

# **TECHNISCHE UNIVERSITÄT MÜNCHEN**

TUM School of Management

Lehrstuhl für Entrepreneurial Finance II

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## **Essays on Ownership over the Company Life Cycle**

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Vollständiger Abdruck der von der Fakultät für Wirtschaftswissenschaften der Technischen Universität München zur Erlangung des akademischen Grades eines

**Doktors der Wirtschaftswissenschaften**

(Dr. rer. pol.)

genehmigten Dissertation.

Vorsitzender: Prof. Dr. Gunther Friedl

Prüfer der Dissertation: 1. Prof. Dr. Reiner Braun

2. Prof. Dr. Jürgen Ernstberger

Die Dissertation wurde am 19.02.2021 bei der Technischen Universität München eingereicht und durch die Fakultät für Wirtschaftswissenschaften am 15.05.2021 angenommen.

## Summary

This thesis builds on the idea that ideal ownership structures vary over the company life cycle. It addresses three distinct settings of ownership and governance. The first topic are growth companies syndicating investments in order to obtain additional financing. This thesis explicitly addresses heterogeneous syndicates between venture capital firms (the general partner) and limited partners. The two groups are found to be notably different with regards to formation motives and syndicate formation criteria. This for instance enables general partners to maximize their control by pooling control rights. Moreover, the investment context of venture capital syndicates is found to be an additional factor determining the most efficient syndicate setup. Second, this thesis analyzes family ownership of listed German companies and how they can contribute to firm performance in times of crisis. Family firms statistically and economically outperform non-family firms during the crisis years 2008 to 2010. Digging deeper into the drivers, family firms were able to significantly reduce their leverage during the crisis and increase their capital expenditures relative to their non-family counterparts. Furthermore, family firms evidently have built-up financial flexibility before the crisis by following a more conservative pay-out policy. The third topic is about foreign direct investment behavior of the two largest investor groups from regions with hierarchical structures in the German stock market, namely China and the Gulf Cooperation Council. Investment patterns differ substantially, as they are largely influenced by the countries' respective industrial policies. The Chinese investment approach is found to be rather of a transactional nature. They buy large shares in relatively small, but not necessarily young companies, aiming to get control. The Gulf states in contrast appear to follow a more long-term oriented, relationship-driven approach. They invest in significantly larger companies and take smaller shareholdings.

## **Zusammenfassung**

Die vorliegende Dissertation baut auf der Idee auf, dass sich ideale Eigentümerstrukturen über den Unternehmenslebenszyklus verändern. Sie befasst sich mit Eigentum und Governance von Unternehmen in drei unterschiedlichen Bereichen. Der erste Bereich sind Wachstumsunternehmen, welche Investitionsrunden syndizieren, um zusätzliches Kapital zu erhalten. Der explizite Fokus hierbei liegt auf heterogenen Syndikaten zwischen Venture Capital Unternehmen und ihren Investoren. Beiden Gruppen unterscheiden sich erheblich in Bezug auf ihre Syndizierungsmotive als auch -kriterien. Dies ermöglicht Venture Capital Unternehmen unter anderem ihren Einfluss zu maximieren, indem sie die Kontrollrechte ihrer Co-Investoren bündeln. Darüber hinaus wird der Investitionskontext als wichtiger zusätzlicher Faktor identifiziert, der die ideale Zusammensetzung des Syndikates beeinflusst. Der zweite Bereich dieser Arbeit behandelt Familieneigentum börsennotierter deutscher Unternehmen und wie die Eigentümer in Krisenzeiten zur Unternehmensperformance beitragen können. Familienunternehmen übertreffen Nichtfamilienunternehmen in Bezug auf operative als auch Kapitalmarktperformance in den Krisenjahren 2008 bis 2010. Bei eingehenderer Betrachtung der Treiber zeigt sich, dass Familienunternehmen ihren Verschuldungsgrad während der Krise erheblich reduzieren und ihre Investitionen vergleichsweise erhöhen konnten. Familienunternehmen scheinen vor der Krise durch eine konservativere Ausschüttungspolitik Reserven aufgebaut zu haben. Der dritte Bereich behandelt ausländische Direktinvestitionen der beiden größten Investorengruppen des deutschen Aktienmarktes aus hierarchischen Regionen; aus China und dem Golf-Kooperationsrat. Die Investitionsmuster unterscheiden sich erheblich, da sie weitgehend von der jeweiligen Industriepolitik der Länder beeinflusst werden. Der chinesische Investitionsansatz ist eher transaktionaler Natur. Sie kaufen große Anteile an relativ

kleinen, aber nicht unbedingt jungen Unternehmen, um die Kontrolle zu erlangen. Im Gegensatz dazu scheinen die Golfstaaten einen eher langfristigen, beziehungsorientierten Ansatz zu verfolgen. Sie investieren in deutlich größere Unternehmen und halten kleinere Anteile.

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## List of abbreviations

ANOVA	Analysis of variance
B2B	Business-to-business
B2C	Business-to-consumer
CAR	Cumulative abnormal returns
CAPEX	Capital expenditures
CDAX	Composite German Stock Index
CEO	Chief executive officer
EBIT	Earnings before interest and tax
et. al	et alii
FDI	Foreign direct investment
FE	Fixed effects
GP	General partner
IPO	Initial public offering
LP	Limited partner
OLS	Ordinary least squares
p.	Page
R&D	Research & development
ROA	Return on assets
SIC	Standard Industry Classification
SPV	Special purpose vehicle
VC	Venture capital

## **Acknowledgements**

First, I thank my supervisor Reiner Braun for his continuous support and our trusting relationship throughout my time as a PhD student at the Chairs of Entrepreneurial Finance at the Technical University of Munich. I'm grateful for the freedom he gave me to conduct my research in such academically and practically relevant fields, that also matter to me.

I thank my co-authors for their feedback and contributions. Most importantly Ann-Kristin Achleitner, who I had a fruitful working relationship with throughout all my research projects. Regarding my research on family firms, I thank Christoph Kaserer and Svenja Jarchow for their continuous guidance and contributions. I thank Mark Schmitz for our collaboration on the topic of venture capital syndication. Furthermore, I thank André Betzer and Dmitry Bazhutov for jointly investigating the phenomenon of investors from hierarchical countries. Finally, I thank Benjamin Puche for our friendship and his great mentorship during my PhD.

I am grateful that McKinsey & Company enabled me to pursue this PhD in the first place within their Educational Leave program. Furthermore, I thank the Foundation for Family Businesses in Germany and Europe ("Stiftung Familienunternehmen") for the collaboration in the context of my family firm research and their additional support, awarding me their doctorate scholarship.

Last and most importantly, I thank my family and friends for their continuous support throughout my PhD. I am grateful for all the good discussions at and beyond the chair. I thank my family for always supporting me in my decisions and helping me to take a step back. And most importantly, I thank my girlfriend Anna for her infinite love and support.

I dedicate this dissertation to my mother.

# 1. Introduction

## 1.1. Motivation and research topics

Corporate ownership has increasingly moved into the focus of public attention. One recent example in Germany is the public debate on collectivization of large corporations. A press statement of the leader of the Young Socialists affiliated with the Social Democratic Party of Germany specifically initiated this discussion (Bittner & Hildebrandt, 2019). The central argument in this debate, criticizing the distribution of billion Euro profits from certain companies to only a few individuals, was publicly scrutinized and condemned. However, the underlying idea of finding ideal ownership models for different types of organizations and diverging objectives prevails. More recently, another initiative moved into public attention calling for a new legal form for corporations, a so-called *company in responsible ownership* (“Gesellschaft in Verantwortungseigentum”) (Brors & Holzki, 2020). This radically new proposal envisions a corporation without beneficiary and liable owner. Corporations under this construct would be self-serving in perpetual motion, not paying out any proceedings and mainly serving itself as an organization. Such radical advances emphasize the relevance of the corporate ownership topic in society.

Corporate ownership has also long been established as a key research strand in academia for finance as well as management researchers. Pioneering works include the seminal papers by Coase (1937), Jensen and Meckling (1976) and La Porta, Lopez-de-Silanes, and Shleifer (1999). In their theory on the ownership structure of the firm, Jensen and Meckling (1976) differentiate equity ownership broadly into *inside equity*, owned by the firm’s management, and *outside equity*, which is owned by outside financial investors. Firms with *outside equity* are

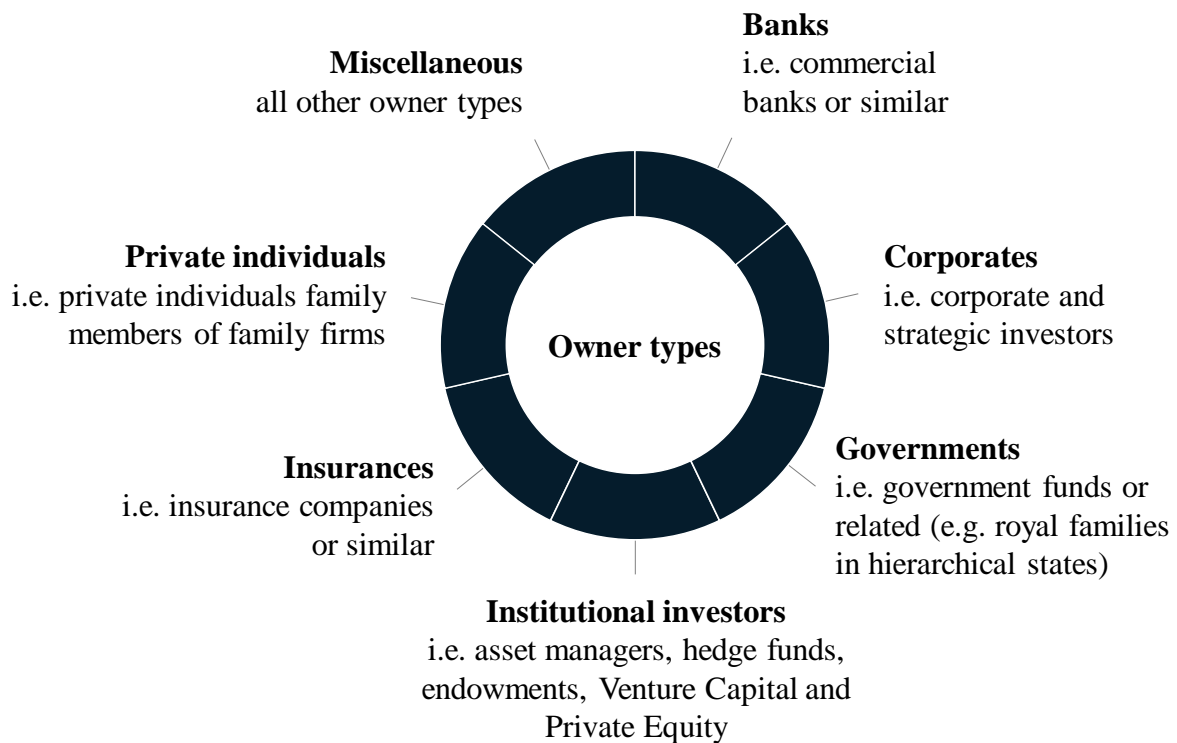
characterized by a separation of ownership and control, as outside shareholders are not necessarily involved in operational management or supervision of the firm. In this setting, agency conflicts arise as the manager (agent) of the company might not act in the best interest of the owner (principal) (Eisenhardt, 1989; Fama & Jensen, 1983a). For instance, a manager might not only be interested in maximizing firm value, and thereby the owner's wealth, but also minimize his own time and effort. These firms with external owners therefore introduce incentives and monitoring mechanisms in order to prevent expropriation by the firm's management (Fama & Jensen, 1983b).

Corporate owners are heterogeneous with regards to their characteristics and objectives, which can be of financial and non-financial nature. Figure 1 shows the seven owner types among which is differentiated in essay 3 on foreign direct investments (FDI). First, there are financial investors, i.e., banks, institutional investors, and insurance companies. Objectives for this investor group are primarily of financial nature. Providing *outside equity*, it is crucial for them to ensure incentivization and monitoring of the firm's management so that they maximize firm value. Second, there are more strategic investors such as corporate investors and also government funds. Next to financial goals, they also often follow strategic objectives, for instance a corporate investor investing in technologies beneficial to its core business (Hellmann, 2002). Government funds also often follow an additional strategic objective which we address in essay 3. Next, there are private individuals, interested in value maximization but often characterized to also follow other, non-financial goals, provided they have the required magnitude of shareholdings to exercise influence. The most prominent company type with private individuals exercising such influence are family firms. Families as firm owners show notable differences to other owner groups. Family firms are found to more likely also focus on



maximizing socio-emotional wealth instead of pure financial wealth (Berrone, Cruz, & Gómez-Mejía, 2012; Carney, 2005; Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Schulze, Richard, Lubatkin, & Buchholtz, 2001). When family firms have *inside equity*, for instance in the case of startups that often have a founder Chief Executive Officer (CEO), also agency costs are lower. Lastly, miscellaneous owners primarily comprise own shares, e.g. after a share buy-back.

**Figure 1: Owner types**

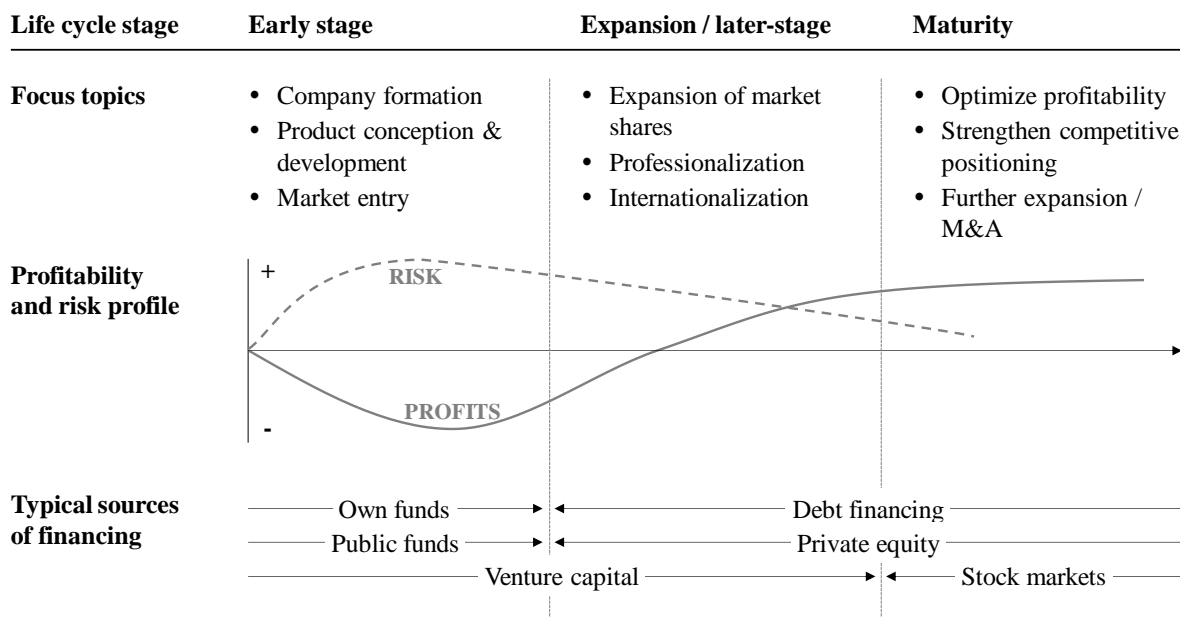


Owners have various options to influence decision-making and hence overall development of firms. Formalized ways most importantly include membership in management or supervisory boards as well as exercising voting rights, e.g. in the annual general meeting. The largest controlling shareholder hereby often takes a special role as they “typically have power over firms significantly in excess of their cash flow rights” (La Porta et al., 1999, p. 471). Only large

shareholders for instance have sufficient influence to be able to decide on the placement of managers or board members.<sup>1</sup>

Ownership typically is not static over the entire company life cycle but rather develops over different stages. Figure 2 (based on Schefczyk (2010)) provides an overview over the different life cycle stages of companies, associated focus topics, profitability and risk profile as well as typical sources of financing. I and my co-authors differentiate three key life cycle stages throughout our essays; *early-stage*, *expansion / later-stage* and *maturity*.

**Figure 2: Phases of financing**



Early stage companies typically possess limited resources and mainly focus on the formation of the company and the development of an attractive product. This stage is characterized by high business risk as the business models and products often still lack proof of concept and just

<sup>1</sup> Or at least to veto or tip a decision.

entered the market. As companies at this point heavily invest without large revenues, they also produce notable losses. Key financing sources are the founders' own funds as well as funding from government grants. Also venture capital (VC) investors already get involved at this point – attracted by a high potential return in case of success.

After achieving proof of concept and successful formation of the company, firms enter the expansion or also called later-stage. Risk is already lower and profits start to increase. Firms are focused on reaching profitability, on further growth and gaining market shares. Additional focus topics in this phase are professionalization of the business and entering new markets through internationalization. This later-stage growth is often financed by so-called *growth financing* mainly provided by VC funds. Some of them are also increasingly specialized on this stage. Due to the losses over the first half of the company lifecycle, companies are mostly not able to self-finance. Equity purchases in early and later-stages are therefore mostly structured as capital increases. With firms turning profitable, the dynamic of financing and ownership notably changes and companies get more room for maneuvering with financing and adjusting it to the needs of their business.

Mature firms can optimize their financing structure by assuming debt and thereby lowering their overall cost of capital. As firms are able to finance themselves, funding needs become less relevant as a driver for changes in ownership structure. Secondary equity transactions become predominant. Investors buy and sell equity shares in companies to maximize their own financial returns. In order to facilitate this, initial public offerings (IPOs) become an attractive option at this point, increasing equity liquidity for owners and improving access to further capital. For equity holders in such mature companies, immediate financial gains from the companies'

profits become a relevant component next to future growth potential. Questions about dividend payouts therefore become relevant, where owners effectively trade-off immediate financial gains with the firm's potential to further invest in future growth.

With changing needs of firms over the company life cycle, also the optimal ownership structure evolves (Maug, 2001). Next to financial resources, owners can also actively contribute to their companies' success in a non-financial way. Early stage companies often need additional know-how from their investors with regards to the product being developed and the market. The owner at this point therefore needs to be knowledgeable in the specific business field. Growth companies benefit from additional resources to continue growth. For instance the owner's professional networks in order to get access to new markets or new customer groups become relevant. In mature companies, ownership and control is often separated. Owners now require effective monitoring skills so that firm value is maximized (Hochberg, Lindsey, & Westerfield, 2015). The required skillset of the owner therefore depends on the life cycle stage of the firm.

As firms' requirements change over the company life cycle, also the ownership structure should change. Demsetz and Lehn (1985) and Demsetz and Villalonga (2001) therefore propose an alternative view on ownership, characterizing ownership structures as endogenous. In this view, a company's ownership structure changes as a result of its position in the life cycle and other idiosyncratic characteristics, maximizing firm value.

### **1.2. Structure of the thesis and main findings**

This thesis builds on the idea that ideal ownership structures vary over the company life cycle. It looks at three distinct settings of ownership and governance throughout the company life cycle. First, we look at how growth companies in need for additional financing find the best

setup to increase available capital by syndicating investments of venture capital firms and limited partners (LPs). Second, we analyze how family ownership of listed companies can help influence the impact on firm performance in times of crisis. Third, we analyze the investment patterns of investors from hierarchical countries investing into listed companies. For each of these three settings of interest, this thesis contains a dedicated essay. Table 1 provides a brief overview.

Table 1: Essay overview

	Essay 1	Essay 2	Essay 3
<b>Title</b>	Fishing among sharks – GP-LP investment syndication in later-stage venture capital	Family firm performance in times of crisis – new evidence from Germany	Foreign Direct Investments in the German stock market from China and the Gulf states
<b>Research questions</b>	What drives GP-LP investment syndication in later-stage venture capital investments?	Do family firms outperform non-family firms in times of crisis and what are potential reasons for this?	What investment patterns do we see for stock investments by investors from hierarchical countries, namely China and the Gulf states?
<b>Used data</b>	Semi-structured open interviews, company website data, field notes	Unbalanced panel data set of listed German non-financial firms between 1998 and 2018	Unbalanced panel data set of listed German companies between 2009 and 2018
<b>Methodology</b>	Qualitative research design; coding and qualitative data analysis	Univariate analyses, OLS regressions	Univariate analyses, logistic and OLS regressions, event study
<b>Main results</b>	The unique setting of such heterogeneous syndicates enables GPs to maximize their control by pooling control rights, which the LPs are willing to forfeit. We furthermore advance existing research on VC syndication in general by elaborating on the role of investment context of VC syndicates, identifying the target company's business model as an important factor, yet not sufficiently accounted for.	Statistically and economically significant outperformance of family firms in terms of ROA and Tobin's Q during the crisis years 2008 to 2010. Next, we find family firms to significantly reduce their leverage during the crisis and to increase their capital expenditures relative to their non-family counterparts. We find evidence that family firms have built-up financial flexibility before the crisis by following a more conservative pay-out policy.	FDI behavior for both groups is largely influenced by their specific industrial policies. The Chinese investment approach is rather of a transactional nature. Chinese investors buy large shares in relatively small, but not necessarily young companies, aiming at getting control. The Gulf states in contrast follow a more long-term oriented and relationship-driven approach. Investors from the Gulf states invest in notably larger companies and take lower shareholdings.
<b>Key contributions</b>	We develop a first qualitative framework for GP-LP syndicates. A syndicate equilibrium is achieved by a triad of the GP maximizing her control, overall collaboration complexity being minimized and the LP maximizing financial return and minimizing effort.	We extend existing research on family firm performance for German listed companies over a relatively long horizon of 21 years. Furthermore, we present evidence supporting the notion that crisis resilience is related to more financial flexibility and long-term decision making.	We provide insights on investment patterns while accounting for investor type and idiosyncratic particularities of investor regions.

In the first essay, we analyze syndication of later-stage venture capital financing rounds. More explicitly, we examine syndicates between general partners (GPs) and limited partners. Such syndicates are increasingly required to close a financing gap GPs encounter in later-stage rounds, caused by increasing ticket sizes. GPs and LPs vary with regards to their motives and goals. We pose this should also affect syndicate characteristics and dynamics. Having the GP as one syndication party actively engaged in managing the target company opens room for an LP to take a passive role in the syndicate. Our research aims at a more granular understanding of the motivation and formation of such GP-LP syndicates. Using a qualitative research design and semi-structured open interviews, we find large differences between GPs and LPs with regards to syndication motives and criteria. The lead investor's ambition to maximize control is largely compatible with the skillset and motives of co-investors, who in turn get direct exposure to attractive investment opportunities at lower fees. The lead investor can thereby also scale his own influence by pooling control rights. We find trust to be an important pre-condition for syndication, as adverse selection risks are generally high. In addition, we emphasize importance of transaction cost and conclude on ideal collaboration models between GPs, LPs as well as the companies in need of the funding. Moreover, we advance existing research on VC syndication as we elaborate on the role of investment context of VC syndicates. Particularly the target company's industry and business model are important contextual factors that need to be taken into consideration when assessing VC syndicate setups.

The second essay investigates crisis resistance of mature companies and the role of ownership. Specifically, we analyze performance of listed German family firms compared to non-family firms in the financial crisis period 2008-2010. It has been extensively shown in the literature that family ownership impacts operating performance and valuation (Amit & Villalonga, 2014;

Villalonga & Amit, 2009). The family as an active blockholder mitigates agency conflicts arising from the separation of ownership and control (Miguel, Pindado, & La Torre, 2004). This is further enhanced through board membership which can decrease monitoring inefficiencies and informational asymmetries (Villalonga, Amit, Trujillo, & Guzmán, 2015). We use different family firm definitions to account for different degrees of family ownership and control. Our sample consists of all listed non-financial German companies over the period 1998 to 2018. Employing fixed effects (FE) regressions, we find that listed German family firms significantly outperformed their non-family counterparts in the crisis period in terms of return on assets (ROA) as well as Tobin's Q. This positive family impact is even stronger, the larger the degree of family involvement is. Digging deeper into the channels responsible for this outperformance, we find that family firms were able to significantly reduce their leverage and increase their capital expenditures during the crisis period relative to their non-family peers. Instead of any structural advantage during the crisis, it seems that family firms were better prepared for the crisis by a priori following a more conservative payout policy.

The third essay also concerns itself with ownership of mature companies. We analyze the investment patterns of the two most relevant investor groups from regions with hierarchical structures in the German market, namely China and the Gulf states. Employing a micro-level dataset, we aim to shed light on the idiosyncratic foreign direct investment patterns of these two groups. We therefore build on a comprehensive dataset of German listed companies over the period 2009 to 2018. Employing univariate tests as well as logistic and basic multivariate ordinary least squares (OLS) regressions, we aim to get a more granular understanding of the type and characteristics of companies investors from those regions favor. We find notable particularities for both groups. FDI behavior for both groups is largely influenced by their



specific industrial policies. The Chinese investment approach is rather of a transactional nature. Chinese investors buy large shares in relatively small, but not necessarily young companies, aiming at getting control. Even when controlling for the above-mentioned investor types, comparing the mainly strategic Chinese investors to other strategic investors, we find significant region-specific evidence. The Gulf states in contrast follow a more long-term oriented and relationship-driven approach. They invest in significantly larger companies taking smaller shareholdings. In line with their longer-term approach, they appear to put less emphasis on purely financial factors, such as operating profitability.

The remainder of this dissertation is organized as follows: section 2 is dedicated to essay 1 on GP-LP investment syndication in the context of later-stage venture capital investments. section 3 contains the second essay on listed family firms and impact of family ownership in the financial crisis. Section 4 comprises the third essay on foreign direct investments in listed companies. Section 5 concludes.

## **2. Essay 1: Fishing among sharks – GP-LP investment syndication in later-stage venture capital**

### **Abstract**

Venture capital (VC) syndication mainly occurs to compensate for a lack of resources, whether financial or otherwise. The current literature does not sufficiently explore the extent to which the motives differ for syndication between general partners (GPs) or between GPs and limited partners (LPs). This paper investigates this matter, using a qualitative research design and focusing explicitly on heterogenous GP-LP syndicates. We document substantial differences between GPs and LPs in terms of syndication motives and criteria. For example, GPs aim to maximize influence by pooling control rights, while LPs wish to play a more passive role. More broadly, we find that the investment context, particularly the target company's business model, presents another factor for determining the most effective syndicate setup.

**Keywords:** Venture capital, syndication, agency theory

**Authors:** Ann-Kristin Achleitner, Reiner Braun and Henry Keppler<sup>2</sup>

**First author:** Henry Keppler

**Status:** Working paper

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<sup>2</sup> The authors would like to thank Mark Schmitz for the great collaboration and his invaluable contributions, particularly with regard to building the bridge to the various industry experts interviewed in the course of this research project.

## 2.1. Introduction

Capacities for growth investments are a cornerstone of a functioning financing ecosystem (Achleitner, Braun, Behrens, & Lange, 2019). At this investment stage, investment syndication plays an essential role as single venture capitalists often become capital constrained with increasing ticket sizes (Manigart et al., 2006). Next to traditional syndication between several VCs, another form of syndication has become popular: syndication between a general partner (GP), i.e., a VC firm, and traditional limited partners (LPs), i.e., institutional investors such as pension funds, asset managers, insurances, and endowments (Black & Lee, 2015). Therefore, we differentiate between two overall outcomes: (1) whether syndication occurs at all, and (2) whether the resulting syndicate is formed between several GPs (GP-GP syndicate) or between a GP and one or more LPs (GP-LP syndicate).

The first outcome has long been of general academic interest. Broad focus areas include the antecedents of syndication, such as motives (Hochberg et al., 2015; Manigart et al., 2006) and channels (Zhang, Gupta, & Hallen, 2017), as well as the formation criteria and dynamics of VC syndicates (Admati & Pfleiderer, 1994; Sorenson & Stuart, 2008). VC syndication occurs mainly to compensate for a lack of resources (Bygrave, 1987; Dimov & Milanov, 2010; Manigart et al., 2006). These resources can be both financial and non-financial (Hochberg et al., 2015). Agency conflict plays a central role in syndicate dynamics, resulting from information asymmetries and diverging utility functions between the lead investor and co-investors, who risk exploitation (Admati & Pfleiderer, 1994; Birmingham, Busenitz, & Arthurs, 2003; Guler, 2007; Lerner, 1994). When co-investors are LPs, agency conflict becomes particularly relevant as the degrees of involvement and skillsets can vary widely from lead investors (Gorman & Sahlman, 1989; Wright & Lockett, 2003).

Despite broad academic study of VC syndication, we find some key aspects remain uncovered. Firstly, most extant research limits analysis to traditional syndicates of several VCs or does not explicitly differentiate between GP-GP and GP-LP syndicates. Therefore, VC syndication theory only narrowly covers heterogenous GP-LP syndication. Also, GPs and LPs involved in such syndicates have different skillsets. The existing literature only partially addresses the additional resource contributions and value-adds beyond financing from such non-VC syndication partners. Furthermore, extant research mainly focuses on motives, the role of networks, and syndicate dynamics. The syndication process and the role of transaction cost and collaboration between lead and co-investors receive less academic attention. Lastly, investment context has not been adequately considered, most notably with regard to target company characteristics, such as business model.

We focus our research explicitly on GP-LP syndicates and concentrate mainly on their heterogeneity because the motives and goals of the syndication partners vary. We contend that this should also affect syndicate characteristics and dynamics. When a GP actively manages the target company, it allows an LP to take a passive role.

We employ a qualitative research design, conducting semi-structured interviews with industry experts from VC funds, LPs, and growth companies in continental Europe. We choose this exploratory setting to allow new insights to emerge from the data. Our analysis largely follows established approaches for coding and qualitative data analysis (Miles & Huberman, 1994; Strauss & Corbin, 1998).

We find GPs and LPs have substantially different syndication motives and criteria. We separate our formation criteria into three categories: “contractual”, “collaborative/processual”, and

“trust-related/relational”. A critical precondition leading to GP-LP syndication is that the lead investor is capital constrained, reducing adverse selection risks caused by diverging utility functions. In contrast, LPs are seizing the opportunity to get direct exposure to attractive investments at lower fees. Therefore, we find key differences to traditional VC syndicates: The GP’s ambition to maximize control essentially complements the LP’s skillset and motives. The lead investor can pool control rights, increasing their influence disproportionately to their financial contribution. The LP’s skillset contributes to an increase in the investment’s overall performance. LPs as co-investors are skilled in assessing GP quality and therefore form an additional quality assurance layer, ensuring GP-investment fit. We also find that transaction cost plays an important role in the syndication process, and we draw conclusions for collaboration models.

We advance existing research on VC syndication in general by elaborating on the role of investment context in VC syndicates. The target company’s industry and business model are critical factors to consider. A passive co-investor that only contributes financial resources is potentially an ideal fit in an ordinary business-to-consumer (B2C) context. However, in an ordinary business-to-business (B2B) context, we find this arrangement inefficient, as additional know-how is often required.

## **2.2. Literature review and main theoretical constructs**

Resource exchange and agency cost have been generally established as key underlying theoretical concepts in VC syndication (Admati & Pfleiderer, 1994; Bygrave, 1987; Jääskeläinen, 2012; Lerner, 1994). They provide a framework for elaborating on VC investment syndication based on the motives and criteria for VC syndication. Both are found to vary across

VCS, for instance, driven by their skillset, reputation, or overall strategic approach to co-investments (Hochberg et al., 2015; Wright & Lockett, 2003). Syndicates are typically asymmetric, involving unequally active parties (Gorman & Sahlman, 1989). The more active partner often takes the role of lead investor, while the less active partner becomes the co-investor. Extant research has focused extensively on the different roles and skillsets of VC firms. The key questions of interest mainly revolve around syndication motives as well as syndicate dynamics and potential conflicts. The unique setting of VC syndicates has also inspired a growing body of research on broader theoretical streams, such as agency (Admati & Pfleiderer, 1994), resource-based (Hochberg et al., 2015), or relational network theory (Meuleman, Lockett, Manigart, & Wright, 2010).

### **2.2.1. Motives for VC syndication**

The primary motivation for VCs to syndicate rather than investing alone is to compensate for a lack of resources (Bygrave, 1987; Dimov & Milanov, 2010; Manigart et al., 2006). These might be purely financial resources or other resources needed from a partner, such as professional network, investment management skills, or exit experience (Cumming, 2005; Hochberg et al., 2015). The overall consensus is that the most prevalent motive is financial (Lockett & Wright, 2001; Manigart et al., 2006; Wright & Lockett, 2003). Manigart et al. (2006) for instance, investigate different syndication motives on both the portfolio and the individual target company level using a questionnaire-based approach. They find that the most important reason for syndication is to obtain additional financing rather than other value-adds or selection benefits.

With financial resources as the primary motivation, a broad range of potential syndication partners come into play. Lead and co-investors do not necessarily need to have similar skillsets (Wright & Lockett, 2003). For instance, research shows that partnerships between a lead investor with experience and deal access and a co-investor who purely provides capital are a particularly suitable combination (Hochberg et al., 2015). Furthermore, co-investors do not need to be VCs. They can also be LPs, as in our area of interest, or strategic investors with other motives. For instance, Hellmann (2002) analyzes syndicates with strategic investors who follow strategic objectives, such as corporate investors investing in technologies that benefit their core business.

Syndication motives are found to be highly dependent on the target company's investment stage (Verwaal, Bruining, Wright, Manigart, & Lockett, 2010). In early-stage investments, there is a stronger focus on syndication with more experienced capital providers as it is more important to obtain additional expertise. In contrast, less experienced capital providers tend to be involved in later financing rounds (Lerner, 1994). Therefore, pure VC syndicates are more common in earlier stages and decrease in later financing rounds, while other investor groups gain larger shares in later-stage syndicates (Ferrary, 2010). In earlier investment stages, lead investors rely more on the co-investor's skillset for screening and other value-adds. In addition, independently of the specific partner, Bottazzi, Da Rin, and Hellmann (2016) find that syndication in later stages is generally more favorable, as early-stage investments are riskier and harbor risks of adverse selection.

### **2.2.2. Syndication criteria and syndicate dynamics**

Extant research focuses secondly on syndication and syndicate dynamics, with agency theory the most predominant (Eisenhardt, 1989; Jensen & Meckling, 1976; Wilson, 1968). Lead investors possess superior knowledge, which potentially allows them to take advantage of the co-investor to maximize their own return. Building on past research on agency conflict in VC syndicates, extant research began focusing on the determinants of syndication, such as investor experience, trust, and prior ties.

Agency conflict plays a central role in VC (Cumming, 2005, 2006; Sahlman, 1990; Sapienza & Gupta, 1994) and VC syndication (Admati & Pfleiderer, 1994; Fried & Hisrich, 1995). As Sorenson and Stuart (2008, p. 275) put it: “Invited firms face uncertainty about the quality of the target company, and lead investors sometimes have an incentive to overstate the quality and value of the target to secure reputable investors at high current-round valuations of the company.” Adverse selection due to information asymmetries plays an important role in VC: Insiders, such as management teams or existing investors, know more about the investment opportunity and could take advantage of new investors. Adverse selection is also a prevailing challenge in lead-investor-co-investor relationships and subsequent financing rounds (Admati & Pfleiderer, 1994). Window dressing and escalating financial commitment play a role as lead investors might overstate their existing portfolio company's performance to secure subsequent financing (Birmingham et al., 2003; Guler, 2007; Lerner, 1994). LPs risk exploitation because lead investors are already invested in the portfolio company and therefore likely have a diverging utility function.

Agency conflict becomes particularly prevalent if prior investment rounds were unsuccessful or lead investors charge co-investors fees. For example, a lead investor acting as an agent



proposes an investment opportunity to a potential co-investor interested in investing in the target company. The lead investor, who knows more about the target company, is already committed but needs the co-investor for additional resources. Involving a co-investor is not beneficial from a purely financial perspective because it reduces the lead investor's return unless the co-investor brings another value-add to the investment. Therefore, the main reason why a co-investor should be involved in promising ex-ante investments is that the maximum capital the lead investor can allocate is less than the required investment amount. The adverse selection risk crystalizes when considering the opposite case, such as a follow-on financing round after an unsuccessful investment. A rational lead investor prefers to continue the investment and receive a follow-on financing round as long as the new round's expected return is greater than the losses resulting from termination. However, if the new financing round's expected return is less than the lead investor's target return, the goal would be to invest as little as possible in the new round. Therefore, the lead investor has an incentive to minimize potential losses by suggesting a disproportionately better return distribution to potential co-investors in order to trigger an investment (Grichnik & Schwärzel, 2005). In summary, co-investments presumably result in lower agency conflict if the lead investor is capital constrained and unable to contribute the entire investment amount even though the expected return is higher than the required minimum return.

Adverse selection risks underscore the importance of the co-investor experience in successful co-investments. The literature also reflects this, demonstrating that, unless invested in earlier rounds, more experienced capital providers only join subsequent investment rounds in well-performing companies (Lerner, 1994). Experience helps co-investors to partially circumvent adverse selection issues. Conversely, non-lead investors with low experience are more prone to

adverse selection issues. They mainly join syndicates to take advantage of the partners' management and selection skills (Manigart et al., 2006). Therefore, syndication between unequal partners is most beneficial for both parties if potential agency conflicts are sufficiently small or generally resolvable (Hochberg et al., 2015).

Trust and prior ties between syndication partners are other key determinants of VC syndication in general. It is well-established that trust is the central element for preventing adverse selection issues in VC and other syndications (Meuleman et al., 2010; Sorenson & Stuart, 2008; Trapido, 2007). In VC, trust is mostly rooted in prior ties between the syndication partners, which are primarily formed through prior collaboration, such as past syndications or other working relationships (Zhang et al., 2017). Co-investors can reduce potential agency conflict by syndicating with lead investors they know and trust. This is particularly important in lead-investor-non-lead-investor syndicates because such collaborations inherently produce information asymmetries. Non-lead investors are less involved in managing and monitoring the target company (Gorman & Sahlman, 1989), receive fewer updates about the target company, and interact less frequently with the target company's management (Wright & Lockett, 2003). This means the lead investor and the co-investor have largely dominant and dependent roles, respectively. As stated above, the importance of prior ties also varies across each investment stage as risk, and therefore potential adverse selection issues, tends to decrease towards later-stage rounds. Atanasov, Ivanov, and Litvak (2012), Meuleman et al. (2010) and Wright and Lockett (2003) also found that lead investor reputation, driven partly by track record, may act as a substitute for professional ties and limit lead investor opportunism.

### **2.2.3. Research gap**

Although extant research covers VC syndication extensively, we find some key aspects left unaddressed. Firstly, existing research does not differentiate between co-investor types, and it focuses on relatively homogenous syndicates between several VC funds. We assert that such syndications among equals are characterized by different motives, criteria, and success factors compared to syndications between VCs and LPs. The emerging phenomenon of GP-LP syndication is heterogeneous, potentially involving one active and one passive investor. Therefore, we expect the existing theory on VC syndication to only partially explain GP-LP syndication.

Secondly, and in connection to this expectation, GPs and LPs generally have different skillsets. Extant research finds the most efficient syndicates are those trading know-how for purely financial resources (Hochberg et al., 2015). While intuitively this appears applicable to GP-LP syndicates, we see a need to further explore this setup and the potential additional implications it has on investment performance. While VCs as lead investors often by nature aim to be actively involved, institutional investors as co-investors might not (Gorman & Sahlman, 1989; Wright & Lockett, 2003). Therefore, this setup allows the parties to allocate responsibilities for monitoring and managing the target company clearly. However, it is also typically characterized by information asymmetries and potential agency conflicts. Questions arise about contract design and how individual rights, such as control and information rights, are allocated between the syndication partners (Kaplan & Strömberg, 2003, 2004).

Thirdly, while existing research covers motives and syndicate dynamics, we see a need to further explore the process of syndication and particularly the role of transaction cost. Syndicated deals are much more complex than non-syndicated deals. We expect transaction

cost to play a central role, particularly in GP-LP syndication, where this increased complexity is primarily traded for further financial resources.

Finally, syndication motives are known to depend on the parties involved and the company's investment stage. However, other mediating variables have generally not been addressed. With regard to company characteristics, we propose that the industry and business model, in particular, are important to consider. These characteristics impact the overall need for additional value-adds from co-investors. For instance, we expect that syndication motives in a financing round for tech companies aiming to develop a highly complex product are different from the motives in a financing round for a company seeking to invest a majority of the raised funds in marketing. We therefore see a need to investigate these investment-level variables in more detail.

We broadly formulate our main research question, which allows us to cover all four aspects mentioned above in the context of this GP-LP syndicate phenomenon:

*What drives GP-LP syndication in later-stage venture capital investments?*

### **2.3. Data collection and methods**

Although deductive research dominates the literature on VC and private equity syndication (Jääskeläinen, 2012), inductive and abductive research methods are gaining wider acceptance. For instance, Manigart et al. (2006) conduct a questionnaire-based analysis of reasons for VC syndication. Zhang (2019) analyzes a set of 351 ventures and enriches it with qualitative evidence from fieldwork to understand the role of founders in investment syndication. Similarly, Zhang et al. (2017) analyze the importance of group ties in VC syndication decisions,

incorporating qualitative aspects from field research and linking it to existing theories such as alliance formation (Mitsuhashi & Greve, 2009). Mäkelä and Maula (2006) analyze inter-organizational commitment in VC syndicates using a multi-case study design. We follow this research approach and choose a qualitative research design to answer our research question. This approach is particularly promising as we are looking to explore a contemporary phenomenon that is not yet fully understood (Strauss & Corbin, 1998; Yin, 2003).

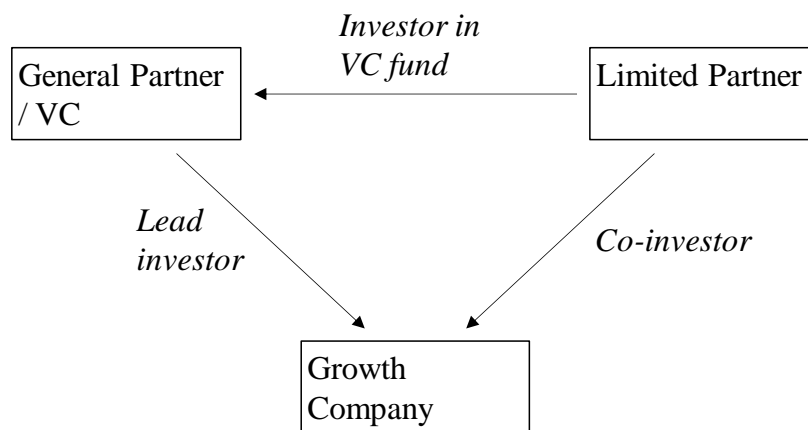
### **2.3.1. Study focus**

We define GP-LP syndication in later-stage investments as the sole focus of our research. The reasons for this are two-fold: Firstly, the investment stage matters, and syndication becomes particularly relevant in this stage (Bottazzi et al., 2016). Secondly, the involvement of less knowledgeable investors is more attractive in later stages, which allows for more heterogeneous syndicate setups (Hochberg et al., 2015; Sorenson & Stuart, 2008).

We focus mainly on companies located within continental Europe, as this region is particularly promising for our research. Fund sizes in Europe are notably smaller than in the US (Achleitner, Braun et al., 2019), which is especially suitable for research on later-stage syndicates. Because fund sizes are smaller in Europe, VCs become capital constrained earlier, making them more dependent on external capital in later-stage investments. Therefore, syndication is not only a strategic decision but also an inevitable means to finance a growing number of European scale-ups. We expect syndication based on purely financial motives to become more relevant than syndication to obtain additional know-how or network. This purely financial motive opens the door for LPs to become passive syndication partners.

To thoroughly understand syndication, we identified three main stakeholder groups (Figure 3). Firstly, we interviewed founding members and top-managers of Europe’s larger VC firms active in the researched investment stage. Secondly, we interviewed institutional investors experienced as limited partners and direct investors (e.g., asset managers, family offices, public-sector funds). We refer to this group as LPs in the remainder of this paper. Thirdly, we interviewed founders of growth companies.

**Figure 3: Stakeholders in GP-LP investment syndicates**



### 2.3.2. Sampling approach

We use expert interviews as our primary data source. To identify suitable interview partners, we employed purposeful sampling, following distinct criteria. Firstly, we required interviewees to be professional experts active in companies in one of the three above-mentioned stakeholder groups. They also needed to hold relevant positions within their companies. To that end, we presumed that top employees in these companies function as “knowledgeable agents” (Gehman et al., 2018) and thereby enable us to better understand the overall dynamics of GP-LP syndication. Next, we required all companies in our scope to be active in later-stage investments, also referred to as the growth stage. Based on discussions with industry insiders,

we broadly defined later-stage investments as Series C<sup>3</sup> and above. Lastly, the companies needed current or past involvement in later-stage GP-LP syndications.

We identified our final sample starting from a list of 111 potential interview partners, which was compiled via market research and speaking to sources knowledgeable in the field. We screened our list based on the criteria mentioned above, assessing each company's fit by reviewing press information, talking to experts, or discussing the matter informally with the potential interview partners themselves. We also used snowball sampling to identify additional interview partners, asking each interviewee to recommend other potential interviewees.

### **2.3.3. Data sources**

Our primary data sources are semi-structured open interviews. We used data from company websites, press coverage, and field notes from informal talks with industry insiders to enrich and triangulate the data.

We developed three separate sets of guiding questions for GPs, LPs, and growth companies. This accounted for the specific role the interviewee's company plays in the industry and ensured that all answers contributed to our overarching questions. We conducted a total of 17 primary interviews with seven VC firms, eight LPs, and two growth companies. Table 2 provides an overview of the interviews. Most interviews were recorded (15 of 17 interviewees allowed a recording) and transcribed accordingly. In addition, the synthesized findings were re-iterated with selected interviewees to test hypotheses and gather more focused insights.

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<sup>3</sup> We define Series C as the third financing round after the initial seed funding of the startup. Ticket sizes are roughly around EUR 30 million according to our interviews.

**Table 2: Sample overview**

Characteristic	GPs	LPs	Growth Companies
Number of interviewees	7	8	2
Business model focus*			
B2B	1		1
B2C	2		1
Both	4	8	
Interviewee experience			
>10 years	3	2	
5-10 years	2	2	2
<5 years	2	4	
Interviewee position			
Founder	3	1	2
Executive	2	1	
Other	2	6	

\* Of the interviewee's company.

As stated above, we ensured our interviewees possessed a certain level of seniority. Among the VC firms, five of the seven experts were either founders or top-level managers in their respective companies. Among the growth companies, we only interviewed founders. Among the LPs, we only interviewed experts responsible for our particular asset class of interest.

We sent a brief description of the overall research project and the objective to the interviewees in advance. We also provided the guiding questions upfront so the interviewees could prepare. The guiding questions were organized in six main categories: (1) general information; (2) current and past experience with syndicated investments; (3) rationale for syndicated investments; (4) investment process for syndicated investments; (5) structure of such investments; and (6) potential opportunities and downsides of syndicated investments. Each guiding question included follow-up questions to more deeply probe and understand the



interviewee's perspective. Where appropriate, we paraphrased interviewees' statements for clarification purposes.

#### **2.3.4. Methods**

We obtained our results on syndication motives and criteria following established approaches for coding and qualitative data analysis (Miles & Huberman, 1994; Strauss & Corbin, 1998). We coded all transcripts and field notes line by line to substantiate statements regarding syndication characteristics and drivers and find commonalities between the different interviews. All transcripts were consolidated and analyzed with the data analysis software MAXQDA.

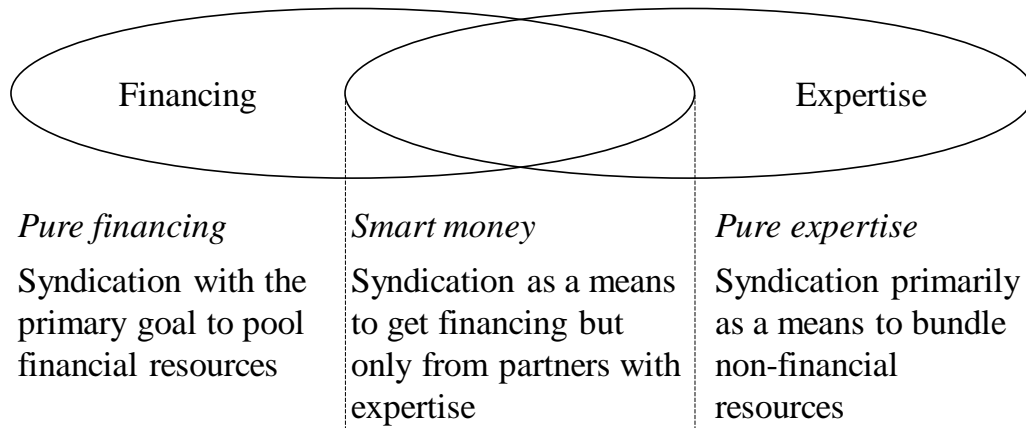
After we identified all relevant statements, we clustered the codes into broader themes (Strauss & Corbin, 1998). This allowed us to uncover overarching themes regarding syndication motives and criteria. Based on this overall structure, the data was re-coded and irrelevant codes discarded. We assessed the themes mentioned above for the two main contract parties (GPs and LPs) separately because this constitutes our main focus of analysis. The insights from the interviews with the growth companies are factored into the GP and LP perspectives.

#### **2.4. Results**

In the following, we provide an overview of our main findings. We characterize the two syndication parties based on their motives and emphasize the contextual importance of target company characteristics. Consequently, we build on three different syndication criteria to address our research question, always differentiating between GP and LP perspectives.

2.4.1. Syndication motives

Figure 4: Syndication motives



“Pure financing”, “smart money”, and “pure expertise” emerge as key syndication motivators (Figure 4). Pure financing means the motivation to involve a syndication partner is purely financial. Pure expertise means the motivation to involve a syndication partner is purely that partner’s know-how, network, and market access. In the growth investment segment, financing is above all the most important trigger for syndication. Ticket sizes exceed the capacity of single VCs, who therefore need to invite external capital to further finance their investments. The statements below and in the remainder of this paper are included to illustrate our findings.

The number one reason why such a co-investment opportunity arises is that the person who generated the deal opportunity cannot or does not want to sign the equity ticket. (LP employee)

I think we have the problem that we leave a large part of the upside on the street because we just cannot provide further funding. (VC founder)

A ticket size of 30 million approximately – at this point, it gets tight for many German venture capital companies to close these rounds by themselves. Instead, they need to look: How do I syndicate my investment smartly so that I can stay in? (Growth company founder)

Financing in later rounds requiring larger ticket sizes appears to be a general challenge for European VCs rather than selected VCs. Limited fund sizes result in an overall lack of growth capital, most notably for well-performing companies compared to great-performing companies with unicorn potential. Great-performing European companies have little problem obtaining even larger financing amounts. However, in most cases, financing is ultimately provided from outside of Europe, such as from American or Asian investors. More capital is available in the US, for instance. Therefore, the opportunity to receive sufficient funding is not limited to great-performing US companies. This is not necessarily the case in Europe, where investments that are not sufficiently promising find it notably difficult to attract capital from overseas and therefore obtain financing.

We found it scary how little growth capital there is. (VC founder)

There are not that many investors in Europe now who could provide 50 million plus funding.

(VC employee)

It would have been easy to raise money but not on the scale that I needed. (Growth company founder)

The good companies [compared to the great] are still limited in the end to German or European VCs. Here the fund sizes, etc., of course, do not allow such large rounds. (VC executive)

In addition to the purely financial objective, GPs, in particular, underscored the need for smart money. Smart money means combining financial motives with other value-adds provided by investors (Legrand & Pommet, 2010; Sørensen, 2007). The expected value-add can refer to the co-investor's technological know-how, market and network access, or exit expertise.

And we included them because they help the asset tremendously and will continue to help and have a good value proposition. [...] We do not need dumb money. (VC founder)

Many startups consciously choose an American investor because they find the American market exciting and want to expand there. (LP employee)

We looked at different groups, assessing who really understands the structure of technology companies and the associated capital requirements. (Growth company founder)

If, for example, I offer a co-investment opportunity here in our group of investors, then I look in the group to see who has industry expertise, who has which network. (VC executive)

Smart money perspectives appear to be mixed, however. LPs barely stated smart money as a motivating factor for deal syndication. Particularly with regard to co-investing, a considerable share of GPs and growth companies also indicated low expectations for an additional value-add from another investor.

The topic of smart money is not very prominent, in my opinion. (Growth company founder)

You might occasionally actually look for an investor with a value-add. But I have very low expectations when it comes to such value-adds. (VC founder)

The relevance of smart money seems to largely depend on the target company's business model. For B2B business models, smart money appears on average to be more relevant compared to B2C business models. In an ordinary B2B business model, the general business risk is perceived higher, for instance, due to technological implementation risks or the relevance of acquiring the right strategic partners. Also, the uses of funds can be notably different: While in B2B growth companies funds are often used to further invest in research and development in the broader sense, B2C growth companies often invest in marketing and comparable expenses to scale-up customer base. The latter is arguably easier to implement and requires less "smartness" from potential new investors.

B2C growth investors are fine with dumb money; they anyway throw everything into marketing expenses and alike. (VC founder)

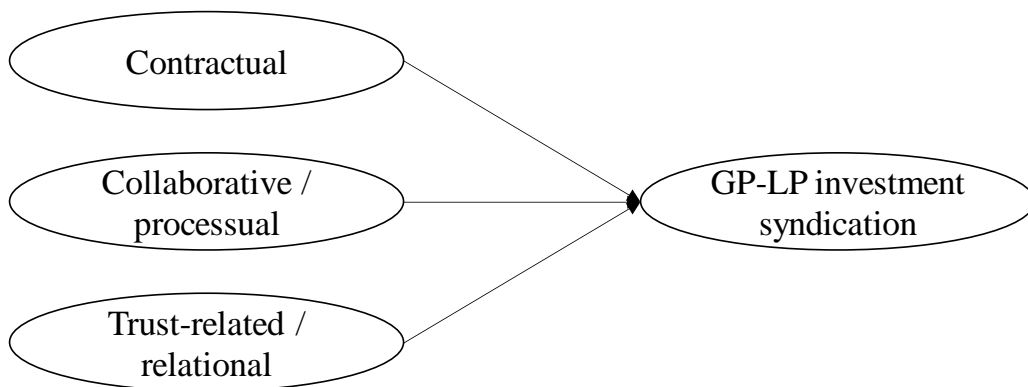
Basically, one can assume that B2C business models rather need dumb money compared to B2B business models where more technological know-how is required. (VC employee)

So if you think about a wafer factory or robotics, it just takes a long time until you have the product ready, market it, and then get into the implementation. (VC executive)

#### 2.4.2. GP-LP syndication criteria

Academia has increasingly shifted focus to VC decision-making (Gompers, Gornall, Kaplan, & Strebulaev, 2020). For the decision whether to syndicate an investment or not, we find three relevant categories of criteria: “contractual”, “collaborative/ processual”, and “trust-related/ relational” (Figure 5). Table 3 provides an overview of the associated dimensions.

**Figure 5: Conceptual model of syndication criteria**



**Table 3: Syndication criteria and observed dimensions**

Criteria	Dimension		
Contractual	<i>Control</i>	<i>Complexity</i>	<i>Return</i>
	Maximize own control within syndicate	Minimize resulting complexity from syndicate	Maximize own return within syndicate
Collaborative/ processual	<i>Speed</i>	<i>Effort</i>	<i>Capabilities</i>
	Maximize deal process speed within syndicate	Minimize own effort within syndicate and deal process	Focus on distinct syndication partner capabilities
Trust-related/ relational	<i>Trust</i>	<i>Signaling</i>	<i>Reputation</i>
	Prior ties and perception of syndication partner	Signalling function of GP actions and reputation	Build reputation and sustain reputation with investors

**Contractual.** GPs and LPs have very different reasons for syndication, which impacts the syndicate’s contractual setup. GPs consistently strive to be actively involved in their investments and to occupy the lead investor position. This is primarily driven by the GP’s ambition to actively shape their investments.

So, of course, we want to be the lead investor in a round. (VC executive)

We are always the lead. We are lead or co-lead. (VC founder)

We typically structure the rounds so that we are clearly in the lead. (VC founder)

[We] like to [initially] invest alone, then we also do not have a co-investor who has her own fund politics and fund tactics. (VC founder)

In contrast, LPs typically strive for the opposite. They do not want to be actively or willingly involved in the portfolio company. Therefore, they generally hold non-leading positions in the VC syndicate.

No, we are never the lead investor, so the way we do it, if you look at typical co-investments - we go into the balance sheet of a company, or we go into special purpose vehicles that invest in the company. (LP employee)

There are different types of co-investment approaches, but my perception is that the least LPs even remotely have an intention to intervene operationally. (LP employee)

[It is] not our interest and not our expertise [to intervene operationally in the company]. (LP founder)

These distinct objectives form the basis for splitting control rights and governance within the syndicate. Control rights and active involvement are generally given to the lead investor. GPs as lead investors monitor and shape the portfolio company, for instance, via board seats or voting rights. LPs often do not have such rights, nor do they want such privileges. In contrast, they rely on the GP to adequately represent them.

Also very often, we do not have, you know, board seats, board observer rights, or anything like that. [...] We always go with funds that have those rights. (LP employee)

Uhm no, that is not the case [that the co-investors want to have active control rights]. But of course, we have to be able to represent them adequately. (VC executive)

So it is usually the case that the GP then controls the asset. (LP founder)

This setup allows GPs to pool individual voting rights, meaning they also assume their co-investors' voting rights, thereby maximizing their control over the investment and ultimately gaining disproportionately strong influence compared to their investment.

We simply pool the votes. That means we can expand our influence on the company, but we are also bringing in an LP. (VC founder)

[The co-investor] then had a voting right binding, so really a new voting right only came through [the lead investor]. (Growth company founder)

GPs therefore benefit more from GP-LP syndication compared to GP-GP syndication because they can maximize their control. In GP-GP syndicates, GPs tend not to rely on each other and therefore maintain their control rights.

But it is always like that: You are not allowed to do anything alone, I am not allowed to do anything alone, only together or with a third person and so on, somehow there are resulting constellations – yes. But no one relies on the other. So nobody waives their control rights because another GP has them. (VC founder)

The second observed dimension, mainly for GPs and the companies in which they invest, is the syndicate structure's complexity. Allocation of control and other rights imposes additional requirements on the syndicate structure and increases complexity. The most significant aspect of the complexity dimension is cap table complexity. This means how many parties hold direct equity shares in the company and can thereby exercise control of some kind. Cap table complexity poses a notable downside for the target company's founders as it typically implies additional effort. Moreover, cap table complexity is associated with transaction cost for GPs. As a solution, non-lead investors are commonly bundled in special purpose vehicles (SPVs). SPVs are an additional legal entity layer that then holds the combined equity share in the target company.

At the time, however, it was important to us that the cap table would not become too complex.  
(Growth company founder)

We sometimes fought harder to implement a governance structure that is better for us than to optimize the valuation. (Growth company founder)

We wanted to prevent that [the shareholders in the SPV have any say.] (Growth company founder)



You want to reduce the transaction costs that you potentially have to a minimum. That means you use a secondary SPV. (VC executive)

It is very rare that we actually go directly on the balance sheet because also the companies do not really want it. (LP employee)

The key objective for LPs to join VC syndicates is an increased financial return realized through lower fee charges. Lowering fees is therefore also a key objective when designing contracts. VC funds typically charge a management fee and carried interest on the fund's return. In contrast, co-investments are often offered without any or with very low fees, thereby compensating the co-investor for essentially waiving their control rights.

It actually comes from everyone who wants to get around the advisory fee. Those who basically say [...] I do not want to go via [GPs] anymore, but I actually want to invest directly. But I am not able to. (VC founder)

The normal case is that fees are lower or do not exist at all. (LP employee)

We do [co-investments] on a fees-free, carry-free basis. (LP employee)

**Collaborative/processual.** Collaboration revolves around speed to execute, the effort each party is willing to contribute, and cooperation models with regard to capabilities. Speed is a key prerequisite for GP-LP investment syndicates to close deals. A structural disadvantage lies in the multi-stage process significantly slowing the timelines. LPs often cannot execute fast as investment processes are not established routine compared to GPs. In addition, high investment attractiveness implies increased competition, further shortening available timelines.

We said we were not going to wait with the round for another two, three, or four months until they decide, also because the money got tight at some point. (Growth company founder)

The timelines are too short. After all, we are still talking about good companies that raise money on reasonable terms, and, I mean, there is no scarcity factor out there. (VC founder)

Then [the co-investor] gets on board because she says if [two high-reputation GPs] co-invest, then they will, in principle, have done their job, and therefore I will join. But you have to piggyback, and somebody has to be the first to hang on to you as a GP. There is no other way because the timelines are too short. (VC founder)

During the syndication process, the effort for all stakeholder groups involved needs to be balanced. We find that LPs mostly do not have the opportunity to conduct their own exhaustive due diligence on the target company, since this places a considerable burden on the target company and would negatively impact their operating business.

In a process like this, you are always trying to only conduct one due diligence because the companies you invest in are still very young. You cannot paralyze the operations for too long. (LP employee)

Of course, you do not want all these people to do some diligence sessions with [the target company]. On the other hand, [the target company] probably does not want to write a slimmed-down brochure either, like a mini brochure, to onboard all these people. (VC executive)

The target company's founders need to balance between finding an ideal investor and running the company. The additional effort caused by the syndication process can even determine the overall syndication outcome.

In any case, there was a feeling that [involving another investor] would mean a very, very large additional effort for us, which includes extended due diligence and related inquiries, claims, and so on. In total, [...] we therefore decided to distance ourselves. (Growth company founder)

As stated above, the capabilities of GPs and LPs are notably different. To establish an efficient GP-LP syndication setup, these capabilities must be split accordingly in the co-investment process. Information sharing is critical for balancing the capability dimension. GPs see their main area of expertise as lead investors to be evaluating a potential target company. They conduct extensive due diligence of the target company to reach a conclusion. LPs broadly acknowledge their lack of this capability. To facilitate the deal process, GPs often share their due diligence materials with potential co-investors. Co-investors then engage in challenging existing materials and selectively interacting with the target company's management to confirm information.

The information is provided by the GP [...] You would not make an own assessment of the market or the business model or alike at this point. (LP employee).

Of course, you do not have that much access, not that much more diligence, but on the other hand, you have the comfort that someone else has looked at it in detail and wants to invest forty million. (VC executive)

Depending on how the round is structured, you share the due diligence documents with the lead investor, or the lead investor shares them with you. (LP employee)

[The LPs] get the company's pitch deck; they also get access to the data room, and they might be allowed to even make another phone call. (VC founder)

LPs see their main expertise in evaluating the quality of investors who prospectively would then exercise control over the target company. Therefore, they focus their efforts on assessing the GP and other potential investors. This additional screening layer ensures the right partner is selected to adequately control and govern the companies. By doing this, LPs protect their investment but also contribute to selecting a suitable investor for a specific investment.

We do not negotiate the documents, we look at, do we like the strategy and do we like the funds involved in the capital structure, do we trust them to do the right things with the company? (LP employee)

A lot of investments are passed up because the funds or co-investors, i.e., companies in the cap table, are not very attractive. (LP employee)

This GP due diligence is a large part of our due diligence. Do you come to the conclusion that they did their job right? (LP founder)

We see no added value through our due diligence on the portfolio company, but in the selection of the GP. (LP employee)

**Trust-related/relational.** Trust, signaling, and reputation emerged as the main dimensions in this category. As stated above, the VC industry is largely characterized by information asymmetries and adverse selection. LPs lack the ability and resources to assess the quality of co-investment opportunities offered to them. In addition, GPs who have typically been involved longer, either by having participated in a prior financing round or by being involved in the process longer, have information advantages. LPs therefore see a significant adverse selection risk.

If I am a GP and I have a deal within reach... then why should I bring in some LPs that I do not even know and with which I have no relationship at all and where I could not build a basis of trust? (LP employee)

You only have to ask yourself who has what interest and then acts accordingly. (LP employee)

So at this point in time, from my point of view, the industry works very strongly through adverse selection. (LP employee)

We would only use [certain co-investment facilities] in difficult assets. In assets we want to survive, but we do not want to put more money into at this point. (VC founder)

Relationships emerge as the leading solution for these adverse selection risks. LPs only co-invest with GPs they know and trust. These relationships are often based on existing LP commitments in the GP's funds. This allows the LP to observe the GP's actions and quality over a longer period and come to a conclusion. Other professional relationships can provide the required trust base in a similar manner. In essence, the relationship is long-term rather than transactional. This gives LPs the confidence to minimize potential adverse selection issues.

It is much easier to know the company, make a better decision, and trust the future when you have already worked with the same people for a couple of years. Otherwise, you know, you just do not know exactly, you might know from the outside, but you just do not know what drives the fund that is offering it to you. Maybe, who knows, they are throwing good money after bad. It is one extra layer of uncertainty, which we do not necessarily want to deal with. (LP employee)

We would never co-invest with a GP we do not know as we cannot assess the target. (LP employee)

This is the biggest learning that a co-investment only works if you have a great alignment of interest, a very strong lead who trusts you and whom you can trust, and that is difficult. (VC executive)

Signaling of the lead investor play a central role. Lead investors send positive signals to potential co-investors via (1) their reputation and (2) their actions. Compared to the trust aspect mentioned above, we see reputation as a broader observable characteristic, while trust is based mainly on dyadic relationships. A GP's reputation is central as this is seen as a proxy for future

investment performance. Reputation is therefore closely related to the perceived level of due diligence and quality of a GP.

There is simply the trust in the GPs that they will do it accordingly, they probably also have a track record, like now with their seventh fund, and then they join the investment round. (VC founder)

Your lead investor should be someone who is not doing this for the first time so that the syndicating partner can also rely on the due diligence. This worked very well. (Growth company founder)

It is important who the lead is because, of course, that has a signaling effect. (VC executive)

The lead investor's actions are the second key signaling mechanism. GPs need to invest a considerable amount of their own funds as the lead investor. This underscores the attractiveness of the investment and reduces concerns about potential adverse selection risks.

You have the comfort that someone else has looked at it in detail and wants to invest forty million. (VC executive)

We do not do any due diligence for them. [...] However, they get from us that we co-invest. (VC founder)

[The co-investors] look at us and say: What are you doing? If I had the opportunity now and say: We will give them ten now, they will do ten too. (VC founder)

Lastly, sustaining and building a reputation is a key dimension of this category. GPs need to balance potential conflicts of interest. They are obliged to serve the existing LPs invested in their funds. Offering investments to external LPs can potentially result in conflicts of interest regarding effort allocation. GPs charge their investors a management fee for the day-to-day

management of the fund. GPs who charge their co-investors additional fees often trigger mechanisms in the agreements with their fund investors.

Why should the GP offer something to others? She should work exclusively for us. (LP employee)

There are exclusivities in the contracts that you need to have structured beforehand so that you can say, yes, I have a fund that is still in the investment period, and I invite my existing LPs to co-invest, and if they do not participate, then I can give it to outside investors. In this case, it is basically raising a new private equity fund for just one investment, and I have shown it to my existing investors beforehand and so on and so forth. (VC founder)

Co-investments also harbor opportunities to build reputations. GPs use co-investment offers as marketing instruments to attract new LPs for their main funds. Offering co-investments helps GPs to improve and develop professional networks.

[Co-investments are] a great way of showing [potential new LPs] even more of the investment strategy, building up the relations, and creating good karma. (LP employee)

And back then, because I wanted to win this new LP as an investor [...], I offered the investment to this new LP. (VC founder)

## **2.5. Discussion**

Extant research has covered VC syndication extensively. In this section, we take a critical look at and extend findings on the general motives for syndication, why syndication occurs, and syndicate dynamics. We find that heterogeneous syndicates between one active and one passive partner differ notably from traditionally homogenous syndicates between several VCs. While lead investor GPs generally strive to maximize control over the target company, LPs aim to

maximize return while minimizing effort. This dynamic is notably different from GP-GP syndicates, where each party has similar skillsets and motives. GP-LP syndicates can more clearly allocate these active-passive roles to the individual syndication parties. As a result, “control maximization” emerges as a new motive for GPs to choose GP-LP syndicates over GP-GP syndicates. Syndicating with LPs allows them to pool voting rights and scale their influence disproportionately to their investment. However, the skillset differences make GP-LP partnerships particularly vulnerable to agency conflicts (Admati & Pfleiderer, 1994; Sorenson & Stuart, 2008). We find supporting evidence for the claim of Hochberg et al. (2015) that trading financing for expertise only works if agency conflicts are nonexistent or resolvable. In our specific setting of growth financing rounds, we find that this challenge is overcome when increasing ticket sizes cause GP capital constraints.

We observe that different LP skillsets provide another important value-add to overall syndicate performance. In contrast to Hochberg et al. (2015), whose research looks at GP-GP syndicates and accumulating similar resources, LP resources are notably different. LPs generally do not focus their due diligence on the target company. Instead, they rely on the GPs’ assessment of the target company and use their skillset to assess the GP’s quality. They thereby function as an additional layer to ensure the quality of the GP as controlling partner. Next to the purely financial contribution, this additional screening layer is a crucial resource contributed by LPs as low-quality GPs will presumably have difficulties finding a passive co-investor that trusts them with complete control over the investment. Extant findings that syndicated investments outperform support this notion (Braun, Jenkinson, & Schemmerl, 2020).



Transaction costs emerge as another important overall determinant of syndication. In contrast to extant research largely focused on traded resources and principal-agent relationships, we find that collaboration between syndication partners is another key component for overall syndicate success. Target companies, lead investors, and potential co-investors are reluctant to accept overly high transaction costs resulting from the syndication. Therefore, the lead and co-investors must implement a lean process supported, for instance, by efficient information sharing. Co-investors aiming to conduct their own assessment of the target company, such as interviewing the company's management, may negatively impact overall syndication success. This potentially ties up the company's resources needed to run the business – an aspect that is even more relevant in multi-party syndications.

Our findings also underscore the role of investment context. The usual motivation for syndication is to compensate for a lack of resources, either financial or non-financial (Bygrave, 1987; Dimov & Milanov, 2010; Hochberg et al., 2015; Manigart et al., 2006). Prior findings that the financing motive is generally the most prevalent are particularly relevant in GP-LP syndicates (Hochberg et al., 2015; Manigart et al., 2006). However, the larger investment context plays an important role, for which the existing literature does not sufficiently account. Most importantly, we find that the target company's industry and business model have an impact on syndication motives and determine the resources sought by the lead investor from a co-investor. The need for smart money is prevalent in more technology-focused investments, which is arguably more often the case in B2B investment contexts. This is notably different in investments where the large share of raised funds is invested in relatively generic expenses, such as marketing. We find this latter scenario to be associated more with B2C investments. Therefore, a passive co-investor providing only financial resources without any additional

contribution is potentially a preferred fit in ordinary B2C investments. However, in a B2B context, this exchange of resources appears inefficient, as additional know-how or network is often required.

## **2.6. Implications and conclusion**

### **2.6.1. Implications for further research**

Our research design enabled us to broadly explore different aspects of VC syndication while explicitly focusing on later-stage syndicates between GPs and LPs. We see opportunities for subsequent quantitative studies testing our qualitative results empirically. Firstly, we propose that GP-LP syndication can be an efficient model, which should eventually also result in investment outperformance. The outperformance of such syndicated VC investments involving passive investors still needs to be empirically assessed, particularly the impact on the investment level due to the additional quality layer to filter out unfavorable GP-investment combinations. Secondly, the complementarity of skillsets with LPs contributing this extra quality-assurance layer could be further investigated using quantitative research approaches building on Hochberg et al. (2015). In this case, the target company's industry and business model will be additional important aspects that need to be covered. Thirdly, adverse selection risks involving passive investors could be further explored. LPs as co-investors are particularly vulnerable to adverse selection as they are not able to judge investment quality. Measuring GPs' relative commitment to financing compared to their overall fund size and associated impact on overall investment performance could provide further insights. Related to this, another interesting angle would be if there are systematic differences between the co-investments GPs offer to their LP base compared to the ones they offer to external LPs.

Our findings provide a first qualitative framework on GP-LP syndication. However, more in-depth qualitative research is needed to further refine and test our results. The variance in seeking smart money, for instance, can potentially also be analyzed using a multi-case study design. In addition, more research is required to thoroughly understand the process of syndication and the distinct role of transaction cost and collaboration between (potential) syndication partners. Also, the phenomenon of GPs pooling the voting rights of their co-investors needs to be further understood.

Lastly, additional research is required to generalize our findings. Research involving other geographies is needed as we focus exclusively on the VC landscape in continental Europe. This becomes particularly relevant as the maturity of the VC industry varies around the globe. Also, the group that we broadly refer to as LPs calls for further differentiation. As stated above, examples of LPs are endowments, pension funds, asset managers, family offices, or public-sector funds. We propose that syndication motives and criteria are likely to vary further across these LP groups.

### **2.6.2. Implications for VC syndication in practice**

A syndicate equilibrium is achieved by a triad of the GP maximizing control, minimizing overall collaboration complexity, and the LP maximizing financial return and minimizing effort. A key objective for the GP is to maximize control over the target company. GP-LP syndicates provide a good foundation for this, as LPs commonly do not share this objective. In contrast, they do not want to be operationally involved as this implies increased effort and does not match their skillset. LPs also accept such a limitation of their influence to be formalized because they are bundled in SPVs. This also reduces the burden on the portfolio company as

they need to manage fewer direct shareholders. In turn, LPs require an attractive fee structure, and therefore trade waived control rights for financial return. The definition of such an equilibrium syndication model has implications for practitioners and regulators. As stated above, the availability of sufficient growth capital is integral to an economy's ability to innovate (Achleitner, Braun et al., 2019). Most importantly, we see potential to further standardize VC syndicates in terms of contracts and roles, as this is currently a rather ad hoc phenomenon. Standardization would help to lower transaction cost further and streamline the syndication process. Moreover, we see regulatory changes to enable the tradability of such passive co-investment stakes on a European level as a key component to notably increase growth capital contributed by LPs. Currently, legal constructs to realize such co-investment stakes are largely country-specific.

### **2.6.3. Conclusion**

The key objective of our research was to shed light on GP-LP syndication as a new phenomenon in the broader context of research on VC syndication. To investigate this and allow for new and surprising insights, our research design was highly exploratory. Based on semi-structured open interviews with industry experts, we developed a broad view covering motivation and syndication criteria for such growth investment syndicates.

We found several additions to the existing theory on VC syndication. We describe active-passive investor syndicates and identify differences to pure VC syndicates, such as the lead investors' motive to maximize control and the complementary skillsets of GPs and LPs contributing an additional quality assurance layer. In addition, we highlight the importance of the syndication process and the role of transaction cost. Lastly, we underscore the relevance of

investment context, particularly differentiating between ordinary B2B and B2C business models.

VC syndication has been a prominent topic in academia for over 20 years (Admati & Pfleiderer, 1994; Lerner, 1994). However, new developments and phenomena create a need for continuous research. Thus, we expect more academic interest to emerge, driven by future needs for new innovative financing models for startups and growth companies.

### **3. Essay 2: Family firm performance in times of crisis – new evidence from Germany**

#### **Abstract**

Founding-family control tends to positively impact firm performance and valuation. However, it is questioned whether this positive impact also persists in times of crisis or might even be reverted, as in such periods families might be focused on the survival of the firm even at the expense of long-term cash-flows. By studying a large sample of listed German firms over the period 1998 to 2018 we document a statistically and economically significant outperformance of family firms in terms of ROA and Tobin's Q during the crisis years 2008 to 2010. Next, we find family firms to significantly reduce their leverage during the crisis. This, however, is not done at the expense of future cash flows, as they increase their capital expenditures relative to their non-family counterparts during the crisis as well. We find evidence that family firms have built-up financial flexibility before the crisis by following a more conservative pay-out policy.

**Keywords:** Family firms, firm performance, ownership, crisis management

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**First author:** Henry Keppler

**Status:** Working paper

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<sup>4</sup> This paper forms the core and further scrutinizes the findings of a project of the Center for Entrepreneurial and Financial Studies commissioned by the Foundation for Family Businesses in Germany and Europe ("Stiftung Familienunternehmen"). The authors would like to thank the Stiftung Familienunternehmen for the support and collaboration. The full study "Börsennotierte Familienunternehmen in Deutschland – Bedeutung, Merkmale, Performance." by Achleitner, Kaserer, Jarchow, Szewczyk, and Keppler (2019) is available on [www.familienunternehmen.de](http://www.familienunternehmen.de).

### **3.1. Introduction**

It has been extensively shown in the literature that family ownership impacts, among others, operating firm performance and valuation (Amit & Villalonga, 2014; Villalonga & Amit, 2006, 2009). A standard argument in this context is that a family as an active blockholder mitigates agency conflicts arising from the separation of ownership and control (Miguel et al., 2004). This is further enhanced through board membership which can decrease monitoring inefficiencies and informational asymmetries (Villalonga et al., 2015).

Furthermore, founding families, as opposed to other blockholders, exhibit additional characteristics, such as the deep knowledge a founder or family member has, the emotional and reputational involvedness (Block, 2012; Gómez-Mejía et al., 2007), or the ability to maintain long-term implicit contracts with employees (Mueller & Philippon, 2011). Yet, due to a limited human capital pool, all benefits need to be weighed against the negative impact of potential inferior management and monitoring capability (Burkart, Panunzi, & Shleifer, 2003). This leaves doubt especially in situations of financial distress, whether family firms are really better off than non-family firms.

In fact, Lins, Volpin, and Wagner (2013) show in an international family firms sample that during the financial crisis performance was worse in terms of their stock returns. The result is mainly driven by investment cuts. They argue that families in times of crisis take actions primarily targeted to the survival of the firm and, thus, the protection of the family's private benefits, at the expense of long-term cash-flows. Meanwhile, Minichilli, Brogi, and Calabrò (2016) show in a sample of Italian family firms an outperformance throughout the crisis. Specifically, family firms with a family CEO in combination with an overall lower family

ownership concentration results in a better performance than a family CEO and high family ownership.

Yet, several questions remain unanswered. The study of Lins et al. (2013) analyses a large international sample at the expense of information on the ownership structure, therefore neglecting questions of control and governance. Moreover, they find significant cross-country heterogeneity indicating that the benefits of family-control might be very different from country to country. In this regard the paper of Minichilli et al. (2016) has the advantage of focusing on one country, i.e. Italy. Yet, apart from the fact that the paper doesn't use a founding-family definition either, it also doesn't scrutinize the specific drivers that might explain the crisis outperformance of family firms. This is where our paper aims to make a contribution.

We analyze a sample of 798 listed German companies over the period 1998 to 2018 leading to 8,093 firm-year observations. By following the founding-family firm definition, we identify roughly 45% of these observations to belong to family firms. In a fixed effects regression we document that listed German family firms significantly outperformed their non-family counterparts in terms of ROA as well as – to a less robust extent – Tobin's Q.

However, this outperformance mostly disappears once a crisis dummy covering the period 2008 to 2010 is introduced. In fact, our results indicate that the outperformance of family firms mostly happens during the times of the global financial crisis and the Euro sovereign debt crisis. As the result also holds for Tobin's Q, the findings are in contrast to those reported by Lins et al. (2013). Moreover, the positive family control impact becomes stronger the narrower the family firm definition is. The strongest results are found for those family firms where the founder is still active on the management or supervisory board.



By digging deeper into the channels responsible for this outperformance we find first that family firms were able to significantly reduce their leverage. However, this wasn't done at the expense of long-term cash flows. In fact, our findings suggest that family firms have increased their capital expenditures during the crisis relative to their non-family peers. At the same time, we do not find clear evidence that they were able to do so because of better access to external capital during the crisis. It rather seems that family firms were simply better prepared for the crisis by a priori following a more conservative payout policy.

Overall, our results add to the understanding of the impact of family control on firm performance and valuation. While our results only add limited evidence in favor of the hypothesis that family firms outperform in general, we present strong evidence in favor of an outperformance during crisis times.

## **3.2. Literature review**

### **3.2.1. Family influence and firm performance**

Our starting point are the seminal papers of Villalonga and Amit (2009) and Amit and Villalonga (2014) showing that family ownership has a significant influence on valuation and performance. Yet, when taking a closer look at the performance of family firms compared to non-family firms, literature gives controversial findings (for meta-analyses see e.g. Myers (1984) and Hansen and Block (2020)). Differences are strongly driven by family firm definition and country selection. In addition, industry affiliation and variation in economic conditions between observed time periods account for performance differences (Amit & Villalonga, 2014). While we control for industry through fixed effects and even the sample by eliminating banking

and insurance companies, we address family influence through three different family definitions.

Family ownership first of all implies a large blockholder in the shareholder structure of the firm. The argument for a better performance of family firms is hereby mainly based on agency theory. A large shareholder is incentivized to thoroughly monitor the management and thereby reduce agency conflicts (Miguel et al., 2004; Villalonga & Amit, 2006). This is further enhanced through board memberships, when ownership and management become partially overlapping, thus decreasing monitoring inefficiencies and information asymmetries (Villalonga et al., 2015). To account for blockholder versus family influence, we thus control for shareholder concentration in our regressions.

However, founding families, as opposed to other blockholders, come along with additional characteristics. Block (2012) argues that the deep knowledge a founder or family member has, improves monitoring and long-term thinking. And the emotional and reputational involvedness adds a further family-specific monitoring incentive. Yet, due to a limited human capital pool within the family, all benefits need to be weighed against the negative impact of potential inferior quality of management as well as monitoring capability (Bennedsen, Nielsen, Pérez-González, & Wolfenzon, 2007). Furthermore, families are undiversified shareholders and thus show risk avoidance which might lead to costs on the firm (Shleifer & Vishny, 1986). This leaves doubt especially in situations of financial distress, whether family firms really show a better performance than non-family firms. The latter might be able to draw on a more experienced management and in case of other blockholding shareholders also on highly experienced financial advisors (i.e. in the case of private equity ownership).

Lins et al. (2013) show in a sample of 8,500 firms in 35 countries that worse stock return performance of family firms is mainly driven by investment cuts. It should be noted that they use a family firm definition which is based on the existence of a blockholding family. They do not take into account, whether this is the founding family. Even though they acknowledge country differences, they cannot find evidence for specific country settings that would overcome the underperformance of family firms throughout the crisis. Yet, Minichilli et al. (2016) show in their Italian sample that family firms outperform non-family firms throughout the crisis. It should be noted, that also this paper does not use a founding-family definition. They find that outperformance depends on the relation between family ownership concentration and the existence of a family CEO. It seems that in crisis times the family CEO in combination with an overall lower family ownership concentration results in a better performance than with a family CEO and high family ownership.

In addition, some studies have concentrated on times of economic distress and its influence on family firms versus non-family firms. The aforementioned studies by Lins et al. (2013) and Minichilli et al. (2016) both concentrate on the financial crisis. In a wider perspective there is a literature stream on the Asian crisis (Baek, Kang, & Park, 2004; Lemmon & Lins, 2003).

### **3.2.2. Financial structure and firm performance**

An important argument in favor of family firms is their close relationship to debt providers. Cheaper access to debt for family firms as well as continuous access also in times of economic crises have been shown in several studies (e.g., D'Aurizio, Oliviero, and Romano (2015) and Stacchini and Degasperi (2015)). The overall amount of leverage however seems to vary widely and does not give a coherent picture for family firms in general. Some studies point at less

leveraged family firms (Ampenberger, Schmid, Achleitner, & Kaserer, 2013) although not always significantly (R. Anderson & Reeb, 2003b; Villalonga & Amit, 2006). Others hint at more leverage in family firms (R. Anderson, Mansi, & Reeb, 2003). There are obvious arguments for both sides, which explains the mixed results. Most importantly, the aforementioned better access to debt financing in contrast to generally more conservative and risk-averse decision-making of family firms (Gómez-Mejía et al., 2007). Especially González, Guzmán, Pombo, and Trujillo (2013) show that the debt level largely depends on the level of involvement the family has in the respective firm. Moreover, the law-and-finance environment of the respective jurisdiction might play a role as well, as pointed out by Ampenberger et al. (2013). In this regard and in correspondence with the German sample we analyze, it should be pointed out that the bank-based economy in Germany enhances a less leveraged family-firm structure (Ampenberger et al., 2013). Yet, in times of crisis, the strong bank-orientation, with strong personal relationships between lenders and banks (Wenger & Kaserer, 1998) could also lead to a higher use of leverage in times of financial distress in order to support future investments and a long-term orientation of the firm.

Besides the level of debt, investments for further growth are highly important. There are several studies on research & development (R&D) spending. Yet, as not every firm is R&D intense and R&D reporting is prone to opportunistic under-reporting (Schmid, Achleitner, Ampenberger, & Kaserer, 2014), capital expenditures (capex) and asset growth are common measures of investment. Lins et al. (2013) base their argument of reduced investments through family firms during the crisis on a significantly lower capex which in their findings drives the underperformance of family firms. Previous papers have documented an investment reduction during the crisis based on financial constraints of the corresponding firms (Campello, Graham,

& Harvey, 2010). Yet, in times of financial constraints, risk-taking behavior might differ with regards to a higher willingness for investments to ensure firm preservation (Minichilli et al., 2016). Therefore, even steady-state risk averse family firms might draw on higher investments during a crisis in order to safeguard the company (Patel & Chrisman, 2014).

### **3.3. Data and methodology**

#### **3.3.1. Family firm definition**

The literature offers a broad spectrum of family firm definitions (Taras, Memili, Wang, & Harms, 2018). We generally follow R. Anderson and Reeb (2003a) in linking the family firm characteristic to the founder and his or her relatives. Villalonga and Amit (2006) define a family firm as a firm “in which the founder or a member of his or her family by either blood or marriage is an officer, director, or blockholder, either individually or as a group.” (p. 389) Taking the German system of corporate governance into account we differentiate three different types of family influence, namely management, governance and ownership (Astrachan, Klein, & Smyrnios, 2002).<sup>5</sup>

Through the two tier board structure, Germany employs a strict separation of the day-to-day management and the monitoring of the supervisory board (e.g., Fauver and Fuerst (2006)). We presume family influence in management or governance to exist, if the founder or his or her relatives or descendants are members of the company’s management board or supervisory board respectively. Independently of these two criteria we also assume family influence, if the family controls more than 25% of the voting rights, as this reflects the blocking minority for German

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<sup>5</sup> The two tier board system in Germany separates management and supervision of listed companies, prescribing them to have separate management and supervisory boards.

joint-stock companies. In this case the family is assumed to have the ability to exercise control over the company (Schmid, Ampenberger, Kaserer, & Achleitner, 2015). Our **basic definition** characterizes a firm as a family firm, if at least one of the three components enables family influence for a given year.

The positive effects of family involvement on firm performance are largely dependent on the family's type and strength of influence (Chua, Chrisman, Steier, & Rau, 2012; Taras et al., 2018). The more the family involvement overcomes the separation of ownership and control, the more it is suitable to reduce the principal-agent conflict. Hence, we introduce a **narrow definition** of family firms where this separation of ownership and control is overcome to some extent. Therefore, a family firm is defined to be a family firm in the narrow sense, if the founding family controls more than 25% of the voting rights and additionally participates in the management or supervisory board.

Based on the *narrow* definition we introduce a third definition of **founder-led** family firms, for which only the founder of the company is operationally involved in management or supervisory board activity as this is generally associated with better firm performance compared to family firms led by later generations (Miller, Le Breton-Miller, Lester, & Cannella, 2007; Pérez-González, 2006; van Essen, Carney, Gedajlovic, & Heugens, 2015).

### **3.3.2. Performance measures and control variables**

Family firm performance literature widely uses ROA as operational performance measure (Azila-Gbettor, Honyenuga, Berent-Braun, & Kil, 2018; Massis, Kotlar, Campopiano, & Cassia, 2015). Thus, in line with existing research, we use ROA as main performance measure (R. Anderson & Reeb, 2003b; Barontini & Caprio, 2006; Villalonga & Amit, 2006).

**Table 4: Description of variables used**

<b>Variable</b>	<b>Description</b>
<b>Family firm characteristics</b>	
Basic	A dummy taking the value 1 if the founding family holds minimum one position in the company's board of directors, holds minimum one position in the company's supervisory board, or owns minimum 25% of the voting rights
Narrow	A dummy taking the value 1 if the founding family owns minimum 25% of the voting rights and holds minimum one position in the company's board of directors or holds minimum one position in the company's supervisory board
Founder-led	A dummy taking the value 1 if the company meets requirements following the narrow definition and the founder of the company is the only family member who holds a position in the company's supervisory or management board
<b>Performance</b>	
Return on assets	The company's EBIT divided by the total assets
Tobin's Q	$(\text{Market value equity} - \text{book value equity} + \text{total assets}) / \text{total assets}$
<b>Governance structure</b>	
Shareholder concentration	The Herfindahl-Hirschman Index of the shareholding of the company's shareholders
Num. mangement board	The total amount of members in the company's management board
Num. supervisory board	The total amount of members in the company's supervisory board
<b>Dividend policy</b>	
Retained earnings	The company's retained earnings
Payout ratio	The company's paid dividends divided by its net income
<b>Size</b>	
Total assets	The company's total assets
Age	The company's age since incorporation
<b>Investment activity</b>	
Capex	The company's capex
Fixed assets	The company's fixed assets
<b>Leverage</b>	
Debt ratio	The company's book value of interest bearing debt divided by the book value of equity
<b>Risk</b>	
Beta	The company's yearly beta calculated based on the average of the company's monthly betas for the respective year
<b>Fixed effects</b>	
Year	Fixed effects for the year
Industry	Fixed effects for the main industry the company is active in based on the first two digits of the Standard Industry Classification code

We define ROA as the company's earnings before interest and taxes (EBIT) in a given year divided by its total assets. Moreover, we analyze whether the market incorporates ownership information in firm valuation. For this purpose we also include Tobin's Q in our analysis (Azila-

Gbettor et al., 2018). Tobin's Q is measured as total assets plus the market value of equity minus book value of equity, all divided by total assets. All dependent variables are winsorized at the 1% and 99% percentiles respectively.

We additionally introduce control variables to account for firm, year and industry specifics following other studies in the field of family business performance (Azila-Gbettor et al., 2018). A description of all variables can be found in Table 4. We control for company size by including the companies' total book value of assets as well as the company's age since incorporation. For the regressions we include the logarithm of both.

We control for shareholder structure by measuring shareholder concentration. Existing research draws on various definitions of shareholder concentration (Overland, Mavruk, & Sjørgen, 2012). In order to capture the role of ownership with regards to corporate governance and control aspects, we define shareholder concentration as the Herfindahl concentration index, which is the sum of the squared shareholdings of the company's shareholders. Following Villalonga and Amit (2006), we additionally control for differences in board size by including the number of management and supervisory board members as control variables. Analogous to other studies in the field we additionally include the companies' annual betas to control for risk-levels and the companies' debt ratios to control for different capital structures (R. Anderson & Reeb, 2003a; Miller et al., 2007; Villalonga & Amit, 2006). We furthermore include industry and year fixed effects thus accounting for unobserved heterogeneity, i.e. unobserved industry and time specific variables influencing our variables of interest (Amit & Villalonga, 2014).

Finally, in line with Lins et al. (2013) we define the beginning of the crisis period to be in 2008. This contradicts the definition of Minichilli et al. (2016) who define 2010 as the first year within



the crisis period in the European context. We choose an overall broader crisis period than Lins et al. (2013) as in a European context it is very hard to separate the financial crisis from the European sovereign debt crisis. Thus we broaden the time span from 2008–2010. As our sample covers the period until 2018, contrary to Minichilli et. al and Lins et al. we additionally include a post crisis dummy, to control for differences in dependent variables in the after crisis period.<sup>6</sup>

### **3.3.3. Data and descriptive statistics**

Our unbalanced panel data set of listed German non-financial firms between 1998 and 2018 comprises 798 companies and 8,093 firm-year observations. Following Schmid et al. (2015) we use the Composite German stock index (CDAX) as a starting point which we take from the CDAX composition published by Deutsche Börse AG for each observed year. The CDAX encompasses all companies listed in the Prime or General Standard of the Frankfurt Stock Exchange, thus representing the entire breadth of the regulated German stock market. Following R. Anderson and Reeb (2003a) and Schmid et al. (2015) we exclude financial and real estate companies (Standard Industry Classification (SIC) Code 6) due to limited comparability of accounting and market performance variables. Additionally, inactive companies, e.g., stocks of companies that declared insolvency or companies without notable revenue solely engaged in research and development activities, are eliminated. In line with Schmid et al. (2015), the firm's common stock needs to be listed for at least one year of the sample period in the CDAX. Thus, we receive an unbalanced panel consisting of both active and inactive firms.

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<sup>6</sup> As the focus of our research lies on the crisis period, for simplification purposes the after crisis dummy is not included in tabulated regression results.

We use Thomson Reuters' *Datastream* database as primary source for companies' market and accounting data. In addition, we draw on Bureau van Dijk's *Amadeus* database as well as the companies' published annual reports as secondary sources. The family firm determinants management members and supervisory board members are taken from Bisnode's *Hoppenstedt Firmendatenbank* database. The voting rights are taken from Bureau van Dijk's *Orbis* database. Again, we complement and validate this information with publicly available information drawn from annual reports and company websites. From the latter two sources we also obtain the companies' incorporation and IPO information, including details on the companies' founders. In cases where the respective company has more than one founder we follow Schmid et al. (2015) and include all founders in the analysis by cumulating the combined ownership shares of all founding family members for one company. For companies without a founder (i.e., 16 formerly state-owned companies that were privatized and 27 spin-offs from corporations) no founder is included and these companies are therefore by default in the non-family sub-sample. Tables 5 and 6 provide a sample overview over the period 1998-2018. They also contain information for our two main definitions of family firms, i.e. *basic* and *narrow*.<sup>7</sup> Our total sample has a size of 8,093 firm-year observations, of which 3,648 are associated with family firms following the *basic* definition, equaling 45%, and 1,971 following the *narrow* definition, equaling 24%. Over our observation period, the total number of firms strongly increases during the dot-com boom until 2000 and then notably declines until 2018, reducing to only 51% of the maximum in 2001.

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<sup>7</sup> The *founder-led* definition is not included in the descriptive part for simplification purposes. It is however included in the multivariate regression results.

**Table 5: Sample composition per SIC-code**

Number of firm-years per two-digit SIC-code for basic and narrow family firm definition. Descriptive statistics are provided for the full sample of 8,093 observations for CDAX companies in the period 1998 to 2018.

SIC- code	Industry description	Total	Basic definition		Narrow definition	
			Family firms	% of total	Family firms	% of total
1	Agricultural Production - Crops	14	14	100%	12	86%
8	Forestry	5	5	100%	3	60%
10	Metal Mining	22	10	45%	8	36%
13	Oil and Gas Extraction	6	0	0%	0	0%
14	Mining and Quarrying of Nonmetallic Minerals, Except Fuels	15	0	0%	0	0%
15	Construction - General Contractors & Operative Builders	52	4	8%	4	8%
16	Heavy Construction, Except Building Construction, Contractor	44	0	0%	0	0%
17	Construction - Special Trade Contractors	10	10	100%	9	90%
20	Food and Kindred Products	202	25	12%	3	1%
22	Textile Mill Products	42	11	26%	11	26%
23	Apparel, Finished Products from Fabrics & Similar Materials	139	83	60%	49	35%
24	Lumber and Wood Products, Except Furniture	59	22	37%	6	10%
25	Furniture and Fixtures	21	14	67%	9	43%
26	Paper and Allied Products	122	41	34%	41	34%
27	Printing, Publishing and Allied Industries	104	49	47%	34	33%
28	Chemicals and Allied Products	411	181	44%	86	21%
29	Petroleum Refining and Related Industries	10	10	100%	10	100%
30	Rubber and Miscellaneous Plastic Products	208	64	31%	36	17%
31	Leather and Leather Products	15	4	27%	3	20%
32	Stone, Clay, Glass, and Concrete Products	156	30	19%	8	5%
33	Primary Metal Industries	116	8	7%	0	0%
34	Fabricated Metal Products	86	19	22%	0	0%
35	Industrial and Commercial Machinery and Computer Equipment	845	281	33%	152	18%
36	Electronic & Other Electrical Equipment & Components	691	385	56%	149	22%
37	Transportation Equipment	304	95	31%	55	18%
38	Measuring, Photographic, Medical, & Optical Goods, & Clocks	326	210	64%	110	34%
39	Miscellaneous Manufacturing Industries	64	35	55%	29	45%
40	Railroad Transportation	10	0	0%	0	0%
41	Local & Suburban Transit & Interurban Highway Transportation	5	0	0%	0	0%
42	Motor Freight Transportation	25	5	20%	3	12%
43	United States Postal Service	10	0	0%	0	0%
44	Water Transportation	16	0	0%	0	0%
45	Transportation by Air	42	3	7%	0	0%
47	Transportation Services	104	38	37%	11	11%
48	Communications	316	178	56%	112	35%
49	Electric, Gas and Sanitary Services	265	44	17%	29	11%
50	Wholesale Trade - Durable Goods	398	200	50%	97	24%
51	Wholesale Trade - Nondurable Goods	172	59	34%	44	26%
52	Building Materials, Hardware, Garden Supplies & Mobile Homes	29	21	72%	21	72%
53	General Merchandise Stores	25	2	8%	0	0%
54	Food Stores	37	0	0%	0	0%
55	Automotive Dealers and Gasoline Service Stations	5	3	60%	0	0%
56	Apparel and Accessory Stores	58	16	28%	0	0%
57	Home Furniture, Furnishings and Equipment Stores	43	28	65%	21	49%
58	Eating and Drinking Places	2	0	0%	0	0%
59	Miscellaneous Retail	96	38	40%	13	14%
70	Hotels, Rooming Houses, Camps, and Other Lodging Places	28	5	18%	3	11%
72	Personal Services	13	0	0%	0	0%
73	Business Services	1521	962	63%	561	37%
75	Automotive Repair, Services and Parking	32	27	84%	21	66%
76	Miscellaneous Repair Services	8	0	0%	0	0%
78	Motion Pictures	232	115	50%	78	34%
79	Amusement and Recreation Services	114	72	63%	30	26%
80	Health Services	108	57	53%	21	19%
82	Educational Services	22	6	27%	6	27%
83	Social Services	14	10	71%	6	43%
87	Engineering, Accounting, Research, and Management Services	235	141	60%	65	28%
89	Services, Not Elsewhere Classified	19	8	42%	2	11%
<b>Sum</b>		<b>8093</b>	<b>3648</b>	<b>45%</b>	<b>1971</b>	<b>24%</b>

**Table 6: Sample composition per year**

Number of firms per year for basic and narrow family firm definition. Descriptive statistics are provided for the full sample of 8,093 observations for CDAX companies in the period 1998 to 2018.

Year	Total	Basic definition		Narrow definition	
		Family firms	% of total	Family firms	% of total
1998	294	100	34%	66	22%
1999	414	193	47%	134	32%
2000	547	300	55%	196	36%
2001	550	304	55%	185	34%
2002	487	243	50%	151	31%
2003	452	225	50%	143	32%
2004	442	215	49%	124	28%
2005	431	203	47%	107	25%
2006	433	205	47%	102	24%
2007	436	199	46%	100	23%
2008	421	184	44%	94	22%
2009	378	161	43%	69	18%
2010	360	154	43%	70	19%
2011	354	149	42%	68	19%
2012	348	141	41%	69	20%
2013	327	131	40%	59	18%
2014	294	117	40%	52	18%
2015	283	111	39%	46	16%
2016	281	105	37%	48	17%
2017	280	103	37%	45	16%
2018	281	105	37%	43	15%
<b>Sum</b>	<b>8093</b>	<b>3648</b>	<b>45%</b>	<b>1971</b>	<b>24%</b>

Table 7 provides an overview over the descriptive statistics for all performance measures and control variables. With regards to profitability, results for the descriptive statistics are notably mixed, depending on the family firm definition used. Family firms following the *basic* definition are significantly less profitable compared to non-family firms. Mean return on assets for family firms is 0.3% (median 5.8%) and 3.5% (5.8%) for non-family firms. The difference in means is significant at the 1% level. When comparing Tobin's Q we find family firms to have higher market values compared to non-family firms.

**Table 7: Descriptive statistics for operational performance measures and independent variables**

Mean, median, number of observations and test for differences in means between family and non-family firms for operational performance measures as well as independent variables used for multivariate regression. Family firms are identified based on basic and narrow family firm definition. Descriptive statistics are provided for the full sample of 8,093 observations for CDAX companies in the period 1998 to 2018. A two-sample t test is applied for testing differences in means. For testing the differences in median, a Wilcoxon rank-sum test is applied for each variable. Illustration of significance level with \* (10%), \*\* (5%), \*\*\* (1%), n.s. (not significantly different).

		Family firm			Non-family firm			Significance		
		Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median	Sum Obs.
<b>Return on assets (in %)</b>	Basic	0.3%	5.8%	3,434	3.5%	5.8%	4,218	***	*	7,652
	Narrow	2.4%	6.4%	1,851	2.0%	5.6%	5,801	n.s.	***	7,652
<b>Tobin's Q (abs.)</b>	Basic	1.72	1.31	3,206	1.50	1.22	3,615	***	***	6,821
	Narrow	1.76	1.29	1,759	1.54	1.25	5,062	***	***	6,821
<b>Shareholder concentration</b>	Basic	0.22	0.18	3,621	0.32	0.23	4,365	***	***	7,986
	Narrow	0.25	0.23	1,971	0.28	0.17	6,015	***	***	7,986
<b>Num. management board (abs.)</b>	Basic	3.03	3.00	3,648	3.13	3.00	4,445	***	n.s.	8,093
	Narrow	3.02	3.00	1,971	3.11	3.00	6,122	**	n.s.	8,093
<b>Num. supervisory board (abs.)</b>	Basic	5.25	3.00	3,648	8.01	6.00	4,445	***	***	8,093
	Narrow	4.89	3.00	1,971	7.37	6.00	6,122	***	***	8,093
<b>Retained earnings (in Mn. EUR)</b>	Basic	532.12	6.07	3,273	920.55	284.50	4,125	***	***	7,398
	Narrow	146.93	6.65	1,780	939.37	18.88	5,618	***	***	7,398
<b>Payout ratio (abs.)</b>	Basic	0.38	0.00	3,159	1.03	0.08	3,961	n.s.	***	7,120
	Narrow	0.45	0.00	1,713	0.83	0.00	5,407	n.s.	n.s.	7,120
<b>Total assets (in Mn. EUR)</b>	Basic	2245.22	94.42	3,512	6389.47	258.12	4,235	***	***	7,747
	Narrow	619.64	89.54	1,901	5776.03	196.31	5,846	***	***	7,747
<b>Company age (in years)</b>	Basic	35.90	21.00	3,648	66.41	50.00	4,444	***	***	8,092
	Narrow	35.99	21.00	1,971	58.02	33.00	6,121	***	***	8,092
<b>Capex (in Mn. EUR)</b>	Basic	97.11	4.00	3,233	363.94	12.15	4,095	***	***	7,328
	Narrow	28.03	3.93	1,762	315.29	9.07	5,566	***	***	7,328
<b>Fixed assets (in Mn. EUR)</b>	Basic	1438.75	39.10	3,191	4077.55	133.92	4,010	***	***	7,201
	Narrow	389.25	35.28	1,733	3706.56	95.71	5,468	***	***	7,201
<b>Debt ratio (abs.)</b>	Basic	0.32	0.16	3,387	0.44	0.22	4,010	***	***	7,397
	Narrow	0.27	0.15	1,857	0.42	0.21	5,540	***	***	7,397
<b>Risk (beta)</b>	Basic	0.70	0.63	3,287	0.56	0.51	4,105	***	***	7,392
	Narrow	0.67	0.61	1,740	0.61	0.55	5,652	***	***	7,392

Yet, family firms perform differently when applying the *narrow* definition. In this case, family firms show a tendency to outperform, particularly regarding return on assets with a mean of 2.4% vs. 2.0% for non-family firms and median of 6.4% vs. 5.6%. The difference in median is significant at the 1% level. Hence, the more restrictive definition leads to a selection of a better performing sub-sample, indicating potential impact of managerial or controlling involvement of the family.

Descriptive statistics for shareholder concentration remain inconclusive, even though significant. Family firms following the *basic* definition have a significantly lower shareholder concentration compared to non-family firms. For the *narrow* definition, mean values point in the same direction; median values vice versa. Regarding the number of management board members, there is only a slight indication that non-family firms have larger management boards. However, the number of supervisory board members is significantly different at the 1% level. The median family firm has 3 supervisory board members vs. 6 for non-family firms. This also relates to the fact that family firms are smaller and younger than non-family firms. Mean total assets following the *narrow* definition is EUR 619.64 million for family firms and EUR 5.78 billion for non-family firms, a sizeable and significant difference. Average company age following the *narrow* definition is 36 years for family and 58 years for non-family firms. The large difference between mean and median reflects the skewedness of the distributions for total assets and company age. All differences in mean and median except for median number of management board members are significant at the 1% level.

Family firms employ less financial leverage compared to non-family firms. The mean debt ratio for family firms is 0.32 following the *basic* and 0.27 following the *narrow* definition. For non-family firms this is 0.44 and 0.42 respectively. This is in line with the presumed more conservative investment behavior found by Faccio, Marchica, and Mura (2011). The differences in financial leverage are significant at the 1% level. Interestingly, this is not reflected in the firms' betas, as family firms have a significantly higher beta than non-family firms. This might be due to the fact that non-family firms are larger and therefore more diversified. However, this difference in market risk is largely driven by the time period 1998-

2004. After 2004 we find no concluding evidence for a difference in betas between family and non-family firms.<sup>8</sup>

### **3.4. Results and discussion**

#### **3.4.1. Regression results**

For our statistical analysis we test the dependency of the performance measures ROA and Tobin's Q on three different definitions of family firms. In our key analysis we employ a fixed effects panel regression with robust standard errors and additionally control for industry and year fixed effects in order to isolate effects originated in industry specific family firm characteristics and time dependent effects.

Table 8 reports the results of our main regression using ROA as dependent variable. The different definitions for family firms are shown in the different columns. We include the family firm characteristic as a dummy variable that takes the value 1 if the company is a family firm in a given year and 0 otherwise. In regressions (4) to (6) we additionally include a crisis dummy and the interaction terms with the respective family firm definition.

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<sup>8</sup> For the sake of brevity, these additional analyses are not reported.

**Table 8: Regression of return on assets on family firm characteristics**

OLS regressions of return on assets on different family firm dummy variables, Basic, Narrow and Founder-led. Return on assets is calculated as the company's EBIT divided by the total assets. Basic is defined as dummy taking the value 1 if the founding family is (1) holds minimum one position in the company's board of directors, (2) holds minimum one position in the company's supervisory board, or (3) owns minimum 25 % of the voting rights. Narrow is defined as dummy taking the value 1 if the company meets requirements following the basic definition and owns minimum 25 % of the voting rights and (1) holds minimum one position in the company's board of directors or (2) holds minimum one position in the company's supervisory board. Founder-led is defined as dummy taking the value 1 if the company meets requirements following the narrow definition and the founder of the company is the only family member who holds a position in the company's supervisory or management board. Shareholder concentration is the Hierfindahl-Hirschman Index of the shareholding of the company's shareholders. Num. management board and num. supervisory board is the total number of members in the company's management and supervisory board. Total assets is the logarithm of the company's total assets. Age since incorporation is the logarithm of the company's age since incorporation. Debt ratio is the company's book value of interest bearing debt divided by the book value of equity. Beta is the company's yearly beta calculated based on the average of the company's monthly betas for the respective year. The regression controls for industry and year fixed-effects. Industry fixed effects regard the main industry the company is active in based on the first two digits of the Standard Industry Classification code. Standard errors are clustered on a company level. The sample consists of 8,093 observations for CDAX companies in the period 1998 to 2018.

Variables	Dependent variable: Return on assets					
	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.00534 (0.00759)			-0.0158 (0.00994)		
Basic X Crisis				0.0465*** (0.0125)		
Narrow		0.0374*** (0.00913)			0.0255** (0.0119)	
Narrow X Crisis					0.0445*** (0.0142)	
Founder-led			0.0416*** (0.0123)			0.0156 (0.0177)
Founder-led X Crisis						0.0682*** (0.0206)
Crisis				-0.00211 (0.0115)	0.0105 (0.0105)	0.00798 (0.0101)
Shareholder concentration	0.0544*** (0.0126)	0.0540*** (0.0123)	0.0520*** (0.0124)	0.0509*** (0.0125)	0.0521*** (0.0123)	0.0509*** (0.0123)
Num. management board	-0.00582** (0.00243)	-0.00664*** (0.00235)	-0.00614** (0.00243)	-0.00598** (0.00240)	-0.00673*** (0.00235)	-0.00634*** (0.00242)
Num. supervisory board	-0.00340*** (0.00103)	-0.00279*** (0.00100)	-0.00320*** (0.00102)	-0.00365*** (0.00105)	-0.00285*** (0.00101)	-0.00326*** (0.00102)
Total assets	0.0258*** (0.00300)	0.0262*** (0.00294)	0.0261*** (0.00296)	0.0259*** (0.00298)	0.0262*** (0.00294)	0.0263*** (0.00296)
Age since incorporation	0.0219*** (0.00358)	0.0220*** (0.00355)	0.0228*** (0.00358)	0.0215*** (0.00356)	0.0219*** (0.00354)	0.0225*** (0.00359)
Debt ratio	-0.00891* (0.00459)	-0.00854* (0.00455)	-0.00854* (0.00451)	-0.00846* (0.00437)	-0.00826* (0.00446)	-0.00819* (0.00439)
Beta	-0.0228*** (0.00610)	-0.0235*** (0.00607)	-0.0230*** (0.00606)	-0.0219*** (0.00606)	-0.0235*** (0.00604)	-0.0228*** (0.00603)
Constant	-0.314*** (0.0427)	-0.351*** (0.0427)	-0.316*** (0.0403)	-0.307*** (0.0425)	-0.354*** (0.0426)	-0.312*** (0.0403)
Observations	6,568	6,568	6,568	6,568	6,568	6,568
Adj. R-squared	0.167	0.174	0.172	0.170	0.175	0.174
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



For ROA, the coefficients for the family firm dummy are positive and significant at the 1% level for the *narrow* as well as *founder-led* definition. However, when adding the crisis dummy we can see that there is (almost) no general outperformance left. Actually, the outperformance is mostly due to the crisis period. The coefficient even increases for the *founder-led* definition. Moreover, as far as our stricter family firm definitions are concerned, our results are in line with other findings in the literature confirming an overall operating outperformance of family firms (Barontini & Caprio, 2006; Miller et al., 2007; Villalonga & Amit, 2006).

Additional control variables show consistent results over all three regressions. The findings of Demsetz and Lehn (1985) suggest that an increased shareholder concentration leads to an increased incentive for the shareholder to monitor the investment. The positive and significant coefficient for shareholder concentration indicates a positive effect of this increased monitoring incentive on firm performance. The number of management board members and supervisory board members is associated with lower company performance, potentially reflecting increased operating complexity for firms with larger boards. Size and age measures are positively and significantly correlated to company performance. This, however, could potentially also be a result of reverse causation due to survivorship bias as unprofitable firms eventually drop out of the sample and therefore fail to gain age or grow.

Interestingly, we find significant negative coefficients for the debt ratio. One potential explanation can again be found in reverse causality. Myers (1984) suggests that debt financing is not always the preferred choice for firms to raise capital. As profitable firms tend to have broader access to funds, this could be a potential explanation. Lastly, the negative coefficient for beta is potentially driven by reverse causality with less profitable firms having a higher risk.

**Table 9: Regression of Tobin's Q on family firm characteristics**

OLS regressions of Tobin's q on different family firm dummy variables, Basic, Narrow and Founder-led. Tobin's q is defined as the sum of the company's market value of equity and its book value of debt divided by its total assets. Basic is defined as dummy taking the value 1 if the founding family is (1) holds minimum one position in the company's board of directors, (2) holds minimum one position in the company's supervisory board, or (3) owns minimum 25 % of the voting rights. Narrow is defined as dummy taking the value 1 if the company meets requirements following the basic definition and owns minimum 25 % of the voting rights and (1) holds minimum one position in the company's board of directors or (2) holds minimum one position in the company's supervisory board. Founder-led is defined as dummy taking the value 1 if the company meets requirements following the narrow definition and the founder of the company is the only family member who holds a position in the company's supervisory or management board. Shareholder concentration is the Hierfindahl-Hirschman Index of the shareholding of the company's shareholders. Num. management board and num. supervisory board is the total number of members in the company's management and supervisory board. Total assets is the logarithm of the company's total assets. Age since incorporation is the logarithm of the company's age since incorporation. Debt ratio is the company's book value of interest bearing debt divided by the book value of equity. Beta is the company's yearly beta calculated based on the average of the company's monthly betas for the respective year. The regression controls for industry and year fixed-effects. Industry fixed effects regard the main industry the company is active in based on the first two digits of the Standard Industry Classification code. Standard errors are clustered on a company level. The sample consists of 8,093 observations for CDAX companies in the period 1998 to 2018.

Variables	Dependent variable: Tobins q					
	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.106 (0.0683)			0.0367 (0.0692)		
Basic X Crisis				0.0666 (0.0784)		
Narrow		0.142 (0.0893)			0.0482 (0.0816)	
Narrow X Crisis					0.203* (0.108)	
Founder-led			0.292** (0.121)			0.0177 (0.0943)
Founder-led X Crisis						0.375** (0.164)
Crisis				-0.269** (0.122)	-0.273** (0.118)	-0.284** (0.112)
Shareholder concentration	0.409*** (0.116)	0.383*** (0.111)	0.375*** (0.110)	0.404*** (0.116)	0.371*** (0.109)	0.370*** (0.109)
Num. management board	0.0462** (0.0199)	0.0473** (0.0196)	0.0467** (0.0202)	0.0458** (0.0198)	0.0465** (0.0196)	0.0449** (0.0199)
Num. supervisory board	0.0103 (0.00890)	0.0108 (0.00879)	0.0104 (0.00871)	0.00906 (0.00911)	0.00981 (0.00888)	0.00882 (0.00883)
Total assets	-0.0453** (0.0221)	-0.0456** (0.0221)	-0.0446** (0.0215)	-0.0449** (0.0220)	-0.0449** (0.0220)	-0.0408* (0.0215)
Age since incorporation	-0.0265 (0.0277)	-0.0299 (0.0272)	-0.0236 (0.0274)	-0.0279 (0.0276)	-0.0314 (0.0272)	-0.0270 (0.0272)
Debt ratio	-0.0486** (0.0233)	-0.0482** (0.0234)	-0.0469** (0.0230)	-0.0476** (0.0225)	-0.0463** (0.0228)	-0.0438** (0.0218)
Beta	0.116*** (0.0346)	0.117*** (0.0346)	0.116*** (0.0345)	0.119*** (0.0342)	0.117*** (0.0344)	0.121*** (0.0339)
Constant	2.117*** (0.372)	2.101*** (0.381)	2.204*** (0.327)	2.148*** (0.371)	2.082*** (0.382)	2.232*** (0.320)
Observations	5,962	5,962	5,962	5,962	5,962	5,962
Adj. R-squared	0.146	0.147	0.152	0.147	0.149	0.160
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

For Tobin's Q (Table 9), again all three family firm coefficients are positive. Yet, including the crisis dummy, significance can only be shown for the *founder-led* definition at a 5% level and for the *narrow* definition at a 10% level. Again, outperformance increases for the *founder-led* firms, indicating a strong positive influence of the founder as controlling agent. This overall finding is in contrast to Lins et al. (2013). Hence, the market seems to recognize the positive impact of founder CEOs on firm performance during times of crisis leading to a higher valuation of these firms during such a period.

**Table 10: Regression of the company's debt ratio on family firm characteristics**

OLS regressions of debt ratio on different family firm dummy variables, Basic, Narrow and Founder-led. Debt ratio is the company's book value of interest bearing debt divided by the book value of equity. Basic is defined as dummy taking the value 1 if the founding family is (1) holds minimum one position in the company's board of directors, (2) holds minimum one position in the company's supervisory board, or (3) owns minimum 25 % of the voting rights. Narrow is defined as dummy taking the value 1 if the company meets requirements following the basic definition and owns minimum 25 % of the voting rights and (1) holds minimum one position in the company's board of directors or (2) holds minimum one position in the company's supervisory board. Founder-led is defined as dummy taking the value 1 if the company meets requirements following the narrow definition and the founder of the company is the only family member who holds a position in the company's supervisory or management board. Controls are the same as for the main regressions in Table 8 and Table 9, excluding debt ratio. The regression additionally controls for industry and year fixed-effects. Industry fixed effects regard the main industry the company is active in based on the first two digits of the Standard Industry Classification code. Standard errors are clustered on a company level. The sample consists of 8,093 observations for CDAX companies in the period 1998 to 2018.

Variables	Dependent variable: Debt ratio		
	(1)	(2)	(3)
Basic	0.0216 (0.0277)		
Basic X Crisis	-0.228** (0.100)		
Narrow		0.0120 (0.0242)	
Narrow X Crisis		-0.230*** (0.0709)	
Founder-led			0.0112 (0.0295)
Founder-led X Crisis			-0.307*** (0.0838)
Observations	6,640	6,640	6,640
Adj. R-squared	0.0683	0.0686	0.0687
Control variables	YES	YES	YES
Year FE	YES	YES	YES
Industry FE	YES	YES	YES

Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The reasons for family firm outperformance during the crisis can be manifold. Generally, crisis outperformance can be driven by leverage reduction. In case of the German setting with a protracted banking crisis first caused by the global financial crisis and then followed by a sovereign debt crisis of other Euro member states, the influence of firm debt could be pivotal. In Table 10 we show the influence of family firms on leverage during the crisis.

Surprisingly, family firms are able to reduce leverage during crisis times more than their non-family counterparts. Thus, the downsizing of leverage in family firms is contrary to the overall trend of German listed firms during the crisis. Again, this finding is even more prominent with the stricter family firm definition, pointing towards the strong managerial influence founding members of the family exert.

Next, we investigate how family firms were able to reduce their leverage during the crisis. As we do not find evidence that family firms were able to tap other financing sources rather than the banking sector during the crisis, an underlying reason could be a better preparation for a crisis due to a more sustainable business strategy. This could be visible through a generally lower payout ratio as well as higher retained earnings, which puts the firms into a position to use more internal funds in crisis times. Table 11 shows the regression results for retained earnings and payout ratio. For retained earnings, we see generally higher numbers, significant at a 5% level for the *basic* definition and at a 10% level for the *narrow* definition. The regression using the *founder-led* definition is not significant, but has a positive coefficient. During the crisis period, the coefficients switch from positive to negative, indicating a decline in retained earnings. The payout ratio does not show any significant results. Yet, the negative coefficients for the entire time period change to positive coefficients during the crisis. This gives us again

an indication, that payout is generally lower in family firms, thus enabling a higher stability during crisis times.

**Table 11: Regression of retained earnings and payout ratio on family firm characteristics**

OLS regressions of retained earnings and payout ratio on different family firm dummy variables, Basic, Narrow and Founder-led. Retained earnings is calculated as the first difference of the logarithm of the company's retained earnings. Payout ratio is calculated by dividing the company's total dividends paid by its net income. Basic is defined as dummy taking the value 1 if the founding family is (1) holds minimum one position in the company's board of directors, (2) holds minimum one position in the company's supervisory board, or (3) owns minimum 25 % of the voting rights. Narrow is defined as dummy taking the value 1 if the company meets requirements following the basic definition and owns minimum 25 % of the voting rights and (1) holds minimum one position in the company's board of directors or (2) holds minimum one position in the company's supervisory board. Founder-led is defined as dummy taking the value 1 if the company meets requirements following the narrow definition and the founder of the company is the only family member who holds a position in the company's supervisory or management board. Controls are the same as for the main regressions in Table 8 and Table 9. The regression additionally controls for industry and year fixed-effects. Industry fixed effects regard the main industry the company is active in based on the first two digits of the Standard Industry Classification code. Standard errors are clustered on a company level. The sample consists of 8,093 observations for CDAX companies in the period 1998 to 2018.

Variables	Dependent variable: D.Retained earnings			Dependent variable: Payout ratio		
	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.0664** (0.0335)			-0.323 (0.260)		
Basic X Crisis	-0.0386 (0.0507)			0.508 (0.394)		
Narrow		0.0650* (0.0389)			-0.252 (0.231)	
Narrow X Crisis		-0.0507 (0.0575)			0.362 (0.283)	
Founder-led			0.116 (0.0732)			-0.237 (0.180)
Founder-led X Crisis			-0.121 (0.102)			0.431 (0.279)
Observations	3,901	3,901	3,901	6,124	6,124	6,124
Adj. R-squared	0.0206	0.0203	0.0207	-0.00546	-0.00556	-0.00571
Control variables	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses.  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Another influencing factor for firm performance is investments. We measure investments through capital expenditures as well as fixed asset growth. If family firms are more stable during

the crisis, this should also result in a higher continuity of investments. Table 12 shows the results for the regression on capital expenditures and fixed asset growth.

**Table 12: Regression of capex and fixed asset growth on family firm characteristics**

OLS regressions of capex and fixed asset growth on different family firm dummy variables, Basic, Narrow and Founder-led. Capex growth is the first difference of the logarithm of the company's capex. Fixed asset growth is defined as the first difference of the logarithm of the company's fixed assets. Basic is defined as dummy taking the value 1 if the founding family is (1) holds minimum one position in the company's board of directors, (2) holds minimum one position in the company's supervisory board, or (3) owns minimum 25 % of the voting rights. Narrow is defined as dummy taking the value 1 if the company meets requirements following the basic definition and owns minimum 25 % of the voting rights and (1) holds minimum one position in the company's board of directors or (2) holds minimum one position in the company's supervisory board. Founder-led is defined as dummy taking the value 1 if the company meets requirements following the narrow definition and the founder of the company is the only family member who holds a position in the company's supervisory or management board. Controls are the same as for the main regressions in Table 8 and Table 9. The regression additionally controls for industry and year fixed-effects. Industry fixed effects regard the main industry the company is active in based on the first two digits of the Standard Industry Classification code. Standard errors are clustered on a company level. The sample consists of 8,093 observations for CDAX companies in the period 1998 to 2018.

Variables	Dependent variable: D.Capex			Dependent variable: D.Fixed assets		
	(1)	(2)	(3)	(4)	(5)	(6)
Basic	0.0156 (0.0299)			-0.00459 (0.0229)		
Basic X Crisis	0.0274 (0.0555)			0.0710** (0.0353)		
Narrow		0.0379 (0.0355)			0.0194 (0.0249)	
Narrow X Crisis		0.106* (0.0644)			0.0719* (0.0426)	
Founder-led			-0.0105 (0.0529)			0.00879 (0.0363)
Founder-led X Crisis			0.281*** (0.103)			0.108* (0.0549)
Observations	5,675	5,675	5,675	5,692	5,692	5,692
Adj. R-squared	0.0368	0.0376	0.0383	0.0315	0.0318	0.0318
Control variables	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The results indicate an increase in capital expenditures and fixed assets during the crisis for family firms. For capital expenditures we cannot find a significant influence for the *basic* definition. Yet, the *narrow* (10% significance level) and especially the *founder-led* (1% significance level) family firms show a positive development during the financial crisis. Taking

additionally into account the results from fixed assets growth, for which coefficients are positive and significant throughout all three family firm definitions, we argue that family firm outperformance is driven by a continuous investment activity and thus higher sustainability of the business also in crisis times.

### **3.4.2. Robustness checks and alternative explanations**

We chose a crisis period from 2008 to 2010, taking into account the sovereign debt crisis following directly after the financial crisis. Yet, others (Lins et al., 2013) only regarded the 2008-2009 time frame as crisis specific. Thus, we control for year sensitivity and alternatively run regressions with the 2008-2009 time frame as well as longer time spans of 2008-2011 and 2008-2012. In untabulated results it can be shown that the outperformance of family firms through all three definitions remains robust for ROA and Tobin's Q.

Similar regressions without fixed effects produce comparable results. In addition, we ran a regression with a corrected ROA calculation. In our main analysis, ROA is calculated by dividing EBIT by year-end total assets. This computation is biased as EBIT is a profit figure accumulating over the financial year. Total assets on the other hand is reported at year-end level. We therefore re-calculated the two performance measures using total assets as average of year-end and year-beginning level. Even though we lose one year of observations, results confirm our main analysis.

Shareholder concentration and exposure is one additional key predictor of advantages in agency cost and eventually firm performance. As Overland et al. (2012) noted, there are various approaches for computing shareholder concentration. We therefore ran the regressions for an alternative computation of shareholder concentration, calculated as the sum of the company's

top three shareholders in a given year. We obtain comparable results for both, descriptive statistics and multivariate regressions, independently of the shareholder concentration measure used. Overall, it has to be noted that shareholder concentration has one potential drawback regarding data availability as shareholdings only need to be reported above a 3% level for German listed companies.

### **3.4.3. Limitations**

The key limitation of this paper is due to endogeneity problems, most importantly caused by omitted variables. Even though we apply a fixed effect approach we are not able to eliminate systematic performance effects coming from unobserved firm characteristics. For instance, it could well be that the family firm characteristic-performance relationship can also be explained by non-performing firms becoming non-family firms over their lifetime due to underperformance. In the case of persistent negative performance, the family could be forced to sell the business. This would lead to nonperforming firms systematically transferring out of the family firm sample into the non-family sample. Over our entire observation period 53 family firms become non-family firms which represents 0.6% of the firm-year observations. The impact within our observation period is therefore assumed to be minor. However, the non-family part of the sample is largely composed of firms that have been family firms following our definitions sometime in the past, i.e., when initially founded. As poor performance and need for external expertise and capital are factors that largely impact the ownership structure, this also has an influence on our sample composition. The problem of endogeneity has been addressed by prior research (R. Anderson & Reeb, 2003a; Basco, Campopiano, Calabrò, & Kraus, 2019; Bertrand & Schoar, 2006; Faccio et al., 2011; Villalonga & Amit, 2006), however, without concluding results.



Another omitted variable bias might be caused by the way we measure family influence. This paper focuses on the direct influence the family can exercise on the company based on formalized mechanisms. Astrachan et al. (2002) propose a more refined measure by introducing the F-PEC scale of family influence. This scale is composed of three subscales, power, experience and culture. Experience and culture are implicitly regarded in this paper under the broader term family goals. However, we do not explicitly test for them but only measure power with its components ownership, governance and management.

### **3.5. Conclusion**

This paper makes two key contributions. First, it extends existing research on family firm performance of German listed companies over a relatively long time horizon of 21 years. We show that family firms do not outperform their non-family counterparts in general, but significantly do so during times of crisis. This result is fairly robust for operating performance (ROA), but to a lesser extent for Tobin's Q. Moreover, this crisis resilience is the more pronounced the stronger the family influence is. Second, we present evidence supporting the notion that crisis resilience is related to more financial flexibility and long-term decision making. In fact, we see that family firms are able to decrease their leverage during the crisis. However, this is not at the expense of future cash flows as capital expenditures are increased at the same time. Overall, we add new evidence on the drivers of family firm performance by emphasizing the role of financial flexibility and long-term decision making in these firms.

#### **4. Essay 3: Foreign Direct Investments in the German stock market from China and the Gulf states**

##### **Abstract**

We document empirical evidence that the investment patterns of the two most relevant investor groups from regions with hierarchical structures in the German stock market, namely China (including Hong Kong) and the Gulf Cooperation Council, differ substantially. Chinese investors buy large shares in relatively small, but not necessarily young, companies. Since their objective is often to gain control, they appear to pay higher premiums when acquiring large equity stakes. Investors from the Gulf states purchase smaller shareholdings in notably larger, older, and more international companies. They seem to seek long-term benefits rather than short-term profits. Our findings are mainly attributable to industrial policies pursued by Chinese and Gulf investors, which mirror the different political and economic goals in these two regions.

**Keywords:** China, corporate governance, foreign direct investments, Gulf states

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**Status:** Working paper

## **4.1. Introduction**

Foreign direct investment (FDI) from emerging economies to developed countries has steadily become more important in increasingly globalized capital markets. FDI allows companies from less-developed economies to offset the technology gap between their home and more developed markets and gain competitive advantages (Luo & Tung, 2007). Furthermore, FDI has a positive impact on domestic economic diversification and growth (Mathews, 2002; Rui & Yip, 2008), which is particularly important for countries with hierarchical structures where FDI decisions also reflect political and macroeconomic goals. In line with that, in Germany, for example, investors from China and the Gulf states are, besides investors from the United States, the key foreign shareholders of listed companies.

There is a substantial amount of established research on FDI and state capitalism (Dunning, 2001; Erel, Liao, & Weisbach, 2012; Jandik & Kali, 2009; Stulz, 2005) and, in particular, on Chinese companies as key FDI protagonists (Boisot & Meyer, 2008; Buckley et al., 2007; Buckley et al., 2018; Buckley, Yu, Liu, Munjal, & Tao, 2016; Rugman, 2010). However, we still know little about micro-level FDI patterns related to countries with hierarchical structures since most academic studies take a macro-level perspective (Paul & Benito, 2018). With concerns about European companies being “sold out” to foreign investors fueled by recent anecdotal evidence, such as when China’s Midea acquired German robot producer Kuka (Reuters, 2016), a deeper understanding of such micro-level patterns is required. Recent studies by Karolyi and Liao (2017) and Fuest, Hugger, Sultan, and Xing (2019) shed light on this issue and investigate deal-level determinants of cross-border acquisitions by government-controlled companies and Chinese investors. However, distinct research gaps remain.

Our study contributes to the academic literature on FDI patterns associated with investors from countries with hierarchical structures by investigating Chinese and Gulf investments using micro-level data for German listed firms from 2009 to 2018. In contrast to prior studies, we focus on one major target country of investors from hierarchical regimes to more closely assess the link between their investment goals – which include political and economic objectives – and target firm characteristics. The fact that we look at the two most relevant investor groups from regions with hierarchical structures in the German market facilitates our analysis. Anecdotal evidence suggests that Chinese investments are mainly motivated by access to technology and know-how. In contrast, Gulf investors are primarily interested in building long-term strategic relationships with German firms (Xuan, 2016). Therefore, we expect to find substantial empirical differences in the FDI patterns we investigate.

Our study further extends prior research as we analyze FDI characteristics and the decision to be invested in German firms using granular investment-level data based on firms' shareholder structures in addition to aggregated company-level data. With our regression analyses, we also account for investor type (e.g., government, bank) to differentiate between region- and owner type-specific effects, thereby extending research conducted by Fuest et al. (2019). In addition to univariate tests and multiple regressions, we conduct an event study analysis to provide evidence on the shareholder value effects associated with Chinese and Gulf investments in German firms and to assess whether these effects are related to the specific FDI patterns.

Our results suggest that the investment patterns associated with Chinese and Gulf investors indeed differ significantly. We find that Chinese investors buy large shares – often a controlling stake – in relatively small, but not necessarily young, companies. In contrast, investors from

the Gulf states purchase smaller equity stakes – amounting to about 10% on average – in larger, more mature, and more international firms. These findings are broadly consistent across all our uni- and multivariate analyses and mirror the different investment objectives pursued by the two investor groups. Chinese investors want to further close the technology gap to more developed economies, in our specific context particularly with regard to industrial technology. In line with that, they aim to gain control over their German target companies and, thus, to get access to their (intangible) assets, which is achieved via mergers and acquisitions. Our finding that Chinese portfolio companies have a significantly lower R&D ratio can be attributed to Chinese investors aiming to access existing technologies as well as the fact that German family firms – relatively small but typically mature – fit Chinese FDI patterns and are known for reporting their R&D expenses very conservatively (Schmid et al., 2014).

Gulf investors, who are mostly related to domestic ruling families, are interested in “getting a foot in the door” of large established German firms via minority stakes and building long-term relationships. Their goal is that German firms in turn invest in the Gulf region and help to diversify their economies beyond oil (Cermak, 2017). Our finding that investors from Gulf states prefer more international firms supports the latter notion. Furthermore, the significantly lower return on assets ascertained for Gulf state portfolio firms suggests that Gulf states pursue long-term strategies rather than seeking short-term profits.

The results of the event study analysis are consistent with our prior findings. The announcements of new or additional investments by Chinese investors are associated with significantly positive average abnormal returns, which are higher for investments related to ultimate ownership stakes above the 25% threshold (i.e., blocking minority). Hence, Chinese

investors seem to pay higher premiums when acquiring large equity stakes and, thereby, seeking control to get access to firms' know-how and assets. In contrast, we do not find significant abnormal returns for announcements attributed to Gulf investors. That is in line with our finding that they typically take small stakes in German companies and are not looking for control associated with acquisition premiums.

Overall, the results of our analyses extend prior research on micro-level FDI patterns related to investors from countries with hierarchical structures, which should be of particular interest to practitioners and scholars.

The rest of this study proceeds as follows: section 2 discusses the institutional background of FDI from countries with hierarchical structures considering relevant findings of prior studies, and introduces our main hypothesis. section 3 presents our sample. section 4 reports the results of our empirical analyses. section 5 discusses our findings. section 6 concludes.

## **4.2. Institutional background, literature, and resulting hypothesis**

Companies internationalize their activities to gain competitive advantages resulting for example from ownership and control of cost-effective foreign production facilities (Dunning, 1988, 2001). However, more refined theories are required to explain FDI from emerging economies to account for the distinct context of such investments (Paul & Benito, 2018). Most importantly, when considering FDI from less-developed countries to more developed countries, a strategic component resulting from the technology gap comes into play (Luo & Tung, 2007; Mathews, 2002). According to this view, companies from less-developed markets pursue foreign acquisitions to acquire know-how and technologies not available in their home markets and thereby gain a competitive advantage. Luo and Tung (2007) use a springboard analogy to

illustrate how companies that pursue such strategies accelerate their technological advancement. Corporate takeovers are the most prominent way for firms from emerging markets to acquire strategic assets from more developed economies (J. Anderson & Sutherland, 2015). In line with that, Rui and Yip (2008) argue that Chinese firms historically used cross-border acquisitions to achieve goals, such as acquiring strategic capabilities to offset competitive disadvantages in their home markets. Increasing academic interest in their investment behavior is, amongst others, reflected in the recent work by Fuest et al. (2019).

Our research on FDI in German listed companies focuses on China and the Gulf states because of the investment magnitude and the regions' particularities, for which we expect to observe idiosyncratic patterns. Chinese investors and investors from the Gulf states are key shareholder groups invested in German listed companies. Table 13 shows value-weighted shares of total known market capitalization for these two investor groups. Between 2009 and 2018, Chinese investors were the fastest-growing shareholder group, becoming the third-largest foreign shareholder group in 2018 (behind the Gulf states and the United States). The Gulf states show a different pattern. Gulf state shareholdings increased sharply until 2014, reaching 5.8% of the total known market capitalization. Since 2015, however, shareholdings have notably declined. In 2018, Gulf investors only owned 0.1 percentage points more than Chinese investors. Harris (2009) discusses the increased international importance of China and the Gulf states. He argues that the two regions emerged as global powers due to capital influx related to global production and a surge in energy prices. The significant concentration of capital ultimately established them as new global players in the cross-border investment landscape.

**Table 13: Share of market capitalization**

Value-weighted share of known market capitalization (>3% shareholding) of German listed companies by location of ultimate owner. Development from 2009 to 2018. The sample consists of all CDAX companies in the period 2009 to 2018.

Year											Change	
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	[abs.]	[%]
China	0.2%	0.2%	0.3%	0.5%	0.6%	0.5%	0.6%	1.4%	2.1%	2.4%	2.3%	1436%
Gulf states	3.6%	4.3%	3.8%	4.7%	4.7%	5.8%	5.2%	4.9%	2.9%	2.5%	-1.1%	-30.9%
Other foreign*	23.6%	26.4%	24.7%	23.7%	22.2%	22.8%	23.2%	24.2%	24.9%	24.2%	0.6%	2.5%
Domestic	72.7%	69.1%	71.2%	71.0%	72.5%	70.9%	71.0%	69.4%	70.2%	70.9%	-1.7%	-2.4%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Abs. [EUR bn]	287.7	352.6	309.4	386.9	468.7	485.6	504.3	528.2	614.5	497.8		

\*Other comprises all other foreign ultimate owner locations of known shareholdings



Corporate governance is found to be notably influenced by a country's culture (Urban, 2019). Hence, we expect countries that value "collectivism", so-called countries with "hierarchical" structures, to exhibit idiosyncratic FDI patterns because their overall political and economic goals play a role in corporate investment decisions. This makes China and the Gulf states particularly interesting as both regions are characterized by the large political aspect of investment activity (Wang, Hong, Kafouros, & Wright, 2012) and are broadly acknowledged to have hierarchical regimes.<sup>9</sup> Although the government largely controls FDI in both regions, the underlying frameworks differ notably. In China, the government exerts indirect control via several FDI regulations and institutions, namely the *National Development and Reform Commission*, the *Ministry of Commerce*, the *State Administration of Foreign Exchange* and, if it involves a state-owned entity, the *State-owned Assets Supervision and Administration Commission* (Riemenschneider & Li, 2018). While nearly 95% of shareholdings are attributable to Chinese companies and individuals, they cannot pursue any foreign investment without prior approval from the Chinese government, for instance, for currency conversion. Chinese institutions also assess the rationality of investments and contribution to Chinese strategic goals, such as access to particular technologies in more developed countries (Kastner, 2019; Luo & Tung, 2007; Rui & Yip, 2008).

In contrast, governments in the Gulf states are more directly involved, as much of the region's total wealth is concentrated in the hands of ruling families and associated individuals (Alvaredo, Assouad, & Piketty, 2019). Also, members of the ruling families are highly active in larger

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<sup>9</sup> For identification we follow Karolyi and Liao (2017), using the Polity IV Individual Country Regime Trends database published by Societal-Systems Research Inc.

companies (Omet, 2005). As a result, Gulf states directly control the investment funds. As shown in Table 14, 93.8% of the Gulf states' shareholdings can be attributed to the government or government-related individuals. An important strategic goal of Gulf states is to diversify their economies beyond oil. To achieve this objective, they build strategic partnerships with globally operating portfolio firms and strive to attract FDI in their home markets (Xuan, 2016). The preferred target industries also reflect the strategic aspect of investments, with both Chinese and Gulf investors primarily focused on the manufacturing sector, which constitutes the key industry of German listed companies (Achleitner, Kaserer et al., 2019).

**Table 14: Owner types and target industries**

Value-weighted share of known investments of Chinese and Gulf state ultimate owners per investor type and industry of target company. Aggregated values based on full sample from 2009 to 2018. Industry is classified by the first digit of the target companies' standard industry classification (SIC) code. The sample consists of all CDAX companies in the period 2009 to 2018.

<b>Ultimate owner type</b>	<b>China</b>	<b>Gulf</b>	<b>Target industry</b>	<b>China</b>	<b>Gulf</b>
Bank	0.0%	0.0%	Agricultural, Forestry, Fishery	1.2%	0.0%
Corporate / strategic	78.8%	0.0%	Mining, Construction	0.0%	1.3%
Government*	4.8%	93.8%	Light Manufacturing	3.1%	0.0%
Institutional**	0.3%	0.7%	Heavy Manufacturing	40.0%	92.3%
Insurance	0.0%	5.4%	Transportation, Public Utility	26.9%	1.3%
Private	16.0%	0.0%	Wholesale, Retail	12.4%	0.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	Finance, Insurance and Real Estate	16.2%	5.0%
			Services 1	0.2%	0.0%
			<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>

\* Including private individuals related to domestic ruling families for Gulf states

\*\* Including Private Equity / Venture Capital

In sum, we expect *FDI from China and the Gulf states to show idiosyncratic patterns as different economic and political goals influence investment decisions*. To assess this hypothesis, we use the region as first dimension to differentiate between investor groups and control for investor type on a secondary level. This approach differs from other key research, which

analyzes certain investor groups individually per country, such as sovereign wealth funds (Bremmer, 2010) or state-owned enterprises (Karolyi & Liao, 2017).

### **4.3. Data and sample composition**

#### **4.3.1. Data**

Our initial dataset covers all companies included in the Composite DAX in the period of 2009 to 2018.<sup>10</sup> We use the historical list of annual CDAX compositions from the German Stock Exchange for identification. To obtain our final company list, we exclude all companies in the index not operating in the respective year, for example, companies that filed for insolvency but are not yet delisted. We mainly draw on press releases and company website information to identify which companies to exclude.

For our analysis, we use information on corporate ownership structure, company financials, and stock market data. We rely on Bureau van Dijk's Orbis database as a primary source to obtain information on corporate ownership. We always focus on the global ultimate owner of the specific investment (Faccio & Lang, 2002; La Porta et al., 1999). Next to the size of shareholding, we include information about the ultimate owner type and geographic location. Our initial list comprises 15,904 individual shareholdings between 2009 and 2018. We took several steps to obtain our final list of 12,157 shareholdings.

First, we excluded all shareholdings below three percent to mitigate biases in our analyses. Shareholdings above three percent must be publicly reported pursuant to section 33 of the

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<sup>10</sup> The CDAX comprises all companies listed in the Prime Standard and General Standard of the Frankfurt Stock Exchange.

German Securities Trading Act. Even though the Orbis database includes data for ownership below the three percent threshold, this might lead to skewed results as this information is only available for certain investor groups, such as institutional investors from the US, and not for the full sample. Next, we manually validated shareholder locations and types with published annual reports, press releases, and publicly available shareholder information. We conducted additional checks to validate our dataset further. We verified missing shareholdings by validating gaps for each country-owner type combination per company over our observation period (i.e. if a company has a shareholder of a specific type and country of origin only in the first and last of three consecutive years). We also corrected duplicate values based on shareholder name per company-year and made sure that aggregate shareholding per company-year ranges between zero and one. For China and the Gulf states, we manually validated all investments with publicly available information. Lastly, we conducted extensive random checks.

We used Thomson Reuters Datastream as our primary source of company financials and stock market data. We drew on annual company financial data and year-end stock market data (e.g., market value, share price). An extensive overview of all variables, including their definitions and sources, is found in the appendix. In addition, we collected daily total return data for the CDAX index and companies with investors from China and the Gulf states to analyze market reactions to foreign investment from these regions. For these new investments, we manually researched publication dates of ad hoc announcements of Chinese and Gulf investors surpassing voting rights thresholds pursuant to section 33 of the German Securities Trading Act.

After obtaining our final sample, we clustered countries of ultimate owners into three distinct groups: Chinese investments (including Hong Kong), Gulf investments (including investments from the Gulf Cooperation Council, namely Saudi Arabia, Kuwait, Qatar, United Arab Emirates, Bahrain, and Oman), and a third group including all other investments.

For our analysis, we use different aggregation levels with our data. For our descriptive statistics, we use an individual investment level (one observation per investor-company-year combination). For analysis of investment patterns, we also aggregate our data on a company-year level, including dummy variables for the involvement of Chinese investors or investors from the Gulf states.

#### **4.3.2. Sample composition**

Table 15 provides an overview of our final sample on a company and an investment level. The number of companies and investments have decreased over our observation period. The total number of listed companies declined substantially by 24% between 2009 and 2018. Our final sample consists of 12,157 individual investments and 4,000 company-years. Throughout our observation period, Chinese investments notably increased in both number of investments and number of companies with Chinese investors. In 2018, 6.1% of all companies in our sample reported a Chinese shareholder. For investments from the Gulf states, the overall number of investments and companies with Gulf investors peaked in 2015/16 and has declined since then. In 2018, 1.9% of all companies reported a shareholder from this region.

**Table 15: Sample overview**

Number of companies and individual investments per year in sample. The first column contains the total number of companies in the sample per year. The second and third column show the number of companies with minimum one Chinese and shareholder from the Gulf states respectively. The sample consists of all CDAX companies in the period 2009 to 2018.

Year	Total sample		Chinese investments			Gulf investments				
	#companies	#investments	#companies	% total	#investments	% total	#companies	% total	#investments	% total
2009	474	1285	7	1.5%	9	0.7%	3	0.6%	4	0.3%
2010	459	1349	7	1.5%	10	0.7%	4	0.9%	6	0.4%
2011	455	1369	13	2.9%	19	1.4%	4	0.9%	6	0.4%
2012	432	1327	19	4.4%	31	2.3%	6	1.4%	9	0.7%
2013	398	1201	15	3.8%	20	1.7%	4	1.0%	5	0.4%
2014	371	1120	17	4.6%	22	2.0%	8	2.2%	9	0.8%
2015	352	1067	18	5.1%	20	1.9%	8	2.3%	10	0.9%
2016	351	1139	21	6.0%	23	2.0%	8	2.3%	10	0.9%
2017	348	1113	20	5.7%	21	1.9%	6	1.7%	8	0.7%
2018	360	1187	22	6.1%	24	2.0%	7	1.9%	9	0.8%
<b>Sum</b>	<b>4000</b>	<b>12157</b>	<b>159</b>	<b>4.0%</b>	<b>199</b>	<b>1.6%</b>	<b>58</b>	<b>1.5%</b>	<b>76</b>	<b>0.6%</b>

## 4.4. Empirical results

To investigate FDI patterns related to Chinese and Gulf investors, we first conduct univariate analyses based on ANOVA tests (section 4.4.1). We also use logistic and OLS regressions based on explanatory variables lagged by one fiscal year to assess the investment preferences of Chinese and Gulf investors (section 4.4.2). Additionally, we conduct an event study analysis to investigate shareholder value effects associated with Chinese and Gulf investments (section 4.4.3).

### 4.4.1. Univariate analyses

To obtain a more granular understanding of Chinese and Gulf investments, Table 16 shows an extensive descriptive analysis of key investment dimensions: *shareholding characteristics*, *company characteristics*, *financing & investment practices*, and *company performance*. For each variable, we also report ANOVA results testing for differences in means.

Overall, Chinese investors take large stakes in companies. Mean shareholdings of Chinese investments are 44.88% compared to 18.40% of other investments. Hence, Chinese investors very often take controlling stakes in the companies in which they invest. In contrast, Gulf investors tend to take relatively smaller stakes with a mean of 9.63%. The differences in means are significant at the 1% level.

With regard to company characteristics, Chinese investors are invested in relatively small companies. The average market value of Chinese portfolio companies is EUR 1.26 billion, compared to EUR 2.41 billion for other investments. As the distribution of market values is skewed, we additionally consider the median values for our comparison. As a result, the differences in market value show the same pattern with a median value of EUR 54.21 million

for Chinese portfolio companies compared to EUR 181.21 million for other investments. Results for revenue and employees also indicate that Chinese investors invest in smaller companies. However, with regard to age, Chinese portfolio companies do not appear to be notably younger, with a mean age of 56.28 years compared to 52.83 years for other investments. Results for the degree of internationalization, measured by foreign sales ratio, remain inconclusive for Chinese investments. In contrast, investors from the Gulf states are invested in larger, older, and more mature companies. The average market value of Gulf portfolio companies is EUR 25.46 billion. Revenue and employee numbers are comparatively larger. Companies in this group are also significantly older, with an average age of 83.05 years compared to 52.83 years for other investments. The foreign sales ratio is significantly larger, with a mean of 77.65% compared to 43.07%. Hence, Gulf investors are invested in more international firms. For this group, differences in means are significant at the 1% level.

Investments also vary with regard to financing and investment practices. Chinese portfolio companies have a lower leverage, R&D, and dividend payout ratio.<sup>11</sup> The mean leverage is 35.54% compared to 82.64% for other investments; the mean R&D ratio is 4.35% compared to 4.95%; the mean payout ratio is 15.32% compared to 30.97%. Differences in means for leverage and payout ratio are significant at the 1% level. In contrast, Gulf portfolio companies have a higher leverage. Mean leverage is notably larger with 167.30% compared to 82.64% for other investments, which is significant at the 1% level. The results for R&D ratio and payout ratio point in the same direction, even though the means are not significantly different.

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<sup>11</sup> For companies with missing R&D ratio (e.g. service companies), the missing values are replaced by the value 0. In the multivariate regressions, an additional dummy is included as control variable to account for this replacement.



**Table 16: Descriptive statistics**

This table reports descriptive statistics and ANOVA results on differences in means for Chinese investments, investments of investors from the Gulf states, and shareholdings of other investors. Descriptive statistics are provided for the full sample of 12,157 individual shareholdings above 3% in CDAX companies for the period 2009 to 2018. All variables are winsorized at the 1st and 99th percentiles. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% level, respectively.

	Chinese investments			Gulf investments			Other investments			ANOVA results		
	Mean	Median	Obs.	Mean	Median	Obs.	Mean	Median	Obs.	China vs. other	Gulf vs. other	China vs. Gulf
<b>Shareholding characteristics</b>												
Shareholding (in %)	44.88%	46.81%	199	9.63%	8.28%	76	18.40%	8.58%	11,882	26.48%***	-8.77%***	35.25%***
<b>Company characteristics</b>												
Market value (in EUR million)	1,260.69	54.21	199	25,461.48	23,799.36	76	2,405.44	181.21	11,882	-1,144.75**	23,056.04***	-24,200.79***
Revenue (in EUR million)	2,455.02	89.54	193	43,131.54	42,497.50	74	3,305.66	199.82	11,788	-850.64	39,825.88***	-40,676.52***
Age (abs.)	56.28	26.00	197	83.05	108.00	75	52.83	29	11,063	3.45	30.22***	-26.77***
Employees (abs)	5,859.96	705.00	181	147,165.30	98,941.00	72	10,869.11	856	11,487	-5009.15*	136,296.19***	-141,305.34***
Foreign sales ratio	45.86%	39.95%	144	77.65%	82.86%	74	43.07%	45.49%	9,507	2.79%	34.58%***	-31.79%***
<b>Financing &amp; investment practices</b>												
Leverage (in %)	35.54%	12.38%	177	167.30%	156.90%	73	82.64%	38.44%	11,474	-47.10%***	84.66%***	-131.76%***
R&D ratio (in %)	4.35%	0.56%	199	6.23%	2.71%	76	4.95%	0.00%	11,882	-0.60%	1.28%	-1.88%
Payout ratio (in %)	15.32%	0.00%	158	28.12%	32.17%	74	30.97%	11.69%	10,754	-15.65%***	-2.85%	-12.80%
<b>Company performance</b>												
Return on assets (in %)	2.53%	4.33%	179	2.99%	5.13%	73	3.78%	5.66%	11,412	-1.25%	-0.79%	-0.46%

Lastly, portfolio companies in both groups tend to perform worse than other firms, with Chinese portfolio companies reporting the lowest mean and median return on assets. However, the differences are not statistically significant.

#### **4.4.2. Multivariate analyses**

Even though the univariate analyses provide a first indication that investment patterns of Chinese and Gulf investors significantly differ from the rest of the sample, as well as from one another, the explanatory power of such analyses remains limited. Following prior academic literature, we employ OLS and logit models based on lagged explanatory variables to get more robust insights on investment propensities (Erel et al., 2012; Fuest et al., 2019; Karolyi & Liao, 2017). Therefore, we take all shareholdings and estimate the probability that the ultimate investment owner is from China or the Gulf states. Tables 5 and 6 show the results for Chinese and Gulf investments, respectively. Due to multicollinearity issues, we only include market value as a firm size measure.<sup>12</sup> As our goal is to differentiate effects inherent to the owner's region of origin from those related to specific owner types, we run the regressions on investment level – i.e., using individual shareholdings above 3% – *without* (regressions (1) and (2)) and *with* (regressions (3) and (4)) owner type controls.<sup>13</sup> Our aim is to crystalize the effects produced purely by the region of origin. In addition, we aggregate our analysis on a company level,

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<sup>12</sup> Including all three variables, market value, revenue and number of employees, yielded an average variance inflation factor of 35 for the logit regression.

<sup>13</sup> For our logistic regressions, total number of observations notably decreases to between 5,946 and 4,928 for Chinese investments and between 4,382 and 3,252 for Gulf investments. The main reason for this is that Chinese and Gulf investments do not cover every industry and investor type. As a result, the dummy variables for these industries and investor types would perfectly predict the model and overall explanatory value is lost. Observations with such industries and investor types (without any Chinese/Gulf investment) are therefore excluded (e.g., mining and construction industry for Chinese investments). Results excluding the dummy variables are also discussed in this section.

employing a Chinese/Gulf state investment dummy equal to one if the company has an investor from China/a Gulf state in the respective year, and zero otherwise (regressions (5) and (6)). Lastly, we use a matched sample (column 7), where the Chinese/Gulf state investment dummy equals one if the Chinese/Gulf state investment in the company exceeds the 3% threshold for the first time or if an existing stake above 3% has been increased, and zero otherwise. With the latter analysis, the control sample covers only CDAX firms with the same year-industry combination as the companies with the new (or additional) Chinese/Gulf state investments.

As shown in Table 17, many of the descriptive results regarding Chinese investments are confirmed. Regression results without and with owner type controls are overall very similar. Therefore, it appears that the specific owner types provide only a limited explanation of Chinese investment preferences. Companies with Chinese investors are comparably smaller but not significantly younger. In regression (7), we even find indications that Chinese investors target relatively older companies. R&D ratio is significantly lower for Chinese portfolio companies. One potential explanation is that Chinese investors are simply less interested in R&D expenditures than other investor groups. Schmid et al. (2014) provide an alternative explanation, finding that family firms report R&D expenditures too conservatively. Therefore, families as prior blockholders in Chinese target firms could be another driver for significantly lower R&D ratios. The reported payout ratio appears to be lower for Chinese investors, although not statistically significant. Additionally, we have a weak indication that Chinese portfolio companies have a comparably lower return on assets and a lower degree of internationalization.

**Table 17: Determinants of Chinese investments**

This table reports OLS and logistic regression results on the determinants of Chinese investments in German firms for the period 2009 to 2018. The results are obtained 1) at the investment level using individual shareholdings above 3% in CDAX companies, 2) at the company level using firm-year observations, and 3) from new (or additional) Chinese investments using a matched sample approach. At the investment level (columns 1 to 4), Chinese investment dummy as dependent variable equals one if the specific investment has a Chinese ultimate owner, and 0 otherwise. At the company level (columns 5 to 6), Chinese investment dummy is equal to one if the company has an investor from China in the respective year, and 0 otherwise. Using matched sample (column 7), Chinese investment dummy equals one if Chinese investment in the company exceeds the 3% threshold for the first time or if an existing stake above 3% has been increased, and 0 otherwise. With the latter analysis, the control sample covers only firms with the same year\*industry (2-digit SIC code) combination as the companies with the new (or additional) Chinese investments. All independent variables are lagged by one year and are winsorized at the 1st and 99th percentiles. The variable definitions and data sources are provided in Appendix 1. In columns 1, 2, 5 and 6, regressions include year and industry (1-digit SIC code) fixed effects. The regression specification in columns 3 and 4 additionally controls for type of ultimate owner per investment, i.e., Bank, Corporate, Government, Insurance, Institutional Investor, Private Individual and Miscellaneous. In column 7, the regression specification includes year\*industry fixed effects. Robust standard errors are clustered at the firm level with regressions in columns 1 to 6 and at the year\*industry level in column 7. \*\*\*, \*\*, and \* denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

Dependent variable: Chinese investment dummy	Investment level				Company level		New investment
	(1) OLS	(2) Logit	(3) OLS	(4) Logit	(5) OLS	(6) Logit	(7) OLS
Market Value t-1	-0.0035** (-1.979)	-0.2446* (-1.922)	-0.0035** (-2.035)	-0.2217* (-1.652)	-0.0074* (-1.721)	-0.2031 (-1.415)	-0.0127* (-1.802)
Age since incorporation t-1	0.0013 (0.248)	0.0681 (0.195)	0.0013 (0.267)	-0.0164 (-0.051)	0.0128 (1.159)	0.3372 (1.096)	0.0332* (1.828)
Foreign sales ratio t-1	-0.0119 (-0.719)	-0.4755 (-0.354)	-0.0096 (-0.575)	-0.5024 (-0.357)	-0.0320 (-0.994)	-0.7150 (-0.703)	-0.1063 (-1.437)
Leverage t-1	-0.0026 (-1.519)	-0.2712 (-1.570)	-0.0023 (-1.319)	-0.3102 (-1.507)	-0.0070 (-1.543)	-0.2864 (-1.576)	-0.0106 (-0.766)
R&D ratio t-1	-0.0451** (-2.399)	-25.0665** (-2.244)	-0.0481** (-2.524)	-23.1177* (-1.916)	-0.1170** (-2.504)	-18.3253* (-1.884)	-0.3374* (-1.936)
Payout ratio t-1	-0.0028 (-1.170)	-0.2582 (-0.963)	-0.0034 (-1.519)	-0.2922 (-1.468)	-0.0043 (-0.809)	-0.1632 (-0.772)	0.0023 (0.095)
Return on assets t-1	-0.0038 (-0.160)	-0.4220 (-0.267)	0.0003 (0.013)	-0.7287 (-0.466)	-0.0615 (-1.089)	-1.5978 (-1.043)	-0.1048 (-1.124)
Constant	0.0256 (0.819)	-3.2563 (-1.470)	-0.0001 (-0.004)	-3.7954 (-1.546)	0.0035 (0.060)	-3.6301 (-1.589)	0.2983*** (3.177)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	No
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes	No
Owner Type Controls	No	No	Yes	Yes	No	No	No
Year*Industry Controls	No	No	No	No	No	No	Yes
Observations	7,445	5,946	7,445	4,928	2,374	1,929	538
Adjusted/Pseudo R-squared	0.0152	0.130	0.0424	0.237	0.0368	0.145	0.184

Gulf investment characteristics, as shown in Table 18, are notably different. Gulf investors prefer relatively larger companies. The results regarding company age are inconclusive. The degree of internationalization (i.e., the foreign sales ratio) of companies targeted by investors from the Gulf states is significantly higher. The results also indicate that leverage and R&D ratio of portfolio firms are higher, particularly when we additionally control for owner types

(regression (4)). Throughout regressions (1) to (6), we find that Gulf investments appear to be in poorer-performing companies compared to other investors, as indicated by significantly lower return on assets.

**Table 18: Determinants of Gulf state investments**

This table reports OLS and logistic regression results on the determinants of Gulf state investments in German firms for the period 2009 to 2018. The results are obtained 1) at the investment level using individual shareholdings above 3% in CDAX companies, 2) at the company level using firm-year observations, and 3) from new (or additional) Gulf state investments using a matched sample approach. At the investment level (columns 1 to 4), Gulf state investment dummy as dependent variable equals one if the specific investment has a Gulf state ultimate owner, and 0 otherwise. At the company level (columns 5 to 6), Gulf state investment dummy is equal to one if the company has an investor from a Gulf state in the respective year, and 0 otherwise. Using matched sample (column 7), Gulf state investment dummy equals one if Gulf state investment in the company exceeds the 3% threshold for the first time or if an existing stake above 3% has been increased, and 0 otherwise. With the latter analysis, the control sample covers only firms with the same year\*industry (2-digit SIC code) combination as the companies with the new (or additional) Gulf state investments. All independent variables are lagged by one year and are winsorized at the 1st and 99th percentiles. The variable definitions and data sources are provided in Appendix 1. In columns 1, 2, 5, and 6, regressions include year and industry (1-digit SIC code) fixed effects. The regression specification in columns 3 and 4 additionally controls for type of ultimate owner per investment, i.e., Bank, Corporate, Government, Insurance, Institutional Investor, Private Individual and Miscellaneous. In column 7, the regression specification includes year\*industry fixed effects. Robust standard errors are clustered at the firm level with regressions in columns 1 to 5 and at the year\*industry level in column 6. \*\*\*, \*\*, and \* denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

Dependent variable: Gulf state investment dummy	Investment level				Company level		New investment
	(1) OLS	(2) Logit	(3) OLS	(4) Logit	(5) OLS	(6) Logit	(7) OLS
Market Value t-1	0.0063** (2.224)	1.2168*** (3.989)	0.0027* (1.792)	0.9566*** (2.611)	0.0140** (2.326)	1.2186*** (3.514)	0.0385** (2.643)
Age since incorporation t-1	-0.0007 (-0.153)	0.2145 (0.480)	-0.0013 (-0.326)	0.7964 (1.411)	0.0028 (0.307)	0.5926 (0.984)	-0.0166 (-0.741)
Foreign sales ratio t-1	0.0172** (2.185)	7.2362*** (3.706)	0.0165** (2.339)	10.4532*** (4.299)	0.0386** (2.223)	8.6620*** (3.154)	0.2930 (1.500)
Leverage t-1	0.0032 (1.557)	0.2841 (1.518)	0.0031 (1.625)	0.3830* (1.876)	0.0064 (1.642)	0.3750 (1.536)	-0.0164 (-0.874)
R&D ratio t-1	0.0098 (0.535)	3.5337 (1.437)	0.0154 (0.857)	6.2853** (2.043)	0.0455 (0.653)	4.8801* (1.759)	-0.3256 (-0.533)
Payout ratio t-1	-0.0013 (-1.156)	-0.1899 (-1.147)	-0.0019 (-1.353)	-0.0457 (-0.151)	-0.0019 (-0.748)	-0.1232 (-0.690)	-0.0176 (-1.168)
Return on assets t-1	-0.0387** (-2.497)	-10.4465*** (-3.623)	-0.0257** (-2.427)	-12.9389*** (-2.810)	-0.1092*** (-2.588)	-11.8683*** (-2.907)	-0.2093 (-1.291)
Constant	0.0114 (0.185)	-19.0194*** (-6.136)	0.0274 (0.465)	-24.7064*** (-4.221)	-0.0524 (-0.526)	-21.4338*** (-4.526)	-0.0354 (-0.227)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	No
Industry Controls	Yes	Yes	Yes	Yes	Yes	Yes	No
Owner Type Controls	No	No	Yes	Yes	No	No	No
Year*Industry Controls	No	No	No	No	No	No	Yes
Observations	7,445	4,382	7,445	3,252	2,374	1,423	120
Adjusted/PseudoR-squared	0.0374	0.407	0.166	0.685	0.0764	0.498	0.198

We also conducted robustness checks to validate our results. First, we replicated the logistic regressions in Tables 27 and 18, excluding controls for industry and investor type, thereby

increasing the number of observations. Further robustness tests are based on clustering regions more granularly, including additional dummies for North American, German, and other European ultimate owners. All untabulated results support the findings from our main regressions.

#### **4.4.3. Event study analysis**

In addition to our uni- and multivariate analyses, we conduct an event study analysis to investigate shareholder value effects associated with Chinese and Gulf investments. Therefore, we assess the average abnormal stock price reaction to 43 announcements of new or additional investments by Chinese and Gulf investors between 2009 to 2018. The information on event dates is obtained from ad hoc announcements of Chinese and Gulf investors surpassing voting rights thresholds pursuant to section 33 of the German Securities Trading Act.

Daily abnormal returns for each firm and day in the event window are calculated as the difference between the realized stock return and the expected stock return. We use the market model to approximate the expected return, i.e., the normal return in the absence of a purchase announcement (Brown & Warner, 1980, 1985). The CDAX index covering all stocks listed in the main German market segments is used as the benchmark market portfolio. We rely on an estimation window of 220 days (i.e., from day -241 to day -21 relative to the event day 0) to estimate the market model's parameters.

As we are interested in the average shareholder value effects related to stock acquisitions by two substantially different investor groups, we calculate the average abnormal returns for Chinese and Gulf investments separately. To account for issues associated with information leakage and event date uncertainty (MacKinlay, 1997), we additionally cumulate average

abnormal returns for different event windows around the announcement date (i.e., -5 to 5, -3 to 3, -1 to 1, 0 to 1).

The significance of (cumulated) average abnormal returns is assessed using the cross-sectional t-test (Brown & Warner, 1980) and the standardized cross-sectional test of Boehmer, Musumeci, and Poulsen (1991). The latter is superior to the simple t-test since it is robust to the event-induced increase of stock return variance.

According to our previous results, Chinese investors tend to acquire large shares in listed German firms, presumably to gain control and to get access to their (intangible) assets. To assess whether the market reaction to announcements of new or additional Chinese investments differs depending on the ultimate shareholding, we conduct a sample split based on the 25% threshold. We investigate the announcements with an ultimate equity stake above and below 25% because the share of voting rights above this critical threshold is essential for fundamental corporate decisions at shareholder meetings of listed German firms.

Table 19 shows the event study results. We find that announcements of new or additional investments by Chinese investors are associated with positive and significant abnormal returns. The average abnormal stock price reaction on the event day equals 3.24%. Besides economic significance, this effect is also statistically significant at the 5% level according to both the cross-sectional t-test and the Boehmer et al. test. The results based on broader event windows support the latter finding and indicate even more significant shareholder value effects (e.g., 4.28% and 8.37% with the 3- and 7-day event windows, respectively).

**Table 19: Event study – new investments**

This table reports event study results for new (or additional) Chinese and Gulf state investments. For Chinese investments subsamples of announced shareholdings below and above 25% are further analyzed. The first date on which the transaction becomes public is used as the event day. Cumulative average abnormal returns (CAARs) are reported along with the results of the cross-sectional t-test and Boehmer et al. test to assess their significance. An abnormal return is calculated as the difference between the realized and the expected total return. Expected returns are calculated using the market model with an event window from -241 to -21 trading days and the CDAX index. Total returns are from the Refinitiv Datastream database. \*\*\*, \*\*, and \* denote statistical significance at the 1%-, 5%-, and 10%-level, respectively.

<b>New Chinese investments (N = 36)</b>			
<u>Event window</u>	<u>CAAR</u>	<u>T-test cross-sectional</u>	<u>Boehmer et al.</u>
(-5...5)	0.0729	1.9252*	1.9579*
(-3...3)	0.0837	2.0112**	2.016**
<b>(-1...1)</b>	<b>0.0428</b>	<b>1.9019*</b>	<b>1.8677*</b>
<b>(0...0)</b>	<b>0.0324</b>	<b>2.012**</b>	<b>2.3197**</b>
<b>(0...1)</b>	<b>0.0278</b>	<b>1.8001*</b>	<b>1.8982*</b>

<b>New Chinese investments above 25% (N = 20)</b>			
<u>Event window</u>	<u>CAAR</u>	<u>T-test cross-sectional</u>	<u>Boehmer et al.</u>
(-5...5)	0.1377	2.2837**	2.4883**
(-3...3)	0.1484	2.1878**	2.4373**
<b>(-1...1)</b>	<b>0.0704</b>	<b>1.8848*</b>	<b>1.842*</b>
<b>(0...0)</b>	<b>0.0401</b>	<b>1.4637</b>	<b>1.626</b>
<b>(0...1)</b>	<b>0.0425</b>	<b>1.8224*</b>	<b>1.7621*</b>

<b>New Chinese investments below 25% (N = 16)</b>			
<u>Event window</u>	<u>CAAR</u>	<u>T-test cross-sectional</u>	<u>Boehmer et al.</u>
(-5...5)	-0.0109	-0.4041	-0.1301
(-3...3)	0.0003	0.011	-0.0893
<b>(-1...1)</b>	<b>0.0082</b>	<b>0.4724</b>	<b>0.5058</b>
<b>(0...0)</b>	<b>0.0228</b>	<b>1.7868*</b>	<b>1.8751*</b>
<b>(0...1)</b>	<b>0.0096</b>	<b>0.5068</b>	<b>0.7467</b>

<b>New Gulf state investments (N = 7)</b>			
<u>Event window</u>	<u>CAAR</u>	<u>T-test cross-sectional</u>	<u>Boehmer et al.</u>
(-5...5)	-0.0008	-0.0745	1.0933
(-3...3)	0.0118	1.1748	1.5655
<b>(-1...1)</b>	<b>0.0168</b>	<b>0.747</b>	<b>0.8976</b>
<b>(0...0)</b>	<b>0.0125</b>	<b>0.7234</b>	<b>0.463</b>
<b>(0...1)</b>	<b>0.0118</b>	<b>0.6586</b>	<b>0.7521</b>

When splitting the sample using the 25% threshold, we find that Chinese investments related to an ultimate ownership stake above 25% are associated with much higher positive abnormal



returns than those with an ultimate equity stake below the 25% threshold (for instance, 4.01% vs. 2.28% on the announcement day and 14.84% vs. 0.03% with the 7-day event window). The results for the latter subsample are only significant for the 1-day event window. These findings indicate that Chinese investors seem to pay higher premiums when acquiring large equity stakes and are thus seeking control.

In contrast, we do not find any significant abnormal returns for the sample of Gulf investments. However, this result is in line with the fact that the ultimate shareholdings of Gulf investors in our sample are all far below 25%, indicating that investors from the Gulf states are not looking for control associated with acquisition premiums.

#### **4.5. Discussion**

Our findings for Chinese and Gulf investors are in line with their respective industrial policies. The countries' influence on firms' outside FDI behavior manifests itself in notably different investment approaches. We find the Chinese investment approach to be rather transactional. In contrast, the investment approach of the Gulf states can be characterized as more long-term oriented and relationship-driven.

In our observation period, Chinese FDI policies are largely influenced by China's strategic objective to update technology in their home market, preferably via mergers and acquisitions (Xuan, 2016). To close the technology and know-how gap between China and more developed countries, controlling stakes in the target companies are essential. In line with this, we find Chinese shareholders to have control over their companies in the majority of the cases. The strategic goal to gain control over their portfolio companies is also reflected in the stock premiums Chinese investors pay, particularly for investments targeting shareholdings above

25%. With regard to company characteristics, our most outstanding finding is the significantly lower R&D ratio of Chinese portfolio companies. As indicated above, the explanations are twofold: One potential reason emerges from the technology gap, in our observation period mainly with regard to industrial technology, between China and Germany (Luo & Tung, 2007; Mathews, 2002). As the existing knowledge and capabilities of their German targets are not yet established in China, Chinese investors potentially prioritize the existing (intangible) assets and technologies and are less interested in further investments into R&D by their portfolio companies. Our finding that Chinese portfolio companies are relatively older firms that likely have established technologies supports this notion. The other potential explanation lies in the nature of the portfolio companies. As Chinese investors often look to acquire majority stakes, existing blockholders in target firms become attractive transaction partners. In particular, family firms present a good fit, as they are generally relatively older and smaller companies that have been shown to report R&D expenses too conservatively (Schmid et al., 2014).

In contrast, the Gulf states follow a long-term, relationship-oriented investment approach. To establish and build relationships, they acquire minority stakes in large, established companies (Reuters, 2017). They aim to diversify their economies beyond oil in the long run. Minority investments in German companies serve this strategy as Gulf states hope these companies will in turn invest in the Gulf region (Cermak, 2017).<sup>14</sup> To accomplish this goal, they are not interested in controlling stakes but rather in “getting a foot in the door” and building relationships. Our findings that Gulf investors purchase small equity stakes in large companies

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<sup>14</sup> For instance, German blue-chip companies like Deutsche Bank, Volkswagen and Hochtief all invested into the Gulf state Qatar, while a priori having Qatari shareholders (Cermak, 2017).

support this notion. Furthermore, we find that Gulf investors target companies that are significantly more international. One potential explanation that Gulf investors actively seek more international firms is that they assume such firms can more easily expand into the Gulf region. Lastly, the significantly lower return on assets and higher R&D expenses of firms targeted by Gulf investors underscore this investor group's long-term strategic motives rather than a short-term financial profit approach.

#### **4.6. Conclusion**

Our findings extend recent works by Fuest et al. (2019) and Karolyi and Liao (2017). We provide insights on investment patterns while accounting for investor type and idiosyncratic particularities of investor regions. We find that FDI patterns of Chinese and Gulf investors largely differ in line with their respective industrial policies. These findings could potentially be extended and further validated. Most importantly, as we employ a dataset of German listed companies, additional research is required to generalize our findings to non-listed companies and other countries. Furthermore, our research mainly focuses on the investment patterns of these investor groups. Additional research is needed to understand their long-term impact on portfolio companies. That is particularly important for Chinese investments in Germany, which have been increasing sharply since 2016.

## **5. Conclusion**

### **5.1. Summary of results and implications**

Owner types, objectives and compositions matter over all stages of the company life cycle. Appropriate ownership can reduce complexity and transaction cost as we show in the context of VC syndicates. It can also increase firm performance, as it is the case for family firms during the financial crisis. Furthermore, we observe varying impact with regards to foreign stock ownership. Chinese investors seek control over their portfolio holdings. Gulf investor influence on a company level appears to be marginal in contrast.

The challenge of finding suitable ownership structures remains. The ideal ownership structure depends on the specific company, its business model, its culture, and the specific life cycle stage it is situated in. As stated above, ownership structure can therefore also partially be regarded as endogenous, adapting with changing circumstances to maximize firm value.

Particularly in early or growth-stage situations, existing management and investors have the possibility to select the most suitable additional owner, who contributes the required additional financing but also is compatible with additional objectives. As shown in essay 1, such objectives can vary from having the investor actively involved and contributing “smartness” to being purely passive and minimizing transaction cost. We find that syndicated investments need both, active and passive roles. The ideal role hereby depends on the specific skillset. GPs often have the ambition to be an active party in the syndicate. They contribute industry-specific knowledge and want to get involved in shaping the target company and contributing know-how. Limited partners as co-investors on the other hand acknowledge to not possess the skillset and ambition to be actively involved. Thereby enabling their active syndication partners to leverage their own

equity position by representing the passive investors. The limited partners on the other hand are skilled in assessing GP quality and therefore contribute an additional quality assurance layer, ensuring GP-investment fit. When syndicates are formed, it is therefore crucial for the syndicate to be balanced with regards to syndication partners' know-how and ambition level. This can be a superior strategy to solely selecting syndication partners based on their individual skillsets. For instance, considering a GP-GP syndicate, each syndication party has the ambition to be actively involved and interacting with the portfolio company. Such a setup bears notably higher transaction cost within the syndicate.

A positive example of owners' power to actively contribute to firm faith by getting involved are family firms. In essay 2 we show that involvement of families as large block holders made German listed companies more resistant towards the financial crisis. A key attribute of family firms is the long-term orientation of their investment. This long-term orientation and the large dependency of the family on the company lead them to engage in more conservative decision-making and also hedge for times of economic downturns. Our finding that families followed a more conservative payout policy in economically more prosperous periods in order to build financial reserves supports this. With these reserves, family firms were able to maintain significantly higher capital expenditures throughout the financial crisis compared to their non-family peers. In addition, we also found another immediate positive effect of these reserves in the financial crisis. Being more robust to external disruptions, family firms were able to outperform non-family firms with regards to Tobin's q as well as return on assets. On a higher level, these family-owned firms benefitted from the long-term orientation of their owners. This long-term orientation overall is a key owner trait that fosters firm success in the long run.

Ownership structures of mature listed companies are often not only determined by the choice of existing owners and management but are rather exogenous, resulting from traditional market mechanisms. Listed companies are therefore more vulnerable to investments from opportunistic investors potentially following alternative agendas next to only maximizing firm value. In essay 3 we observe two distinct investor groups from hierarchical countries, China and the Gulf states. For both groups, we find strategic interests emerging from the countries' industrial policies manifested in their investment behavior. The approach towards industrial policy however is notably different. Chinese investors showed a transactional investment approach. In our observation period, their objective was to close the technology and know-how gap between China and more developed countries. This also required Chinese investors to acquire controlling stakes in the portfolio companies. The resulting impact on portfolio company level is potentially unfavorable, as it seems that Chinese investors were mainly interested in the companies' existing technologies and know-how. The Gulf states' approach towards industrial policies is different and so are the investment patterns. Their objective was to build long-term relationships and attract large, established companies to expand into the Gulf region. This didn't require Gulf investors to acquire large stakes in their portfolio companies. Instead, minority investments were sufficient to get a "foot in the door". Due to the low degree of investment, their impact on portfolio companies is also likely lower.

In summary, we find that ownership can be endogenous as well as exogenous towards firm characteristics. In the first case, firm owners and management are able to identify suitable owners to reach their goals. One example being the provision of additional know-how and network by a new investor in a syndicated VC investment. In the second case, ownership change is externally driven. Investors acquire firm stakes to reach their own goals, which is not

necessarily aligned with maximizing firm value. For instance, considering Chinese investors potentially valuing existing technologies of their investees more than further R&D expenses. Thereby they capitalize on the companies' existing (intangible) assets at the expense of future prosperity.

This thesis emphasizes the benefits for companies to actively manage their ownership structure. Essays 1 and 2 demonstrate how ownership structures can benefit firm success. In essay 1, LPs as additional owners provide the required capital and at the same time reduce syndicate complexity and foster investment success. In essay 2, families as owners enable firms to build larger reserves in economically prospering times to strengthen the companies towards economic downturns. Essay 3 shows the opposite case in the context of investors from hierarchical countries. Firms therefore need to try to actively shape their ownership structure throughout all lifecycle stages, e.g. by attracting (additional,) more long-term oriented investor groups.

### **5.2. Future research and outlook**

This thesis contributes to several academic strands. First, it contributes to theory on VC syndicate formation (Admati & Pfleiderer, 1994; Hochberg et al., 2015; Lerner, 1994). We classify active-passive investor syndicates and their differences to pure VC syndicates. Important findings being the complementarity of the lead investors' motive to maximize their control with the LPs' ambition to take a passive role in the syndicate. Furthermore, we find that the skillset of GPs and LPs are largely complementary. LPs can even contribute an additional quality assurance layer to the syndicate. Moreover, we highlight the importance of the syndication process and role of transaction cost and emphasize the relevance of investment context.

Second, it extends research on family firms (R. Anderson & Reeb, 2003a; Villalonga & Amit, 2006). We support extant findings on the outperformance of family firms over a relatively long time horizon of 21 years. We show that family firms do not outperform in general, but particularly in times of crises. Outperformance of family firms furthermore increases, the larger the involvement of the family is.

Third, it provides further evidence in the field of crisis management (Lins et al., 2013; Minichilli et al., 2016). We find evidence that crisis resilience is related to more financial flexibility and long-term decision making. Family firms were able to decrease their leverage during the crisis and at the same time keep capital expenditures at a higher level compared to their non-family firm counterparts. We find indication that this is due to higher pre-crisis reserves resulting from a more conservative payout policy.

Fourth, it extends research on foreign direct investments (Dunning, 1988, 2001; Fuest et al., 2019; Karolyi & Liao, 2017). We provide insights on investment patterns while accounting for idiosyncratic particularities of investor regions. Chinese and Gulf investors largely differ from other investor groups, in line with their specific industrial policies. Chinese investors follow a more transactional FDI approach. Gulf investors follow a more long-term, relationship-oriented one.

This thesis poses various additional questions to be addressed in future research. For our research on VC syndication we see a need for our qualitative results to be tested empirically in subsequent quantitative studies. In addition, we see opportunities to further refine, test and generalize our findings. The research on family performance in times of crisis can potentially be further validated with an alternative research design eliminating the endogeneity problems



we occur. Furthermore, findings need to be generalized, including non-listed firms as well as other countries. It would also be interesting to conduct similar research on the ongoing Covid-19 crisis. Our research on FDI also needs to be further validated using data of non-listed firms and other countries. Finally, the impact of such FDI on portfolio companies is yet to be further explored.

Concluding, corporate ownership, owner compositions and types are important determinants for firm success. As emphasized by one of the entrepreneurs interviewed on the topic of VC syndication, it is therefore worthwhile to not only optimize for immediate financial gains, but it can also pay-off in the long-term to optimize for ownership structure as a complementary goal.

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# Appendix

## Appendix 1: Essay 3 – Variable definitions and sources

Variable	Definition	Primary data source
<b>Shareholding characteristics</b>		
Shareholding	An investor's percentage shareholding in a company in a given year.	Orbis
<b>Company characteristics</b>		
Age since incorporation	The company's age since incorporation.	Orbis
Employees	The company's number of employees.	Datastream
Foreign sales ratio	The company's share of foreign revenue as percentage of total revenue.	Datastream
Market value	The company's total market capitalization in a given year.	Datastream
Revenue	The company's revenue.	Datastream
<b>Financing &amp; investment practices</b>		
Leverage	The company's interest bearing debt divided by it's book value of equity.	Datastream
Payout ratio	The company's dividends paid divided by it's net income.	Datastream
R&D ratio	The company's expenses for research and development divided by it's revenue.	Datastream
<b>Company performance</b>		
Return on assets	The company's earnings before interest and tax divided by it's total assets.	Datastream
<b>Stock market performance</b>		
Daily abnormal returns	CDAX index covering all stocks listed in the main German market segments as benchmark market portfolio. Estimation window of 220 days (i.e., from day -241 to day -21 relative to the event day 0) to estimate the parameters of the market model.	Own source; Datastream
<b>Additional control and dummy variables</b>		
Industry controls	Dummy variables for each main industry based on the first digit of the Standard Industry Classification code.	Orbis
Owner type controls	Dummy variables for each owner type; Bank, Corporate / Strategic, Government, Institutional, Insurance, and Private.	Orbis
Year controls	Dummy variables for each year in the observation period.	Own source