 1983). Leverage in this study is evaluated with the help of the debt-to-equity ratio, calculated by dividing a company's total liabilities by its shareholder equity.

Liquidity (Current_Ratio). I expect that firms with higher liquidity reserves perform better during a crisis as those firms with liquidity shortage lack the financial resourced to repay creditors and therefore might result in a situation of default. Liquidity is evaluated with the current ratio, calculated by dividing a firm's current assets by its current liabilities. The current ratio therefore measures a company's ability to repay short-term liabilities with the available short-term resources on hand.

Cash flow generation (CF_Sales_Ratio). I expect that firms that have a greater ability to generate cash out of its sales perform better during a crisis as they can generate more cash for each money unit earned than other firms with a lower cash flow generation ability. The ability to translate sales into cash is evaluated by the cash flow-to-sales ratio, calculated by dividing a company's funds from operations by its net sales.

3.6. Analytical Approach

All regressions have been performed in StataSE 16 by Stata corp. For the main regression, I chose a multiple linear regression model using generalized least squares in order to estimate coefficients. The regression results will be interpreted using significance levels of 1%, 5%, and 10%. Deviating, non-linear regression models or models with different dependent variables used for robustness tests are described in detail in section 4.3 Robustness.
The following formula depicts the main regression analysis:

$$y_i = \beta_0 + \beta_1 X_i + \cdots + \beta_1 X_n + \epsilon_i$$

Where y_i = Dependent variable
β_0 = Population Y intercept
β_1 = Population slope coefficients
$X_i \cdots X_n$ = Independent variables and control variables
ϵ_i = Random error term

Generally, it should be noted that the independent and control variables have been lagged by one period (year-end 2007) in order to ensure that they describe the pre-crisis status. Thereby, I avoid that variables are already influenced by the crisis period. For example, the debt-to-equity ratio serving as the leverage control variable is considered for the year 2007 and therefore cannot be a consequence of heavy borrowing during the crises period. Table 6 summarizes the variables that have been used in the main regression analysis as well as their purpose, the variable type and the respective definition.

4. Analyses and Results

This section summarizes the empirical findings of the analyses performed in this thesis. The significant outcomes will be outlined, and it will be resolved whether the hypotheses

Table 6: Variable Definitions

Variable	Variable Purpose	Variable Type	Definition
Crisis_Return	Dependent	Continuous	Accumulated total return for shareholders between September 14, 2008, and March 6, 2009
TFF	Independent	Continuous	Percentage of voting rights (common shares) held by multiple members of the same family as of the end of the financial year 2007
LFF	Independent	Continuous	Percentage of voting rights (common shares) held by the company's founder(s) with no other family members involved as of the end of the financial year 2007
FamilyxFamily_CEO	Independent	Interaction Term	Percentage of voting rights (common shares) held by multiple members of the same family multiplied with one if the CEO is a family member as of the end of the financial year 2007 as of the end of the financial year 2007
FamilyxExternal_CEO	Independent	Interaction Term	Percentage of voting rights (common shares) held by multiple members of the same family multiplied with one if the CEO is no member of the owning family as of the end of the financial year 2007 as of the end of the financial year 2007
Other_Individual	Independent	Continuous	Percentage of voting rights (common shares) held by individual investors with no other family members involved as of the end of the financial year 2007
Financial_Institution	Independent	Continuous	Percentage of voting rights (common shares) held by banks, venture capital funds, insurance firms, mutual or pension funds, other funds, or holding companies as of the end of the financial year 2007
PE	Independent	Continuous	Percentage of voting rights (common shares) held by PE firms (incl. family professionally managed family offices) that exclusively engage in private equity activities as of the end of the financial year 2007.
State	Independent	Continuous	Percentage of voting rights (common shares) held by the government / state-controlled blockholders as of the end of the financial year 2007
Other	Independent	Continuous	Percentage of voting rights (common shares) held by all other types of shareholders (except free float), i.e. foundations, cooperatives, anonymous investors, management, or employees as of the end of the financial year 2007
Pre_Crisis_Return	Control	Continuous	Accumulated total return for shareholders between 2007 and 2009
1-digit SIC codes	Control	Categorical	Standard Industrial Classification (SIC) Code of the firm's industry
ln_IPO	Control	Continuous	Natural logarithm of the firms' age since their IPO as of the end of the financial year 2007
ln_Cap	Control	Continuous	Natural logarithm of the firms' market capitalization as of the end of the financial year 2007
DE_Ratio	Control	Continuous	Debt-to-Equity ratio as of the end of the financial year 2007
Current_Ratio	Control	Continuous	Current ratio (current assets / current liabilities) as of the end of the financial year 2007
CF_Sales_Ratio	Control	Continuous	Cash flow-to-sales ratio (funds from operations / net sales) as of the end of the financial year 2007

Source: Miller et al. (2007), Own Compilation

can be supported or not. The section is structured as follows: First, descriptive statistics including means, standard deviations, and correlations among the variables are presented. Thereafter, the main regression results will be outlined in order to conclude whether the hypotheses derived throughout this thesis can be supported. Finally, several robustness tests increase the quality of research by testing resistance to variable definitions, choice of dependent variables, determination of the crisis window, or selection of the analytical approach. Finally, further empirical analyses related to decisions about personnel, capital structure, and capital expenditures provide further insights into the behavior of TFF and LFF during the GFC.

4.1. Descriptive Results

Table 7 summarizes the empirical correlations among the dependent, independent, and control variables, including means and standard deviations and excluding interaction terms. The dependent variable, Crisis_Return, shows a significant positive correlation with LFF (p<0.05), but not with TFF. Furthermore, Other_Individual ($p < 0.05$) correlates positively with accumulated total shareholder return during the GFC. Performance during the control window prior to the crisis is positively correlated with Financial_Institution ($p < 0.01$) and Current_Ratio ($p < 0.01$). Furthermore, there is a slight negative correlation between CF_Sales_Ratio and Pre_Crisis_Return. It is also noteworthy that LFF ownership is negatively associated with firm size (*ln_Cap*, $p < 0.01$) and firm age (*ln_IPO*, $p < 0.01$) which is intuitive as the founders are still present and therefore the firms cannot be as old as multigenerational TFF and often are smaller due to the relatively early stage of business. TFF ownership, analogously, is positively associated with firm age ($p < 0.1$).

4.2. Main Regression Results

Table 8 shows the regression results for the first regression. Hypotheses 1a and 1b are tested in Model 2, where total shareholder return is accumulated during the crisis period from September 14, 2008, until March 6, 2009. Model 1 performs the same analysis, only that the total shareholder return is accumulated over the period 2005 – 2007. Furthermore, pre-crisis return is introduced as a control variable in Model 2 in order to test whether the performance is impacted by prior performance.

The first independent variable, TFF does not seem to have any significant effect on firm performance during the crisis ($p > 0.1$). Therefore, the results do not support hypothesis 1a. Interestingly, there is a significant effect of TFF ownership on firm performance during the control window prior to the GFC ($p < 0.1, \beta = 0.302$). The positive coefficient implies that TFF ownership is positively associated with total shareholder return, suggesting that TFF exhibit superior performance during a period of stable economic conditions.

The second independent variable, LFF, is significant during the crisis period ($p < 0.05, \beta = 0.425$). The positive coefficient implies that LFF ownership is positively associated with total shareholder return, suggesting that LFF exhibit superior performance during a period of financial distress. Therefore, the results do support hypothesis 1b. During the pre-crisis period 2005 – 2007, no significant performance effect relating to LFF ownership can be observed ($p > 0.1$).

With regard to other categories of firms analyzed in this study, only a few ownership types show significant effects, and when they do, then only for one of the periods examined. First, and most notable, state ownership is positively and highly significantly associated with firm performance during crisis ($p < 0.01, \beta = 1.323$). This result might indicate that investors had higher expectations for firms where the government was a large shareholder as these firms might benefit from preferential treatment with regard to financial bailouts by the government. Second, also firms where other individuals like single investors were major shareholders showed superior performance during the GFC ($p < 0.1, \beta = 0.624$). Third, ownership by financial institutions is positively associated with performance in the control window prior to the crisis ($p < 0.05, \beta = 0.573$). During the GFC, however, having financial institutions as shareholders had no significant effect on firm performance.

Although I expected firms belonging to different industries to behave differently, almost no significant associations between industry group membership and firm performance can be observed. With regard to other control variables, age does not seem to be significant for firm performance, either ($p > 0.1$). Firm size is only significant during the control window prior to the GFC ($p < 0.1, \beta = 0.0518$). The Debt-to-Equity ratio, not significant before crisis, is negatively associated with performance during the GFC ($p < 0.1, \beta = -0.000315$), suggesting that a higher indebtedness resulted in inferior performance during the crisis. The current ratio exhibits a positive significant effect on firm performance both during ($p < 0.1, \beta = 0.00993$) and before the crisis ($p < 0.01, \beta = 0.0412$). The Cash-flow-to-sales ratio, in contrast, is not significant with regard to firm performance during neither period.

The strength of the relationship between the model and the dependent variable is expressed by the R-squared. The R-squared is the percentage of the dependent variable variation that is explained by the linear regression model and therefore is always between zero and one. The R-squared value of the model during the crisis and before the crisis is 0.234 and 0.284, respectively. This suggests, that 23.4% (28.4%) of the variance of accumulated total shareholder return during (before) the crisis can be explained by the model. The R-squared adjusted penalizes the analysis as additional variables that do not enhance the explanatory power of the model are included in the model. The lower R-squared adjusted during both periods indicates that the inclusion of some of the control variables did not improve overall fit of the model.

Table 9 shows the second regression analysis. The dependent variable and the regression model are identical, but in this setting, the independent variable TFF is replaced by two interaction terms where the effect of family ownership

Table 7: Correlation Matrix

	Mean	SD	1	2	3	4	5	6
1. Crisis_Return	-0.44	0.38	1.0000					
2. Pre_Crisis_Return	0.70	0.63	0.0038	1.0000				
3. TFF	0.16	0.27	0.0070	0.0275	1.0000			
4. LFF	0.05	0.15	.1518**	0.0562	-0.2109***	1.0000		
5. Other_Individual	0.03	0.08	0.1542**	-0.0633	-0.1099	0.0281	1.0000	
6. Financial_Institution	0.13	0.20	-0.0244	0.2828***	-0.1652**	-0.1608**	-0.0610	1.0000
7. PE	0.04	0.11	0.0063	-0.0889	-0.0180	-0.0963	-0.0069	-0.0520
8. State	0.02	0.08	0.0916	-0.0133	-0.0995	-0.0688	-0.0296	-0.0687
9. Other	0.11	0.22	0.0304	-0.0491	-0.1442*	-0.0848	-0.0822	0.0108
10. ln_IPO	2.42	0.59	-0.0700	-0.0402	0.1395*	-0.2646***	-0.1083	0.0159
11. ln_Cap	13.08	2.21	-0.1206	-0.0057	0.0794	-0.2930***	-0.1340*	0.0324
12. DE_Ratio	56.58	153.72	-0.1111	-0.0511	-0.0476	-0.0482	0.0008	0.0220
13. Current_Ratio	2.69	5.64	0.0888	0.3827***	-0.0776	0.0372	0.0699	0.2164***
14. CF_Sales_Ratio	-20.40	284.54	-0.1228	-0.1392*	0.0684	0.0129	-0.0633	-0.0426

	7	8	9	10	11	12	13	14
1. Crisis_Return								
2. Pre_Crisis_Return								
3. TFF								
4. LFF								
5. Other_Individual								
6. Financial_Institution								
7. PE	1.0000							
8. State	-0.0445	1.0000						
9. Other	-0.0611	0.0231	1.0000					
10. ln_IPO	-0.0287	-0.0341	-0.0041	1.0000				
11. ln_Cap	-0.1301*	0.2382***	0.1081	0.5098***	1.0000			
12. DE_Ratio	0.1549**	0.1482**	0.0457	0.0162	0.1830**	1.0000		
13. Current_Ratio	-0.0647	-0.0558	-0.0589	-0.0979	-0.1925**	-0.0712	1.0000	
14. CF_Sales_Ratio	-0.0008	0.0238	0.0404	0.0686	0.1074	0.0416	-0.2039***	1.0000

Source: Own calculation. ***p<0.01, **p<0.05, *p<0.1.

on firm performance is conditioned on whether the firm is managed by a family CEO or an external CEO. With regard to all other variables except FamilyxFamily_CEO and FamilyxExternalCEO, the regression results are naturally almost identical to the first regression.

The independent variable FamilyxFamily_CEO, hence the share of family ownership in case a family member holds the CEO position, is not significant during the crisis period ($p > 0.1$). Therefore, hypothesis 2 cannot be supported. However, the results suggest that there is a significant relationship between the presence of a family CEO and the accumulated shareholder return in the years 2005 – 2007, prior to the GFC ($p < 0.1, \beta = 0.501$). The positive coefficient implies that family management is beneficial for firm performance during periods of stable economic conditions.

The analogous independent variable FamilyxFamily_CEO, hence the share of family ownership in case the CEO position is held by an external manager, is not significant in either period ($p > 0.1$) and thus the presence of an external CEO seems to have no impact on total shareholder return.
The coefficient of determination, R-squared, and also the R-squared adjusted are slightly higher than in the first regression analysis, suggesting that the differentiation within TFF helped to increase the explanatory power of the model.

4.3. Robustness

In this section, several robustness tests will be performed. It shall be analyzed whether the results are influenced by specific variable definitions or analytical methods. Therefore, the regression analysis is repeated using alternative performance measures, alternative blockholder definitions, an alternative crisis period window, as well as an alternative analytical approach.

4.3.1. Alternative Firm Performance Measures

In their meta-study, Block et al. (2011) found that the results of studies examining family firm performance were highly sensitive to the choice of the performance measure.

Table 8: Regression Results TFF and LFF

DV: Accumulated total shareholder return VARIABLES	(1) Pre-Crisis	(2) Crisis
TFF	0.302*	0.137
	(0.178)	(0.113)
LFF	0.463	0.425**
	(0.333)	(0.210)
Other_Individual	-0.314	0.624*
	(0.558)	(0.350)
Financial_Institution	0.573**	0.122
	(0.241)	(0.154)
PE	-0.0732	0.173
	(0.398)	(0.249)
State	0.345	1.323***
	(0.638)	(0.400)
Other	-0.0978	0.0195
	(0.207)	(0.130)
Pre_Crisis_Return		-0.0477
		(0.0500)
group(SIC) = 2	0.359	-0.341
	(0.625)	(0.392)
group(SIC) = 3	0.145	-0.392
	(0.589)	(0.369)
group(SIC) = 4	0.243	-0.484
	(0.582)	(0.365)
group(SIC) = 5	0.130	-0.687*
	(0.613)	(0.384)
group(SIC) = 6	0.206	-0.325
	(0.607)	(0.380)
group(SIC) = 7	0.887	-0.402
	(0.627)	(0.396)
group(SIC) = 8	0.443	-0.185
	(0.590)	(0.370)
group(SIC) = 9	0.123	-0.126
	(0.619)	(0.388)
ln_IPO	-0.0477	0.0448
	(0.0921)	(0.0577)
ln_Cap	0.0518*	0.00529
	(0.0272)	(0.0172)
DE_Ratio	-0.000209	-0.000315*
	(0.000293)	(0.000184)
Current_Ratio	0.0412***	0.00993*
	(0.00848)	(0.00570)
CF_Sales_Ratio	-0.000247	-6.11e-05
	(0.000170)	(0.000107)
Constant	-0.380	-0.324
	(0.687)	(0.431)
Observations	178	178
R-squared	0.284	0.234
R-squared adjusted	0.192	0.131

Source: Own Calculation
Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Regression Results Family CEO

DV: Accumulated total shareholder return VARIABLES	(1) Pre_Crisis_CEO	(2) Crisis_CEO
FamilyxFamily_CEO	0.501*	0.269
	(0.258)	(0.164)
FamilyxExternalCEO	0.192	0.0662
	(0.206)	(0.129)
LFF	0.483	0.440**
	(0.333)	(0.210)
Other_Individual	-0.298	0.633*
	(0.558)	(0.350)
Financial_Institution	0.573**	0.124
	(0.241)	(0.153)
PE	-0.0393	0.194
	(0.399)	(0.250)
State	0.328	1.313***
	(0.638)	(0.400)
Other	-0.105	0.0141
	(0.207)	(0.130)
Pre_Crisis_Return		-0.0525
		(0.0501)
group(SIC) = 2	0.454	-0.277
	(0.631)	(0.396)
group(SIC) = 3	0.237	-0.331
	(0.595)	(0.373)
group(SIC) = 4	0.347	-0.415
	(0.590)	(0.370)
group(SIC) = 5	0.226	-0.624
	(0.619)	(0.388)
group(SIC) = 6	0.277	-0.277
	(0.611)	(0.383)
group(SIC) = 7	0.993	-0.328
	(0.635)	(0.401)
group(SIC) = 8	0.536	-0.123
	(0.596)	(0.374)
group(SIC) = 9	0.222	-0.0601
	(0.626)	(0.392)
ln_IPO	-0.0503	0.0429
	(0.0921)	(0.0577)
ln_Cap	0.0561**	0.00831
	(0.0275)	(0.0174)
DE_Ratio	-0.000217	-0.000321*
	(0.000293)	(0.000184)
Current_Ratio	0.0414***	0.0103*
	(0.00848)	(0.00570)
CF_Sales_Ratio	-0.000248	-6.27e-05
	(0.000170)	(0.000107)
Constant	-0.528	-0.423
	(0.701)	(0.440)
Observations	178	178
R-squared	0.289	0.240
R-squared adjusted	0.193	0.132

Source: Own Calculation. Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In section *3.3 Dependent Variable*, the categorization of performance measures into accounting measures, financial market measures and mixed accounting and financial market measures according to Richard et al. (2009) has been introduced. In order to test the robustness of the main result, where the financial market-based performance measure total shareholder return was used, the following Table 10 shows a regression using popular accounting measures as well as mixed accounting and financial market measures.

One major disadvantage of accounting measures, and therefore also of mixed measures, is that they cannot be observed on a daily basis like financial measures but rather are reported at least on an annual basis. Therefore, it is impossible to measure performance over the exact crisis period that has been used for the main regression. Because accounting measures are rather backward-looking (Keats, 1988), for the purpose of this analysis, the accounting performance measures are the sum of the year-end reported measures by Reuters Eikon of the years 2008 and 2009. Thereby, the crisis period as defined in the main regression is included. In order to compare the results against stable economic conditions before the GFC, I also aggregated the same dependent variables over the years 2005 and 2006.

Please note that Table 10 shows shortened regression results. For improved visualization, some control variables that have not been significant like the industry groups or past performance are not displayed. For a full regression table, including all variables, please refer to Appendix 1. I tested the different ownership types against four alternative performance measures both during and before the GFC.

ROE has been computed as the net income before extraordinary items for the fiscal year divided by the same period average total equity and is expressed as a percentage. Surprisingly, no single ownership type has a significant effect on ROE. Furthermore, the goodness-of-fit measure R-squared during the crisis is relatively low *(0.125)* and the R-squared adjusted close to zero *(0.007)*, suggesting that the overall model does not explain much of the ROE's variance and the choice of variables might not be optimal for this analysis. To conclude, neither hypothesis 1a nor hypothesis 1b can be supported.

Examining ROA, in contrast, reveals interesting results. ROA represents the return on assets after taxes. It is calculated as net income before extraordinary items for the fiscal year divided by the average total assets for the same period and is expressed as a percentage. Interestingly, TFF ownership is significant both before ($p < 0.01, \beta = 18.05$) and during the crisis ($p < 0.1, \beta = 12.59$). The indication of this result is twofold. First, although only significant at a 10% level, TFF seem to have performed superior in terms of ROA compared to other firms during the GFC. This supports hypothesis 1a. Second, TFF generally seem to perform better than other firms during the period of stable economic conditions prior to the GFC. LFF ownership is not significant and therefore seems to have no effect on firm performance neither before nor during the crisis. Therefore, hypothesis 1b cannot be supported. Another interesting result is that PE ownership is negatively associated with ROA performance on a 1% significance level ($p < 0.01, \beta = -49.08$). Overall, the R-squared during the crisis is relatively high *(0.466)* and also the R-squared adjusted *(0.395)* indicates that the relationship between the dependent variable and the model is quite good.

Also the analysis of the ROIC reveals significant results with regard to the effect of ownership types. ROIC is calculated as income after tax for the fiscal year divided by the same period average total long-term capital and is expressed as a percentage. Total long-term capital represents the sum of total equity, total long-term debt, deferred income tax and total other liabilities. When measuring performance with the ROIC, TFF ownership is only significant in the period prior to the GFC ($p < 0.05, \beta = 28.17$), but not during the crisis itself. LFF ownership is not significant and therefore seems to have no effect on firm performance neither before nor during the crisis. Therefore, neither hypothesis 1a nor hypothesis 1b can be supported. Similar to ROA performance, PE ownership has a significantly negative effect on the firm's ROIC ($p < 0.01, \beta = -1,481$). Again, R-squared *(0.440)* and R-squared adjusted *(0.365)* suggest a good model fit.

The fourth alternative performance measure is a mixed accounting and financial market-based measure, Tobin's q. It is the ratio of the market value of firm assets and its replacement cost (Tobin, 1969). Because the estimation of the replacement value of a firm's assets is difficult, I calculated the ratio by dividing the market value of a firm's assets by its corresponding book values. Specifically, I follow the approach of Chung and Pruitt (1994) who simplified the calculation of Tobin's q by dividing the sum of the market value of equity, hence the market capitalization, at the end of the year and the book value of debt by the book value of total assets. The market-to-book value is considered a useful measure of firm performance as the valuation of the firm is determined by market participants who evaluate the firms and their prospects (Villalonga & Amit, 2006).

Neither TFF nor LFF ownership has a significant effect on the firms' Tobin's q during the GFC, providing no support for hypotheses 1a and 1b. It should be noted, however, that TFF ownership is positively associated with firm performance ($p < 0.1, \beta = 1.673$) when examining the effect during the control window 2005 – 2007 where economic conditions were stable. Interestingly, firm age since the IPO had a significant negative effect both prior and during the GFC. Overall, the R-squared during the crisis is highest *(0.489)* compared with all other performance measures and also the R-squared adjusted (0.420) indicates that the relationship between the dependent variable and the model is quite good.

Table 11 shows the same dependent variables. However, this time the independent variable TFF is separated into FamilyxFamily_CEO and FamilyxExternalCEO, analogously to the main regression. Regardless of the performance measure, family CEO presence was not significant during the crisis and therefore no effect on firm performance can be suggested by the results. Therefore, hypothesis 2 cannot be supported. However, in the period 2005 – 2007, prior to the

Table 10: Robustness – Regression (shortened) including Alternative Performance Measures

VARIABLES	(1a) Pre-Crisis ROE	(1b) Crisis ROE	(2a) Pre-Crisis ROA	(2b) Crisis ROA	(3a) Pre-Crisis ROIC	(3b) Crisis ROIC	(4a) Pre-Crisis TobinsQ	(4b) Crisis TobinsQ
TFF	57.70	50.03	18.05***	12.59*	28.17**	26.32	1.673*	0.327
	(35.79)	(35.94)	(6.767)	(6.739)	(12.75)	(68.90)	(0.921)	(0.451)
LFF	12.19	0.444	7.327	-3.485	16.44	-104.7	2.321	1.062
	(66.72)	(66.81)	(12.62)	(12.53)	(23.76)	(128.1)	(1.717)	(0.838)
Other_Individual	53.02	60.98	13.25	11.46	-4.723	127.2	3.226	0.0286
	(111.9)	(111.5)	(21.16)	(20.91)	(39.86)	(213.7)	(2.879)	(1.398)
Financial_Institution	13.31	-1.239	2.022	-6.364	-0.125	28.11	0.665	-0.125
	(48.30)	(48.92)	(9.132)	(9.173)	(17.20)	(93.78)	(1.243)	(0.613)
PE	79.61	81.47	3.728	-49.08***	23.51	-1,481***	-0.986	1.353
	(79.87)	(79.49)	(15.10)	(14.90)	(28.44)	(152.4)	(2.055)	(0.997)
State	-21.93	-30.68	-7.683	-4.074	-15.81	17.42	-3.493	-1.375
	(128.0)	(127.5)	(24.20)	(23.91)	(45.59)	(244.4)	(3.293)	(1.598)
Other	41.62	44.10	7.702	8.698	19.62	-2.895	0.0652	-0.419
	(41.46)	(41.29)	(7.839)	(7.742)	(14.77)	(79.15)	(1.067)	(0.518)
ln_IPO	-11.65	-10.44	0.997	2.170	-2.025	30.50	-1.122**	-0.682**
	(18.46)	(18.39)	(3.491)	(3.448)	(6.576)	(35.26)	(0.475)	(0.231)
ln_Cap	12.92**	11.61**	2.000*	1.921*	5.569***	3.066	0.335**	0.212***
	(5.460)	(5.495)	(1.032)	(1.030)	(1.944)	(10.53)	(0.140)	(0.0689)
DE_Ratio	-0.0129	-0.00762	-0.00771	-0.0157	-0.0195	-0.166	-0.00150	-0.000793
	(0.0588)	(0.0587)	(0.0111)	(0.0110)	(0.0210)	(0.112)	(0.00151)	(0.000735)
Current_Ratio	3.171*	2.125	1.787***	-0.377	2.147***	-2.410	-0.0113	-0.0182
	(1.701)	(1.815)	(0.322)	(0.340)	(0.606)	(3.480)	(0.0438)	(0.0228)
CF_Sales_Ratio	0.0282	0.0344	0.0268***	0.0489***	0.0290**	0.0491	-0.00327***	-0.00440***
	(0.0340)	(0.0341)	(0.00644)	(0.00639)	(0.0121)	(0.0654)	(0.000876)	(0.000428)
Constant	-164.4	-154.7	-33.41	-24.56	-73.72	9.363	1.293	2.766
	(137.8)	(137.3)	(26.05)	(25.74)	(49.08)	(263.1)	(3.545)	(1.721)
Observations	178	178	178	178	178	178	178	178
R-squared	0.111	0.125	0.296	0.466	0.211	0.440	0.183	0.489
R-squared adjusted	-0.003	0.007	0.207	0.395	0.111	0.365	0.079	0.420

Source: Own Calculation; Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

GFC, the presence of a family CEO has a significant positive impact when performance is measured by ROA ($p < 0.01, \beta = 26.32$) or ROIC ($p < 0.05, \beta = 37.91$). The presence of an external CEO, that is not part of the owning family, has a positive, but only slightly significant effect on ROA performance both prior ($p < 0.1, \beta = 13.48$) and during ($p < 0.1, \beta = 13.27$) the GFC. There seems to be no significant relationship between the presence of an external CEO and other firm performance measures.

4.3.2. Alternative TFF and LFF Definitions

Researchers argued that despite the existence of wide-ranging family business literature, finding a consensus on the exact definition of a TFF or LFF is difficult (Miller et al., 2007). In many studies, TFF or LFF status is defined by the circumstance that the voting rights or equity held by the owning family or owning founders exceed a particular threshold. However, there has been no conclusive opinion in academic research about how high exactly such a threshold should be. Reviewing studies from family business literature, I found that researchers used a variety of different thresholds ranging from 5% (M. P. Allen & Panian, 1982; Miller et al., 2010) to 10% (Sacristan-Navarro et al., 2011b) to 20% (Arosa et al., 2010; Faccio & Lang, 2002) to 25% (Andres, 2008; Kowalewski et al., 2010) to 33% (Barth, Gulbrandsen, & Schønea, 2005) to 50% (Ang, Cole, & Lin, 2000; Wong et al., 2010) to 51% (Barontini & Caprio, 2006).

In order to test whether my regression analysis is robust to the independent variable definition, I follow a similar approach as mentioned above and create dummy variables for all ownership types that are one, if the voting rights or equity held by the owning family or owning founders exceed the respective threshold and zero, otherwise. By performing the same regression but with several different thresholds, I want to ensure to obtain results that can be traced back to the ownership structure independent from the respective thresholds themselves.

Specifically, I tested the effect of ownership structure on accumulated total shareholder return during and before the GFC using thresholds of 25%, 30%, and 50%. In the first model, family or founder shareholder must hold at least half of all voting rights of the firm, hence are by all means the single largest shareholder in the firm and always have the absolute majority in the firm. In my sample, 32 TFF and six LFF fulfill this criterion. The dummy variable for TFF is not significant neither before nor during the GFC. The LFF dummy, however, is significant with a positive coefficient in the period prior to the crisis ($p < 0.05, \beta = 0.589$), indicating that LFF, where the founders hold 50% of voting rights, performed better than firms with other types of blockholders

Table 11: Robustness – Regression (shortened) including Alternative Performance Measures and Family CEO

VARIABLES	(1a) Pre-Crisis ROE	(1b) Crisis ROE	(2a) Pre-Crisis ROA	(2b) Crisis ROA	(3a) Pre-Crisis ROIC	(3b) Crisis ROIC	(4a) Pre-Crisis TobinsQ	(4b) Crisis TobinsQ
FamilyxFamily_CEO	78.96	66.53	26.32***	11.31	37.91**	-28.39	2.187	0.891
	(51.90)	(52.29)	(9.780)	(9.809)	(18.47)	(100.1)	(1.335)	(0.653)
FamilyxExternalCEO	45.94	41.18	13.48*	13.27*	22.78	55.65	1.388	0.0250
	(41.43)	(41.37)	(7.808)	(7.760)	(14.75)	(79.20)	(1.066)	(0.517)
LFF	14.31	2.340	8.148	-3.632	17.41	-111.0	2.372	1.127
	(66.97)	(67.12)	(12.62)	(12.59)	(23.84)	(128.5)	(1.723)	(0.838)
Other_Individual	54.65	62.04	13.89	11.38	-3.975	123.7	3.265	0.0650
	(112.2)	(111.8)	(21.14)	(20.98)	(39.93)	(214.1)	(2.887)	(1.396)
Financial_Institution	13.24	-0.956	1.993	-6.386	-0.160	27.17	0.663	-0.115
	(48.40)	(49.05)	(9.121)	(9.203)	(17.23)	(93.92)	(1.245)	(0.613)
PE	83.22	84.20	5.134	-49.29***	25.16	-1,490***	-0.899	1.446
	(80.29)	(79.94)	(15.13)	(15.00)	(28.58)	(153.1)	(2.066)	(0.998)
State	-23.75	-31.87	-8.391	-3.981	-16.64	21.38	-3.537	-1.415
	(128.3)	(127.9)	(24.18)	(23.99)	(45.67)	(244.8)	(3.302)	(1.597)
Other	40.81	43.42	7.387	8.751	19.25	-0.643	0.0456	-0.442
	(41.57)	(41.42)	(7.835)	(7.772)	(14.80)	(79.31)	(1.070)	(0.517)
ln_IPO	-11.93	-10.68	0.891	2.188	-2.150	31.29	-1.128**	-0.690***
	(18.51)	(18.45)	(3.488)	(3.461)	(6.588)	(35.32)	(0.476)	(0.230)
ln_Cap	13.38**	11.99**	2.177**	1.892*	5.777***	1.809	0.346**	0.225***
	(5.530)	(5.578)	(1.042)	(1.046)	(1.968)	(10.68)	(0.142)	(0.0697)
DE_Ratio	-0.0137	-0.00836	-0.00802	-0.0157	-0.0199	-0.163	-0.00152	-0.000818
	(0.0590)	(0.0588)	(0.0111)	(0.0110)	(0.0210)	(0.113)	(0.00152)	(0.000735)
Current_Ratio	3.198*	2.171	1.798***	-0.380	2.159***	-2.561	-0.0106	-0.0166
	(1.705)	(1.823)	(0.321)	(0.342)	(0.607)	(3.491)	(0.0439)	(0.0228)
CF_Sales_Ratio	0.0281	0.0342	0.0267***	0.0489***	0.0290**	0.0497	-0.00327***	-0.00441***
	(0.0341)	(0.0342)	(0.00643)	(0.00641)	(0.0121)	(0.0655)	(0.000878)	(0.000427)
Constant	-180.1	-167.1	-39.55	-23.60	-80.96	50.32	0.910	2.344
	(140.9)	(140.5)	(26.55)	(26.36)	(50.14)	(269.0)	(3.625)	(1.755)
Observations	178	178	178	178	178	178	178	178
R-squared	0.113	0.126	0.302	0.466	0.214	0.442	0.184	0.493
R-squared adjusted	-0.0069	0.002	0.209	0.391	0.108	0.363	0.074	0.421

Source: Own Calculation
Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

holding 50% of voting rights in that period.

According to the German Securities Acquisition and Takeover Act, control is defined as the holding of at least 30% of the voting rights of a company (§291$W_p\bar{U}G$). The threshold of 30% was chosen because in many cases the majority of the voting rights represented are already attained in a general meeting, where not all shareholders are present. I therefore tested the impact on firm performance in the second model under the condition that the family or founder shareholders must hold at least 30% of all voting rights of the firm. In my sample, 46 TFF and 13 LFF fulfill this criterion. The dummy variable for TFF is not significant neither before nor during the GFC. The LFF dummy, however, is significant with a positive coefficient during the crisis ($p < 0.1, \beta = 0.217$), indicating that LFF, where the founders hold 30% of voting rights or more, performed better than firms with other types of blockholders holding at least 30% of voting rights during the GFC.

Finally, I repeated the same analysis using a threshold of 25%. According to the European Commission (2019), "Listed companies meet the definition of family enterprise if the person who established or acquired the firm (share capital) or their families or descendants possess 25 per cent of the decision-making rights mandated by their share capital" (p.1). This time, 50 TFF and 16 LFF of my sample fulfill this criterion. Using this threshold, both TFF ($p < 0.1, \beta = 0.117$) and LFF ($p < 0.1, \beta = 0.118$) are significant and seem to have a positive impact during the GFC. However, prior to the crisis, TFF or LFF did not perform differently than firms with other types of blockholders holding at least 25% of voting rights prior to the crisis. This result would support hypothesis 1a and 1b as it emphasized the superior performance of TFF and LFF during the GFC.

To summarize, choosing different thresholds defining the independent variables led to different results. Although there is a tendency that TFF and LFF might outperform other firms in some economic conditions and dependent on specific variable definitions, no conclusive observations across the different models can be made. As explained earlier, this approach has some important limitations. For instance, it is difficult to argue that for example firms with 24% family ownership are

Table 12: Robustness – Regression including Alternative Independent Variable Definitions

DV: Total shareholder return VARIABLES	(1a) Pre_Crisis 50%	(1b) Crisis 50%	(2a) Pre_Crisis 30%	(2b) Crisis 30%	(3a) Pre_Crisis 25%	(3b) Crisis 25%
TFF_Dummy	0.161	0.0120	0.0810	0.0816	0.151	0.117*
	(0.118)	(0.0771)	(0.110)	(0.0684)	(0.107)	(0.0680)
LFF_Dummy	0.589**	0.191	0.00663	0.217*	-0.0349	0.180*
	(0.246)	(0.164)	(0.183)	(0.114)	(0.171)	(0.108)
Other_Individual_Dummy	-0.403	0.329	0.00337	0.331*	-0.294	0.248
	(0.414)	(0.271)	(0.306)	(0.191)	(0.250)	(0.159)
Financial_Institution_Dummy	0.341**	0.0240	0.141	0.0493	0.0928	0.0650
	(0.172)	(0.113)	(0.136)	(0.0853)	(0.132)	(0.0832)
PE_Dummy	-0.180	-0.0309	0.188	0.0483	0.220	0.0692
	(0.339)	(0.221)	(0.305)	(0.191)	(0.237)	(0.150)
State_Dummy	0.121	0.449	-0.255	0.481**	0.188	0.413**
	(0.437)	(0.285)	(0.362)	(0.226)	(0.306)	(0.193)
Other_Dummy	-0.0320	0.00249	-0.00123	0.0182	-0.116	0.00686
	(0.177)	(0.116)	(0.138)	(0.0862)	(0.126)	(0.0796)
Pre_Crisis_Return		-0.0428		-0.0307		-0.0395
		(0.0520)		(0.0497)		(0.0503)
group(SIC) = 2	0.270	-0.401	0.369	-0.315	0.486	-0.296
	(0.615)	(0.401)	(0.641)	(0.400)	(0.635)	(0.401)
group(SIC) = 3	0.101	-0.421	0.166	-0.375	0.244	-0.368
	(0.585)	(0.381)	(0.603)	(0.376)	(0.596)	(0.376)
group(SIC) = 4	0.188	-0.507	0.253	-0.451	0.330	-0.442
	(0.576)	(0.376)	(0.597)	(0.372)	(0.590)	(0.372)
group(SIC) = 5	0.0887	-0.583	0.253	-0.586	0.267	-0.565
	(0.603)	(0.393)	(0.630)	(0.393)	(0.621)	(0.392)
group(SIC) = 6	0.117	-0.310	0.180	-0.291	0.267	-0.279
	(0.602)	(0.392)	(0.620)	(0.387)	(0.613)	(0.387)
group(SIC) = 7	0.894	-0.447	0.979	-0.398	1.104*	-0.389
	(0.614)	(0.403)	(0.640)	(0.402)	(0.636)	(0.405)
group(SIC) = 8	0.356	-0.200	0.464	-0.151	0.555	-0.143
	(0.585)	(0.382)	(0.606)	(0.378)	(0.599)	(0.379)
group(SIC) = 9	0.0678	-0.190	0.0772	-0.102	0.240	-0.0766
	(0.611)	(0.398)	(0.635)	(0.396)	(0.629)	(0.397)
ln_IPO	-0.0456	0.0337	-0.0694	0.0469	-0.0588	0.0377
	(0.0912)	(0.0595)	(0.0946)	(0.0590)	(0.0928)	(0.0586)
ln_Cap	0.0573**	0.00209	0.0550**	0.00107	0.0508*	0.00348
	(0.0262)	(0.0174)	(0.0276)	(0.0174)	(0.0276)	(0.0176)
DE_Ratio	-0.000222	-0.000245	-0.000233	-0.000316*	-0.000313	-0.000309
	(0.000288)	(0.000188)	(0.000299)	(0.000187)	(0.000298)	(0.000189)
Current_Ratio	0.0401***	0.00843	0.0427***	0.00936	0.0437***	0.00982*
	(0.00845)	(0.00589)	(0.00860)	(0.00577)	(0.00851)	(0.00580)
CF_Sales_Ratio	-0.000268	-8.30e-05	-0.000262	-7.82e-05	-0.000231	-8.10e-05
	(0.000170)	(0.000111)	(0.000174)	(0.000109)	(0.000173)	(0.000110)
Constant	-0.333	-0.153	-0.306	-0.275	-0.357	-0.308
	(0.669)	(0.436)	(0.695)	(0.434)	(0.691)	(0.436)
Observations	178	178	178	178	178	178
R-squared	0.294	0.182	0.252	0.208	0.269	0.207
R-squared adjusted	0.204	0.072	0.157	0.102	0.175	0.100

Source: Own Calculation
Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

fundamentally different than firms with 26% family ownership. Nevertheless, I further tested the impact of the presence of a family CEO using dummy variables (see Appendix 3 for the regression table). However, the results reveal that neither the presence of a family CEO nor the presence of an external CEO has a significant impact on performance during the GFC in any of the three models.

More interestingly, I also tested the impact on ownership defined with the help of dummy variables on firm performance using alternative measures of firm performance (see Appendix 4 for regression table). Whereas LFF ownership is not significant in any of the models including ROA, ROIC, and s q as a performance measure, TFF ownership is significant when measuring performance with ROA across all three thresholds. The positive coefficient indicates that TFF ownership positively affects the firm's ROA, regardless whether TFF are defined using a threshold of 50% ($p < 0.1, \beta = 8.378$), 30% ($p < 0.1, \beta = 7.717$), or 25% ($p < 0.1, \beta = 8.008$). TFF ownership computed with a dummy variable is not significant when performance is measured by ROIC or Tobin's q.

4.3.3. Alternative Crisis Window

In their study of 2,949 firms across 27 European countries, Van Essen et al. (2015) argued that the crisis period should include the beginnings of the real estate bubble in the US and therefore determined the period to be analyzed from 2007 to 2009. Following the original approach with accumulated total shareholder return as the performance measure and the percentage of voting rights held by the family or founders as a continuous, independent variable, I repeat my analysis using an alternative crisis window covering the period January 1, 2007, until December 31, 2009. The results are compared against the original analysis where shareholder returns were accumulated over the period starting September 14, 2008, until March 6, 2009

Table 13 shows the regression results. The first model shows the impact of the seven different ownership types while the second model further differentiates between TFF with a family CEO and TFF with an external CEO. The regression results of the models are very similar. TFF ownership is not significant neither during the original crisis window nor during the alternative crisis window. LFF ownership, in contrast, is significant in both approaches. The positive coefficient indicates that LFF ownership is associated with a higher firm performance from September 14, 2008, until March 6, 2009 ($p < 0.1, \beta = 0.403$) as well as in the period January 1, 2007, until December 31, 2009 ($p < 0.1, \beta = 0.631$).

Differentiating between TFF with family CEOs and TFF with external CEOs does not lead to any significant results, regardless of the period used in the analysis. Interestingly, the significance level of LFF ownership in the regression using the original period is higher ($p < 0.05, \beta = 0.440$) than when using the alternative crisis window ($p < 0.1, \beta = 0.652$). Overall, the R-squared and R-squared adjusted in both models are lower when examining the ownership performance relationship during an alternative time period. To conclude, the results suggest that the findings are robust to the alternative crisis period definition and the model using the original definition of the GFC timeframe shows a higher fit.

4.3.4. Alternative Analytical Approach

Several researchers provided evidence suggesting that the relationship between family ownership and firm performance might not be linear. Specifically, some scholars found that the relationship can be best described by an inverted U-shape (e.g. Anderson & Reeb, 2003; Kowalewski et al., 2010; Van Essen et al., 2013). More recently, also Maseda et al. (2019) found that there seems to be an inverted U-shaped relationship between family board members' ownership and firm performance. I therefore analyzed the impact of TFF and LFF ownership on accumulated total shareholder return during the GFC using an alternative, non-linear regression model.

Table 14 shows the results of a quadratic regression. The quadratic regression fits a non-linear model to the data although some consider it to be a special case of linear multiple regression because it is linear as a statistical estimation problem. Specifically, the following formula depicts the quadratic regression analysis:

$$y_i\beta_0 + \beta_1 X_i \beta_2 X_2 i + \cdots + \beta_1 X_n + \beta_2 X^2 n + \epsilon_i$$

Where
y_i = Dependent variable
β_0 = Population Y intercept
$\beta_1 \cdots \beta_n$ = Population slope coefficients
$X_i \cdots X_n$ = Independent variables and control variables
ϵ_i = Random error term
Model 1 again shows the regression results of firm performance during the GFC for the different ownership types whereas model 2 further differentiates between family CEOs and external CEOs. While a significant t-test of the quadratic term might indicate a quadratic relationship, considering the significance level of a quadratic term is not sufficient to interpret the results. I therefore performed a joint test of the linear and quadratic coefficients of the independent variables (Table 15). The p-values in both models are always greater than 0.1 except for the ownership type state. However, in that case, a quadratic distribution cannot be assumed since the effect of the quadratic coefficient is not significant.

Overall, the results do not suggest that the relationship between firm performance and accumulated total shareholder return during the GFC is quadratic. Therefore, the conjecture of researchers finding a U-shape or inverted U-shape relationship between ownership and performance cannot be supported.

4.4. Further Empirical Analyses

In the light of the inconclusive regression results, I conducted further, additional empirical analyses to better understand the behaviors of family and non-family firms during the GFC that consequentially might evoke performance differences when compared to other firms. Following other researchers that examined the behavior of TFF and LFF during

Table 13: Robustness – Regression including Alternative Crisis Window

DV: Total shareholder return VARIABLES	(1a) 09/08 – 03/09	(1b) 2007 – 2009	(2a) 09/08 – 03/09	(2b) 2007 – 2009
TFF	0.122	-0.0731		
	(0.112)	(0.183)		
FamilyxFamily_CEO			0.269	0.107
			(0.164)	(0.265)
FamilyxExternalCEO			0.0662	-0.170
			(0.129)	(0.210)
LFF	0.403*	0.631*	0.440**	0.652*
	(0.208)	(0.339)	(0.210)	(0.340)
Other_Individual	0.639*	-0.265	0.633*	-0.254
	(0.349)	(0.566)	(0.350)	(0.567)
Financial_Institution	0.0948	-0.00929	0.124	-0.00619
	(0.151)	(0.249)	(0.153)	(0.249)
PE	0.176	-0.606	0.194	-0.576
	(0.249)	(0.404)	(0.250)	(0.405)
State	1.306***	0.472	1.313***	0.459
	(0.400)	(0.648)	(0.400)	(0.648)
Other	0.0241	-0.259	0.0141	-0.266
	(0.129)	(0.210)	(0.130)	(0.210)
Pre_Crisis_Return		-0.0237	-0.0525	-0.0302
		(0.0809)	(0.0501)	(0.0812)
group(SIC) = 2	-0.358	-0.0103	-0.277	0.0774
	(0.391)	(0.634)	(0.396)	(0.641)
group(SIC) = 3	-0.399	-0.712	-0.331	-0.629
	(0.369)	(0.597)	(0.373)	(0.604)
group(SIC) = 4	-0.496	-0.814	-0.415	-0.720
	(0.365)	(0.590)	(0.370)	(0.599)
group(SIC) = 5	-0.693*	-0.965	-0.624	-0.878
	(0.384)	(0.622)	(0.388)	(0.629)
group(SIC) = 6	-0.335	-0.668	-0.277	-0.603
	(0.380)	(0.616)	(0.383)	(0.620)
group(SIC) = 7	-0.444	-0.847	-0.328	-0.746
	(0.393)	(0.640)	(0.401)	(0.649)
group(SIC) = 8	-0.207	-0.558	-0.123	-0.472
	(0.370)	(0.599)	(0.374)	(0.607)
group(SIC) = 9	-0.132	-0.758	-0.0601	-0.668
	(0.388)	(0.628)	(0.392)	(0.635)
ln_IPO	0.0471	-0.0746	0.0429	-0.0772
	(0.0577)	(0.0934)	(0.0577)	(0.0935)
ln_Cap	0.00281	0.0308	0.00831	0.0350
	(0.0170)	(0.0279)	(0.0174)	(0.0283)
DE_Ratio	-0.000305*	-0.000569*	-0.000321*	-0.000577*
	(0.000184)	(0.000298)	(0.000184)	(0.000298)
Current_Ratio	0.00797	-0.000362	0.0103*	0.000138
	(0.00531)	(0.00922)	(0.00570)	(0.00924)
CF_Sales_Ratio	-4.93e-05	-9.36e-06	-6.27e-05	-1.16e-05
	(0.000106)	(0.000173)	(0.000107)	(0.000173)
Constant	-0.306	0.751	-0.423	0.616
	(0.430)	(0.697)	(0.440)	(0.712)
Observations	178	178	178	178
R-squared	0.230	0.173	0.240	0.177
R-squared adjusted	0.131	0.061	0.132	0.061

Table 14: Robustness – Quadratic Regression

DV: Total shareholder return VARIABLES	(1) Quadratic	(2) Quadratic_CEO
TFF	0.370	
	(0.306)	
c.TFF#c.TFF	-0.314	
	(0.369)	
FamilyxFamily_CEO		0.305
		(0.416)
c.FamilyxFamily_CEO#c.FamilyxFamily_CEO		-0.0354
		(0.482)
FamilyxExternal_CEO		0.668
		(0.418)
c.FamilyxExternal_CEO#c.FamilyxExternal_CEO		-0.851
		(0.554)
LFF	0.439	0.468
	(0.615)	(0.616)
c.LFF#c.LFF	-0.0182	-0.0367
	(0.913)	(0.912)
Other_Individual	0.0664	0.127
	(0.870)	(0.869)
c.Other_Individual#c.Other_Individual	1.527	1.410
	(2.240)	(2.236)
Financial_Institution	-0.0307	-0.0532
	(0.423)	(0.422)
c.Financial_Institution#c.Financial_Institution	0.203	0.224
	(0.597)	(0.596)
PE	0.216	0.280
	(0.582)	(0.585)
c.PE#c.PE	-0.0594	-0.122
	(0.743)	(0.744)
State	2.438**	2.248**
	(1.068)	(1.073)
c.State#c.State	-2.005	-1.752
	(1.773)	(1.776)
Other	-0.202	-0.235
	(0.284)	(0.285)
c.Other#c.Other	0.248	0.280
	(0.266)	(0.267)
group(SIC) = 2	-0.297	-0.265
	(0.401)	(0.408)
group(SIC) = 3	-0.354	-0.339
	(0.379)	(0.387)
group(SIC) = 4	-0.472	-0.437
	(0.373)	(0.381)
group(SIC) = 5	-0.634	-0.593
	(0.395)	(0.402)
group(SIC) = 6	-0.292	-0.283
	(0.390)	(0.395)
group(SIC) = 7	-0.400	-0.366
	(0.402)	(0.411)

(Continued)

Table 14—continued

group(SIC) = 8	-0.177	-0.153
	(0.378)	(0.385)
group(SIC) = 9	-0.0850	-0.0606
	(0.397)	(0.405)
ln_IPO	0.0530	0.0480
	(0.0588)	(0.0587)
ln_Cap	-0.00339	0.000355
	(0.0182)	(0.0184)
DE_Ratio	-0.000298	-0.000281
	(0.000188)	(0.000188)
Current_Ratio	0.00762	0.00761
	(0.00550)	(0.00549)
CF_Sales_Ratio	-6.05e-05	-6.51e-05
	(0.000110)	(0.000110)
Constant	-0.268	-0.337
	(0.445)	(0.458)
Observations	178	178
R-squared	0.247	0.260
R-squared adjusted	0.111	0.115

Source: Own Calculatio
Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 15: Joint F-test of the Linear and Quadratic Coefficients

Variables tested		F-Statistic F (2,150)	P-Value
Model 1	TFF	0.98	0.3770
	LFF	2.00	0.1394
	Other_Individual	1.67	0.1911
	Financial_Institution	0.28	0.7562
	PE	0.24	0.7882
	State	5.91	0.0034
	Other	0.46	0.6307
Model 2	Family CEO	1.39	0.2522
	External CEO	1.28	0.2812
	LFF	2.16	0.1195
	Other_Individual	1.74	0.1795
	Financial_Institution	0.26	0.7734
	PE	0.30	0.7391
	State	5.32	0.0059
	Other	0.57	0.5642

Source: Own Calculation

severe crises (e.g. Lins et al., 2013; Van Essen et al., 2015), I analyzed the firms' decisions with regard to their personnel, capital structure, and investments. It should be noted that at this point there will be no comprehensive hypothesis development, but results are presented rather shortly, giving additional information with regard to the decision making of TFF and LFF during the GFC and therefore might provide possible areas for future analyses outside the scope of this thesis.

Studying 2,949 companies across 27 European countries, Van Essen et al. (2015) found that TFF show a lower propensity to cut wages or downsize their workforce in both crisis and pre-crisis conditions. They argued that TFF more likely consider the interests of their employees and are under less

pressure from outside investors to cut wages or decrease workforce. Analogous to Van Essen et al. (2015), I analyzed personnel-related alterations of German TFF and LFF during the GFC. Specifically, I examined both changes in the workforce and in salaries. Δ *Workforce* is a dependent variable calculated as the percentage change of the workforce between 2007 and 2009. Workforce is the reported number of both full and part-time employees of the company. Δ *Salaries* represents the percentage change in wages paid to the employees by the firm. It includes but is not restricted to salaries, employee benefits such as health insurance, and contributions to pension plans.

Table 16 shows the variable descriptions. Despite the crisis, on average both the number of employees *(+7.3%)* as well as the amount of salaries paid *(+13.9%)* increased. While the 25^{th} percentile shows that some firms decreased workforce *(-5.8%)* and wages *(-3.0%)*, the positive median indicates that at least half of the firms showed positive growth rates in both number of employees and salaries and benefits paid to them. Overall, the standard deviation is rather low, and the mean is in between the median and the 75^{th} percentile for both variables. It should be noted that the change in salaries paid to the workforce is partly caused by the change in the workforce.

The regression results are presented in Table 17. The impact of ownership on the change in workforce and salary payments is tested in models 1a and 1b respectively. In the model, that is analogous to the main regression but with a different dependent variable, neither TFF nor LFF are significant with regard to the employee-related decisions. Moreover, no other ownership type seems to be significantly associated with a change in the number of workforce or the amount of salaries paid to the employees. Interestingly, past performance is the variable with the highest significance. A high total shareholder return over the years 2005 and 2006 is positively associated with workforce change ($p < 0.01, \beta = 0.084$) and salary payment change ($p < 0.01, \beta = 0.124$). Furthermore, age since IPO is negatively associated with workforce ($p < 0.05, \beta = -0.0798$) and salary change ($p < 0.1, \beta = -0.078$).

Next, financing decisions with regard to the borrowing of capital shall be analyzed. Lins et al. (2013) assumed different propensities of TFF with regard to cash financing decisions but could not find significant results. Nevertheless, I performed an analysis of financing decisions within the frame of German listed firms. Table 16 shows the characteristics of the variables Δ *Long-Term Debt and* Δ *Short-Term Debt*. *Specifically*, Δ Long-Term Debt is the change of the firm's long-term debt between the years 2007 and 2009. Long-term debt comprises all interest-bearing financial obligations, excluding amounts due within one year. It is shown net of premium or discount. While the median firm did not increase or decrease its long-term debt *(+/- 0.0)*, the very high mean *(+828.6%)* shows that very few firms increased their debt excessively. This is also reflected in the high standard deviation. The variable Δ Short-Term Debt shows a similar and even more pronounced statistic: The median firm did not increase or decrease its short-term debt *(+/- 0.0)*, but the average firm increased its short-term debt significantly *(+1919.7%)*. The rather modest increase of the 75^{th} percentile *(+54.3%)* shows that again very few firms increased their short-term debt quite significantly. Short-term debt represents that portion of debt payable within one year including current portion of long-term debt and sinking fund requirements of preferred stock.

The change in capital structure is represented in models 2a and 2b in the regression table. Similarly to the results regarding the firms' workforce, neither TFF nor LFF ownership is significant. Furthermore, other ownership structures do not show significant results with the except of state ownership, which is significantly associated with long-term debt ($p < 0.1, \beta = -187.4$). The negative coefficient implies that with increasing state ownership, firms are less likely to exhibit strong borrowing of long-term capital during the GFC when compared with other firms. Furthermore, a higher current ratio is positively associated with an increase in short-term debt ($p < 0.01, \beta = 8.769$).

Finally, also the investment decisions of TFF and LFF will be analyzed. Lins et al. (2013) found that TFF cut investments more than other firms. They argued, that for TFF the survival of the family's wealth is of major importance and therefore owning families extract capital at the expense of prospective investment projects of the firm. Specifically, I analyze the change in the capital expenditure to total asset ratio from 2007 to 2009. Capital expenditures represent the funds used to purchase fixed assets with the except of acquisitions. It includes but is not restricted to investments in property, plant, and equipment. The amount of capital expenditures is then divided by the total assets of the firm. By using ratios, the comparability between firms is increased. Table 16 shows that Δ *Capex-Asset-Ratio* on average increased significantly between 2007 and 2009 *(+475.9%)*. However, the median change is negative *(-22.9%)* suggesting that at least half of the firms in the sample decreased their capex-to-asset ratio. The fact that the mean is well above the 75^{th} percentile (+11.6%) again is an indication that few firms increased their capital expenditure-to-asset ratio quite extensively during the GFC.

The regression results again do not reveal a significant effect of TFF or LFF ownership in model 3. With regard to other ownership types, only financial institution ownership is significant ($p < 0.05, \beta = 21.16$). The positive coefficient implies that higher ownership of financial institutions results in a stronger increase in the capex-to-asset ratio. The high R-squared *(0.878)* and R-squared adjusted *(0.861)*, indicating a good model fit, is quite notable. For completeness, the analysis again is repeated in Appendix 5 differentiating between family CEOs and non-family CEOs. However, the differentiation does not lead to any significant effect other than those presented in the previous paragraphs.

Table 16: Further Analyses - Variable Descriptions

Variable	N	Mean	25th pcl.	Median	75th pcl.	SD
Δ Workforce	178	7.3%	-5.8%	4.8%	15.5%	0.24
Δ Salaries	178	13.9%	-3.0%	8.7%	22.8%	0.30
Δ Long-Term Debt	178	828.6%	-20.0%	0.0%	51.9%	87.97
Δ Short-Term Debt	178	1919.7%	-44.0%	0.0%	54.3%	187.14
Δ Capex-Asset-Ratio	178	475.9%	-57.5%	-22.9%	11.6%	58.06

Source: Own Calculation

5. Discussion

Analyzing German publicly listed firms during the GFC as a unique exogenous contingency, the aim of this study was to better understand the frequently assumed supremacy of TFF and LFF over other ownership types (e.g. Allouche et al., 2008; Ben-Amar et al., 2013; Chrisman et al., 2007; Maseda et al., 2019; Miller et al., 2011).

In this section, the results of my study will be interpreted with regard to the hypotheses derived as well as with reference to extant academic literature. Thereafter, theoretical and practical implications of the findings will be discussed. Finally, limitations of this study as well as fruitful avenues for future research will be outlined.

5.1. Interpretation of Results

In my first hypothesis (1a), I expected TFF ownership to be associated with higher firm performance during the GFC, analogous to findings of previous research covering sample firms located in other jurisdictions (Amann & Jaussaud, 2012; Minichilli et al., 2016; Saleh et al., 2017; Van Essen et al., 2015). I argued that TFF might reduce their emphasis on SEW objectives for the benefit of financial performance and even inject private capital, provide financing through other family firms, and have easier access to debt, all of which increases the performance of the firm. The results provide only weak support for hypothesis 1a: There is no significant effect in the main regression model. However, TFF ownership results in superior performance when firm performance is measured with the accounting measure ROA and when TFF ownership is constructed as a dummy variable with a threshold of 25% voting rights that have to be possessed by the owning family.

Interestingly, the results reveal an even stronger positive effect on firm performance during the pre-crisis period 2005 – 2007. TFF ownership is significantly and positively associated with accumulated total shareholder return in the main regression analysis but is also significant when measuring firm performance with ROA, ROIC, or Tobin's q. These results suggest that there seems to be a general tendency of outperformance of TFF ownership during stable economic conditions. Therefore, the findings are similar to those of other researchers who argued that TFF generally show higher firm performance when compared to other ownership types (e.g. Anderson & Reeb, 2003; Block et al., 2011; Miller et al., 2011). The positive performance effect of TFF, according to academic literature, most probably originates from reduced conflicts between ownership and management (agency theory), the commitment to lead the firm in a collectivistic way (stewardship theory), unique strategic resources (RBV), as well as the benefit from long-term orientation and unique values and norms of the family (concept of SEW).

With regard to LFF, I hypothesized that also LFF ownership led to higher firm performance during the GFC (hypothesis 1b), because LFF are free from kinship ties and therefore can make strategic decisions faster and more efficiently during times of financial distress. Furthermore, LFF are less likely subject to owner-manager conflicts or conflicts among owners such as in TFF, where disputes between family members might arise. The performance of LFF during the GFC has scarcely been examined in prior academic research, only Zhou et al. (2012) published a study in a renown academic journal and derived the same hypothesis. For the greater part, the results provide support for hypothesis 1b: LFF ownership is significant in the main regression, thereby indicating that accumulated total shareholder return during the GFC was higher when compared to other ownership types. The results are significant when determining LFF status with the help of dummy variables that were one if the founders held 25% or 30%, respectively. Only when measuring performance with alternative accounting measures and mixed accounting and financial market measures, LFF ownership is not significant.

In contrast to the impact of TFF ownership, the positive effect of LFF ownership on firm performance was almost exclusively during the crisis period. Only in one specific case, where LFF status was determined using a 50% voting rights dummy, LFF ownership is significant and has a positive effect on firm performance. In the main regression and all other robustness tests, LFF ownership is not significant. Therefore, the general notion suggesting that LFF ownership always influences firm performance positively due to their social context emphasizing financial performance, expertise and skills as well as independence from family disputes and other SEW objectives could not be supported. While other researchers found supremacy of LFF in general during stable economic conditions (e.g. Anderson & Reeb, 2003; Barontini & Caprio, 2006; Miller et al., 2007; Villalonga & Amit, 2006), this study does not provide similar evidence with regard to publicly listed firms in Germany but emphasizes the importance of a differentiated perspective incorporating the GFC

Table 17: Further Analyses – Regression Results

VARIABLES	(1a) Δ Workforce	(1b) Δ Salaries	(2a) Δ Long-Term Debt	(2b) Δ Short-Term Debt	(3) Δ Capex-Asset Ratio
TFF	-0.0256	-0.0209	1.156	-58.43	5.597
	(0.0714)	(0.0898)	(27.69)	(57.88)	(6.866)
LFF	0.0875	-0.0371	13.58	16.41	-17.96
	(0.133)	(0.167)	(51.48)	(107.6)	(12.76)
Other_Individual	-0.0117	0.177	-56.74	25.30	25.17
	(0.221)	(0.278)	(85.91)	(179.5)	(21.30)
Financial_Institution	-0.0972	-0.134	59.54	-52.09	21.16**
	(0.0972)	(0.122)	(37.70)	(78.79)	(9.347)
PE	-0.00695	-0.0828	88.44	-38.33	22.71
	(0.158)	(0.199)	(61.25)	(128.0)	(15.19)
State	-0.320	-0.416	-187.4*	51.13	-6.655
	(0.253)	(0.318)	(98.25)	(205.3)	(24.36)
Other	-0.00211	0.0602	29.95	-11.30	1.858
	(0.0820)	(0.103)	(31.82)	(66.49)	(7.888)
Pre_Crisis_Return	0.0840***	0.124***	-8.369	-29.69	0.847
	(0.0316)	(0.0398)	(12.27)	(25.65)	(3.043)
group(SIC) = 2	-0.0184	0.0326	-2.753	-9.835	10.92
	(0.248)	(0.312)	(96.17)	(201.0)	(23.84)
group(SIC) = 3	-0.229	-0.253	-2.639	-8.112	5.823
	(0.234)	(0.294)	(90.59)	(189.3)	(22.46)
group(SIC) = 4	-0.247	-0.244	1.480	-12.26	5.416
	(0.231)	(0.290)	(89.58)	(187.2)	(22.21)
group(SIC) = 5	-0.259	-0.213	116.7	-45.49	21.09
	(0.243)	(0.306)	(94.31)	(197.1)	(23.38)
group(SIC) = 6	-0.260	-0.315	6.395	227.0	-6.326
	(0.241)	(0.303)	(93.41)	(195.2)	(23.16)
group(SIC) = 7	-0.252	-0.182	-7.951	-2.402	-16.00
	(0.250)	(0.315)	(97.10)	(202.9)	(24.08)
group(SIC) = 8	-0.0883	-0.0628	-1.501	-17.41	16.98
	(0.234)	(0.295)	(90.94)	(190.1)	(22.55)
group(SIC) = 9	-0.181	-0.144	-4.397	-32.78	0.417
	(0.245)	(0.309)	(95.20)	(199.0)	(23.60)
ln_IPO	-0.0798**	-0.0781*	-8.133	-10.60	2.289
	(0.0365)	(0.0459)	(14.17)	(29.62)	(3.514)
ln_Cap	0.00972	0.00577	0.692	-2.563	1.965*
	(0.0109)	(0.0137)	(4.235)	(8.850)	(1.050)
DE_Ratio	-0.000101	1.09e-05	-0.0454	-0.00529	0.00501
	(0.000117)	(0.000147)	(0.0452)	(0.0945)	(0.0112)
Current_Ratio	-0.00490	-0.000577	-1.630	8.769***	9.687***
	(0.00361)	(0.00453)	(1.399)	(2.924)	(0.347)
CF_Sales_Ratio	1.58e-05	6.15e-05	-0.00894	0.0295	0.0363***
	(6.77e-05)	(8.52e-05)	(0.0263)	(0.0549)	(0.00651)
Constant	0.316	0.375	12.73	95.45	-64.83**
	(0.273)	(0.343)	(105.8)	(221.1)	(26.22)
Observations	178	178	178	178	178
R-squared	0.229	0.213	0.134	0.164	0.878
R-squared adjusted	0.125	0.107	0.018	0.052	0.861

Source: Own Calculation
Note: Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

as a contingent event into the analysis.
In a third analysis, I differentiated further between TFF where a family member holds the CEO position and TFF where an external, outside CEO manages the firm. I expected that having a family CEO unfolds as disadvantageous during the GFC because the managers might extract capital out of the firm and thus ensure the survival of the family's wealth. Therefore, analogous to Minichilli et al. (2016), I assumed firm performance to be lower. The results, however, do not support hypothesis 2: The presence of a family CEO is not significant in any of the regression models during the GFC. Thus, there is no indication that firm performance during the crisis was influenced positively or negatively by the involvement of the family in the firm. Similarly, the interaction term representing an external CEO in TFF is not significant in any of the models except when performance is measured with ROA, where the presence of an outside manager has a weak but positive effect on firm performance during the crisis.

However, the results indicate that during the period of stable economic conditions, the presence of a family CEO significantly impacted firm performance positively: Family CEO presence is significant in the main regression as well as when using alternative performance measures ROA and ROIC. The results thereby are aligned with evidence suggested by other researchers (e.g. Anderson & Reeb, 2003; Andres, 2008; Chu, 2011; Kowalewski et al., 2010; Minichilli et al., 2010) who argued that family CEOs contribute to the superior performance of TFF due to the alignment of interests between management and owners, the CEOs' behavior as a steward of the organization, the CEOs' specific knowledge and skills, or their emotional attachment and transgenerational intention.

To summarize, the results indicate a general superior performance of TFF ownership over other ownership types that is more pronounced during overall stable economic conditions and generally is not magnified during situations of financial distress such as the GFC. LFF ownership, in contrast, does not exhibit superior effects during the steady-state period but seems to be beneficial in times where firms face serious threats due to macroeconomic developments. Analyzing family management led to results suggesting a reverse effect: While beneficiary during stable economic conditions, the competitive advantage from a family CEO seemed to vanish during the GFC.

5.2. Implications for Theory

I contribute to the family business literature by analyzing theoretically and empirically the performance of German publicly listed firms during and prior to the GFC. Specifically, my study has a number of potential theoretical implications. First, I contribute to the longstanding and inconclusive discussion of whether family firms exhibit superior firm performance compared to their non-family counterparts (Block et al., 2011). Maseda et al. (2019) argued that the effects of corporate ownership and governance on firm behavior were "some of the most debated issues in business and management literature" (p. 285). Although significance levels varied across models the family ownership variables TFF and LFF were only significant in some of the models, each of the significant coefficients had a positive sign. This indicates a general tendency of the superior performance of family ownership irrespective of performance measurement or variable definitions in the model. For other ownership structures, in contrast, the results did not provide sufficient evidence suggesting a significant and robust impact of ownership on firm performance. Adopting a purely agency-theoretical perspective, one could argue that the benefit of concentrated ownership and management through, for instance, reduced principal-agency conflicts exceed the costs often associated with such ownership structures, in particular the extraction of resources for the benefit of the family shareholders and on the expense of other investors. It remains questionable, however, whether the well-adopted agency theory is sufficient to explain the superior performance. The literature review delineated further academic theories and concepts such as the stewardship theory, RBV, and the concept of SEW. While it is very difficult to attribute the financial market and accounting based outcome of an organization to a specific component of these academic theories and concepts, this study in general supports the notion that the outlined mechanisms collectively result in superior performance and outweigh potential disadvantages of TFF or LFF.

Second, I contribute to the narrative of an external hazard as a contingency that moderates the impact of ownership on firm performance by analyzing the sample firms during and prior to the GFC. The implications of my study, however, are twofold. On the one hand, I could not establish that TFF ownership resulted in exceptional superior or inferior performance during the GFC when compared to a period of stable economic conditions prior to the GFC. Scholars, in contrast, suggested that with increasing external hazard, the balance between families' non-economic and economic objectives during stable economic conditions (Berrone et al., 2012; Gómez-Mejía et al., 2007) is challenged and family shareholders prioritize the financial survival of the TFF, thereby showing an explorative attitude characterized by enhanced risk-taking and ultimately higher firm performance (Minichilli et al., 2016). This study rather suggests that TFF are significantly different from other firms and exhibit higher performance during steady-state periods but during crisis suffer similarly to other firms and cannot capitalize on the advantages originating from TFF-specific characteristics during such times of financial distress. Moreover, it should be noted that the further empirical analyses conducted in section 4.4 support this proposition: Analyzing employee-related as well as financing and investment decisions, this study does not provide any significant indication that TFF have behaved differently during the GFC than firms with other ownership structures.
On the other hand, the GFC indeed seems to be a contingency that moderates the impact of LFF ownership on firm performance. This result is of special interest as LFF owner-

ship and its association with firm performance during times of financial distress has been subject in academic literature only to a very limited degree. Accordingly, extant literature does not provide a comprehensive overview of underlying theories explaining the superior performance of LFF ownership during crisis. From an agency-theoretical perspective, LFF are very similar to TFF in that regard that ownership and management are often concentrated. However, the differences among these two ownership types may lie in the fact that principal-principal conflicts might arise more frequently in TFF where several family members are shareholders of the firm while in LFF there is mostly one founder or a very low number of founders holding voting rights in the firm and hence the company is less apt to such conflicts. From a SEW perspective, it might be the independence from non-economic obligations and higher perceived freedom to take risks and fully concentrate on the performance of the firm that helps LFF to outperform other companies during the GFC. To summarize, the narrative of an exogenous shock serving as a natural experiment that moves firms out of their equilibrium and hence magnifies costs and benefits of ownership structures can only partially be supported.

The third contribution is to the increasingly debated topic of heterogeneity among family firms (e.g. Berrone et al., 2012). I considered three different dimensions of heterogeneity in my analysis. Firstly, by differentiating between TFF and LFF ownership, I considered the generational stage of the family firms, and the results confirm that the two ownership types affect firm performance differently. Especially the social context of founders and the existence of non-economic utility that is increasingly important in multi-generational TFF result in different corporate decision making. Differentiating between the two ownership structures helps to disentangle how the different academic theories influence the behavior of the heterogenetic family business landscape and has been gained high attraction in literature (e.g. Barontini & Caprio, 2006; Miller et al., 2007).

Furthermore, regarding heterogeneity, I considered the magnitude of ownership, thus the stake held by the family or founder, by defining ownership as a continuous variable and testing also a non-linear regression model. Because the significance of variables and the corresponding coefficients differ, it can be assumed that the magnitude of ownership indeed is an important factor to consider when examining family firms. Furthermore, I tested different dummy variables representing various equity stakes held by the family or founders. It is reasonable to assume that the outlined mechanisms and their respective academic theories are impacting firm performance differently depending on the stake of ownership. For instance, I would expect that the desire to preserve the SEW might be present even with low family ownership and increases rather moderately with larger ownership stakes. The elements of agency theory, however, are heavily dependent on the level of ownership. A family with many voting rights can use its powerful blockholder position whereas a family in a minority shareholder position cannot and moreover might be more prone to other governance issues such as owner-manager conflicts. These conclusions are in line with family business researchers who argued that the ownership-performance relationship is not linear but dependent on the degree of ownership (e.g. Anderson & Reeb, 2003; Kowalewski et al., 2010; Maseda et al., 2019).

Moreover, family involvement through board membership is another dimension of heterogeneity considered in this study. Although not pronounced during the GFC, this study showed that there is a positive impact of strategic leaders belonging to the family that enhances firm performance. The role of a family CEO has been extensively discussed in academic literature and scholars argued that although the family managers might tend to abuse their situation and pursue family-related goals on the expense of firm performance, the advantageousness of having a family CEO outweighs the costs (e.g. Andres, 2008; Kowalewski et al., 2010). Again, it is difficult to determine how exactly family management affects firm performance but, considering different academic theories the positive effect might be due to a family CEO who has fewer incentives to act opportunistically (agency theory), or sometimes even maximizes his own utility by seeing the firm strive (stewardship theory), while capitalizing on specific skills and knowledge (RBV), and being attached emotionally to the organization with the intention to preserve it over a long period of time and potentially hand it over to the next generation (concept of SEW).

The fourth contribution of this study is the validity of the SEW as an appropriate perspective to better understand the behavior of families and founders. The previous paragraphs already indicated that the concept of SEW plays a pivotal role in understanding why TFF or LFF ownership is different from other ownership types. The SEW perspective is based on behavioral agency theory and obtained its name within the frame of a study of Spanish oil mills by Gómez-Mejía et al. (2007). It has gained increasing attraction in recent family business research (Minichilli et al., 2016). The evidence suggested in this study reconnects with the recent advancement of the SEW concept distinguishing between restricted and extended SEW priorities. While restricted SEW priorities are family-centric and often counteract the interests of non-family stakeholders in the long run, extended SEW priorities go beyond the family and are characterized as advocating stewardship, sustainability, or multi-stakeholder advancement (Miller & Le Breton-Miller, 2014). For instance, while the extended SEW approach might help to better understand the superior performance of TFF with family management, the differentiation shows that the argumentation substantiating the superior performance of LFF refers to the absence of restricted SEW priorities. In short, the objectives relating to the SEW have been further divided in order to better understand the mechanisms that lead to different firm behaviors.

To summarize, the conjecture that ownership structures affect firm performance in particular during financial crises, magnifying ownership-specific costs and benefits, cannot be supported unanimously. On the one hand, this study contributes to one of the most debated issues in family business research as the results indicate a general superior per-

formance of TFF during periods of stable economic activity. On the other hand, the macroeconomic environment of a firm seems to matter in case of LFF ownership as these firms show superior performance compared to other firms during crises but do not stand out from the sample in a period of stable economic conditions prior to the GFC. The diverging results confirm the need of a differentiated perspective regarding the heterogeneous landscape of family firms and, finally, different dimensions of the SEW concept have been found helpful to understand the underlying mechanisms impacting firm behavior, further promoting the concept on its way to becoming an established academic theory.

5.3. Implications for Practice

This study examining the performance of firms with different ownership types during and prior to the GFC offers several practical implications. First, investors and bondholders gain a deeper understanding of how ownership structures affect firm performance. Generally, investors can assume that TFF tend to have higher returns when compared to other firms and therefore investors could concentrate their investment on firms with family shareholders. The supposition that the positive effect on firm performance is even magnified when a family member holds the top management position of the firm could also be considered in their investment decision. During periods of economic downturns, such as the GFC, having invested in TFF does not turn out to be unsuccessful but the empirical results showed that in these times LFF ownership is more likely to be beneficial for firm performance and should therefore be in the focus of equity investing.

Second, financial institutions and rating agencies can incorporate the findings into the credit risk assessment of TFF and LFF. While TFF ownership, contrary to the belief of some researchers arguing that the family shareholders harm the firm by extracting resources (e.g. Anderson et al., 2009), does not exhibit any negative performance effect during the crisis, it proved even beneficial in general, during stable economic conditions, and TFF could therefore be considered as more creditworthy than firms with other shareholder types. In addition, financial institutions and rating agencies should value the long-term orientation (Anderson & Reeb, 2003), aversion with regard to their bankruptcy risk (Poletti-Hughes & Williams, 2017), and willingness to inject private capital to the firm in times of financial distress (Villalonga & Amit, 2010). With regard to LFF, although granting credits to the relatively young firms during economic downturns might impose risks, financial institutions and rating agencies should consider that these firms tend to outperform other organizations in particular during crises, and banks or other institutions therefore can adjust their credit risk assessment accordingly.

Third, members of the shareholding family gain a deeper understanding of the advantageousness of having a family CEO, especially during periods of stable economic conditions. Families should meet calls for widely diffused, outsider-dominated governance systems (Minichilli et al., 2016) with caution and acknowledge that the unique skill set, emotional attachment, and attitude as the steward of the organization might evolve to higher firm performance and to a sustained competitive advantage in the long term. However, no conclusion can be drawn that having a family member as CEO during a global recession turns out to be beneficial for the firm.

Finally, policymakers could recognize the strengths and performance superiority of TFF and LFF and their contribution to the national economy. Although it should be argued with caution if policymakers shall privilege particular ownership structures over others, it might be beneficial for the economy to support the development of TFF and LFF, for instance by creating awareness about the importance of such ownership structures in the corporate environment. Furthermore, the development of LFF could be supported especially during crises to even further foster the positive effect on performance, offsetting partially the negative effect of a global recession.

5.4. Limitations

This study has some important limitations. First, the firms of my sample were all listed in the German Prime Standard. Therefore, the findings might not be transferable or only partially transferable to a very small or mid-sized German family firm. Among my sample firms are some of the largest corporations in Germany and due to their legal form, they have to follow rules and laws that might restrict family influence and involvement when compared with smaller firms. For example, a listed legal entity ("AG") is required to have a supervisory board partly consisting of employee representatives ($\S 96 AktG$). The mere size of these companies implies a corresponding organizational behavior typical for large firms that due to the complexity limits the influence of individual shareholders. However, it should be noted that an empirical study of smaller firms and their behavior is very difficult to perform as smaller firms do not have to comply to publication and disclosure requirements to the same extent as large firms do. For this reason, most of the studies analyzed in the theoretical background section of this thesis examined performance of publicly listed family and non-family firms (e.g. Anderson & Reeb, 2003; Andres, 2008; Bjuggren & Palmberg, 2010; Bonilla et al., 2010; Kowalewski et al., 2010; Martínez et al., 2007; Sacristan-Navarro et al., 2011a, 2011b).

Second, it should be noted that the German market analyzed in my study includes a high number of TFF (Fiss & Zajac, 2004) and is often characterized as an economy heavily dependent of family firms, which is why comparability among geographies and the transferability of results for example to Anglo-Saxon countries might be limited. Furthermore, regulatory peculiarities of the German jurisdiction such as the employees' rights of participation in the supervisory board mentioned in the previous paragraph might distort results and limit the transferability of findings to firms in other jurisdictions

Third, family involvement in the management in this study

is determined only by the presence of a CEO who at the same time is a member of the owning family. Although this approach might be appropriate as the CEO is the single most important and influential person in the organization (Minichilli et al., 2010), the owning family might influence the management of the firm in other forms (Berrone et al., 2012). For instance, family members might exert pressure over the management of the firms through other positions in the company such as board memberships or division management positions. Furthermore, the family influence might be manifested in the membership or even chairmanship of the supervisory board, overseeing management actions and appointing the board members running the organization.

5.5. Avenues for Future Research

The analysis that has been conducted throughout this thesis provides several avenues for future research. First, studies should be performed also for small and medium-sized firms in order to decrease the effect of large firm size on corporate behavior as mentioned earlier. Because it might be difficult to collect data for empirical analyses, it could be revealing to choose a qualitative research approach. In general, the benefit of a qualitative analysis is that it provides deeper insights into the underlying mechanisms and drivers of firm performance with regard to the different ownership types. Thereby, it would complement and enhance the existing quantitative research.

Second, researchers should consider similar studies with firms in a different geographical or organizational context. For instance, companies in Anglo-Saxon countries might behave differently than companies in the German market that is especially characterized by the influence families have on the business. In order to increase the explanatory power of findings that might be distorted by the peculiarities of national jurisdictions, future research should consider extending the results to cross-national evidence.

Third, further research on heterogeneity among the ownership structure, management structure, as well as the generational stage of family firms should be intensified. Especially in the context of the longstanding debate whether family firms perform better than other firms, the differentiation of TFFs and LFFs has been incorporated in only few studies before. However, after finding partial support for my first set of hypotheses, I believe that it is important to make this distinction because these different types of ownership structures tend to elicit distinct organizational behavior as the impact on firm performance was found to be different. Besides the integration of heterogeneity aspects with regard to the ownership structure, further research on the involvement of family members and founders not only as CEO but also as board members or supervisory board members could help identify how families and founders influence the strategic decision making process in an organization, therefore covering a broader spectrum of family involvement.

Finally, future research on the validity of using an economic shock as an experiment, where firms are moved out of their equilibrium and ownership effects intensify because adjustments of the ownership structure occur with a certain delay, is necessary. My results could only partially support this conjecture and, in case of TFF ownership, rather indicate an effect of ownership on firm performance in general, independent from the macroeconomic condition. It cannot unanimously concluded that the effect for LFF ownership during crisis observed in this study is causally linked to the economic downturn which is why primarily qualitative research should examine the influence of a crisis on LFF as well as the resulting organizational behavior.

6. Conclusion

The aim of this study was to better understand the frequently assumed supremacy of TFF and LFF ownership over other ownership types by using the GFC as a unique exogenous contingency, where firms are moved out of there equilibrium while ownership structures stay constant at least in the short-term and, therefore, costs and benefits of the ownership structure are assumed to be magnified.

Introducing arguments from the agency theory, stewardship theory, RBV, as well as the concept of SEW, I hypothesized that TFF and LFF ownership is associated with superior performance during the GFC when compared to firms with other ownership structures. The results of the analysis covering 178 firms listed in the German Prime Standard indicated a general superior performance of TFF ownership over other ownership types that was more pronounced during overall stable economic conditions but was not observed during situations of financial distress such as the GFC. LFF ownership, in contrast, did not exhibit superior effects during the steady-state pre-crisis period but seemed to be beneficial in times where firms faced serious threats due to macroeconomic developments. Furthermore, I hypothesized that the presence of a family CEO in TFF is associated with lower firm performance compared to TFF with an external CEO. However, the results did not support this hypothesis: While beneficiary during stable economic conditions, the competitive advantage of a family CEO seemed to vanish during the GFC.

To conclude, the conjecture that ownership structures affect firm performance in particular during severe economic crises, magnifying ownership-specific costs and benefits, cannot be supported unanimously. However, contributing to the increasing academic discussion of family firm heterogeneity, the results of this thesis confirm the need of a differentiated perspective on how large the stake held by the family is (magnitude of ownership), how actively the family shapes the management of the firm (family involvement through board membership), and whether the firm is owned and managed by a lone founder or by descendants or multiple family members of the founder (generational stage of family firms).

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