Financial Performance and Capital Structure of Family Firms: Meta-Analytical Investigations

Universität Trier

Financial Performance and Capital Structure of Family Firms: Meta-Analytical Investigations

DISSERTATION

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Preface

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List of Abbreviations

CEO	Chief executive officer
CI	Confidence interval
CNKI	China National Knowledge Infrastructure
CrI	Credibility interval
e.g.	Exempli gratia (for example)
et al.	et alii (and others)
F&E	Forschung und Entwicklung (research and development)
GDP	Gross domestic product
GLOBE	Global Leadership and Organizational Behavior Effectiveness
HOMA	Hedges and Olkin meta-analysis
MASEM	Meta-analytic structural equation model
MRA	Meta-regression analysis
MTB	Market-to-book ratio
OBPR	O'Boyle, Pollack & Rutherford (2012)
OECD	Organisation for Economic Co-operation and Development
REML	Restricted maximum-likelihood
R&D	Research and development
ROA	Return on assets
ROCE	Return on capital employed
ROE	Return on equity
ROI	Return on investment
ROS	Return on sales
RQ	Research question
SAMD	Sample adjusted meta-analytic deviancy
SE	Standard error
SEW	Socioemotional wealth
SME	Small and medium-sized enterprise
SSRN	Social Science Research Network

UAE	United Arab Emirates
UK	United Kingdom
US	United States
Var	Variance
VIF	Variance inflation factor
WGI	Worldwide Governance Indicators
WLS	Weighted least squares

Zusammenfassung

Familienunternehmen stellen die häufigste Unternehmensform weltweit dar. Schätzungsweise zwei Drittel bis drei Viertel aller Unternehmen werden von Familien gehalten und zu großen Teilen auch aktiv geführt. Darüber hinaus beschäftigen diese Unternehmen 60 Prozent aller Arbeitnehmer, sodass sie eine erhebliche Bedeutung für nahezu alle Volkswirtschaften haben. Durch das häufige Vorkommen dieser Unternehmensform haben die meisten Menschen auch in ihrem täglichen Leben stetigen persönlichen Kontakt zu Familienunternehmen, sie es als Angestellte, Kunden oder durch Familienunternehmer im Bekanntenkreis. Trotz dieser hohen praktischen Relevanz ist die akademische Forschung erst vergleichsweise spät auf Familienunternehmen als Untersuchungsgegenstand aufmerksam geworden. In den letzten zwei Jahrzehnten ist das Feld der Familienunternehmensforschung allerdings stark gewachsen und hat sich als eigenes Forschungsgebiet mit einer großen thematischen Bandbreite etabliert. Neben Fragen rund um die Themen Corporate Governance, Unternehmensnachfolge und die Betrachtung von Unternehmerfamilien selbst wurde vor allem der Frage nachgegangen, welche Auswirkungen Familieneinfluss in Unternehmen auf deren Erfolg hat. Diese Dissertation untersucht die finanzielle Performance und die Kapitalstruktur von Familienunternehmen in verschiedenen meta-analytischen Studien. Meta-Analysen eignen sich insbesondere dazu, bestehende Erkenntnisse eines Forschungsgebietes zusammenzufassen und darüber hinaus Moderatoren zu identifizieren, die eine Beziehung zweier Variablen beeinflussen können.

Zunächst geht die Dissertation der Frage nach, ob Familienunternehmen eine bessere finanzielle Performance aufweisen als Nicht-Familienunternehmen. Dazu wird in Kapitel 2 die Studie von O'Boyle et al. (2012), welche die erste Meta-Analyse zu Familienunternehmen darstellt, repliziert und erweitert. Neben dem allgemeinen Effekt von Familieneinfluss auf Unternehmensperformance wird vor allem untersucht, welchen Einfluss methodische Aspekte der einzelnen Primärstudien auf deren Ergebnisse haben. Die Ergebnisse basierend auf 1.095 Primärstu-

dien zeigen, dass Familienunternehmen eine geringfügig bessere Performance aufweisen als Nicht-Familienunternehmen, welche jedoch statistisch signifikant ist. Dieser Effekt ist stärker in börsengelisteten und großen Unternehmen sowie in Bezug auf bilanzbasierte Kennzahlen. Ein weiterer Fokus liegt auf dem Einfluss der Länderkultur auf Familienunternehmensperformance, welche mithilfe der Konstrukte von Hofstede (1980, 2001) und dem GLOBE-Projekt (House et al., 2004) gemessen wird. Es zeigt sich, dass Familienunternehmen vor allem in individualistisch geprägten Ländern und Ländern mit einer geringen Machtdistanz besser abschneiden.

Kapitel 3 der Dissertation untersucht anschließend die Sensitivität der Performance von Familienunternehmen in Bezug auf konjunkturelle Rahmenbedingungen. Die Ergebnisse verschiedener Meta-Regressionen zeigen, dass Familienunternehmen ein pro-zyklisches Muster aufweisen, das heißt ihre relative finanzielle Performance gegenüber Nicht-Familienunternehmen ist besser in konjunkturell guten Zeiten. Dieser Effekt ist vor allem in anglo-amerikanischen Ländern und Entwicklungsländern ausgeprägt.

In Kapitel 4 wird gezielt die Marktbewertung von börsengelisteten Familienunternehmen untersucht. Verschiedene Meta-Analysen bisher haben bilanz- und marktbasierte Performancekennzahlen meist gemischt als generelle Unternehmensperformance betrachtet. Mittels eines meta-analytischen Strukturgleichungsmodells (MASEM) wird sowohl der direkte Einfluss des Status Familienunternehmen untersucht, wie auch die Mediationseffekte durch Profitabilität und verschiedene strategische Entscheidungen. Es zeigt sich zum einen, dass das Merkmal Familienunternehmen selbst keinen Einfluss auf die Marktbewertung eines Unternehmens hat. Zum anderen wirkt sich die höhere Profitabilität von Familienunternehmen positiv auf ihren Marktwert aus, wohingegen die niedrige F&E-Intensität wertmindernd wirkt. Eine geteilte Betrachtung des Familieneinflusses zeigt, dass der Besitzanteil der Familie positiv auf die Unternehmensprofitabilität wirkt, jedoch negativ auf F&E-Intensität. Eine Beteiligung der Familie im Management führt hingegen zu einer geringeren Diversifizierung und zu einem geringeren Grad an Internationalisierung.

Weiterhin betrachtet diese Dissertation die Kapitalstruktur von Familienunternehmen. Die Ergebnisse der univariaten Meta-Analyse in Kapitel 5 zeigen, dass Familienunternehmen im Durchschnitt einen leicht geringeren Verschuldungsgrad aufweisen. Es zeigen sich darüber hinaus jedoch deutliche Unterschiede zwischen den 45 im Datensatz enthaltenen Ländern. Im zweiten Schritt untersucht diese Studie mithilfe einer hierarchischen Meta-Regression, wie sich der Gläubiger- und Aktionärsschutz der jeweiligen Länder auf den Verschuldungsgrad von Familienunternehmen auswirken. Die Ergebnisse belegen, dass Familienunternehmen die Kapitalstruktur als strategisches Instrument nutzen, um ihre kontrollierende

Position im Unternehmen zu sichern. Während ein starker Gläubigerschutz zu weniger Fremdkapitalnutzung führt, hat ein starker Aktionärsschutz die entgegengesetzte Wirkung.

Chapter 1

Introduction

Abstract. *This dissertation investigates the financial performance and capital structure of family firms in several meta-analytical studies. Chapter 2 summarizes empirical findings on family firm performance and identifies relevant moderators in terms of country culture and methodological choices. Chapter 3 more specifically analyzes the sensitivity of family firm performance to business cycle fluctuations. Chapter 4 focuses primarily on the impact of family firm status on publicly listed firms' value and investigates the mediating impact of family firms' profitability levels and strategic choices. Finally, Chapter 5 analyzes the capital structure of publicly listed family firms and the impact of countries' creditor and shareholder rights.*

The following introductory chapter (Chapter 1) describes the motivation of this thesis (Section 1.1) and formulates eight different research questions, which are investigated in the later chapters (Section 1.2). Finally, Section 1.3 provides an overview of the structure of this thesis.

1.1 Motivation

All over the world, family firms are the dominating firm type and shape the economic landscape of most countries. Estimates suggest that family firms constitute about two-thirds to three-fourths of all global firms (Duran et al., 2016; O'Boyle et al., 2012) and employ about 60 percent of the global workforce (Neckebrouck et al., 2018). Thus, most people have regular points of contact with family firms in their daily lives, be it as employees, consumers, or through family firm owners among their acquaintances, which results in distinctive public perceptions about this firm type (Sageder et al., 2018). However, no other type of business is as common but at the same time as diverse as family firms. Looking at family firms more closely, one ascertains that they by no means constitute a homogeneous group. First, family firms show a considerable variation in terms of size. While they are the predominant firm type among small and medium-sized enterprises (SMEs) and private firms, family firms are also common among large, publicly listed companies. In some countries, even 60 to 70 percent of all publicly listed firms are controlled by owner families (Aminadav & Papaioannou, 2020; Claessens et al., 2000; La Porta et al., 1999), which contradicts the common image of widely held public corporations as suggested by Berle and Means (1932). Second, owner families themselves shape the characteristics of each firm in a unique way. Each business family distinguishes in terms of its structure, its members' functions, and its family goals, traditions, and values from other owner families (Chrisman et al., 2012; Jaskiewicz & Dyer, 2017; Kotlar & De Massis, 2013). In some family firms, the owner families are publicly visible through the occupation of management positions or the firms bearing their families' names, whereas in other firms, their families act more reclusively and do not reveal their firm as a family firm at first glance.

Although of high practical relevance ever since, academic research took notice of family firms as intriguing research subjects surprisingly late. However, the field of family business research has grown eminently over the past two decades and has established itself as a mature research field with influential publications in general management, entrepreneurship, or finance journals (Evert et al., 2016; Gedajlovic et al., 2012). Existing theories such as agency and stewardship theory or the resource-based view have been adapted to family firms (Le Breton–Miller & Miller, 2006; Madison et al., 2016; Miller & Le Breton-Miller, 2006), and new concepts like socioemotional wealth (SEW; Gomez-Mejia et al., 2007) have been developed to explain differences to non-family firms. Examining the variant diversity of family firms, there has also evolved a broad topical scope within the field of family business research (Sharma et al., 2012), which can be roughly categorized into the topic clusters corporate governance, succession, family resources and dynamics, and firm outcomes (Xi et al., 2015; Yu et al., 2012). This thesis fo-

cuses on the firm outcomes financial performance and capital structure of family firms in several meta-analytic investigations.

So far, family firms' financial performance has been investigated within several contexts, such as public (e.g., Anderson & Reeb, 2003a; Andres, 2008; Maury, 2006) and private firms (e.g., Arosa et al., 2010; López-Delgado & Diéguez-Soto, 2015), family firm succession (e.g., Bennedsen et al., 2007; Bloom & Van Reenen, 2007; Pérez-González, 2006), or with respect to different family influence types and generations (e.g., Block et al., 2011; Kowalewski et al., 2010; Miller et al., 2007). The findings of these studies are ambiguous and highlight benefits as well as shortcomings of family influence on firm performance. Along these investigations, several theoretical stems have developed, with agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976), stewardship theory (Davis et al., 1997) and the resource-based view (Barney, 1991) being the most commonly used theories to explain performance differences between family and non-family firms (Carney, 2005; Chrisman et al., 2005; Madison et al., 2016; Miller & Le Breton-Miller, 2006). All of those perspectives offer arguments for both a better and worse financial performance of family firms.

Agency theorists suggest that, on the one hand, family firms should have higher financial performance resulting from lower agency costs due to the concurrence of ownership and management and the alignment of interests (Anderson & Reeb, 2003a; Maury, 2006). On the other hand, numerous studies revealed that family firms could also suffer from higher agency conflicts with minority shareholders because of the extraction of private benefits of control, which dampens their financial performance (Morck & Yeung, 2003). Whereas agency theory is based on the assumptions of self-serving humans maximizing their private wealth with economic rationality, stewardship theory has the view of self-actualizing humans with pro-organizational behaviors (Corbetta & Salvato, 2004; Davis et al., 1997). A deep emotional investment and a long-term orientation, which is typical for family firm owners, lead to high investments in the company's assets and its employees (Le Breton-Miller et al., 2011; Miller & Le Breton-Miller, 2006), which in turn may result in sustainable business growth (Le Breton-Miller & Miller, 2009). On the other hand, nepotism, conservatism, and family conflicts are the dark side of family influence and can harm firm performance (Eddleston & Kellermanns, 2007; Miller et al., 2008). Finally, research has also investigated family firm performance from a resource-based point of view (Chrisman et al., 2003; Habbershon & Williams, 1999; Sirmon & Hitt, 2003). Family firms can incorporate non-imitable resources such as a high amount of tacit knowledge, social and patient capital, as well as lower governance costs due to a high level of interpersonal trust that provide them with competitive advantages (Chrisman et al., 2005; Dyer, 2006; Sirmon & Hitt, 2003). On the other hand, family firms often

have to deal with lower financial resources, potentially unskilled family members, and inefficient governance structures in the case of weak family bonds (Sciascia & Mazzola, 2008; Sirmon & Hitt, 2003).

A topic that has gained less attention than firm performance is the capital structure of family firms. The capital structure depicts a firm's decision of how to finance its business activities. The decision to prefer either debt or equity is also a strategic one since the use of either one has several implications. From an economic point of view, debt increases a firm's investment options but also its bankruptcy risk. Furthermore, it can be used to incentivize managers or to realize tax shields (Jensen & Meckling, 1976; Modigliani & Miller, 1963). However, family owners are also known to pursue noneconomic goals (Chrisman et al., 2012), which can often be against the interests of other shareholders.

In family business research, there exist two competing views on family firms' capital structure. First, the risk aversion view suggests that family firms avoid debt (Mishra & McConaughy, 1999) because family owners have their wealth typically concentrated in the firm (Anderson & Reeb, 2003b). Since a higher leverage ratio increases the bankruptcy risk of a firm, family firms rely more on retained earnings or equity financing. In this manner, they prevent a loss of control if the firm cannot fulfill its financial obligations towards creditors. The opposing view focuses on the strong control considerations of owner families and suggests higher leverage ratios (Croci et al., 2011). Since issuing new shares dilutes the equity stakes of existing shareholders, families prefer to raise debt capital to prevent a dilution of their ownership stake. The results of existing studies are inconclusive and confirm both viewpoints.

Thus, the overall directions of both the financial performance and capital structure of family firms remain unclear. In this manner, this thesis aims to summarize empirical findings on family firm performance and family firms' capital structure in several meta-analytic investigations. Furthermore, the performance and capital structure outcomes are likely to be dependent on moderating conditions and circumstances (Dyer, 2018). Meta-analysis is a suitable method to summarize existing empirical findings as well as to identify relevant moderators of a relationship of interest across different studies. On the one hand, these potential moderators might be methodological choices of study authors such as family firm definitions or outcome measures used. Moreover, the performance and capital structure of family firms might also differ across countries. In this respect, institutional theory as a further theory perspective has gained increased attention in general strategic management (Peng et al., 2009; Peng et al., 2008; Wan & Hoskisson, 2003) and family business research (Gedajlovic et al., 2012; Liu et al., 2012; Soleimanof et al., 2018) in recent years. Institutions determine the "rules of the game" that structure political, economic and social interaction (North, 1990).

Previous studies show that country institutions affect the appearance and behavior of family firms and are affected by them in a reciprocal way (Wright et al., 2014). This dissertation specifically analyzes the impact of country culture as an informal institution as well as the impact of economic development and different governance systems as formal institutions on financial performance. Furthermore, it compares the capital structure of family firms across countries and explores the impact of countries' creditor and shareholder rights. In this manner, this dissertation aims to achieve a better understanding of family firm prevalence and its impact on economies all around the globe.

1.2 Research questions

1.2.1 Financial performance of family firms (Chapters 2, 3 and 4)

First, this thesis addresses the research topic of family firms' financial performance. As outlined in the previous section, financial performance is one of the most regarded topics in family business research. This dissertation aims to contribute to the existing literature by answering multiple research questions that address yet unexplored aspects of family firms' financial performance.
In the first meta-analysis on family firm performance, O'Boyle et al. (2012) compiled the results of 95 samples from 78 studies. They found neither an overall performance effect for family firms compared to non-family firms nor with regard to several country cultural and methodological moderators. In subsequent years, also several other meta-analyses (Carney et al., 2015; Duran et al., 2019; Taras et al., 2018; Van Essen et al., 2015a; Wagner, 2016; Wagner et al., 2015; Wang & Shailer, 2017) embraced this topic and predominantly identified an outperformance of family firms. However, these studies mostly used rather small study samples or restricted themselves to specific geographic regions. Since the study of O'Boyle et al. (2012), many further empirical studies have been devoted to family firms' financial performance, especially in previously unexplored countries (Dinh & Calabrò, 2019; Evert et al., 2016). This study thus aims to contribute to the existing knowledge by replicating and generalizing the results of O'Boyle et al. (2012) on family firm performance with the largest possible sample of primary studies up to date. Moreover, the moderating impact of country culture on family firm performance is still relatively unexplored. While O'Boyle et al. (2012) examined only the two Hofstede (1980, 2001) dimensions individualism and power distance, little is known about the impact of the remaining country culture dimensions. In this regard, this dissertation addresses the following two research questions:

RQ 2.1: *Do family firms outperform other types of business in terms of financial performance?*
RQ 2.2: *Do countries' cultural characteristics and methodological choices of study authors moderate the relationship between family involvement and financial performance?*

Business cycles and their impact on countries, firms, and individuals have attracted great interest in academic research (Gertler & Gilchrist, 1994; Koellinger & Thurik, 2012; Kose et al., 2003; Malmendier & Nagel, 2011). However, there is no consensus on the relative performance of family firms concerning business cycle fluctuations so far. Several empirical studies have investigated family firm performance during major financial crises, unfortunately with quite inconclusive results. Whereas some studies find an inferior performance of family firms during recession periods (e.g., Baek et al., 2004; Lins et al., 2013), others find the opposite (e.g., Kashmiri & Mahajan, 2014; Minichilli et al., 2016). However, a more detailed understanding of how business cycles and family firm performance interact is important to predict the short- and long-term effects of recession and boom periods, as family firms shape most economies around the globe. Concerning family firms' performance sensitivity to business cycles, also the type of corporate governance system or the economic development of a country might have an important impact. Hence, this dissertation aims to answer the following research questions:

RQ 3.1: *How does the business cycle influence the relative performance of family firms?*
RQ 3.2: *Do business cycle fluctuations affect family firm performance differently in various institutional settings?*

Empirical studies on family firm performance use a wide array of performance measures. On the highest level, these measures can be divided into accounting-based profitability measures and market-based performance measures. Whereas accounting-based measures reflect a firm's historically archived performance based on financial statement analysis, market-based measures reflect a valuation based on investors' expectations of a firm's future performance (Demsetz & Villalonga, 2001). So far, especially empirical evidence about the impact of family firm status on firm value is equivocal, as some studies report beneficial effects (e.g., Anderson & Reeb, 2003a), whereas others report harmful effects (e.g., King & Santor, 2008). Furthermore, the potentially mediating impacts of family firms' profitability and strategic choices remain largely unclear and constitute a research

gap. Family firms have shown to outperform other types of business in terms of profitability (Wagner et al., 2015) and to differ significantly in their strategic decisions such as capital structure, R&D investments, corporate diversification, or international diversification (Gomez-Mejia et al., 2011). Although both characteristics are likely to influence firm value, existent research lacks to provide a consistent framework of family firms' valuation by investors. To extend the knowledge on family firms' market valuation, this thesis addresses the following research questions:

RQ 4.1: *Does family firm status have an impact on firms' market value?*
RQ 4.2: *How do family firms' profitability levels and strategic choices mediate the relationship between family firm status and market value?*

1.2.2 Capital structure of family firms (Chapter 5)

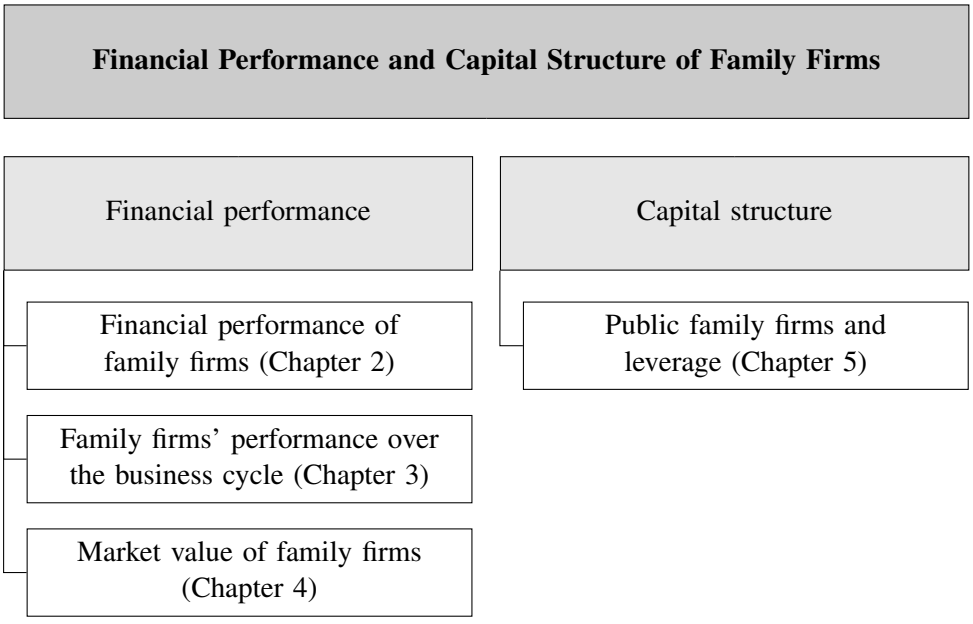
Chapter 5 investigates the capital structure of family firms, which has not received the same attention as family firms' financial performance. Recently, the findings of existent studies have been summarized in several literature reviews (Michiels & Molly, 2017; Motylska-Kuzma, 2017; Thiele, 2017). They reveal two competing views on the relationship between family firms and leverage ratios. On the one hand, multiple studies find lower leverage ratios for family firms compared to non-family firms (e.g., Ampenberger et al., 2013; Mishra & McConaughy, 1999). These studies argue that, due to the family owners' low degree of diversification (Anderson & Reeb, 2003b), family firms avoid debt since it increases bankruptcy risk. On the other hand, several studies suggest that family firms prefer debt as a non-diluting financing strategy and thus show higher leverage ratios (e.g., Croci et al., 2011; Ellul, 2009). So far, there is also little knowledge about the potential moderating effect of countries' creditor and shareholder rights on the relationship between family firms and leverage. Schmid (2013) argues that family firms avoid debt especially in countries with strong creditor rights, as creditors are more likely to gain and exercise control in case of payment default. In contrast, stronger shareholder rights should make debt more attractive, as they provide minority shareholders more influence in these countries. In order to shed light on these important aspects, the following research questions are addressed:

RQ 5.1: *Do publicly listed family firms have higher or lower leverage ratios than non-family firms?*
RQ 5.2: *How does a country's strength of creditor and shareholder rights moderate the relationship between family firm status and leverage ratios?*

1.3 Structure of the dissertation

This dissertation consists of six chapters. Figure 1.1 provides an overview of the structure of this dissertation.

Figure 1.1: Structure of the dissertation



Chapter 2 addresses the question of family firms' financial performance compared to their non-family competitors. In 2012, O'Boyle et al. were the first to summarize empirical results on family firm performance in a meta-analysis. This chapter replicates the study of O'Boyle et al. (2012) using the univariate meta-analytic approach by Hunter and Schmidt (2004). Furthermore, it generalizes and extends their results with empirical findings gathered from 1,095 primary studies up to date. Specifically, subsample analyses are used to examine the respective impact of several conceptual moderators on the relationship between family involvement in firms and financial performance. The first focus is on country culture, measured by Hofstede's (1980, 2001) and the GLOBE (House et al., 2004) cultural dimensions. The second focus is on the influence of several methodological moderators, such as family firm or financial performance variables used or sample and study characteristics.

Chapter 3 more narrowly examines family firms' performance sensitivity with regard to the business cycle. To increase the understanding of the relationship be-

tween family firm performance and business cycle fluctuation, it analyzes the results of 155 primary studies from 35 countries by various meta-analytic methods. First, Hedges & Olkin meta-analysis (HOMA) is used to investigate the overall family firm performance relationship in our sample. After merging country-level variables on business cycles, this chapter investigates their impact on family firm performance in a multivariate meta-regression analysis (MRA). Furthermore, the moderating effects of corporate governance systems and economic development are tested. Finally, several robustness checks are conducted to validate the results.
Chapter 4 focuses on the impact of family firm status on firms' market value. Next to a potential direct impact, it investigates also mediator mechanisms via family firms' profitability levels and strategic choices in terms of leverage, R&D intensity, diversification, and internationalization. Agency theoretic arguments are used to hypothesize a positive mediation effect of profitability on family firms' market value. Moreover, behavioral agency theory (Wiseman & Gomez-Mejia, 1998) is adopted to explain different strategic choices of family firms. It is argued that family firms' strategic choices on leverage and diversification increase, whereas their choices on R&D intensity and internationalization hamper their market value. These hypotheses are tested in a meta-analytic structural equation model (MASEM; Cheung & Chan, 2005) based on 515 empirical studies. A post hoc analysis further explores the respective influences of family ownership and management on these mediator relationships. Finally, a sample split into developed and emerging markets investigates the moderating impact of countries' institutional development.
While Chapters 2 to 4 focus on family firms' financial performance, **Chapter 5** investigates family firms' capital structure. The capital structure of a firm, typically measured by the leverage ratio, reflects its decision on how to finance its investments and business activities. On the one hand, debt increases a firm's investment opportunities without diluting existing shareholders' equity stakes, but at the same time it also increases the firm's bankruptcy risk. In family firm research, there is an ongoing debate on whether family firms have higher or lower leverage ratios than non-family firms (Michiels & Molly, 2017). This chapter first reflects existing theories and derives hypotheses for the underlying relationships. A sample of 780 effect sizes from 550 studies on publicly listed firms is then used to explore the overall impact of family firm status on firms' leverage ratios and country-specific differences in several HOMAs. Moreover, hierarchical meta-regression analysis examines the impact of countries' creditor and shareholder rights on family firms' leverage ratio.
Finally, **Chapter 6** concludes with a summary of the main findings. Furthermore, it highlights the theoretical and practical implications of the research findings and discusses limitations and avenues for further research.

Chapter 2

Exploring the relation between family involvement and firms' financial performance

Abstract. *This study replicates and extends the meta-analysis on family firm performance by O'Boyle et al. (2012). Based on the empirical findings of 1,095 primary studies from 61 countries, we find an economically small but statistically significant positive impact of family influence on firms' financial performance. This outperformance occurs particularly for large and listed firms, as well as for accounting performance measures rather than market performance measures. Furthermore, we investigate the potential moderation effects of different country cultural dimensions, as operationalized by the Hofstede and GLOBE framework, on family firm performance. We find higher performance effects for countries with a higher degree of individualism, masculinity, long-term orientation, and performance orientation, and a lower degree of power distance. We find only marginal differences in the mean effect sizes between the journal fields.*[1]

[1] This chapter is based on Hansen and Block (2020).

2.1 Introduction

During the past two decades of its adolescence, one of the fundamental questions family firm researchers addressed was: "How do family firms differ in terms of their financial performance?" (Gedajlovic et al., 2012, p. 1011). To date, there has been no consensus on whether family firms outperform non-family firms, and if they do, then under what types of conditions. In a first attempt to summarize the ambiguous findings of previous empirical studies, O'Boyle et al. (2012; hereafter referred to as "OBPR") conducted a meta-analysis on the impact of family influence on performance, consisting of 95 effect sizes from 78 studies. They did not find a significant influence on the overall level or when controlling for firm size, firm type, and cultural characteristics. In the following years, several other meta-analyses investigated the performance of family firms, often with a focus on a certain region or group of countries. Van Essen et al. (2015a) found a positive performance relationship between family firms and firm performance for listed firms across 74 US studies, as did Taras et al. (2018) for a sample of 33 studies from different countries around the globe. On the other hand, Carney et al. (2015) found no outperformance for private family firms compared to their non-family counterparts. Duran et al. (2019) and Wang and Shailer (2017) concentrated on emerging markets and found a positive relationship between family influence and firm performance in these countries. Furthermore, they highlighted the importance of countries' institutional development as a moderating factor. In the largest study to date, spanning 380 studies on different countries and different firm types, Wagner et al. (2015) found a small but significant outperformance of family firms, as well as differences in the level of outperformance between different firm types and sizes.

These more recent results indicate that the results of OBPR and their conclusion of no performance difference might no longer hold. However, the newer studies are also limited in that they mostly use rather small samples, which are often restricted to certain firm or country types. Furthermore, the number of publications has increased tremendously in the meantime. Whereas early studies on family firms have concentrated mainly on European, North American, and Southeast Asian countries, research on family firms in other parts of the world has grown steadily with an increasing focus on emerging countries (Dinh & Calabrò, 2019; Evert et al., 2016; Soleimanof et al., 2018). Lakens et al. (2016), thus, highlight the need for regular updates of meta-analyses to prevent outdated scientific conclusions. Following their call, we replicate the study of OBPR with a sample of 1,095 usable primary studies that report a relationship between family firms and financial performance. We first conduct an exact replication by using the same inclusion criteria for the same sample period as the original study. Doing so, we find a positive relationship between family influence and firm performance across 236

studies published before 2009. Moreover, we generalize the investigations with empirical findings from 1,095 studies up until now and extend the set of moderating effects of the family firm performance relationship. The overall relationship remains positive, but on a lower level. Moreover, we identify several moderating effects with regard to the firm types, firm sizes, and country's culture.
The remainder of the article is structured as follows: In Section 2.2, we briefly introduce the OBPR study and review the potential performance impact of the investigated moderators. In Section 2.3, we introduce the methods of our replication study. Section 2.4 reports the results. In Section 2.5, we discuss these results and identify opportunities for future research. Section 2.6 concludes the article.

2.2 The OBPR study

Subsequent to the groundbreaking study of Anderson and Reeb (2003a), which reports an outperformance of family firms in the S&P 500, countless empirical studies have investigated the impact of various family influences on financial performance. The findings of these studies are ambiguous, highlighting benefits and shortcomings of family influence on firm performance. The aim of OBPR was to summarize these findings and the underlying theoretical foundations through meta-analytic procedures. Thus, they present arguments rooted in evolutionary psychology and agency theory (Fama & Jensen, 1983; Jensen & Meckling, 1976) and briefly refer to stewardship theory (Davis et al., 1997) and the resource-based view (Barney, 1991; Habbershon & Williams, 1999; Sirmon & Hitt, 2003) to explain the overall relation between family influence and firm performance and possible moderation effects. While the evolutionary perspective has not been used frequently in family firm research, agency and stewardship theory, as well as the resource-based view, are the most common theories used to explain performance outcomes (Carney, 2005; Chrisman et al., 2005; Dyer, 2006; Miller & Le Breton-Miller, 2006). As all of those perspectives offer arguments for positive and negative performance effects, OBPR leave their main research question an open one. Moreover, they identify four potential moderators of the family influence–performance relationship: firm type (public vs. private), firm size, and the cultural context in terms of individualism vs. collectivism and power distance. The hypotheses derived in their study are stated in Table 2.1.
We will briefly summarize the arguments of OBPR for potentially moderating effects in the following sections and integrate the research findings of subsequent studies.

Table 2.1: Hypotheses and results

Original hypotheses	Results O'Boyle et al.	Results exact replication	Results generalization & extension
H1: The relation between family involvement and firm performance is more positive and stronger in public firms than in private firms.	*Not supported*	*Not supported (insignificant)*	*Supported*
H2: The relation between family involvement and firm performance is positive and stronger in larger firms than in smaller firms.	*Not supported*	*Supported*	*Partially supported*
H3a: The relation between family involvement and firm performance is positive and stronger in firms that exist in a more collectivistic culture relative to firms that exist in a more individualistic culture.	*Not supported*	*Not supported (opposite direction)*	*Not supported (opposite direction)*
H3b: The relation between family involvement and firm performance is positive and stronger in firms that exist in cultures where power distance is high relative to where power distance is low.	*Not supported*	*Not supported (opposite direction)*	*Not supported (opposite direction)*

2.2.1 Public vs. private

Whereas family firms are the usual firm type among private firms all over the world, their prevalence on global stock markets varies with less family firm presence in Anglo-American countries and higher presence in European and Asian countries (Aminadav & Papaioannou, 2020; Claessens et al., 2000; Faccio & Lang, 2002; La Porta et al., 1999). However, public listing has several implications for firm governance and family influence. OBPR highlight that the combination of family influence and public ownership can lead to beneficial synergies. More precisely, they argue that those firms can combine their intangible tacit resources with better access to financial resources, which results in a competitive advantage. Furthermore, the influence and control of other shareholders in public firms, as well as the higher disclosure requirements, can limit potential expropriation and entrenchment activities of family shareholders (Schulze et al., 2003). As those control mechanisms from external markets are nonexistent in private firms, benefits of family influence such as long-term orientation or social capital are often compensated for by nepotistic actions or entrenchment (Sciascia & Mazzola, 2008). Hence, Stewart and Hitt (2012) summarize in their literature review that family influence generally has a positive influence on firm performance for public firms but an insignificant or negative effect for private firms. Similarly, Carney et al. (2015) do not find performance differences between private family and non-family firms in their meta-analysis. Aside from performance advantages due to lower agency costs, family ownership can be an efficient type of control for listed firms even without family managers. The reason is that owner families have a high interest in the well-being of the firm due to their relatively undiversified investment portfolio and therefore spend more effort monitoring the management's actions compared to diversified investors (Anderson & Reeb, 2003b; Shleifer & Vishny, 1997).

2.2.2 Firm size

For firm size, OBPR argue similarly to the firm type hypothesis that family firms should have synergies from family involvement and size advantages. Specifically, they emphasize that family firms are able to operate with fewer hierarchies and control mechanisms due to the stewardship behavior of subordinates than comparably large companies, while the ability to leverage size is retained.
Another argument is rooted in different levels of family influence between small and large family firms. In small family firms, the ratio of family ownership stakes and family members in executive positions is typically higher than in large firms (Klein, 2000). Currently, large family firms also acquire top management talent from outside the family to satisfy the requirements of the market (Block, 2011;

Chua et al., 2003). With this mix of tacit knowledge by the family managers and expert knowledge from hired managers, large family firms are able to complement the advantage of unique firm resources with resources necessary to compete in competitive environments. Oftentimes, owner families of large firms nowadays entrust firm management completely to professional managers and accompany the firm as close monitors and counselors if there are no suitable successors inside the family. Small family firms, on the other hand, do not have the capacity, the will, or the need to hire outside managers (Chrisman et al., 2014; De Kok et al., 2006). However, with too much family influence in the firm, there is the risk that noneconomic goals might overwhelm economic goals and that the firm falls victim to ruinous actions mentioned above (Chrisman et al., 2014; Westhead & Howorth, 2006).

2.2.3 Country culture

Over the past few years, the institution-based view has become increasingly popular to explain differences in family influence outcomes across countries (Peng et al., 2018; Soleimanof et al., 2018; Wright et al., 2014). While the impact of formal institutions such as laws and regulations on family firm performance has been studied intensively, evidence for the impact of culture and informal institutions is still sparse (Sauerwald & Peng, 2013). Hofstede defines culture as "the collective programming of the mind that distinguishes the members of one group or category of people from others" (Hofstede et al., 2010, p. 6). OBPR apply two dimensions of Hofstede's (1980, 2001) model of national culture to explore performance differences between family and non-family firms: individualism vs. collectivism and power distance. They argue that family involvement leads to better performance outcomes in countries with a more collectivistic culture and a higher power distance due to a better fit of societal-level and organizational-level culture. Using the Hofstede dimensions, Newman and Nollen (1996) find support for better financial performance if management practices and national culture are congruent. In collectivistic cultures, family and kinship ties play a crucial role when doing business (Li et al., 2001). In this manner, Banalieva et al. (2015) stress the commitment of families in collectivistic cultures to preserve the firm within the family and the advantage of family networks in the development of social capital. This network provides firms with better access to financial and human resources (Duran et al., 2019). Collectivistic societies expect loyalty, while individual excellence is awarded in individualistic cultures (Sharma & Manikutty, 2005). A high degree of loyalty increases the effort of family members and employees and is thus beneficial for firm performance. However, a collectivistic culture also implies reciprocal obligations that might be costly, such as sharing resources or providing jobs for network members (Bertrand & Schoar, 2006; Khavul et al.,

2009). In a meta-analysis on family firm performance in emerging markets, Duran et al. (2019) find a positive impact of informal enabling institutions as a whole but no influence for collectivism singularly. With respect to the second dimension, Chakrabarty (2009) suggests that family businesses have more benefits in countries with a high power distance. In these countries, powerful owner families have the opportunity to safeguard their own interests and enjoy privileges (Chakrabarty, 2009; Morck & Yeung, 2004). Furthermore, the respect for high power differentials impedes the opportunistic behavior of lower hierarchy employees (O'Boyle et al., 2012). On the other hand, owner families in cultures with a strong emphasis on hierarchy run into the danger of intrafamily conflicts, as criticism of family members lower in the hierarchy is not accepted (Goel et al., 2011).

2.3 Methods

The aim of this study is to replicate the results of OBPR and to generalize and extend their findings. Tsang and Kwan (1999) distinguish between six types of replications. Along their typology, we will first conduct an exact replication, as well as a generalization and extension. An exact replication means that a study is repeated on the same population by using the same procedures (Tsang & Kwan, 1999). In our case, exact replication also allows us to include more primary studies that comply with the inclusion criteria of the repeated study that the authors might have overlooked. Moreover, we will conduct a generalization and extension of the repeated study. To do so, we first enlarge the study sample by including studies as of today and thereby generalize the findings of the exact replication. Second, we extend the conceptual moderators by including further variables.

2.3.1 Sample and inclusion criteria

Conducting our meta-analysis, we followed several search strategies to collect suitable primary studies for our research sample. We built on the sample of Wagner et al. (2015), which is the largest sample so far, and further extended their sample. To be included, studies needed to report empirical results for the relationship between family firms and financial performance. First, we identified those studies by an electronic database search[2] using various search terms and their combinations.[3] Second, we searched for undiscovered articles by tracking the study lists of other published meta-analyses on family firms (Canavati, 2018;

[2]We searched Google Scholar, JSTOR, EBSCOhost, SSRN, and China National Knowledge Infrastructure (CNKI).

[3]These search terms are family, family firm, family business, family management, family ownership, family succession, financial performance, firm performance, corporate governance, block holder, ownership structure.

Carney et al., 2015; Duran et al., 2016; Taras et al., 2018; Van Essen et al., 2015a; Wang & Shailer, 2017). We furthermore browsed a selection of journals that are field journals for family business research or regularly publish articles in this research field.[4] Fourth, we corresponded with authors and asked them to send us their working papers or to send us missing effect sizes in the case that the articles included family firm and financial performance variables but did not report their relationship. We did not restrict our sample to any type of publication or language used.[5] Therefore, we included published journal articles as well as working papers, doctoral dissertations and student theses. Including all types of scientific outputs addresses publication bias (Sutton, 2009), which can appear due to the preference of authors and editors to publish studies with significant research findings (Rosenthal, 1979; Stanley, 2005). These search strategies resulted in a total sample of 1,484 primary studies.

Similar to the study of OBPR, the studies in our meta-analysis needed to include a comparison between family and non-family firms or a continuous measure of family influence and a fiscal performance measure. Due to the lack of objective comparability, we excluded studies that used self-reported performance measures or that solely investigated family firms. We excluded 282 studies that did not fulfill these criteria. We then checked for multiple studies based on the same dataset. If two or more studies used the same dataset, we ensured that the sample characteristics were sufficiently different or that they used different family firm or financial performance measures to avoid double entries of the same effect size in our dataset (Wood, 2008). We excluded 55 studies that did not fulfill these requirements.

2.3.2 Meta-analytic procedure and outlier analysis

Similar to OBPR, we conducted the univariate random-effects meta-analysis approach developed by Hunter and Schmidt (2004). Whereas in fixed-effects the underlying assumption is a shared common effect size across all studies, random-effects models allow the true effect size to vary from study to study (Borenstein et al., 2010). We included two types of effect sizes. First, we coded Pearson correlation coefficients r and statistics that can be transformed into r, such as descriptive statistics or t-test statistics (Lipsey & Wilson, 2001). Second, we included regression coefficients and converted them into partial correlation coefficients (Peterson

[4]These journals are Academy of Management Journal, Corporate Governance: An International Review, Entrepreneurship Theory and Practice, Family Business Review, Journal of Business Venturing, Journal of Corporate Finance, Journal of Family Business Management, Journal of Family Business Strategy, Strategic Management Journal.

[5]Members of the author team have language skills in German, French and/or Spanish. The studies published in the CNKI and in Chinese language have been searched and coded by a Chinese PhD student.

& Brown, 2005; Stanley & Doucouliagos, 2012). We then transformed all raw Pearson and partial correlations by Fisher's Z transformation to correct for skewness in the effect size distribution (Fisher, 1928; Hedges & Olkin, 1985). If a study reported multiple effect sizes, e.g., different family firm variables or financial performance measures, we included all of them in the sample, as simulations indicated that this procedure leads to better results compared to selecting only one effect size or calculating average values (Bijmolt & Pieters, 2001).
We then eliminated outliers by calculating Huffcutt and Arthur's (1995) sample adjusted meta-analytic deviancy (SAMD) statistic, also known as externally studentized residuals. We used critical cutoff values at the 0.001 level. The use of these values resulted in four outlier observations for the exact replication sample and 92 outlier observations for the generalization and extension sample, which were eliminated from further analysis.

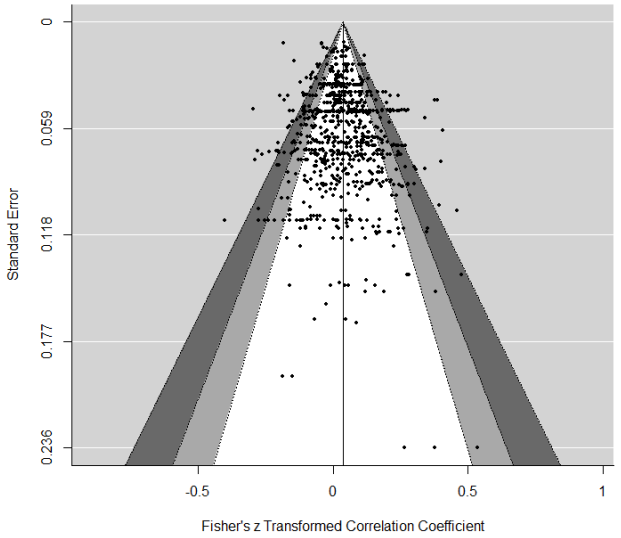
2.3.3 Final datasets

Study sample exact replication. For the exact replication sample, we were restricted to publications until the end of 2008. In this sample, we primarily used Pearson correlation coefficients. If a study did not report Pearson correlation coefficients or statistics convertible to them, we also included partial correlations. There was no significant difference between the two data types ($t - test = 0.53$, $p = 0.59$). Overall, 236 studies with 811 effect sizes were included in this sample. Figure 2.1 shows the funnel plot of the included effect sizes. The original study of OBPR constituted 78 studies with 95 effect sizes.

Study sample generalization and extension. For the generalization and extension sample, we used all available studies up until now. In contrast to the exact replication sample, we did not mix Pearson and partial correlations. In an ongoing debate, several authors (e.g., Combs et al., 2019; Roth et al., 2018) have raised concerns about the combined use of Pearson and partial correlation. Therefore, we coded Pearson and partial correlation coefficients for each study but split our sample and investigated each type of effect size measure separately. Our final sample included 1,095 studies with 4,216 effect sizes, divided into 918 studies with 2,513 Pearson correlation coefficients, and 416 studies with 1,702 partial correlation coefficients.[6] Figure 2.2 shows the funnel plot of the included effect sizes, and Figure 2.3 shows the number of studies included in our sample for each publishing year. Table 2.2 reports the number of effect sizes and studies per country for all three samples.

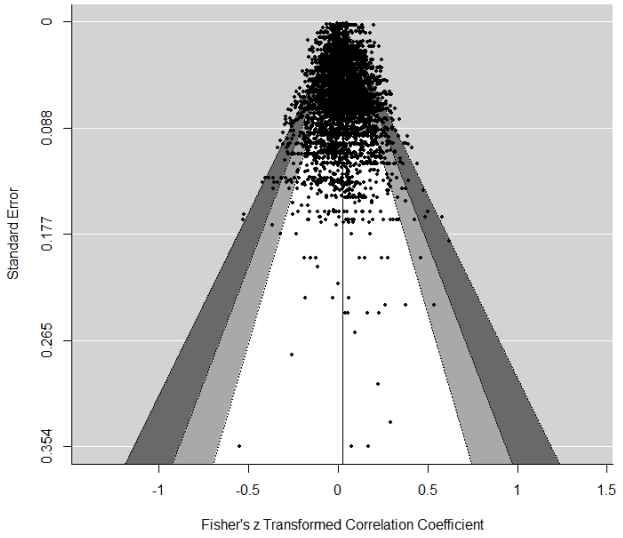
[6]The list of included studies is provided on the Open Science Framework project link: https://osf.io/wxg8e/.

Figure 2.1: Funnel plot of 812 z-transformed effect sizes for exact replication



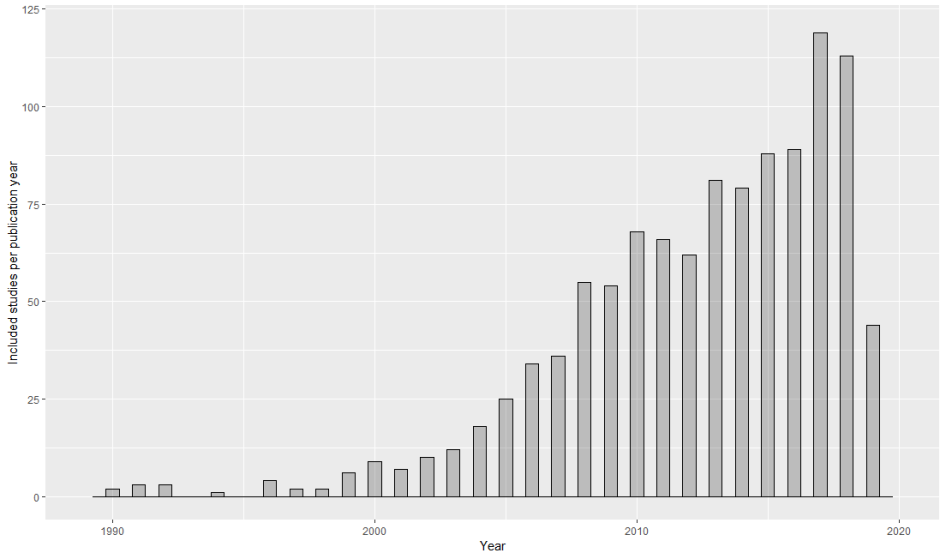
Notes: The shaded regions represent the pseudo-confidence intervals at the 95% (white), 99% (grey), and 99.9% (dark grey) level.

Figure 2.2: Funnel plot of 4,223 z-transformed effect sizes for generalization study



Notes: The shaded regions represent the pseudo-confidence intervals at the 95% (white), 99% (grey), and 99.9% (dark grey) level.

Figure 2.3: Histogram of included studies per publication year



Notes: Studies published before 1990 are assigned to the year 1990.

2.3.4 Conceptual moderators

Similar to OBPR, we split the samples with regard to several conceptual and methodological moderators to identify underlying patterns of the family involvement–performance relationship.

Firm type and firm size. First, we considered the empirical setting of the study sample by controlling for the firm type and firm size. For firm type, we distinguished between private and public firms. Accordingly, public firms (*Public*) included all observations from study samples that investigated publicly listed firms, whereas private firms (*Private*) included all observations from study samples that investigated privately held firms. Additionally, there are studies that use mixed samples of public and private firms (*Publ. & priv.*). Second, we controlled for the firm size investigated in the studies. Therefore, we distinguished between samples that investigated small and medium-sized firms (*Small*) and samples that investigated large firms (*Large*). We gathered the information on firm type and firm size from the sample descriptions of the primary studies.

Cultural context. Next, we matched data on the cultural context of the respective sample countries. First, we used Hofstede's (1980, 2001) cultural dimensions.[7]

[7]The data can be downloaded from https://geerthofstede.com/research-and-vsm/dimension-data-matrix/.

The respective country values range from 0 to 100. Similar to OBPR, we investigated only the two dimensions *Individualism–collectivism* and *Power distance* in the exact replication and split the sample according to the mean value to distinguish between high and low values.[8] In the generalization and extension analysis, we also included the remaining dimensions *Masculinity*, *Uncertainty avoidance*, *Long-term orientation*, and *Indulgence*. In this sample, we split the high vs. low subsamples at the raw value of 50 to prevent bias from an overrepresentation of single countries.
Second, we used the GLOBE national culture practices (House et al., 2004) as an alternative scale for national culture to validate the results from the Hofstede framework. The authors identified nine dimensions to characterize national culture: *Institutional collectivism*, *In-group collectivism*, *Power distance*, *Gender egalitarianism*, *Uncertainty avoidance*, *Future orientation*, *Humane orientation*, *Performance orientation*, and *Assertiveness*. The initiators provided global mean values to distinguish between low and high observations.

2.3.5 Methodological moderators

Family involvement. In the academic literature there is still no unique definition of family firms, and a multitude of concepts exist to distinguish family firms from non-family firms (Chua et al., 1999; Diaz-Moriana et al., 2019; Mazzi, 2011) or to represent the heterogeneity of the group of family firms (Neubaum et al., 2019). We identified multiple relevant variable constructs used frequently to operationalize family influence and coded them as dummy variables to conduct subgroup analyses. Hence, we defined a dummy variable *Ownership*, which equals 1 if the primary studies measured family influence via the ownership stake or an ownership dummy. In the generalization and extension analysis, we investigated those two variable constructs separately and introduced the variables ownership dummy (*Own. dum.*) and ownership percent (*Own. perc.*). Similarly, we created dummy variables addressing the involvement of family members in the management (*Management*) or the supervisory board (*Governance*). OBPR combined the governance and ownership observations due to a small number of observations. In this manner, we adapted this procedure for the exact replication but analyzed governance as its own category in the generalization and extension. Apart from investigating ownership, management, and governance separately, several studies define family firms by combining multiple influence types (e.g., Chua et al., 1999; Villalonga & Amit, 2006). We captured those definitions by the category multiple criteria (*Mult. criteria*). In the generalization and extension analysis, we split this category into strong influence (*Strong infl.*), including definitions that require at

[8] We consulted with the authors about this procedure.

Table 2.2: Sample composition by continental areas and countries

	Exact replication		General. & extension Pearson correlations		General. & extension partial correlations	
	No. effect sizes	No. study samples	No. effect sizes	No. study samples	No. effect sizes	No. study samples
Africa						
Cameroon	—	—	—	—	2	1
Ghana	2	1	2	1	—	—
Nigeria	—	—	1	1	16	2
South Africa	—	—	2	1	2	1
Arabia						
Egypt	—	—	3	2	—	—
Jordan	3	2	17	10	12	6
Kuwait	—	—	4	2	2	1
Morocco	—	—	1	1	—	—
Saudi Arabia	—	—	21	10	15	5
Tunisia	—	—	8	5	1	1
UAE	—	—	4	2	6	2
Mult. countries	—	—	16	7	—	—
Asia						
Bangladesh	4	2	17	9	13	2
China	7	3	54	24	29	7
Hongkong	64	15	76	26	39	8
India	15	7	81	42	41	17
Indonesia	6	4	54	26	25	12
Iran	—	—	12	5	2	1
Israel	2	1	2	1	—	—
Japan	52	5	95	17	39	9
Malaysia	10	5	114	50	50	20
Pakistan	—	—	67	21	24	7
Philippines	—	—	7	2	3	2
Singapore	3	1	7	2	6	1
South Korea	26	11	44	22	55	15
Sri Lanka	—	—	5	3	2	1
Taiwan	44	10	200	72	80	18
Thailand	8	4	41	13	29	9
Vietnam	—	—	1	1	1	1
Mult. countries	4	3	34	12	4	4
Europe						
Austria	—	—	5	3	—	—
Belgium	7	3	44	12	8	5
Croatia	—	—	—	—	2	1
Cyprus	—	—	3	1	4	1
Czech Rep.	—	—	26	2	—	—
Denmark	4	2	8	4	13	3

(Table 2.2 continues on the next page)

Table 2.2: (continued)

	Exact replication		General. & extension Pearson correlations		General. & extension partial correlations	
	No. effect sizes	**No. study samples**	**No. effect sizes**	**No. study samples**	**No. effect sizes**	**No. study samples**
Finland	2	2	16	8	18	5
France	41	11	56	27	91	18
Germany	60	13	134	40	119	24
Greece	—	—	16	8	6	3
Hungary	—	—	2	1	—	—
Ireland	—	—	1	1	—	—
Italy	19	8	130	49	62	23
Netherlands	1	1	7	4	6	3
Norway	9	4	51	19	120	11
Poland	—	—	16	3	10	2
Portugal	—	—	24	9	18	4
Romania	—	—	3	2	6	1
Spain	49	14	111	51	72	19
Sweden	43	9	57	19	66	10
Switzerland	5	2	32	7	66	8
Turkey	15	4	40	11	45	7
United Kingdom	8	6	13	8	18	7
Mult. countries	37	7	108	40	87	20
North America						
Canada	36	7	28	13	69	13
Dominican Rep.	2	1	5	2	4	1
Mexico	—	—	16	8	23	6
United States	187	62	411	152	179	50
Oceania						
Australia	11	4	26	8	15	4
South America						
Brazil	5	2	30	13	11	4
Chile	8	3	16	7	11	8
Colombia	4	1	3	2	19	7
Peru	—	—	20	1	14	1
Venezuela	1	1	1	1	—	—
Mult. countries	—	—	7	5	—	—
Multi-continent samples	8	3	57	24	22	9
	812	237	2,513	918	1,702	416

least two influence types to define a family firm, and undefined influence (*Undef. infl.*), including definitions that require any of the multiple possible influences. Finally, some studies operationalized family influence via succession (*Succession*) or categorized family firms by self-report in surveys (*Self-reported*).
In addition to the definition categories, we also controlled for the generational stage of the family firms in the generalization and extension. Previous research highlighted the need for a distinction between founder firms and later-generation family firms (Miller et al., 2011; Miller et al., 2007). We distinguished between founder generation (*Found. gen.*), including all observations where founder influence is measured, and later generation (*Later gen.*), where the influence of successor generations is measured. The category no specification (*No specific.*) includes all other observations that do not distinguish between founder firms and later-generation family firms.

Firm performance. Empirical studies use a multitude of indicators to measure financial performance. At the highest level, they can be divided into accounting-based performance measures, reflecting a firm's profitability, or market-based performance measures, reflecting firm performance with regard to stock market valuations. OBPR compared firm performance measured by return on assets (*ROA*) as the most common performance measure with all other types. We adopted this categorization for the exact replication. For the generalization and extension, the large number of effect sizes allowed us to apply a more fine-grained categorization, which included return on assets (*ROA*), return on equity (*ROE*), return on sales (*ROS*), sales growth (*Sales gr.*), productivity (*Product.*), and other accounting measures (*Other acc.*) for the group of accounting measures (*Acc. meas.*), and Tobin's Q or market-to-book ratio (*Q/MTB*), stock return (*Stock ret.*), and other market measure (*Other mark.*) for the group of market measures (*Mark. meas.*).[9]

Publication and publication quality. We coded the publication status of a study, reflecting whether a study is published in an academic journal (*Published*) or as a working paper, PhD thesis, or student thesis (*Unpublished*). By including unpublished studies, the potential danger of publication bias is addressed, as journal editors and authors might be prone to publish only significant outcomes in academic journals (Rosenthal, 1979; Stanley, 2005). Ignoring potentially insignificant results would therefore skew the overall relationship. On the other hand, peer reviews try to ensure quality standards and verify the methodological rigor of the study. OBPR therefore also controlled for the quality of the journal for published articles, reflected by the impact of the journal. Their assumption was that top-tier journals may publish more methodologically robust and theoretically influential

[9]We did not include measures such as employment growth or export propensity (as done by OBPR), as we assess them as inappropriate measures to reflect financial performance.

studies, whereas articles in journals with lower quality might resemble unpublished articles. The h index (Hirsch, 2005) was used to measure journal quality. Furthermore, we controlled for the field of the journal to check for possible publication bias in certain research fields. We divided the journals in our list into eight categories: family business and entrepreneurship (*FB/Entr.*), finance and economics (*Fin./Econ.*), accounting (*Accounting*), general management (*Gen. man.*), international business (*Int. bus.*), corporate governance and business ethics (*Corp. gov.*), human resources and organizational studies (*HRM/Organ.*), and all other research areas (*Other field*).

Year of publication. As the last methodological moderator, we tested for the year of publication. The underlying logic for this test in the original study was empirical evidence of declining effect sizes over time (Trikalinos & Ioannidis, 2005). For the exact replication, we adopted the distinction between studies published before and since 2007. Due to the longer time period in the generalization and extension sample, we divided the publications into groups published before 2000, from 2000 to 2004, from 2005 to 2009, from 2010 to 2014, and from 2015 onwards.

2.4 Findings

2.4.1 Exact replication

Table 2.3 reports the results of the exact replication on the left side of the table and the original results of the OBPR study on the right side of the table. Our results indicate a mean effect size six times larger compared to the original results ($r = .036$ vs. $r_{OBPR} = .006$). This mean effect size is statistically significant. The result is in line with the identified mean effect of Wang and Shailer (2017), slightly higher than the effect sizes of Duran et al. (2019) and Wagner et al. (2015), and slightly lower than Taras et al. (2018) and Van Essen et al. (2015a).
Analyzing the moderation effect of firm type and size, we find higher mean effect sizes for public firms ($r = .037$) and large firms ($r = .038$), whereas private ($r = .014$) and small ($r = .008$) firms show only marginally positive and insignificant effect sizes. Both directions were hypothesized by OBPR. However, the difference between the samples is only slightly significant for firm size. For the cultural dimensions *Individualism–collectivism* and *Power distance*, we find stronger performance effects for individually oriented countries and countries with a low power distance. Both differences are significant and contradict the stated hypotheses of OBPR. Regarding the definition criterion, we find nearly similar mean effect sizes for ownership ($r = .032$) and management ($r = .037$), and the highest effect sizes for multiple criteria ($r = .052$). The succession and

self-reported definitions show negative but insignificant mean effect sizes. Furthermore, performance measured by ROA ($r = .066$) leads to significantly higher performance outcomes compared to other performance measures ($r = .026$). Finally, we find stronger performance effects in unpublished studies (difference insignificant), studies that have been published in 2007 and 2008, and studies that have been published in lower quality journals.

2.4.2 Generalization and extension

In the generalization and extension, we rerun the original analyses with effect sizes from studies up to this date and add further variables. Table 2.4 reports the results for Pearson correlations and partial correlations separately.

For both samples, we find overall statistically significant mean effect sizes for the relationship between family influence and firm performance. However, both are smaller than the mean effect size of the exact replication in Table 2.3 ($r_{Pearson} = .019$, $r_{partial} = .034$). In both samples we find higher mean effect sizes for public firms ($r_{Pearson} = .019$, $r_{partial} = .043$) compared to private firms ($r_{Pearson} = .008$, $r_{partial} = .003$). For the newly introduced category of private and public firms the evidence is mixed: Whereas this group has the highest mean effect size in the Pearson correlation sample ($r_{Pearson} = .029$), it is well in between the two other categories in the partial correlation sample ($r_{partial} = .026$). Additionally, for firm size the evidence is mixed. In the Pearson correlation sample SMEs and large firms show the same mean effect size of $r_{Pearson} = .020$, whereas the mean effect size is significantly higher for large firms in the partial correlation sample. However, the number of effect sizes reveals that the overwhelming majority of empirical studies, most likely due to easier data access, uses datasets of large listed companies.

The results of the two Hofstede dimensions *Individualism–collectivism* and *Power distance* are similar to the exact replication. Both samples reveal significantly higher mean effect sizes for individualistic and power distant countries. Investigating the remaining Hofstede dimensions, we find higher mean effect sizes for countries with a high level of *Masculinity*, a high level of *Uncertainty avoidance* (only in the partial correlations sample), a high level of *Long-term orientation*, and no difference for the level of *Indulgence*. Similar to the Hofstede dimensions, the results of the GLOBE dimensions reveal higher mean effect sizes for less collectivistic (and thus more individualistic) countries and countries with a low power distance (only significant for the Pearson correlation sample). Furthermore, we find significantly higher mean effect sizes in performance-oriented countries, whereas the effect directions for all other categories are mixed or non-significant.

In terms of the family influence type, the performance effect is the highest if

Table 2.3: Results for the exact replication of O'Boyle et al. (2012)

	Exact replication									Original results O'Boyle et al. (2012)							
	k	*s*	*n*	*r*	*Var*	*95% CI*	*90% CrI*	I^2	*z-test*	*k*	*n*	*r*	*Var*	*95% CI*	*90% CrI*	I^2	*z-test*
Overall	812	237	435,638	.036***	.008	.030; .043	-.089; .162	75.5%		95	80,421	.006	.002	-.004; .016	-.054; .063	50.8%	
Type of firm																	
Public	678	189	296,445	.037***	.007	.030; .045	-.085; .159	70.4%	1.63	50	20,355	.001	.006	-.020; .021	-.089; .091	55.9%	.607
Private	59	28	58,465	.014	.007	-.009; .036	-.109; .136	84.0%		39	51,295	.005	.001	-.007; .041	-.037; .047	47.4%	
Firm size																	
Small	44	24	51,296	.008	.005	-.015; .031	-.095; .111	81.1%	1.93*	42	54,110	.006	.001	-.006; .038	-.034; .046	44.9%	.489
Large	768	215	384,342	.038***	.008	.031; .045	-.090; .166	74.9%		50	20,282	.001	.005	-.020; .046	-.086; .087	54.2%	
Individualism																	
Low	323	92	163,747	.012**	.005	.003; .022	-.085; .109	63.3%	5.55***	48	45,406	.002	.002	-.010; .022	-.044; .049	44.2%	1.219
High	433	130	231,651	.053***	.012	.043; .063	-.090; .196	80.0%		45	32,904	.012	.003	-.005; .064	-.059; .082	58.2%	
Power distance																	
Low	387	119	215,218	.049***	.011	.039; .059	-.091; .189	79.8%	3.60***	54	34,405	.013	.004	-.003; .060	-.061; .087	57.2%	1.701
High	369	104	180,180	.021***	.006	.012; .031	-.087; .129	67.4%		39	43,905	.001	.002	-.011; .032	-.039; .041	41.1%	
Family definition																	
Ownership	448	139	216,212	.032***	.007	.024; .040	-.080; .144	68.6%	Ref. cat.	39	36,310	.011	.002	-.003; .041	-.038; .059	46.4%	.703
Management	152	56	74,856	.037***	.010	.018; .056	-.131; .205	83.3%	.46	6	29,678	.003	.008	-.080; .064	-.114; .098	59.5%	-.385
Mult. criteria	198	67	132,458	.052***	.008	.039; .065	-.068; .172	77.7%	2.40**	36	6,585	.029	.002	-.013; .019	-.052; .057	48.9%	-.329
Succession	3	2	6,004	-.057	.01	-.136; .021	-.171; .057	65.9%	1.58	7	1,516	-.008	.003	-.008; .066	-.033; .090	63.4%	-.289
Self-reported	12	3	4,961	-.028	.004	-.065; .010	-.106; .051	43.9%	2.93***	7	6,332	-.022	.002	-.056; .013	-.074; .031	55.9%	-.086
Performance measure																	
ROA	243	131	142,283	.066***	.007	.055; .078	-.046; .178	72.6%	5.30***	45	34,185	.009	.002	-.005; .023	-.042; .060	43.6%	.897
Other measure	569	199	293,355	.024***	.008	.016; .032	-.102; .149	74.7%		50	46,236	.004	.004	-.009; .018	-.056; .065	56.5%	
Article source																	
Published	533	169	235,660	.033***	.008	.024; .041	-.092; .157	71.5%	1.44	59	42,288	.003	.003	-.009; .016	-.050; .057	44.1%	.414
Unpublished	279	69	199,978	.043***	.009	.032; .054	-.083; .169	80.4%		36	38,133	.010	.002	-.006; .025	-.050; .070	59.6%	
Year of publication																	
Before 2007	450	141	198,853	.026***	.008	.017; .036	-.103; .156	72.9%	2.90***	52	40,302	.011	.003	-.004; .026	-.055; .077	56.6%	.993
2007 and after	362	96	236,785	.047***	.008	.038; .057	-.075; .170	78.0%		43	40,119	.002	.002	-.011; .015	-.043; .046	41.7%	
Journal importance																	
Low	314	84	126,289	.047***	.006	.036; .058	-.084; .177	71.3%	3.43***	32	30,807	.002	.002	-.013; .018	-.049; .053	49.9%	1.163
High	196	72	121,268	.018***	.007	.007; .030	-.089; .126	72.1%		27	11,481	.006	.004	-.017; .029	-.053; .065	37.7%	

Notes: *k* = number of effect sizes; *s* = number of studies; *n* = number of firms; *r* = mean effect size; *Var* = variance of effect sizes; *95% CI* = 95% confidence interval; *90% CrI* = 90% credibility interval; I^2 = ; *z-test* = test statistic of the z-test for group differences; significance levels denoted by asterisks, *** 1%, ** 5%, and * 10%.

studies use ownership stake to measure family influence ($r_{Pearson} = .026$, $r_{partial} = .053$). Furthermore, ownership leads to higher performance effects than family management ($r_{Pearson} = .015$, $r_{partial} = .021$) or supervisory control ($r_{Pearson} = .011$, $r_{partial} = .022$). As shown by previous studies (Miller et al., 2007), we also find evidence for the so-called founder effect on firm performance. In both samples, we observe significantly higher effect sizes ($r_{Pearson} = .040$, $r_{partial} = .065$) if primary studies control for the founder status. Separating the sample with regard to the financial performance measures used in empirical studies, we find that family firms generally show better performance in terms of *Accounting measures* (except for sales growth and productivity) compared to *Market measures*. In the Pearson correlation sample, we do not find a performance effect for Tobin's Q / market-to-book ratio at all ($r_{Pearson} = .005$).
Finally, we investigate the influence of publication types on the observed performance effect. We find higher mean effect sizes for unpublished studies and a tendency of decreasing mean effect sizes since 2010. Contrary to the exact replication, we find higher effect sizes for studies published in high-impact journals (only significant for Pearson correlations) and no performance effect for studies published in journals without an h-index. With regard to the field of journals, we do not find significant differences in the Pearson correlation sample. The mean effect size is negative only in the field of human resources and organizational studies. In the partial correlation sample, the mean effect size is even lowest for studies published in family business or entrepreneurship journals. Thus, we do not observe a bias in the field of family business research towards positive performance outcomes.

2.4.3 Robustness check

We test our results for robustness by applying a multilevel meta-analysis (Konstantopoulos, 2011; Raudenbush & Bryk, 2002). Using this method, we control for the dependency of multiple effect sizes from the same study (Steenbergen & Jones, 2002) but avert a loss of information by maintaining the full set of effect sizes. This procedure is therefore superior to choosing only one effect size per study or calculating mean values. Table 2.5 reports the results.
Most remarkably, the observed mean effect sizes decrease for both types of correlations and across the moderation variable subsamples ($r_{Pearson} = .015$, $r_{partial} = .031$). This decrease indicates that some studies with multiple effect sizes, which find an outperformance of family firms, may increase the effect sizes of the base model in Table 2.4. In both subsamples, we find no performance effects for private firms ($r_{Pearson} = .008$, $r_{partial} = -.009$). However, in the Pearson correlation sample, the difference to public firms is not large enough to be significant. For size, the results are inconsistent as in the base model with a pos-

Table 2.4: Results for the generalization and extension

	Pearson correlations									Partial correlations								
	k	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*	*k*	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*
Overall	2,513	918	7,039,889	.019***	.001	.017;.022	-.052;.091	83.3%		1,702	416	10,277,978	.034***	.002	.031;.038	-.055;.124	94.6%	
Type of firm																		
Public	2,072	745	1,075,380	.019***	.002	.015;.023	-.085;.123	67.2%	*Ref. cat.*	1,360	329	680,933	.043***	.003	.037;.048	-.090;.176	76.4%	*Ref. cat.*
Publ. & priv.	213	64	2,641,411	.029***	.003	.023;.036	-.023;.081	92.0%	2.63***	203	51	5,441,805	.026***	.004	.018;.034	-.051;.103	98.3%	3.32***
Private	228	113	3,323,098	.008**	.004	.001;.016	-.059;.075	95.1%	2.56**	139	44	4,155,240	.003	.006	-.008;.014	-.092;.098	98.9%	6.30***
Firm size																		
Small	146	66	2,590,533	.020***	.003	.013;.026	-.012;.051	81.4%	.04	146	40	2,210,884	.016**	.007	.003;.029	-.099;.131	98.6%	2.90***
Large	2,367	855	4,449,356	.020***	.001	.017;.022	-.055;.094	78.9%		1,556	384	8,067,094	.036***	.002	.032;.040	-.041;.113	91.7%	
Hofstede																		
Individualism																		
Low	1,048	392	491,605	.008***	.003	.002;.014	-.111;.128	71.0%	4.62***	599	173	314,485	.026***	.004	.018;.035	-.114;.167	79.1%	2.21**
High	1,178	413	5,172,137	.024***	.002	.021;.028	-.039;.088	85.6%		934	200	6,280,242	.037***	.003	.032;.042	-.052;.127	95.1%	
Power distance																		
Low	925	324	4,992,348	.025***	.002	.021;.029	-.036;.087	87.2%	4.31***	753	159	6,189,015	.038***	.003	.033;.044	-.051;.128	95.9%	2.32**
High	1,304	482	671,394	.011***	.003	.006;.016	-.104;.126	71.5%		780	214	405,712	.027***	.004	.020;.035	-.109;.164	77.9%	
Masculinity																		
Low	981	374	4,577,973	.001	.002	-.003;.005	-.055;.057	82.9%	9.48***	765	175	5,390,689	.021***	.003	.015;.027	-.073;.115	95.7%	5.78***
High	1,245	431	1,085,769	.032***	.002	.027;.036	-.077;.141	78.5%		768	198	1,204,038	.044***	.003	.039;.049	-.038;.126	71.6%	
Uncertainty avoidance																		
Low	964	378	4,934,945	.019***	.002	.015;.022	-.043;.080	86.7%	.13	661	161	5,422,702	.024***	.003	.018;.030	-.068;.116	96.2%	4.40***
High	1,262	426	728,797	.018***	.003	.013;.023	-.093;.130	72.4%		872	211	1,172,025	.042***	.003	.036;.048	-.049;.133	72.2%	
Long-term orientation																		
Low	1,151	441	4,974,556	.010***	.002	.006;.014	-.051;.071	84.4%	5.38***	819	203	5,410,579	.022***	.003	.017;.028	-.071;.116	95.4%	5.89***
High	1,122	389	695,379	.028***	.003	.023;.034	-.088;.144	75.3%		759	180	1,188,950	.046***	.003	.040;.051	-.039;.131	72.6%	
Indulgence																		
Low	1,363	485	736,798	.020***	.003	.015;.024	-.091;.130	70.9%	1.17	851	212	1,140,779	.037***	.003	.032;.043	-.047;.122	68.3%	1.64
High	911	344	4,933,192	.016***	.002	.012;.020	-.046;.078	87.4%		731	172	5,459,154	.031***	.003	.025;.036	-.063;.125	95.9%	

Table 2.4 continues on the next page

Table 2.4: (continued)

	Pearson correlations									Partial correlations								
	k	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*	*k*	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*
GLOBE																		
Institutional collectivism																		
Low	1,163	416	965,155	.021***	.002	.016;.026	-.074;.116	72.4%	.46	797	188	1,053,296	.043***	.003	.038;.049	-.033;.120	60.8%	4.11***
High	845	323	486,769	.019***	.003	.013;.025	-.098;.136	74.2%		547	148	444,281	.023***	.004	.015;.031	-.106;.152	83.0%	
In-group collectivism																		
Low	1,049	350	975,837	.037***	.003	.032;.042	-.073;.147	79.6%	10.30***	763	173	1,204,375	.044***	.003	.039;.050	-.039;.128	72.5%	4.64***
High	959	389	476,087	-.001	.003	-.006;.004	-.090;.087	58.6%		581	163	293,202	.02***	.004	.012;.029	-.112;.153	76.4%	
Power distance																		
Low	890	300	878,154	.032***	.003	.027;.038	-.075;.140	79.8%	6.32***	577	131	438,616	.037***	.004	.030;.045	-.085;.159	80.4%	.54
High	1,118	439	573,770	.008***	.003	.003;.013	-.089;.106	64.0%		767	204	1,058,961	.034***	.003	.029;.040	-.047;.116	64.9%	
Gender egalitarianism																		
Low	1,502	548	1,237,819	.021***	.002	.016;.025	-.087;.129	77.4%	.62	890	227	1,219,748	.041***	.003	.036;.046	-.043;.126	70.4%	3.32***
High	506	191	214,105	.018***	.003	.012;.025	-.053;.090	43.4%		454	111	277,829	.023***	.005	.014;.033	-.106;.152	78.6%	
Uncertainty avoidance																		
Low	1,070	400	967,573	.022***	.003	.017;.027	-.085;.129	78.4%	1.17	591	171	354,729	.029***	.004	.022;.037	-.087;.146	74.9%	2.08**
High	938	343	484,351	.018***	.003	.012;.023	-.078;.114	63.4%		753	166	1,142,848	.039***	.003	.034;.045	-.046;.124	71.1%	
Future orientation																		
Low	569	217	341,809	.013***	.003	.006;.019	-.073;.099	61.6%	2.42**	396	103	180,509	.032***	.005	.022;.042	-.093;.158	72.1%	.61
High	1,439	523	1,110,115	.023***	.002	.018;.027	-.086;.131	76.2%		948	233	1,317,068	.036***	.003	.031;.041	-.054;.125	74.3%	
Humane orientation																		
Low	779	287	405,247	.016***	.003	.010;.022	-.071;.104	59.2%	1.56	684	157	1,071,001	.036***	.003	.031;.042	-.036;.109	62.8%	.76
High	1,229	451	1,046,677	.022***	.002	.017;.027	-.087;.131	78.1%		660	179	426,576	.033***	.004	.025;.040	-.103;.168	81.2%	
Performance orientation																		
Low	524	203	260,222	.004	.003	-.003;.011	-.070;.078	49.5%	4.92***	415	108	241,583	.022***	.005	.012;.032	-.103;.147	76.5%	3.07***
High	1,484	536	1,191,702	.024***	.002	.020;.029	-.085;.134	77.3%		929	228	1,255,994	.04***	.003	.035;.045	-.048;.128	72.4%	
Assertiveness																		
Low	1,027	379	576,142	.023***	.003	.017;.029	-.092;.138	73.1%	1.52	647	174	346,358	.036***	.004	.028;.044	-.104;.175	79.1%	.68
High	981	363	875,782	.017***	.002	.013;.022	-.075;.109	72.3%		697	165	1,151,219	.032***	.003	.027;.038	-.044;.108	68.4%	

Table 2.4 continues on the next page

Table 2.4: (continued)

	Pearson correlations									Partial correlations								
	k	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*	*k*	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*
Family definition																		
Own. dum.	683	322	3,644,065	.016***	.003	.011;.021	-.055;.087	89.8%	*Ref. cat.*	576	181	4,023,333	.038***	.003	.032;.045	-.062;.139	96.1%	*Ref. cat.*
Own. perc.	500	258	798,493	.026***	.003	.020;.032	-.043;.095	70.3%	2.56**	279	102	1,358,401	.053***	.006	.042;.064	-.058;.163	95.2%	2.21**
Management	383	181	1,429,089	.015***	.003	.009;.022	-.042;.073	70.2%	.92	349	115	2,064,597	.021***	.003	.015;.027	-.027;.069	82.0%	3.74***
Control	198	91	122,566	.011*	.006	-.001;.023	-.089;.110	69.6%	.78	148	60	580,687	.022***	.006	.010;.034	-.050;.094	84.3%	2.32**
Strong infl.	414	171	763,876	.025***	.003	.018;.032	-.040;.090	70.7%	2.18**	180	64	2,045,892	.028***	.004	.020;.036	-.020;.077	89.0%	1.89*
Undef. infl.	337	158	275,665	.023***	.005	.014;.032	-.086;.131	77.8%	1.32	158	60	189,851	.033***	.007	.019;.047	-.085;.151	85.5%	.72
Succession	1	1	5,334	.043***	.014	.017;.070	.021;.066	0.00%	1.98**	4	2	10,054	-.050***	.017	-.084;-.017	-.096;-.005	47.5%	5.12***
Self-reported	14	6	9,375	-.012	.021	-.053;.029	-.115;.091	65.8%	1.33	5	2	3,241	-.068*	.036	-.138;.002	-.189;.053	67.8%	2.96***
Generation																		
No specific.	2,307	896	6,838,089	.019***	.001	.016;.022	-.051;.090	83.8%	*Ref. cat.*	1,407	393	10,103,953	.032***	.002	.028;.036	-.057;.120	95.3%	*Ref. cat.*
Founder gen.	130	59	150,224	.040***	.007	.027;.053	-.048;.128	74.5%	3.08***	156	60	85,655	.065***	.008	.049;.081	-.068;.197	77.6%	4.00***
Later gen.	76	34	51,576	-.006	.008	-.023;.010	-.094;.081	64.7%	3.00***	139	42	88,370	.031***	.007	.016;.045	-.081;.143	74.1%	.10
Measures of performance																		
Acc. meas.	1,692	793	6,553,058	.025***	.002	.022;.028	-.042;.093	85.9%	*Ref. cat.*	956	297	7,862,335	.039***	.002	.034;.043	-.047;.124	95.6%	*Ref. cat.*
ROA	937	602	3,903,193	.032***	.002	.029;.036	-.018;.082	76.6%		595	234	3,581,935	.054***	.003	.049;.059	-.015;.123	90.9%	
ROE	271	160	759,939	.017***	.003	.011;.023	-.013;.047	43.4%		172	68	1,716,874	.048***	.005	.038;.059	-.026;.122	94.8%	
ROS	117	71	504,006	.032***	.005	.021;.042	-.020;.084	73.7%		52	26	1,230,553	.022***	.004	.014;.030	.000;.044	76.3%	
Sales gr.	295	192	1,096,542	.007**	.003	.001;.012	-.036;.049	68.2%		68	30	2,307,128	-.029***	.004	-.037;-.020	-.068;.011	94.7%	
Product.	24	13	284,468	-.040***	.008	-.056;-.023	-.089;.010	80.7%		49	18	84,642	-.038***	.011	-.059;-.018	-.141;.064	86.2%	
Other acc.	62	38	28,053	.036***	.009	.019;.054	-.027;.100	37.6%		41	17	32,882	.025*	.015	-.004;.055	-.103;.154	81.0%	
Mark. meas.	805	457	463,341	.006*	.003	.000;.012	-.103;.115	71.5%	5.36***	721	263	422,779	.029***	.004	.022;.036	-.096;.153	76.7%	2.24**
Q/MTB	659	406	393,869	.005	.004	-.002;.012	-.111;.121	74.6%		594	231	339,407	.025***	.004	.017;.033	-.105;.156	77.9%	
Stock ret.	128	85	65,276	.016***	.005	.005;.026	-.036;.068	33.0%		118	46	82,321	.044***	.008	.030;.059	-.050;.139	68.2%	
Other mark.	24	20	5,459	-.028	.017	-.062;.006	-.109;.052	31.7%		9	6	1,051	.051	.054	-.055;.157	-.171;.272	62.5%	
Article source																		
Published	1,784	703	1,327,311	.016***	.002	.012;.020	-.080;.112	71.0%	4.00***	1,062	293	1,462,789	.031***	.002	.027;.036	-.058;.122	75.4%	1.93*
Unpublished	729	215	5,712,578	.028***	.002	.023;.032	-.033;.088	90.8%		640	123	8,815,189	.039***	.003	.033;.044	-.049;.127	97.5%	

Table 2.4 continues on the next page

Table 2.4: (continued)

	Pearson correlations									Partial correlations								
	k	***s***	***n***	***r***	***SE***	***95% CI***	***90% CrI***	I^2	***z-test***	***k***	***s***	***n***	***r***	***SE***	***95% CI***	***90% CrI***	I^2	***z-test***
Year of publication																		
Before 2000	21	13	7,224	.022	.015	-.009;.052	-.033;.076	19.8%	*Ref. cat.*	41	13	10,735	.077***	.024	.031;.123	-.145;.300	82.0%	*Ref. cat.*
2000-2004	83	34	28,555	.028**	.011	.006;.050	-.097;.154	65.8%	.36	95	32	51,486	.023**	.010	.004;.043	-.094;.141	72.3%	2.12**
2005-2009	466	156	269,624	.031***	.004	.024;.038	-.054;.115	59.4%	.59	611	113	348,073	.042***	.004	.035;.049	-.069;.153	71.9%	1.48
2010-2014	842	295	3,618,309	.017***	.002	.013;.022	-.046;.080	83.9%	.27	552	133	4,641,298	.030***	.003	.024;.036	-.054;.114	95.4%	1.98**
2015-2019	1,096	417	3,114,836	.017***	.002	.013;.021	-.047;.082	80.8%	.29	403	125	5,226,386	.028***	.004	.020;.035	-.064;.120	97.5%	2.08**
Journal importance																		
Low	401	176	191.38	.011***	.004	.003;.018	-.066;.087	50.3%	*Ref. cat.*	157	59	49,486	.032***	.010	.013;.052	-.128;.193	73.8%	*Ref. cat.*
High	1,044	401	944,171	.022***	.003	.017;.027	-.076;.120	75.0%	2.37**	697	175	1,298,898	.036***	.003	.031;.041	-.043;.114	74.7%	.73
No h-index	339	126	191,760	-.002	.005	-.012;.008	-.102;.098	66.9%	2.01**	208	59	114,405	.006	.008	-.009;.021	-.133;.145	79.2%	2.12**
Journal field																		
FB/Entr.	219	119	433,669	.016***	.004	.008;.024	-.065;.096	70.6%	*Ref. cat.*	228	48	838,213	.014***	.004	.005;.022	-.041;.069	52.9%	*Ref. cat.*
Fin./Econ.	428	161	296,359	.017***	.004	.010;.024	-.069;.104	65.2%	.25	450	104	414,282	.035***	.004	.027;.042	-.071;.141	78.9%	3.55***
Accounting	197	94	124,907	.012**	.006	.001;.024	-.086;.110	68.6%	.61	65	19	49,678	.031**	.012	.007;.054	-.082;.143	76.1%	1.32
Gen.man.	446	176	237,351	.016***	.004	.007;.024	-088;.120	67.3%	.03	188	70	80,687	.048***	.008	.032;.064	-.099;.195	76.9%	3.72***
Int. bus.	54	25	23,789	.014	.011	-.008;.036	-.081;.109	58.0%	.16	9	6	4,222	-.065***	.021	-.107;-.023	-.122;-.008	19.0%	3.63***
Corp. gov.	225	88	122,262	.025***	.006	.014;.036	-.079;.129	68.1%	1.26	64	27	51,377	.057***	.012	.033;.081	-.067;.181	77.4%	3.35***
HRM/Organ.	55	12	40,826	-.010	.010	-.029;.009	-.104;.085	70.0%	2.41**	9	2	4,487	-.077***	.029	-.135;-.020	-.211;.056	73.8%	3.06***
Other field	60	28	48,148	.010	.008	-.006;.026	-.036;.056	32.9%	.62	49	17	19,843	.035*	.019	-.002;.073	-.137;.207	79.8%	1.10

Notes: *k* = number of effect sizes; *s* = number of studies; *n* = number of firms; *r* = mean effect size; *SE* = standard error of the mean effect size; *95% CI* = 95% confidence interval; *90% CrI* = 90% credibility interval; I^2 = ; *z-test* = test statistic of the z-test for group differences; significance levels denoted by asterisks, *** 1%, ** 5%, and * 10%.

itive and significant size effect in the partial correlation sample and no difference in the Pearson correlation sample. In the analysis of the Hofstede dimensions, some previously significant differences in the partial correlation sample become insignificant, while the effect directions in the Pearson sample remain largely unchanged. For the remaining variables, we find similar effect size directions, albeit on a lower overall level. The same holds for the GLOBE dimensions. In the partial correlation sample, many of the previously significant results are insignificant. In the Pearson correlation sample, we still find significantly higher performance effects for countries with low in-group collectivism, low power distance, and high performance orientation. In addition, with regard to the family and performance variables, the effect directions remain largely unchanged. Performance effects are the highest for family ownership percentage and higher for accounting measures than for market measures. With regard to the publication characteristics, there are hardly any significant differences with regard to the type of publication, the publication year, or the journal importance and research field.

2.5 Discussion

2.5.1 Theoretical implications

The results of our replication study of OBPR meta-analysis with a sample of 1,095 primary studies reveal a small positive but statistically significant impact of family influence on firm performance. Contrary to the results of the original study, we found a general outperformance and significant moderation effects in the exact replication with studies published before 2009. For the generalization and extension, we included empirical studies up to this date and found lower but still significant performance effects, which are generally higher for partial correlations compared to Pearson correlations. However, although significant due to the large number of included effect sizes, our identified mean effects are rather small from an economic point of view. Furthermore, heterogeneity analyses reveal a high degree of heterogeneity and thus a wide distribution of observed performance outcomes across empirical studies. These findings support the conclusion of OBPR "that family involvement is not, by itself, a competitive advantage (or disadvantage)" (O'Boyle et al., 2012, p. 12). Therefore, we associate ourselves with the recent call of Dyer (2018), who concludes "that comparing the performance of family to non-family firms is not a fruitful endeavor" (p. 246) but that researchers should rather explore circumstances and conditions that lead to certain performance outcomes. In this manner, we have extended the first attempt of the original study to find moderating effects of the family influence performance relationship. For firm type and firm size, we found that the positive performance effect of family influence is rather prevalent in public firms compared to private ones and large

Table 2.5: Results for robustness check with study-level random effects

	Pearson correlations									Partial correlations								
	k	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*	*k*	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*
Overall	2,513	918	7,039,889	.015***	.002	.010;.020	-.087;.117	91.1%		1,702	416	10,277,978	.031***	.005	.022;.041	-.135;.198	98.4%	
Type of firm																		
Public	2,072	745	1,075,380	.016***	.003	.011;.021	-.091;.123	68.5%	*Ref. cat.*	1,360	329	680,933	.040***	.006	.028;.052	-.136;.217	85.0%	*Ref. cat.*
Publ. & priv.	213	64	2,641,411	.023***	.007	.009;.037	-.060;.106	96.7%	.93	203	51	5,441,805	.023***	.008	.007;.038	-.094;.139	99.2%	1.75*
Private	228	113	3,323,098	.007	.006	-.005;.018	-.088;.101	97.5%	1.39	139	44	4,155,240	-.009	.011	-.031;.013	-.128;.111	99.3%	3.87***
Firm size																		
Small	146	66	2,590,533	.017***	.006	.005;.029	-.045;.079	94.6%	.38	146	40	2,210,884	-.002	.013	-.028;.024	-.138;.134	99.0%	2.62***
Large	2,367	855	4,449,356	.015***	.002	.010;.020	-.090;.120	88.1%		1,556	384	8,067,094	.035***	.005	.025;.046	-.134;.204	98.1%	
Hofstede																		
Individualism																		
Low	1,048	392	491,605	.002	.004	-.006;.010	-.115;.119	70.0%	4.58***	599	173	314,485	.031***	.009	.014;.048	-.152;.214	86.5%	.05
High	1,178	413	5,172,137	.025***	.003	.019;.031	-.068;.117	92.7%		934	200	6,280,242	.030***	.007	.016;.044	-.133;.193	98.5%	
Power distance																		
Low	925	324	4,992,348	.028***	.003	.021;.034	-.063;.118	93.6%	4.81***	753	159	6,189,015	.034***	.007	.019;.049	-.123;.191	98.6%	.49
High	1,304	482	671,394	.004	.004	-.003;.011	-.109;.118	70.8%		780	214	405,712	.029***	.008	.013;.044	-.156;.213	86.6%	
Masculinity																		
Low	981	374	4,577,973	-.003	.004	-.010;.004	-.098;.092	93.3%	6.48***	765	175	5,390,689	.014*	.008	-.002;.030	-.168;.196	98.8%	2.85***
High	1,245	431	1,085,769	.029***	.003	.022;.035	-.075;.132	76.8%		768	198	1,204,038	.045***	.007	.031;.059	-.109;.198	89.8%	
Uncertainty avoidance																		
Low	964	378	4,934,945	.019***	.003	.012;.025	-.078;.116	94.1%	1.74*	661	161	5,422,702	.022***	.007	.008;.036	-.131;.175	98.6%	1.40
High	1,262	426	728,797	.010***	.004	.003;.017	-.100;.121	72.0%		872	211	1,172,025	.037***	.008	.022;.053	-.149;.223	91.5%	
Long-term orientation																		
Low	1,151	441	4,974,556	.008**	.003	.001;.014	-.090;.105	93.2%	2.87***	819	203	5,410,579	.026***	.008	.010;.042	-.156;.208	98.7%	1.26
High	1,122	389	695,379	.022***	.004	.015;.029	-.088;.132	73.3%		759	180	1,188,950	.040***	.007	.025;.054	-.122;.201	90.6%	
Indulgence																		
Low	1,363	485	736,798	.013***	.003	.006;.019	-.100;.125	71.4%	.68	851	212	1,140,779	.034***	.008	.019;.049	-.142;.210	90.3%	.32
High	911	344	4,933,192	.016***	.004	.009;.023	-.078;.110	94.1%		731	172	5,459,154	.030***	.008	.015;.046	-.140;.201	98.7%	

Table 2.5 continues on the next page

Table 2.5: (continued)

	Pearson correlations									Partial correlations								
	k	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*	*k*	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*
GLOBE																		
Institutional collectivism																		
Low	1,163	416	965,155	.019***	.003	.013;.026	-.080;.118	73.9%	1.43	797	188	1,053,296	.040***	.008	.025;.055	-.124;.203	87.5%	1.78*
High	845	323	486,769	.012***	.004	.004;.020	-.102;.125	72.9%		547	148	444,281	.020***	.008	.005;.036	-.136;.177	87.8%	
In-group collectivism																		
Low	1,049	350	975,837	.034***	.003	.027;.041	-.069;.138	77.7%	7.53***	763	173	1,204,375	.037***	.007	.022;.051	-.121;.194	90.3%	1.08
High	959	389	476,087	-.003	.003	-.009;.004	-.097;.091	61.6%		581	163	293,202	.025***	.008	.009;.041	-.142;.191	83.5%	
Power distance																		
Low	890	300	878,154	.029***	.004	.022;.036	-.074;.132	78.3%	4.73***	577	131	438,616	.035***	.008	.019;.050	-.113;.182	85.7%	.46
High	1,118	439	573,770	.005	.004	-.002;.012	-.096;.107	65.8%		767	204	1,058,961	.029***	.008	.015;.044	-.144;.203	89.2%	
Gender egalitarianism																		
Low	1,502	548	1,237,819	.017***	.003	.011;.023	-.093;.127	78.0%	.55	890	227	1,219,748	.035***	.006	.023;.048	-.116;.187	88.4%	1.03
High	506	191	214,105	.014***	.005	.005;.023	-.067;.095	49.7%		454	111	277,829	.023**	.010	.003;.043	-.159;.205	87.9%	
Uncertainty avoidance																		
Low	1,070	400	967,573	.019***	.004	.012;.026	-.092;.130	79.4%	1.26	591	171	354,729	.029***	.007	.015;.044	-.123;.182	83.6%	.26
High	938	343	484,351	.012***	.004	.005;.020	-.084;.109	63.5%		753	166	1,142,848	.032***	.008	.017;.048	-.137;.201	90.6%	
Future orientation																		
Low	569	217	341,809	.011**	.005	.001;.020	-.089;.111	68.5%	1.30	396	103	180,509	.030***	.010	.010;.049	-.144;.201	83.2%	.22
High	1,439	523	1,110,115	.018***	.003	.012;.024	-.088;.124	73.4%		948	233	1,317,068	.032***	.007	.019;.045	-.125;.190	89.9%	
Humane orientation																		
Low	779	287	405,247	.013***	.004	.005;.021	-.084;.110	63.9%	1.01	684	157	1,071,001	.037***	.008	.020;.053	-.132;.205	90.1%	.87
High	1,229	451	1,046,677	.017***	.003	.012;.024	-.091;.126	77.9%		660	179	426,576	.027***	.007	.013;.041	-.129;.183	85.1%	
Performance orientation																		
Low	524	203	260,222	.004	.005	-.006;.013	-.083;.090	57.2%	2.77***	415	108	241,583	.032***	.011	.011;.053	-.158;.222	88.2%	.07
High	1,484	536	1,191,702	.020***	.003	.014;.026	-.088;.128	76.8%		929	228	1,255,994	.031***	.006	.018;.044	-.121;.182	88.5%	
Assertiveness																		
Low	1,027	379	576,142	.016***	.004	.009;.024	-.095;.128	71.8%	.18	556	156	307,255	.026***	.008	.011;.041	-.139;.191	84.1%	.97
High	981	363	875,782	.016***	.003	.009;.022	-.083;.114	74.7%		788	180	1,190,322	.031***	.008	.021;.052	-.121;.194	90.3%	

Table 2.5 continues on the next page

Table 2.5: (continued)

	Pearson correlations									Partial correlations								
	k	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*	*k*	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*
Family definition																		
Own. dum.	683	322	3,644,065	.012***	.004	.004;.019	-.084;.108	94.2%	*Ref. cat.*	576	181	4,023,333	.033***	.007	.019;.048	-.127;.194	98.5%	*Ref. cat.*
Own. perc.	500	258	798,493	.024***	.004	.016;.033	-.071;.120	82.1%	2.16**	279	102	1,358,401	.057***	.011	.036;.078	-.114;.229	97.9%	1.83*
Managem.	383	181	1,429,089	.014***	.005	.004;.025	-.092;.121	89.1%	.40	349	115	2,064,597	.028***	.011	.007;.048	-.148;.203	98.4%	.46
Control	198	91	122,566	.011	.008	-.005;.027	-.092;.114	70.9%	.08	148	60	580,687	.016	.013	-.009;.041	-.133;.165	95.8%	1.19
Strong infl.	414	171	763,876	.021***	.005	.010;.031	-.079;.120	84.8%	1.36	180	64	2,045,892	.036**	.015	.007;.064	-.147;.219	99.1%	.14
Undef. infl.	337	158	275,665	.020***	.006	.008;.032	-.096;.136	80.0%	1.18	158	60	189,851	.041***	.014	.014;.068	-.123;.205	91.9%	.49
Succession	1	1	5,334	.043***	.014	.017;.070	.021;.066	0.00%	1.98**	4	2	10,054	-.084	.059	-.201;.032	-.247;.079	92.2%	1.97**
Self-reported	14	6	9,375	-.039	.030	-.098;.020	-.151;.073	80.0%	1.67*	5	2	3,241	-.033	.076	-.182;.116	-.245;.180	26.0%	.87
Generation																		
No specific.	2,307	896	6,838,089	.014***	.002	.010;.019	-.087;.115	91.3%	*Ref. cat.*	1,407	393	10,103,953	.031***	.005	.021;.041	-.136;.198	98.6%	*Ref. cat.*
Founder gen.	130	59	150,224	.039***	.009	.022;.056	-.066;.143	80.4%	2.70***	156	60	85,655	.069***	.014	.041;.098	-.110;.249	86.3%	2.49**
Later gen.	76	34	51,576	-.002	.011	-.023;.018	-.096;.091	67.6%	1.53	139	42	88,370	.036**	.015	.007;.065	-.118;.190	84.3%	.32
Measures of performance																		
Acc. meas.	1,692	793	6,553,058	.020***	.003	.015;.025	-.074;.114	92.2%	*Ref. cat.*	957	297	7,862,335	.038***	.006	.026;.052	-.128;.205	98.8%	*Ref. cat.*
ROA	937	602	3,903,193	.029***	.003	.023;.036	-.071;.130	93.1%		595	234	3,581,935	.053***	.007	.039;.066	-.103;.209	98.1%	
ROE	271	160	759,939	.020***	.005	.010;.029	-.040;.079	75.1%		172	68	1,716,874	.040***	.013	.014;.067	-.123;.203	98.9%	
ROS	117	71	504,006	.015	.010	-.004;.034	-.092;.123	92.3%		52	26	1,230,553	.023***	.006	.011;.034	-.003;.048	80.9%	
Sales gr.	295	192	1,096,542	.006	.004	-.002;.014	-.062;.074	84.8%		68	30	2,307,128	-.009	.015	-.038;.021	-.128;.111	99.4%	
Product.	24	13	284,468	-.059***	.021	-.101;-.018	-.181;.062	96.2%		49	18	84,642	-.046**	.023	-.090;-.001	-.195;.103	92.7%	
Other acc.	62	38	28,053	.028**	.011	.006;.050	-.048;.104	46.4%		41	17	32,882	.019	.024	-.028;.065	-.141;.178	86.5%	
Mark. meas.	805	457	463,341	.005	.004	-.003;.013	-.108;.118	72.8%	3.12***	721	263	422,779	.023***	.007	.010;.037	-.147;.193	86.0%	1.59
Q/MTB	659	406	393,869	.004	.004	-.004;.013	-.116;.124	75.7%		594	231	339,407	.018**	.008	.003;.033	-.156;.192	86.2%	
Stock ret.	128	85	65,276	.015***	.005	.006;.025	-.023;.053	20.1%		118	46	82,321	.046***	.016	.016;.077	-.104;.197	84.4%	
Other mark.	24	20	5,459	-.034**	.020	-.072;.004	-.129;.061	39.3%		9	6	1,051	.048	.061	-.072;.168	-.206;.303	68.8%	
Article source																		
Published	1,784	703	1,327,311	.013***	.003	.008;.018	-.087;.113	72.7%	1.71*	1,062	293	1,462,789	.030***	.006	.018;.043	-.141;.201	91.8%	.46
Unpublished	729	215	5,712,578	.021***	.004	.013;.030	-.082;.125	96.7%		640	123	8,815,189	.035***	.008	.019;.051	-.119;.188	99.2%	

Table 2.5 continues on the next page

Table 2.5: (continued)

	Pearson correlations									Partial correlations								
	k	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*	*k*	*s*	*n*	*r*	*SE*	*95% CI*	*90% CrI*	I^2	*z-test*
Year of publication																		
Before 2000	21	13	7,224	.018	.020	-.021;.057	-.068;.104	40.2%	*Ref. cat.*	41	13	10,735	.007	.038	-.068;.081	-.208;.221	80.0%	*Ref. cat.*
2000-2004	83	34	28,555	.033**	.015	.004;.062	-.112;.178	71.8%	.61	95	32	51,486	.013	.016	-.019;.044	-.138;.163	80.8%	.15
2005-2009	466	156	269,624	.019***	.006	.007;.031	-.089;.127	70.4%	.05	611	113	348,073	.034***	.009	.017;.052	-.119;.188	82.9%	.72
2010-2014	842	295	3,618,309	.014***	.004	.006;.022	-.092;.120	93.7%	.19	552	133	4,641,298	.040***	.009	.023;.058	-.127;.207	98.8%	.87
2015-2019	1,096	417	3,114,836	.013***	.003	.007;.020	-.082;.108	90.1%	.23	403	125	5,226,386	.025**	.010	.006;.045	-.153;.204	99.3%	.48
Journal importance																		
Low	401	176	191,380	.008	.006	-.004;.019	-.091;.106	62.4%	*Ref. cat.*	157	59	49,486	.038**	.018	.003;.073	-.178;.254	83.5%	*Ref. cat.*
High	1,044	401	944,171	.018***	.003	.012;.025	-.078;.115	74.4%	1.62	697	175	1,298,898	.034***	.007	.020;.049	-.118;.186	91.7%	.19
No h-index	339	126	191,760	.000	.007	-.014;.015	-.116;.117	73.3%	.77	208	59	114,405	.006	.016	-.025;.037	-.199;.211	89.1%	1.36
Journal field																		
FB/Entr.	219	119	433,669	.012**	.006	.000;.024	-.084;.108	77.3%	*Ref. cat.*	228	48	838,213	.024*	.013	-.002;.049	-.133;.181	90.2%	*Ref. cat.*
Fin./Econ.	428	161	296,359	.013**	.005	.002;.023	-.085;.111	70.7%	.05	450	104	414,282	.021**	.010	.002;.040	-.135;.177	89.0%	.21
Accounting	197	94	124,907	.015**	.006	.002;.027	-.070;.100	62.2%	.28	65	19	49,678	.036	.027	-.016;.088	-.144;.215	88.7%	.40
Gen. man.	446	176	237,351	.014**	.006	.002;.025	-.094;.122	68.9%	.17	188	70	80,687	.053***	.015	.024;.082	-.139;.245	84.9%	1.48
Int. bus.	54	25	23,789	.011	.016	-.019;.042	-.095;.118	62.9%	.05	9	6	4,222	-.067**	.029	-.123;-.010	-.161;.027	43.0%	2.88***
Corp. gov.	225	88	122,262	.013	.009	-.004;.030	-.101;.126	71.6%	.05	64	27	51,377	.058***	.021	.017;.100	-.121;.237	87.6%	1.38
HRM/Organ.	55	12	40,826	-.015	.020	-.054;.024	-.121;.090	73.0%	1.32	9	2	4,487	-.077**	.031	-.138;-.017	-.219;.065	76.2%	3.02***
Other field	60	28	48,148	.020	.014	-.008;.048	-.075;.114	67.7%	.48	49	17	19,843	.013	.039	-.064;.090	-.239;.265	89.2%	.27

Notes: *k* = number of effect sizes; *s* = number of studies; *n* = number of firms; *r* = mean effect size; *SE* = standard error of the mean effect size; *95% CI* = 95% confidence interval; *90% CrI* = 90% credibility interval; I^2 = ; *z-test* = test statistic of the z-test for group differences; significance levels denoted by asterisks, *** 1%, ** 5%, and * 10%.

ones compared to small ones. These results support the originally stated hypotheses and the findings of previous literature reviews (Stewart & Hitt, 2012), as well as the meta-analytic results of Wagner et al. (2015). Higher governance and disclosure requirements, which result from a public listing, seem to tame expropriation activities of controlling family shareholders, at least in well-regulated markets (Schulze et al., 2003). Lower agency conflicts, long-term commitment, and tacit knowledge of the family can thus result in superior performance outcomes. In small, private, and less professional family firms, on the other hand, noneconomic goals may have a higher priority and reduce positive performance effects of family influence.

A country's culture is also likely to influence family firm performance outcomes. Contrary to the hypotheses of OBPR, we found no indications for a better performance of family firms in countries where the society-level culture and organizational-level culture ascribed to family firms coincide. Rather, we found higher performance effects in individualistic and less power-distant countries. Therefore, we posit that it is not a high society-level and organizational-level cultural fit that has beneficial performance outcomes for family firms, but rather that higher performance outcomes could be more true for a low cultural fit under certain conditions. Specifically, we found that family firm performance is better in countries with low in-group collectivism (GLOBE) and a high level of individualism (Hofstede). In the sense that family firms are known to offer more cooperative work environments, they might be able to create a collectivistic firm culture, which can in turn be a unique resource and a stronger competitive advantage in highly individual-oriented countries (Block et al., 2019; Zahra et al., 2004). On the other hand, we also found higher performance outcomes in long-term oriented countries, which would indeed indicate positive effects of a high society- and organizational-level fit on family firm performance. This finding is in accordance with Duran et al. (2019), who tested the impact of long-term orientation on family firm performance in emerging markets in a multivariate setting. A reason for the different findings compared to the OBPR study with regard to country culture might be the increase in empirical studies in developing countries during the last decade. As shown in Table 2.2, our analyses incorporated a significant number of observations from emerging markets such as India, Malaysia and Pakistan, whereas the original study largely concentrated on Western economies. The higher number of emerging market observations increased the variance of observed variable values and allowed a more powerful investigation of country-level variables on family firm performance.

Furthermore, we highlight the importance of the family firm and financial performance variables chosen. Similar to Wagner et al. (2015) we found higher mean effect sizes for family ownership compared to family management or governance.

We also extended the original study by considering the generational stage of family firms and found significantly higher mean effect sizes for first-generation / founder firms. These findings support critical voices to differentiate between (lone) founder and real family firms (Miller et al., 2007; Villalonga & Amit, 2006). Miller et al. (2011) argue that the identities of both groups are clearly different from each other in the sense that lone founders follow an entrepreneurial orientation focused on growth and wealth accumulation, whereas successors must fill the role as family nurturers and preservers of family needs. Furthermore, the different stage of both firm types in the firm life cycle may have a significant impact on the performance outcomes and thus bias observed effects if too many founder firms are assigned to the group of family firms. Implications arise also from the findings of significantly higher mean effect sizes for accounting performance measures compared to market performance measures, especially in combination with the findings from the firm type analyses. Whereas the analyses of accounting measures include public and private firms, the analyses of market measures are limited solely to listed firms. Excluding private firms, which show no outperformance overall, the difference between accounting and market measures would be even larger. If listed family firms are on the one hand more profitable than their competitors but are not valued to the same extent by investors on the other hand, there must be devaluating attributes that offset profitability advantages if one assumes the efficiency of stock markets.
Finally, contrary to other fields in strategic management (Harrison et al., 2017), we did not find a systematic publication bias. We found higher mean effect sizes for unpublished studies compared to published studies. There is also no bias in family business journals towards exclusively positive performance effects compared to other fields. The observed mean effect sizes were either similar or smaller than in other fields that include family firm variables in their studies regularly.

2.5.2 Future directions

Our study is the most comprehensive meta-analysis on family firm performance to date and summarizes performance effects that have been debated for a long time in the academic literature. However, it also leaves some questions open for future research.
First, as stated previously, we recommend investigating performance-influencing circumstances and conditions in the future rather than comparing general performance differences between family and non-family firms. Although significant, we do not consider our effect sizes large enough to attribute family firms as generally having better performance. Recent calls highlight the importance of family heterogeneity on firm outcomes as an important future research direction, including facets such as family structures, functions, values, goals, interactions, and

events (Jaskiewicz & Dyer, 2017; Neubaum et al., 2019; Payne, 2018). Also meta-analyses so far typically compared family firms to non-family firms but did not investigate performance effects within the group of family firms, such as top-management team composition or family goals. Investigating family (firm) heterogeneity could also help to disentangle the performance outcomes found in our study between private and listed or small and large family firms. Possible reasons could be different firm governance structures, professionalization efforts, family dynamics, or leadership styles (Dyer, 2018). In a recent study, Miller et al. (2018), for example, examine the conformity to industry norms and find that listed firms are more likely to show and benefit in terms of performance from a high level of conformity, whereas private firms can also benefit from a low level of conformity as a sign of distinctiveness.

Next, we identify the interplay of country culture and family firm characteristics, and the resulting firm outcomes as a promising future research direction. Whereas the influence of formal institutions has been studied intensively in recent years (Soleimanof et al., 2018), relatively little is known about the influence of a country's culture on family firm performance. Duran et al. (2019) made a first attempt to investigate the impact of country institutions on family firm performance in a multivariate meta-analysis. In addition to the impact of formal institutions, they examined the impact of long-term orientation, collectivism, and interpersonal trust as informal enabling institutions. However, they only concentrated on emerging markets and therefore call for further research to explore the institutional embeddedness perspective with regard to family firms in other countries.

Finally, our results highlighted the performance differences of family firms between accounting and market performance measures. While listed family firms seem to be slightly more profitable than their competitors, they do not excel in terms of market valuation. Previous studies identified control-enhancing mechanisms such as dual share classes, pyramids, cross-holdings, or voting agreements as value-decreasing for family firms (King & Santor, 2008; Villalonga & Amit, 2006). However, less is known about the impact of investor perceptions on family firm valuations. Recent studies by Lude and Prügl (2019) and Santiago et al. (2019) investigate the perceptions and investment decisions of nonprofessional investors and find that a high firm reputation, perceived longevity and perceived trust affect nonprofessionals' investment decisions towards family firms. However, more research on the valuation mechanisms of professional investors is needed.

2.6 Conclusion

In sum, our replication of O'Boyle et al.'s (2012) meta-analysis on family firm performance revealed, on average, an economically small positive impact of fam-

ily involvement on firm performance. Our results are based on the most comprehensive meta-analytic sample of 1,095 empirical studies on family firm performance so far. We found evidence for stronger performance effects in listed and large firms, and in terms of accounting measures rather than market measures. We further examined the impact of country culture, measured by the Hofstede and GLOBE dimensions, on family firm performance and found inter alia stronger performance effects in individualistic and low power-distant countries.

Chapter 3

Family firm performance over the business cycle

Abstract. *The financial performance of family firms has been widely studied in the literature. Combining the results of 155 primary studies from 35 countries with data about business cycles, we investigate how family firm performance changes over the business cycle. Using meta-analytic estimation methods, we find that family firms slightly outperform non-family firms in developed markets, irrespective of economic circumstances. With regard to the business cycle, we find evidence for a pro-cyclical effect in which the relative performance of family firms is lower in economically difficult times. Our study extends the literature on how family firm performance depends on macroeconomic factors.*[10]

[10]This chapter is based on Hansen et al. (2020).

3.1 Introduction

Research on business cycles and their impact on individuals, firms and markets is a topic of high academic and practical relevance and has led to a significant number of publications (Bernanke & Gertler, 1989; Giuliano & Spilimbergo, 2014; Koellinger & Thurik, 2012; Malmendier & Nagel, 2011; Mascarenhas & Aaker, 1989). It has been shown that countries, industries, and firms differ in their sensitivity to (global) business cycles and economic shocks (Braun & Larrain, 2005; Cerra & Saxena, 2008; Claessens et al., 2010; Gertler & Gilchrist, 1994; Groot et al., 2011; Kose et al., 2003; Stock & Watson, 1999). Our study is about the relationship between business cycles and family firms. In particular, we investigate in a meta-analysis how the performance of family firms changes over the business cycle. Even though family firms are the most widespread firm type around the world (Aminadav & Papaioannou, 2020; Claessens et al., 2000; Faccio & Lang, 2002; La Porta et al., 1999), knowledge on this relationship is limited and restricted to a few crisis periods such as the recent financial crisis (e.g., Baek et al., 2004; Lins et al., 2013; Minichilli et al., 2016). A broader and more detailed understanding of how business cycles and family firm performance interact helps policy makers to predict the short- and long-term effects of recession and boom periods for the economy and further development of their country. For example, if it turns out that family firms compared to other firms are more strongly affected by business cycles, countries with a high proportion of family firms are also relatively stronger affected by recessions compared to other countries.

The performance of family firms is widely studied in the literature, and several meta-analyses have been devoted to this topic. O'Boyle et al. (2012) were the first to examine family firm performance with regard to methodical, conceptual, and cultural moderators in a univariate setting and find no relationship between family firms and financial performance. Wagner et al. (2015) replicate their study with a larger sample of studies and find an economically weak but statistically significant outperformance, especially for publicly listed and large firms. Taras et al. (2018) confirm the result of a positive family firm performance relationship in their meta-analysis on publicly listed firms. The same holds for the study of Van Essen et al. (2015a), who concentrate solely on publicly listed US firms. They methodically extend the previous studies further by conducting meta-regressions and meta-analytic structural equation modeling (Cheung & Chan, 2005). In the same manner, Carney et al. (2015) test the family firm-performance relationship for private firms but find no outperformance. Finally, Wang and Shailer (2017) concentrate on family firm performance in emerging markets and find outperformance compared to non-family firms. Duran et al. (2019) deepen the understanding of this relationship and investigate the influence of varying formal and informal institutions across emerging markets. Our study sheds new light on this issue by

conducting a meta-analysis investigating how family firm performance changes over the business cycle. This question is not trivial, as theory is unclear about the direction of business cycle effects on family firm performance.

On the one hand, family firms typically have a strong alignment of interests between shareholders and executives, leading to a strong long-term orientation (Kappes & Schmid, 2013; Lumpkin & Brigham, 2011), low debt levels (Mishra & McConaughy, 1999; Schmid, 2013), fast and flexible decision-making (Anderson & Reeb, 2003a), and cautious investment strategies (Block, 2012; Chrisman & Patel, 2012). These characteristics place family firms in a good position to overcome external profitability shocks and would speak in favor of countercyclical effects, where the relative performance of family versus non-family firms is stronger in economically difficult versus economically good times.

On the other hand, family firms are also shown to focus on noneconomic goals such as family tradition (Jaskiewicz et al., 2015), dynastic control (Gomez-Mejia et al., 2007), and family and firm reputation (Berrone et al., 2010; Deephouse & Jaskiewicz, 2013). Pursuing such noneconomic goals in crisis times can lead family firms to avoid the necessary job cuts and adjustments to their business model (Bassanini et al., 2013; Bjuggren, 2015; Block, 2010). Moreover, in some family firms, dominant (family) shareholders are in a strong position to extract private benefits of control through pyramid structures (Almeida & Wolfenzon, 2006), a separation of control and cash flow rights (Claessens et al., 2000), and cross-shareholdings (Morck et al., 2005). In crisis times, when the wealth of the business-owning family may be at stake, family owners may be tempted to extract resources from the firm, harming firm performance. This situation becomes reinforced as the wealth of business-owning families is typically undiversified and highly concentrated in the firm (Anderson & Reeb, 2003b). Overall, these arguments would suggest a pro-cyclical effect where the relative performance of family versus non-family firms is stronger in economically good versus economically difficult times.

To investigate business cycle effects on family firm performance, we conducted a meta-analysis covering 155 primary studies and 528 effect sizes from 35 countries. We further subdivide our sample according to OECD member status and a classification of worldwide governance systems to investigate a potential influence of the institutional setting. Based on univariate meta-analytic investigations, our results show a positive relationship between family firms and firm performance in Anglo-American and Continental European countries, but not in emerging markets, without controlling for the current economic situation. Moreover, our multivariate analyses reveal a positive impact of GDP growth on family firm performance, suggesting a pro-cyclical effect of relatively stronger financial performance in economically good times and relatively weaker financial performance

in economically difficult times. Further sensitivity analyses show that this effect holds especially for accounting-based performance measures. We find also notable differences between different country types and governance systems. On the one hand, we find pro-cyclical performance effects for Anglo-American countries and emerging markets. On the other hand, we do not find any sensitivity of family firm performance with regard to the business cycle in Continental European countries. With these results, our study brings together ambiguous findings from previous primary studies and extends the literature on how family firm behavior and performance depend on macroeconomic factors such as business cycles (e.g., Bjuggren, 2015; Lins et al., 2013).
The remainder of our study is structured as follows. Section 3.2 reviews the literature on family firm performance with regard to the macroeconomic environment. Section 3.3 introduces the sample and the methods and variables used in our study. Section 3.4 reports the results of our empirical analysis. Section 3.5 concludes with a discussion of our results with respect to previous findings in the academic literature and a reflection on potential limitations of our study.

3.2 Literature review

Several studies investigated the relative performance of family firms with regard to the overall macroeconomic environment, especially in times of economic distress compared to times of stability and growth (e.g., Baek et al., 2004; Lins et al., 2013; Minichilli et al., 2016). In the last two decades, the Asian crisis in 1997/1998 and the Global Financial Crisis from 2007 to 2009 were two ideal settings for an empirical investigation. Typically, those studies compared the relative performance of family firms in times of the crises with a previous or subsequent period. However, no study to date has examined family firm performance with regard to macroeconomic circumstances over several business cycles. Furthermore, the findings of the studies on financial crises are ambiguous.
The first studies investigating the performance of family firms with regard to the business cycle were conducted in the aftermath of the Asian crisis. Investigating 644 Korean firms in the Asian crisis 1997/1998, Baek et al. (2004) find that Chaebol firms with concentrated ownership by controlling family shareholders experience a larger drop in their equity value compared to firms with foreign investors or firms with a higher disclosure quality. Lemmon and Lins (2003) find a lower stock return by 12 percentage points during the East Asian financial crisis for firms in which managers and their families separate control and cash flow rights through pyramid ownership structures compared to other firms. In contrast, Allouche et al. (2008) find better performance in terms of profitability for family firms in Japan during the Asian crisis, and Amann and Jaussaud (2012) find

that family firms resist the downturn better, recover faster, and continue to exhibit higher performance over time.

Those studies that find inferior performance of family firms during the Asian crises argue mainly about agency problems resulting from corporate governance characteristics inherent in those countries. Because the major part of the owner families' wealth, not only in Asia, is typically concentrated in the firm, they are less diversified than other investors, which makes them more vulnerable to profitability shocks (Anderson & Reeb, 2003b). In these situations, the survival of the family's economic interests becomes central and, as a result, family firms cut investments even in healthier group firms to ensure the survival of the whole empire, which in turn reinforces the lower overall performance even more (Lins et al., 2013). Furthermore, Attig et al. (2016) show that family firms pay less dividends and that they use retained earnings mainly for the extraction of private benefits. Becoming aware of these expropriation activities, investors lose their confidence and adjust the amount of capital they are willing to provide (Johnson et al., 2000). Consequently, they require a higher risk premium for capital provision after recession periods (Boubakri et al., 2010). Although these agency problems during recession periods can lead to worse performance of family firms, and minority investors become aware of expropriation risks, Bae et al. (2012) find better performance for those firms during the recovery period. They argue that as the economy recovers, controlling shareholders can benefit more from profitable firm investments than from expropriation strategies. With limited resources for investments because of a more severe asset diversion before the recovery period, those firms have to limit themselves to only the most profitable projects and therefore show better performance. This point holds for market measures and for accounting measures. In addition to the expropriation hypothesis, Bae et al. (2012) find additional although weaker evidence for explanations based on market overreactions and beta. They furthermore relate their results to the findings of Friedman et al. (2003), who state that family group firms not only can expropriate minority shareholders through tunneling but also can use their private resources to provide affiliated firms with capital quickly in economic upswings ("propping"). In the economically stable times before the Asian crisis, (especially international) investors potentially ignored the weaknesses of East Asian countries' governance systems and provided capital to profitable investment opportunities in a liberalizing market (Rajan & Zingales, 1998).

In the same manner, Lins et al. (2013) find that family firms perform significantly worse compared to non-family firms in terms of stock returns in the last worldwide financial crisis 2008/2009. Similarly to Baek et al. (2004), they argue that the preservation of private benefits of control becomes central in economic crises and that these actions are at the cost of minority shareholders. Specifically, Lins et

al. (2013) find that family-controlled firms reduce their investments more strongly than non-family firms do, which in turn negatively affects their stock prices. Furthermore, family business groups reduce investments in relatively healthy group firms to help firms hit strongly by the crisis.
On the other hand, Van Essen et al. (2015b) observe outperformance of family firms in terms of stock prices during the crisis for a sample of European firms. Correspondingly, Minichilli et al. (2016) observe outperformance in terms of profitability for family firms in Italy during the crisis, but not before. While Van Essen et al. (2015b) argue that the long-term orientation of family firms leads to relative outperformance during economic crises, Minichilli et al. (2016) posit that family firms become more risk-seeking when their socioemotional wealth is at stake and make consistent use of their superior credit from outside stakeholders. Accordingly, Stacchini and Degasperi (2015) find that family firms benefit from a loan interest-rate discount during the financial crisis, especially in regions with a low level of interpersonal trust. Additionally, family firms become less subject to credit restrictions during crises Crespí-Cladera and Martín-Oliver (2015), D'Aurizio et al. (2015). In a recent study, Casillas et al. (2019) show furthermore that family firms increase the intensity of retrenchment strategies more than non-family firms do during economic downswings, and even more when their survival is threatened.
For US firms, Zhou et al. (2017) show that among S&P 500 firms, only founder firms have a higher profitability during the financial crisis, while later-generation family firms are not distinguishable from non-family firms. They argue that, when under financial pressure, founder firms invest less in risky projects and thus have higher short-term earnings during a crisis. Kashmiri and Mahajan (2014) compare the financial performance of family and non-family firms for seven recession periods in the United States between 1970 and 2008. They find that family firms have a higher Tobin's Q in general and even higher during recessions; they argue that this positive effect stems inter alia from a more proactive marketing behavior during recessions. Finally, Villalonga and Amit (2010) find that US family firms are less sensitive to positive and to negative profit shocks.

3.3 Data and methods

3.3.1 Sample and coding

Conducting our meta-analysis, we followed the reporting guidelines for meta-analyses in economics (Stanley et al., 2013). We followed five search strategies to build upon our study sample. First, we identified new or unrecognized primary studies by tracking recently published meta-analyses (Arregle et al., 2017; Carney et al., 2015; Duran et al., 2016; Taras et al., 2018; Van Essen et al.,

2015a; Wang & Shailer, 2017). Second, we explored the electronic databases Google Scholar, JSTOR, EBSCOhost, SSRN, and China National Knowledge Infrastructure (CNKI) using various search terms and their combinations.[11] Third, we browsed notable journals that publish articles in the research field of family businesses.[12] Fourth, we corresponded with authors who participated in leading family business conferences and asked them to send us their working papers. Finally, we contacted authors whose articles include family firm variables and financial performance variables in an effort to fill in missing variables.

The literature search and coding resulted in a total sample of 1,458 primary studies measuring the focal effect between family firms and financial performance. We included articles published in scientific journals, working papers, doctoral dissertations and student theses to address publication bias (Sutton, 2009). Furthermore, we did not limit our sample to studies published in English; we also included studies published in Chinese, French, German or Spanish.[13] If two or more studies used the same dataset, we ensured that they used different family firm definitions or financial performance measures to avoid double entries of the same effect size in our dataset. For a straightforward match of macroeconomic variables with yearly data, the final sample was limited to those studies that reported effect sizes for single years and single countries.[14] Excluding studies that reported effect sizes based on panel datasets led to a sample of 155 published articles, working papers, and theses with 528 effect sizes. Table 3.1 shows the distribution of studies and observations across the 35 countries included in the sample. Appendix A.1 lists all studies included in the sample.

[11] These search terms are family, family firm, family business, family management, family ownership, family succession, financial performance, firm performance, corporate governance, block holder, ownership structure.

[12] These journals are Academy of Management Journal, Corporate Governance: An International Review, Entrepreneurship Theory and Practice, Family Business Review, Journal of Business Venturing, Journal of Corporate Finance, Journal of Family Business Strategy, Strategic Management Journal.

[13] Members of the author team have language skills in German, French and/or Spanish. The studies published in the CNKI and in the Chinese language were searched and coded by a Chinese PhD student.

[14] If primary studies use a panel dataset and report effect sizes for the entire observation period, we are not able to identify the yearly effect of the economic climate on family firm performance. Consequently, we exclude these studies. Calculating average values for the independent variables would be inappropriate since this procedure ignores fluctuations and postulates a constant relationship between economic climate and family firm performance. This problem becomes more severe with the length of the observed time period of the primary study and if the study contains years of extreme growth or recessions.

Table 3.1: Sample composition by country

	No. study samples	No. effect sizes		No. study samples	No. effect sizes
Anglo-American Governance System			***Emerging / Transition Economies***		
Australia^{OECD}	3	6	Bangladesh	1	2
Canada^{OECD}	1	4	Brazil	4	14
United States^{OECD}	20	66	China	8	16
	24	**76**	Czech Rep.^{OECD}	2	20
			Egypt	1	1
Continental European Governance System			Hong Kong	8	25
Austria^{OECD}	1	2	Hungary^{OECD}	1	2
Belgium^{OECD}	7	35	India	6	9
Finland^{OECD}	3	7	Indonesia	9	25
France^{OECD}	5	10	Kuwait	1	2
Germany^{OECD}	11	49	Malaysia	16	41
Italy^{OECD}	10	31	Pakistan	1	10
Japan^{OECD}	3	30	Poland^{OECD}	1	4
Netherlands^{OECD}	1	1	Singapore	1	3
Norway^{OECD}	6	14	South Korea^{OECD}	3	5
Portugal^{OECD}	1	6	Sri Lanka	1	2
Spain^{OECD}	11	42	Taiwan	3	20
Sweden^{OECD}	3	4	Thailand	1	2
Switzerland^{OECD}	2	9	Turkey^{OECD}	2	9
	64	**240**		**70**	**212**

This table reports the number of samples and effect sizes by country. Countries are divided by the respective governance system. Countries labeled with ^{OECD} are OECD member countries. The number of studies included and the number of study samples deviates due to the inclusion of multiple countries in some studies.

3.3.2 Effect size measure

Following previous meta-analyses in management, finance and economics (e.g., Fidrmuc & Korhonen, 2018; Klier et al., 2017; Pérez-Calero et al., 2019), we included Pearson's r and statistics that can be transformed into r, such as descriptive statistics or t-test statistics (Lipsey & Wilson, 2001).[15] We transformed all raw correlations by Fisher's Z transformation to correct for skewness in the effect

[15]Descriptive statistics can be transformed to r by the following: $r = \frac{(\overline{x}_1 - \overline{x}_2)/s_{pooled}}{\sqrt{((\overline{x}_1 - \overline{x}_2)/s_{pooled})^2 + 1/p(1-p)}}$, where $\overline{x}_1$ and $\overline{x}_2$ are the group means, s_{pooled} is the pooled standard deviation, and p is the proportion of the total sample in one of the two groups. T-tests can be transformed to r by the following: $r = \frac{t}{\sqrt{t^2 + n_1 + n_2 - 2}}$, where t is the t-test statistic, and n_1 and n_2 are the group sizes (Lipsey & Wilson, 2001, pp. 192f.).

size distribution (Fisher, 1921; Hedges & Olkin, 1985):

$$Z(r) = \frac{1}{2} ln(\frac{1+r}{1-r}) \tag{3.1}$$

If a study reported multiple effect sizes, for instance, different financial performance measures or different family variables, we included all of them in the models, as doing so leads to better results compared to selecting only one value or calculating average values (Bijmolt & Pieters, 2001). It was furthermore common that primary studies reported effect sizes for multiple years. Thus, a limitation to only one effect size would decrease the level of information. We designed the coding protocol to allow the depiction of as many characteristics of the effect sizes and underlying samples as possible.

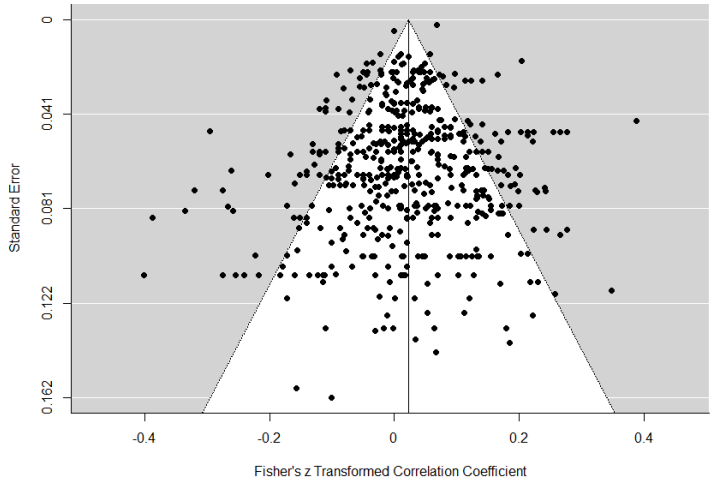
3.3.3 Publication bias

Publication bias can be a serious problem when conducting meta-analyses (Geyskens et al., 2009). It occurs due to the preference of researchers to submit and the preference of editors and reviewers to accept preferentially studies for publication with significant findings, especially in top-tier journals (Rosenthal, 1979; Stanley, 2005). Therefore, we included articles from journals of all impact levels, working papers, PhD and student theses, and articles written in languages other than English (Sutton, 2009). A graphical means of detecting publication bias is a funnel plot (Egger et al., 1997). Figure 3.1 shows the funnel plot for our model with Fisher's Z transformed correlation coefficients on the x-axis and the respective standard errors on the y-axis. The graph shows a symmetrical distribution of effect sizes, which leads us to the assumption that our sample does not suffer from a publication bias (Sterne & Egger, 2001). Furthermore, the broad range reveals heterogeneity of effect size outcomes.
However, a purely visual testing can be prone to subjective perceptions (Terrin et al., 2005). Therefore, we also ran a funnel plot asymmetry test (Egger et al., 1997; Sterne & Egger, 2005). The results in Table 3.2 suggest that there is no publication bias ($z = -0.870$, $p = 0.38$). Also a rank correlation test (Begg & Mazumdar, 1994) reveals no publication bias ($Kendall's\, Tau = 0.046$, $p = 0.11$). Given these indications, and as funnel plot asymmetry could also have different explanations (Sterne et al., 2011), publication bias is not a major concern in our analysis.

3.3.4 Methods used

In our study, we used two kinds of meta-analytical techniques. First, we used Hedges and Olkin meta-analysis (HOMA; Hedges & Olkin, 1985) to identify the

Figure 3.1: Funnel plot of 528 z-transformed effect sizes



Notes: The white area represents the 95% pseudo confidence interval.

overall mean correlation coefficient. Second, we applied meta-regression analysis (MRA; Lipsey & Wilson, 2001; Stanley & Jarrell, 2005) to examine all effects in a multivariate setting.

With the univariate HOMA model, we calculated the overall mean effect size for the relationship between family firms and financial performance for the whole sample and different subgroups. In HOMA, one typically distinguishes between random- and fixed-effects models (Field, 2001). We applied a random-effects model because it allows for variation of the true effect size from study to study, which is a more plausible assumption in our case (Borenstein et al., 2010). The underlying assumptions of random-effects models are that the study sample is a random draw from the overall population and that not every possible and explanatory moderating effect is included in the model (Gonzalez-Mulé & Aguinis, 2018). We used the inverse variance (w) to weigh the effect sizes (Hedges & Olkin, 1985)[16] and to calculate the overall mean effect size, its standard error, Z-statistic, and

[16]The inverse variance w is calculated as follows: $w_i = \frac{1}{SE_i^2 + \upsilon_\theta}$, where SE_i is the standard error of the effect size and calculated as follows: $SE_i = \sqrt{\frac{1}{n_i - 3}}$, whereas υ_θ is the random effects variance component calculated as $\upsilon_\theta = \frac{Q_T - k - 1}{\sum w_i - (\sum w_i^2 / \sum w_i)}$ (Lipsey & Wilson, 2001, pp. 64, 119).

Table 3.2: Funnel plot asymmetry test

	Coefficient	***SE***
Constant	0.031	(0.010)***
SE	-0.144	(0.165)
k (number effect sizes)	528	
N (number studies)	155	
Q	1923.04	***
I^2 (%)	79.59	

This table reports the results of Egger's funnel plot asymmetry test. Significance levels are denoted by asterisks, *** 1%, ** 5%, and * 10%.

confidence interval (Lipsey & Wilson, 2001).[17] We estimated the between-study variance with the restricted maximum-likelihood (REML) estimator. The REML estimator has proven to be efficient and unbiased and is recommended for use in meta-analyses (Viechtbauer, 2005).

To test the impact of the business cycle on the relationship between family firms and firm performance, we applied meta-regression analysis (MRA; Lipsey & Wilson, 2001, Stanley & Jarrell, 2005). With the MRA, we checked for several moderating effects, including the business cycle, simultaneously in a multivariate setting. The standard meta-regression model is described by the following:

$$\begin{aligned} ES_i = \beta_0 + \beta_1^{'} BC_i + \beta_2^{'} CC_i + \beta_3^{'} FF_i + \beta_4^{'} FP_i + \beta_5^{'} SC_i + \beta_6^{'} SFE_i \\ + \beta_7^{'} CFE_i + \beta_8^{'} YFE_i + u_i + e_i, \end{aligned} \tag{3.2}$$

where ES_i denotes the Z-transformed effect sizes extracted from the primary studies *i*. *BC* denotes the vector of business-cycle variables and *CC* the vector of further country control variables, whereas *FF* and *FP* reflect the choice of family firm definition and financial performance measure, respectively. *SC* is a vector of sample and study control variables that reflect the empirical setting. As we include multiple effect sizes per study if available, we control for these interdependencies by study fixed effects (*SFE*). Additionally, we include country fixed effects to account for country-specific characteristics (*CFE*), and year fixed effects (*YFE*), which reflect the global business cycle. The error terms u_i and e_i reflect the between and within variance of the effect sizes, respectively.

[17] The mean effect size is calculated as follows: $\overline{ES} = \frac{\sum(w_i * ES_i)}{\sum w_i}$. Its standard error is calculated as $SE_{\overline{ES}} = \sqrt{\frac{1}{\sum w_i}}$, and the corresponding z-value is calculated as $z = \frac{\overline{ES}}{SE_{\overline{ES}}}$. The confidence intervals are calculated as follows: $\overline{ES}_{U/L} = \overline{ES} \pm z_{(1-\alpha)}(SE_{\overline{ES}})$ (Lipsey & Wilson, 2001, pp. 113ff.

Our meta-regression model reflects a mixed-effects model. For mixed-effects models, the underlying assumption is that the variability in the effect size distribution is due to systematic between-study differences, subject-level sampling error, and an additional random component (Lipsey & Wilson, 2001). Similarly to the HOMA model, we weight the observations by their inverse variance and use the REML estimator account for residual heterogeneity. Following the recommendation of Gonzalez-Mulé and Aguinis (2018), we apply the Knapp and Hartung (2003) method for testing boundary conditions. Viechtbauer et al. (2015) show that this method has lower Type 1 error rates when estimating the standard errors of regression coefficients compared to the standard Wald-type method. Additionally, we employ heteroscedasticity-robust standard errors. We ran our analyses with the metafor package in R (Viechtbauer, 2010).

3.3.5 Variables

In meta-analyses, the dependent variables are the observed effect sizes from primary studies. In our case, these effect sizes reflect a relationship between family firms and financial performance. To detect potential moderation effects of this relationship, we include several independent and control variables in our regression model.

Business cycle variables. Our main independent variables of interest are those describing the overall economic climate in a country at the time of the primary study. We included three economic indicators to draw a picture of the state of the business cycle. We first included real GDP growth, measured as the percentage increase of a country's real GDP in a given year, as arguably most important indicator and hence our main variable of interest. Next, we also took into account changes in a country's price level with the help of the consumer price inflation rate. Firms typically prefer low and stable inflation rates to make decisions in a tranquil environment. Lastly, we included the short-term interest rate to account for a potentially accommodative or restrictive monetary policy stance set by a country's or a monetary union's central bank. By combining these three variables, we could disentangle growth episodes that were accompanied by high inflation rates or low interest rates from those with modest inflation rates and a rather neutral monetary policy stance.

As our sample includes effect sizes from 35 different countries, we faced the problem of comparability of these three variables across countries. Emerging markets, for example, have higher GDP growth rates and higher inflation rates on average than developed countries. In addition, the average growth rates in developed countries have declined over the last decades. Hence, comparing the actual values of the macroeconomic indicators across countries and time could bias our results. To account for different average levels of these variables across countries and for

country-specific nonlinear time trends, we constructed cyclical values for all three variables:

$$Cycl.\,BC_{c,t} = BC_{c,t} - \frac{1}{5}\sum_{j=1}^{5} BC_{c,t-j}, \tag{3.3}$$

where countries are denoted by c and years by t. The cyclical values hence subtract the average of a given variable over the past five years from this year's value.[18] The procedure generates values fluctuating around zero, which also allows a straightforward interpretation. If, for instance, the cyclical value of GDP growth is positive in a given year, this implies above-average growth rates, whereas a negative value would indicate an economic slowdown or even a recession. Thus, we denote our three business cycle variables as *Cycl. GDP growth*, *Cycl. inflation rate*, and *Cycl. interest rate*. We lagged the cyclical values by one year in the analysis to prevent reverse causality.[19]

Country controls. Next to the business cycle variables, we controlled for the longer-term productivity and state of development of a country by including the natural logarithm of GDP per capita (*Ln GDP/capita*), measured in constant 2010 US Dollars. This variable, which also serves as a rough proxy of a country's capital stock, is also helpful to account for heterogeneity across countries beyond the random effects employed in the analysis.

Furthermore, we included the level of institutional development of a country. Those characteristics have shown to be crucial for the size and development of financial markets in different countries. Countries with stronger corporate governance and law systems show larger and more developed financial markets, higher firm valuations, higher growth rates, easier access to external finance and less ownership concentration (La Porta et al., 1997, 2000; Rajan & Zingales, 1998). High ownership concentrations, especially by families and the state, are in contrast more prevalent in countries with weak corporate governance and law systems (Fogel, 2006; La Porta et al., 1999). Investors are typically aware of the risks related to weak corporate governance and legal systems and are more cautious with providing capital to large blockholder firms in these countries. Hence, there should be an effect on the performance of family firms. To characterize a country's governance and legal system, we used the Worldwide Governance Indicators (WGI) provided by the World Bank (Kaufmann et al., 2011). These measure a country's institutional quality along six dimensions, which are voice and accountability, political stability and the absence of violence/terrorism, government effectiveness,

[18] We choose five years to de-trend the variables since this roughly corresponds to the average length of a business cycle or monetary policy cycle.

[19] Note that investment shocks are considered as a potential cause of business cycles. By lagging all three variables by one period, we rule out the possibility of contemporaneous feedback between the performance measures and the business cycle.

regulatory quality, rule of law, and control of corruption. Following the suggestion of Langbein and Knack (2010), we constructed an average value over all six dimensions (*Institutional dev.*). The six dimensions originally ranged from -2.5 to $+2.5$ with higher values indicating a better development. We rescaled the values from 0 to 5, so that we only have positive values. The indicators were surveyed every two years since 1996 and on a yearly basis since 2002. For observations before 1996, we used the value of 1996, as changes over time were small or even negligible (Kaufmann et al., 2011).

Family firm measure controls. To date, there is no unique definition for family firms in the academic literature (see, e.g., Diaz-Moriana et al. (2019) and Mazzi (2011) for an overview). Villalonga and Amit (2006) and Miller et al. (2007) show that even the results of family firm performance studies depend strongly on the definition of family firms. Thus, we control for the used family firm definition in the primary studies. In general, Astrachan et al. (2002) define three potential influences of a family: ownership, management, and supervisory control. Authors use those three influence types solely or in combination for family firm definitions in the academic literature. Accordingly, we coded five different definitions for family influence in a firm as dummy variables. The first variable, family ownership (*Fam. ownership*), equals 1 if the ownership stake of a family is used to define a family firm. In the primary studies, ownership is measured either by a continuous variable (e.g., Connelly et al., 2012; Joh, 2003) or by dummy variables defined by several percentage thresholds (e.g., Anderson et al., 2003; Barth et al., 2005). The second variable, family management (*Fam. management*), equals 1 if a family member serves as CEO of the firm or the family influence is measured as the ratio of family members in the management board or top management team. The third variable, family control (*Fam. control*), equals 1 if a family member is a member of the supervisory board or the family influence is measured as the ratio of family members on the supervisory board. The two last variables, strong family influence (*Strong fam. infl.*) and mixed family influence (*Mixed fam. infl.*), combine all three influence types. Strong family influence equals 1 if a definition requires at least two of the three categories to be prevalent in a firm (e.g., Andres, 2008; Chrisman et al., 2004), whereas mixed family influence requires only any one of the three (e.g., Miller et al., 2007; Villalonga & Amit, 2006).
Additionally, we controlled for the generational stage of family firms. Prior studies highlight significant performance implications with regard to the generation in place (Cucculelli & Micucci, 2008; Miller et al., 2007). Some studies control for the so-called "founder effect" and distinguish between founder and later generations in their variables. Founder involvement (*Founder inv.*) is a dummy variable equal to 1 if the effect size in a primary study observes only active founders in any of the before-mentioned family variables. Later generation (*Later gen.*) is a

dummy variable equal to 1 if successors are in place. Observations with a value equal to 0 for both variables do not control for generational influence and use a mixed definition.

Financial performance measure controls. Different performance measures are commonly used in family firm performance studies. In coding them, we distinguished on the first level between market- and accounting-based performance measures. Both types differ with regard to the time perspective and to assessors (Demsetz & Villalonga, 2001). The group of market measures includes *Tobin's Q/MTB*, *Stock return*, and other market measures *Other mark. meas.* (such as price-equity ratio or earnings per share), and the group of accounting-based measures return on assets (*ROA*), return on equity (*ROE*), return on sales or profit margin (*ROS/PM*), sales growth (*Sales growth*), and other accounting measures (*Other acc. meas.*, e.g., ROI or ROCE). We coded each variable equal to 1 if the respective performance measure is used in the primary study to measure financial performance.

Sample & study controls. We included several variables to account for the empirical setting of the primary studies (Stanley et al., 2013). Wagner et al. (2015) show that the empirical setting can have a significant impact on the family firm performance outcome. First, firm size is controlled for by the variable *SMEs*, which equals 1 if the study sample observes only small and medium-sized firms and 0 if the study sample observes large firms. Prior research showed that performance outcomes of family control depend on contextual factors, as large firms typically have a higher administrative complexity than SMEs do (Miller et al., 2013). Similarly, we included dummy variables that equal 1 if the primary sample consists only of publicly listed firms (*Listed firms*) or use a mixed sample of private and public firms (*Priv. & listed firms*). If both variables are equal to 0, studies investigate only private firms. With regard to the type of study, we distinguished between published articles (*Published*), which equals 1 if the study is published in an academic journal, and unpublished articles, which include working papers, PhD theses and student theses. Significant findings might be more prone to be published; thus, effect sizes might be larger in published studies compared to unpublished ones (Rosenthal, 1979; Stanley, 2005). Furthermore, we coded whether firm performance is the dependent variable or focus of the study (*Performance study*). The rationale is similar to the publication status; authors might have a higher interest in finding significant effects between family firms and firm performance if firm performance is the dependent variable compared to studies where firm performance is used as a control variable.

Fixed effects. We included three types of fixed effects in our analysis. First, we included study fixed effects to control for dependencies of multiple effect sizes from the same study and account for study-specific characteristics. Second, coun-

try fixed effects control for country-specific unobserved viability. Finally, year fixed effects reflect the global business cycle.

Table 3.3: Variable definitions and descriptive statistics

Variable name	Description	N	Mean	SD	Min	Max
Business cycle variables						
Cycl. GDP growth	Cyclical GDP growth in country c in year t-1 (source: World Bank)	528	-0.002	0.024	-0.144	0.073
Cycl. interest rate	Cyclical central bank rate in country c in year t-1 (source: World Bank)	523	-0.007	0.023	-0.077	0.130
Cycl. inflation rate	Cyclical consumer price inflation in country c in year t-1 (source: World Bank)	528	-0.004	0.025	-0.241	0.060
Country controls						
GDP/capita	Natural logarithm of GDP per capita in constant 2010 USD in country c in year t-1 (source: World Bank)	528	9.976	1.033	6.318	11.391
Institutional dev.	Country mean value of the six World Governance Indicators: Voice and accountability, Political stability and absence of violence/terrorism, Government effectiveness, Regulatory quality, Rule of law and Control of corruption (source: World Bank)	528	3.373	0.726	1.377	4.471
Family firm measure controls						
Fam. ownership	Binary variable = 1 if family influence is measured by ownership, either continuously or by cut-off dummies	528	0.407	0.492	0.000	1.000
Fam. management	Binary variable = 1 if family influence is measured by management (e.g., family CEO)	528	0.110	0.313	0.000	1.000
Fam. control	Binary variable = 1 if family influence is measured by control function (e.g., family member on supervisory board)	528	0.133	0.339	0.000	1.000
Strong fam. infl.	Binary variable = 1 if firms are defined as family firms, if at least two of the previous influences are prevalent	528	0.237	0.425	0.000	1.000
Mixed fam. infl.	Binary variable = 1 if firms are defined as family firms, if either of the previous influences is prevalent	528	0.102	0.303	0.000	1.000
Founder inv.	Binary variable = 1 if the founder or first generation is active in the firm	528	0.025	0.155	0.000	1.000
Later gen.	Binary variable = 1 if a firm is in the hands of a later generation	528	0.027	0.161	0.000	1.000

Table 3.3 continues on the next page

Table 3.3: (continued)

Variable name	Description	N	Mean	SD	Min	Max
Financial measure controls						
Market measures						
Tobin's Q/MTB	Binary variable = 1 if financial performance is measured by Tobin's Q or the market-to-book ratio	528	0.167	0.373	0.000	1.000
Stock return	Binary variable = 1 if financial performance is measured by stock return	528	0.038	0.191	0.000	1.000
Other mark. meas.	Binary variable = 1 if financial performance is measured by other market measures than the before mentioned (e.g., PE ratio or Earning per share)	528	0.013	0.114	0.000	1.000
Accounting measures						
ROA	Binary variable = 1 if financial performance is measured by return on assets	528	0.384	0.487	0.000	1.000
ROE	Binary variable = 1 if financial performance is measured by return on equity	528	0.178	0.383	0.000	1.000
ROS/PM	Binary variable = 1 if financial performance is measured by return on sales or profit margin	528	0.078	0.268	0.000	1.000
Sales growth	Binary variable = 1 if financial performance is measured by sales growth	528	0.068	0.242	0.000	1.000
Other acc. meas.	Binary variable = 1 if financial performance is measured by other accounting measures than the before mentioned (e.g., ROI or ROCE)	528	0.080	0.271	0.000	1.000
Sample & study characteristics						
SMEs	Binary variable = 1 if the primary study observes only small- and medium-sized firms	528	0.100	0.301	0.000	1.000
Listed firms	Binary variable = 1 if the primary study observes only listed firms	528	0.695	0.461	0.000	1.000
Priv. & listed firms	Binary variable = 1 if the primary study observes a mixed sample of private and listed firms	528	0.129	0.335	0.000	1.000
Published	Binary variable = 1 if the primary study is published in an academic journal and 0 if the primary study is a working paper, PhD or student thesis	528	0.689	0.463	0.000	1.000
Performance study	Binary variable = 1 if the primary study observes primarily firm performance	528	0.519	0.500	0.000	1.000

3.4 Results

This section reports the results of our meta-analysis. The data that support the findings of this study are available from the corresponding author upon reasonable request.

3.4.1 The family firm performance effect

First, we run the HOMA model to investigate the overall family firm performance relationship. Table 3.4 shows the results of the HOMA model with 528 effect size observations from 155 studies with 487,692 firm observations included. We find an overall mean effect size of $r = 0.023$, which is statistically significant at the 1% level. This outcome indicates general outperformance of family firms compared to non-family firms, without controlling for moderator effects such as the family firm definition, the type of financial performance measure or the economic conditions. The finding of slight, general outperformance of family firms is consistent with previous meta-analyses (e.g., Van Essen et al., 2015a; Wagner et al., 2015; Wang & Shailer, 2017). Although the mean effect size is rather small from an economic point of view, it lies within the typical range of meta-analyses focusing on family firm performance or other ownership concentration performance relationships (e.g., Carney et al., 2011; Duran et al., 2019; Heugens et al., 2009; O'Boyle et al., 2016; Wang & Shailer, 2015). The Q-test indicates a high degree of heterogeneity ($Q = 2,000.10, p = 0.00$) and thus a great variability in performance outcomes across the included studies as well as the presence of several moderators. According to the I^2 statistic, 81.43% of the total heterogeneity is due to variance between the observations. In what follows, we divide the sample according to the institutional environments to explore differences with regard to economic development and regulatory circumstances. We thereby use the countries' OECD membership status and their governance system to generate different subsamples.[20]

First, we divide our sample by the OECD membership status of the countries. The OECD states principles of good corporate governance that are adopted by its member states and should contribute to growth and financial stability by underpinning market confidence, financial market integrity and economic efficiency (Jesover & Kirkpatrick, 2005). The results reveal that family firms' overall outperformance mainly stems from countries that are members of the OECD, whereas there is no outperformance on average for family firms in non-OECD countries. In OECD countries, family firms show significant outperformance ($r = 0.037$, $p = 0.00$) and strengthen the suggestion by Anderson and Reeb (2003a) that family firms can be an effective organizational structure in well-regulated and trans-

[20] Table 3.1 shows the country classifications and the OECD membership status.

Table 3.4: HOMA results

	k	*n*	*C*	*Y*	*firms*	*r*	*SE*	*95% CI*	*Q*	I^2	*z-test*
Complete sample	528	155	35	30	487,692	0.023 ***	0.004	0.015; 0.031	2,000.10 ***	81.43 %	
OECD countries	355	94	21	29	412,257	0.037 ***	0.005	0.027; 0.047	1,398.34 ***	83.36 %	
Non-OECD countries	172	61	14	21	75,425	-0.005	0.007	-0.019; 0.009	473.37 ***	67.34 %	z = 4.80 ***
Anglo-American countries	76	24	3	25	52,681	0.064 ***	0.013	0.039; 0.088	413.19 ***	86.43 %	
Continental Europe % Japan	240	61	13	22	329,432	0.032 ***	0.006	0.021; 0.044	868.98 ***	79.63 %	z = 2.22 **
Emerging market countries	212	70	19	22	105,579	-0.002	0.006	-0.013; 0.010	581.60 ***	67.01 %	z = 4.65 ***

This table reports the results of the Hedges and Olkin meta-analysis for the family firm–performance relationship for the complete sample and the subsamples based on the countries OECD member status and governance system (see Table 3.1). *k* denotes the number of effect sizes included. *N* denotes the number of study samples included. *C* denotes the number of countries included. *Y* denotes the number of years included. Firms denotes the number of firm observations. *r* denotes the meta-analytic mean effect size. *SE* denotes the standard error of the meta-analytic mean effect size. *95% CI* denotes the 95% confidence interval limits. *Q* denotes the Hedges and Olkin chi-square significance test of heterogeneity. I^2 denotes the ratio of between-study variance to total variance. *z-test* denotes the significance test for mean effect size differences between two groups. Significance levels are denoted by asterisks, *** 1%, ** 5%, and * 10%.

parent markets. On the other hand, there is no performance effect for family firms on average in non-OECD countries ($r = -0.005$, $p = 0.45$).
However, even within the group of OECD countries, the institutional environments differ significantly. Whereas Anglo-Saxon countries have strong investor protection, high financial market development and are characterized by dispersed ownership, Continental European countries have weaker investor protection, less developed financial markets, and firms are predominantly owned by large investors and banks (Franks et al., 2012; Shleifer & Vishny, 1997). These investors are often wealthy families or individuals who control a majority of the votes, often via pyramidal structures (Enriques & Volpin, 2007; La Porta et al., 1999). Steier (2009) therefore distinguishes between four global patterns of corporate governance systems: Anglo-American countries, Continental Europe and Japan, emerging markets, and transition economies. We adopt this categorization but group together emerging markets and transition economies, as they resemble one another in their characteristics (Steier, 2009). The results of the HOMA models show that family firms have the strongest outperformance in Anglo-American countries ($r = 0.064$, $p = 0.00$), outperformance above the overall mean effect size in Continental European countries and Japan ($r = 0.032$, $p = 0.00$), and no outperformance in emerging markets or transition economies ($r = -0.002$, $p = 0.95$). Similar to the overall relationship, we also find a high amount of heterogeneity within the subsamples.

3.4.2 Meta-regression analysis

In the MRA, we test the sensitivity of the family firm performance relationship with regard to the business cycle while controlling for other systematic influence factors. We derive our base model by investigating the impact of the use of different fixed-effects combinations on our regression results. We thereby test our model with study, country, and time fixed-effects singularly and with their combinations. Table 3.5 shows the results based on 523 effect sizes from 35 countries. It reveals that the inclusion of study fixed-effects turns the coefficient of the GDP growth variable positive and significant. However, the inclusion of study fixed-effects decreases the amount of total heterogeneity (Q) and between-study heterogeneity (I^2) and increases the amount of heterogeneity accounted for ($Pseudo - R^2$) significantly. As all effects remain similar for all models with study fixed-effects included, we use the full model (Model 8) as our model hereafter when running regressions on the complete sample to control for all possible dependencies. When analyzing different subsamples, we include only study fixed-effects due to the smaller sample sizes.
The complete model with all fixed-effects included (Model 8) reveals a positive and significant impact of GDP growth on relative family firm performance

Table 3.5: Meta-regression analysis (MRA)

	Model 1: No FE	Model 2: Study FE	Model 3: Country FE	Model 4: Year FE	Model 5: Study + Country FE	Model 6: Study + Year FE	Model 7: Country + Year FE	Model 8: All FE
Business cycle variables								
Cycl. GDP growth	0.065 (0.186)	0.484 (0.272)*	0.000 (0.203)	-0.310 (0.302)	0.473 (0.273)*	1.535 (0.529)***	-0.534 (0.343)	1.286 (0.539)**
Cycl. interest rate	0.239 (0.212)	-0.393 (0.503)	0.427 (0.366)	0.336 (0.248)	-0.223 (0.489)	0.139 (0.547)	0.318 (0.469)	0.316 (0.583)
Cycl. inflation rate	-0.293 (0.196)	-0.267 (0.413)	-0.418 (0.231)*	-0.076 (0.239)	-0.231 (0.412)	-0.659 (0.717)	-0.563 (0.267)**	-0.648 (0.740)
Country controls								
Ln GDP/capita	-0.006 (0.010)	-0.017 (0.193)	-0.021 (0.043)	0.000 (0.011)	-0.216 (0.216)	0.295 (0.245)	0.060 (0.076)	0.043 (0.371)
Institutional dev.	0.033 (0.014)**	-0.008 (0.073)	0.204 (0.052)***	0.016 (0.016)	-0.039 (0.113)	-0.042 (0.084)	0.145 (0.060)**	-0.140 (0.197)
Family firm controls (Ref.: Fam. ownership)								
Fam. management	-0.013 (0.016)	-0.033 (0.019)*	-0.020 (0.015)	-0.018 (0.015)	-0.033 (0.019)*	-0.032 (0.018)*	-0.020 (0.015)	-0.032 (0.018)*
Fam. control	-0.028 (0.017)*	-0.025 (0.017)	-0.029 (0.016)*	-0.027 (0.015)*	-0.025 (0.017)	-0.024 (0.016)	-0.030 (0.015)*	-0.025 (0.016)
Strong fam. infl.	0.037 (0.012)***	0.001 (0.020)	0.026 (0.015)*	0.028 (0.011)**	0.001 (0.020)	0.002 (0.019)	0.021 (0.014)	0.002 (0.019)
Mixed fam. infl.	0.016 (0.014)	-0.044 (0.028)	0.005 (0.017)	0.014 (0.017)	-0.044 (0.028)	-0.043 (0.027)	0.005 (0.019)	-0.043 (0.027)
Founder inv.	0.049 (0.031)	0.050 (0.035)	0.041 (0.031)	0.054 (0.029)*	0.048 (0.036)	0.047 (0.034)	0.050 (0.031)	0.047 (0.034)
Later gen.	-0.054 (0.039)	0.001 (0.046)	-0.071 (0.039)*	-0.037 (0.042)	0.000 (0.046)	0.004 (0.045)	-0.059 (0.041)	0.003 (0.046)
Fin. measure controls (Ref.: Tobin's Q/MTB)								
Stock return	-0.018 (0.027)	-0.025 (0.024)	-0.023 (0.026)	-0.017 (0.018)	-0.025 (0.024)	-0.025 (0.024)	-0.017 (0.018)	-0.025 (0.024)
Other mark. meas.	0.010 (0.039)	0.023 (0.029)	0.009 (0.025)	0.035 (0.032)	0.023 (0.029)	0.024 (0.029)	0.020 (0.026)	0.024 (0.029)
ROA	0.031 (0.015)**	0.046 (0.014)***	0.034 (0.014)**	0.032 (0.014)**	0.046 (0.014)***	0.046 (0.014)***	0.039 (0.014)***	0.046 (0.014)***
ROE	0.016 (0.016)	0.015 (0.016)	0.020 (0.016)	0.017 (0.015)	0.015 (0.016)	0.016 (0.016)	0.013 (0.015)	0.017 (0.016)
ROS/PM	0.024 (0.021)	0.043 (0.021)**	0.017 (0.020)	0.041 (0.020)**	0.043 (0.022)**	0.044 (0.020)**	0.026 (0.020)	0.044 (0.021)**
Sales growth	-0.003 (0.017)	-0.006 (0.019)	-0.004 (0.018)	0.010 (0.017)	-0.005 (0.019)	-0.006 (0.019)	-0.003 (0.017)	-0.007 (0.019)
Other acc. meas.	0.038 (0.022)*	0.037 (0.022)*	0.021 (0.022)	0.031 (0.022)	0.037 (0.022)*	0.037 (0.022)*	0.025 (0.022)	0.038 (0.022)*
Sample & study controls								
SMEs	-0.008 (0.017)	0.020 (0.018)	-0.014 (0.020)	-0.002 (0.017)	0.022 (0.019)	0.020 (0.018)	-0.001 (0.020)	0.020 (0.018)
Listed firms	0.033 (0.016)**	-0.012 (0.254)	0.009 (0.023)	0.048 (0.014)***	0.257 (0.310)	-0.092 (0.313)	0.036 (0.022)	0.301 (0.485)
Priv. & listed firms	0.020 (0.017)	0.161 (0.466)	0.014 (0.024)	0.040 (0.016)**	0.821 (0.625)	-0.275 (0.580)	0.022 (0.026)	0.543 (0.997)
Published	-0.002 (0.010)	-0.042 (0.089)	-0.007 (0.010)	-0.014 (0.010)*	-0.043 (0.089)	-0.043 (0.090)	-0.020 (0.011)*	-0.043 (0.089)
Performance study	-0.005 (0.011)	0.021 (0.074)	-0.012 (0.010)	0.003 (0.010)	-0.025 (0.077)	-0.081 (0.119)	-0.013 (0.010)	-0.132 (0.133)

Table 3.5 continues on the next page

Table 3.5: (continued)

	Model 1: No FE	**Model 2: Study FE**	**Model 3: Country FE**	**Model 4: Year FE**	**Model 5: Study + Country FE**	**Model 6: Study + Year FE**	**Model 7: Country + Year FE**	**Model 8: All FE**
Study FE	*no*	*yes*	*no*	*no*	*yes*	*yes*	*no*	*yes*
Country FE	*no*	*no*	*yes*	*no*	*yes*	*no*	*yes*	*yes*
Year FE	*no*	*no*	*no*	*yes*	*no*	*yes*	*yes*	*yes*
Constant	-0.076 (0.067)	0.169 (1.603)	-0.541 (0.531)	-0.072 (0.079)	1.874 (1.843)	-2.324 (2.022)	-1.197 (0.789)	-0.038 (3.085)
k (number effect sizes)	523	523	523	523	523	523	523	523
N (number studies)	152	152	152	152	152	152	152	152
C (number countries)	35	35	35	35	35	35	35	35
Y (number years)	30	30	30	30	30	30	30	30
Q	1,583.09 ***	553.58 ***	1,190.62 ***	1,267.80 ***	547.66 ***	483.43 ***	999.48 ***	483.13 ***
I^2	72.36	36.79	63.88	64.98	36.80	32.03	57.82	32.92
Pseudo-R^2	9.12	76.61	33.81	29.37	76.62	80.08	45.82	79.21
F	2.85 ***	3.70 ***	3.63 ***	3.49 ***	3.66 ***	3.82 ***	3.56 ***	3.73 ***

Notes: This table shows the results of our main analysis. We perform a mixed-effects meta-regression with family firm performance as dependent variable. All variables are defined in Table 3.3. Regression coefficients are reported with heteroscedasticity-robust standard errors in parentheses. Significance levels are denoted by asterisks, *** 1%, ** 5%, and * 10%. Q denotes the weighted residual sum of squares between individual effect sizes and the mean effect size. I^2 denotes the amount of between-study heterogeneity to total heterogeneity. R^2 denotes the amount of heterogeneity accounted for. F denotes the test statistics of the test of moderators.

($p = 0.02$). In other words, family firms outperform especially in times of high economic growth, whereas the outperformance is weaker or even negative in times of economic distress. On the other hand, none of the other economic variables and country-control variables have a significant impact on family firm performance in our model. Examining the used definitions of family firms and financial performance in the primary studies, we find a negative effect for family management compared to family ownership and a positive effect of accounting-based performance measures such as *ROA* or *ROS/PM* compared to the reference category *Tobin's Q/MTB*.

3.4.3 Sensitivity analysis results

In the following, we divide our sample according to different characteristics that might affect the relationship between family firms and financial performance, especially in consideration of the business cycle influence. Furthermore, we conduct several robustness checks by testing our model with different business cycle variable constructions and a different regression method.

3.4.3.1 Country institution differences

First, we perform the same subsample analyses as in the HOMA model in a multivariate setting and investigate the impact of the institutional environment on the relationship between family firm performance and the business cycle. In Table 3.6, we divide the sample in a first step according to the OECD member status of the countries. In the sample of OECD countries (Model 1a), we find a significantly positive effect for our main independent variable *Cycl. GDP growth* ($p = 0.01$). This outcome indicates that family firms have a more pro-cyclical performance compared to non-family firms in these countries. Furthermore, we find a negative and slightly significant impact of *Cycl. interest rate* on family firm performance ($p = 0.06$). In the sample of non-OECD countries (Model 1b), we do not find a significant effect of *Cycl. GDP growth* on family firms' performance but do find a positive and significant effect of *Cycl. interest rate* ($p =< 0.01$). This finding indicates that family firms perform relatively more strongly during phases of high interest rates.

As an alternative to the distinction between OECD and non-OECD members, we divide our sample according to the three governance systems as described in Section 3.4.1. This alternative sample division reveals significant differences between the Anglo-American and Continental European samples, whose countries are all OECD members. In the Anglo-American sample (Model 2a), we find a positive and significant impact of *Cycl. GDP growth* on relative family firm performance ($p = 0.02$). On the opposite, a higher interest rate ($p = 0.08$) and inflation rate

Table 3.6: MRA by OECD member status and corporate governance system

	OECD Membership Status		Corporate Governance System		
	Model 1a: OECD Countries	**Model 1b: Non-OECD Countries**	**Model 2a: Anglo-American Countries**	**Model 2b: Continental Europe**	**Model 2c: Emerging Markets**
Business cycle variables					
Cycl. GDP growth	0.649 (0.253)**	-0.640 (0.518)***	2.499 (1.049)**	-0.518 (0.576)	0.468 (0.222)**
Cycl. interest rate	-0.941 (0.505)*	2.936 (0.994)***	-1.442 (0.798)*	-0.588 (1.304)	1.314 (0.834)
Cycl. inflation rate	-0.023 (0.348)	-3.052 (1.847)	-3.128 (1.545)*	-0.758 (0.884)	-0.065 (0.391)
Country controls					
Ln GDP/capita	-0.071 (0.210)	-0.228 (0.962)	0.148 (0.287)	0.293 (0.215)	-0.225 (0.271)
Institutional dev.	0.024 (0.077)	-0.033 (0.690)	0.370 (0.134)***	-0.071 (0.096)	-0.297 (0.219)
Family firm controls (Ref.: Fam. ownership)					
Fam. management	-0.037 (0.025)	-0.038 (0.029)	-0.133 (0.027)***	-0.022 (0.021)	-0.032 (0.029)
Fam. control	-0.039 (0.025)	-0.012 (0.020)	0.016 (0.036)	-0.058 (0.023)**	-0.010 (0.020)
Strong fam. infl.	0.003 (0.037)	0.001 (0.021)	-0.061 (0.097)	-0.037 (0.027)	0.002 (0.021)
Mixed fam. infl.	-0.041 (0.034)	-0.242 (1.656)	0.039 (0.012)***	-0.080 (0.033)**	-0.081 (0.150)
Founder inv.	0.098 (0.046)**	-0.012 (0.047)	0.163 (0.025)***	0.118 (0.069)*	-0.012 (0.047)
Later gen.	0.009 (0.045)	—	0.166 (0.096)*	-0.054 (0.062)	—
Fin. measure controls (Ref.: Tobin's Q/MTB)					
Stock return	-0.010 (0.033)	-0.060 (0.027)**	0.019 (0.043)	-0.034 (0.044)	-0.049 (0.026)*
Other mark. meas.	0.019 (0.043)	0.016 (0.034)	0.056 (0.042)	—	0.015 (0.031)
ROA	0.042 (0.020)**	0.056 (0.022)**	0.092 (0.027)***	0.010 (0.026)	0.062 (0.019)***
ROE	0.014 (0.023)	0.028 (0.020)	-0.085 (0.036)*	-0.013 (0.029)	0.04 (0.020)**
ROS/PM	0.035 (0.025)	0.106 (0.074)**	0.104 (0.076)	-0.025 (0.034)	0.087 (0.026)***
Sales growth	0.001 (0.025)	-0.012 (0.026)	0.040 (0.036)	-0.031 (0.031)	-0.012 (0.026)
Other acc. meas.	0.058 (0.027)**	-0.016 (0.039)	0.125 (0.076)	0.022 (0.031)	-0.015 (0.038)
Sample & study controls					
SMEs	0.023 (0.023)	0.084 (0.579)	0.056 (0.100)	0.027 (0.022)	0.207 (0.134)
Listed firms	0.130 (0.117)	0.496 (3.002)	-0.022 (0.152)	0.125 (0.087)	0.600 (0.408)
Priv. & listed firms	0.148 (0.212)	0.412 (2.605)	—	0.225 (0.143)	0.784 (0.566)
Published	-0.025 (0.091)	0.000 (0.021)	0.153 (0.060)**	-0.025 (0.078)	0.003 (0.021)
Performance study	0.207 (0.304)	-0.291 (1.345)	0.134 (0.097)	-0.013 (0.112)	-0.056 (0.082)

Table 3.6 continues on the next page

Table 3.6: (continued)

	OECD Membership Status		Corporate Governance System		
	Model 1a: OECD Countries	**Model 1b: Non-OECD Countries**	**Model 2a: Anglo-American Countries**	**Model 2b: Continental Europe**	**Model 2c: Emerging Markets**
Study FE	*yes*	*yes*	*yes*	*yes*	*yes*
Country FE	*no*	*no*	*no*	*no*	*no*
Year FE	*no*	*no*	*no*	*no*	*no*
Constant	0.427 (2.088)	1.936 (9.175)	-3.214 (3.414)	-2.871 (2.245)	2.369 (2.280)
k (number effect sizes)	356	167	76	240	207
N (number studies)	94	58	24	61	67
C (number countries)	21	14	3	13	19
Y (number years)	29	20	25	22	21
Q	356.51 ***	147.90 ***	40.88 ***	202.61 ***	185.59 ***
I^2 *(%)*	31.87	38.43	9.47	21.19	33.51
Pseudo-R^2 *(%)*	80.95	68.14	98.19	80.67	74.75
F	3.92 ***	2.81 ***	7.80 ***	3.69 ***	3.08 ***

Notes: This table reports the results of a subsample analysis by the countries' OECD member status and the countries' corporate governance system. Table 3.1 shows the list of countries included in each subsample. We perform a mixed-effects meta-regression with family firm performance as dependent variable. All variables are defined in Table 3.3. Regression coefficients are reported with heteroscedasticity-robust standard errors in parentheses. Significance levels are denoted by asterisks, *** 1%, ** 5%, and * 10%. Q denotes the weighted residual sum of squares between individual effect sizes and the mean effect size. I^2 denotes the amount of between-study heterogeneity to total heterogeneity. R^2 denotes the amount of heterogeneity accounted for. F denotes the test statistics of the test of moderators.

($p = 0.05$) have a negative impact. Thus, family firms perform relatively worse in these countries in economically difficult situations, such as years of low or negative economic growth, high interest rates, or a high inflation rate. For the sample of Continental European countries and Japan in contrast (Model 2b), we do not find significant effects for any of our business cycle variables, indicating that family business performance is as sensitive to economic shocks as non-family firm performance. The results of the emerging markets subsample (Model 2c) indicate similar performance effects in terms of GDP growth as the Anglo-American countries ($p = 0.04$).

3.4.3.2 Performance measure differences

Next, we divide the dataset according to the type of performance measure used in the primary studies. The two main groups, accounting-based and market-based performance measures, differ with regard to the time perspective and to assessors (Demsetz & Villalonga, 2001). Whereas accounting-based measures reflect a firm's performance based on annual report figures and are thus backward looking, market-based measures reflect investors' assessment of a firm's future performance. Models 1 and 2 in Table 3.7 show the regression results for accounting measures and market measures, respectively. The table shows that the positive effect of GDP growth on family firm performance in the overall dataset mainly stems from the subsample of accounting measures ($p = 0.01$), whereas we do not find any systematic effect of GDP growth on family firms' market performance across all countries. Thus, family firms seem to have a pro-cyclical performance behavior in terms of accounting performance measures, indicating a higher relative profitability in economically good times and a lower relative profitability in economically difficult times.

3.4.3.3 Alternative business cycle measures

In the previous models, we used cyclical values of the economic indicators that compared the value of a given variable in year t with the average of the five preceding years. As an alternative to this backward-looking method, we also constructed a cyclical value with two lag and two lead periods, which thus also takes into account future economic development.[21] Additionally, we used the cyclical component of the Hodrick-Prescott filter (Hodrick & Prescott, 1997) with the standard smoothing parameter for yearly observations of 100 to operationalize business cycle fluctuations for a given year. Table 3.8 reports the results. Both alternatives

[21] The cyclical variable with two lag and two lead periods is calculated as follows: $Altern.\,Cycl.\,BC_{c,t} = BC_{c,t} - \frac{1}{5}\sum_{j=-2}^{2} BC_{c,t+j}$

Table 3.7: MRA divided by type of performance measure

	Model 1: Accounting measures	**Model 2: Market measures**
Business cycle variables		
Cycl. GDP growth	0.555 (0.212)***	0.973 (0.845)
Cycl. interest rate	-0.350 (0.495)*	-2.264 (2.139)***
Cycl. inflation rate	0.118 (0.326)	-5.911 (2.045)
Country controls		
Ln GDP/capita	-0.013 (0.216)	-0.497 (0.319)
Institutional dev.	0.003 (0.078)	0.091 (0.119)
Family firm controls (Ref.: Fam. ownership)		
Fam. management	-0.021 (0.018)	-0.108 (0.053)***
Fam. control	-0.029 (0.018)	-0.013 (0.023)
Strong fam. infl.	0.006 (0.019)	-0.008 (0.030)
Mixed fam. infl.	-0.036 (0.026)	-0.052 (0.087)
Founder inv.	0.044 (0.036)	0.013 (0.019)
Later gen.	0.018 (0.040)	-0.068 (0.078)
Fin. measure controls		
Tobin's Q/MTB	—	*Ref.*
Stock return	—	-0.028 (0.034)
Other mark. meas.	—	0.035 (0.028)
ROA	*Ref.*	—
ROE	-0.028 (0.011)**	—
ROS/PM	-0.004 (0.016)	—
Sales growth	-0.053 (0.013)***	—
Other acc. meas.	-0.003 (0.018)	—
Sample & study controls		
SMEs	0.018 (0.018)	—
Listed firms	0.054 (0.280)	—
Priv. & listed firms	0.064 (0.209)	—
Published	-0.088 (0.098)	-0.030 (0.082)
Performance study	0.095 (0.308)	0.149 (0.074)**
Study FE	*yes*	*yes*
Country FE	*no*	*no*
Year FE	*no*	*no*
Constant	0.427 (2.088)	1.936 (9.175)
k (number effect sizes)	410	114
N (number studies)	146	51
C (number countries)	34	24
Y (number years)	26	25
Q	338.74 ***	48.35 ***
I^2 *(%)*	28.33	1.49
Pseudo-R^2 *(%)*	85.53	98.85
F	4.35 ***	4.14 ***

This table reports the results of our analysis divided by the type of performance measure. Model 1 includes all effect sizes, where financial performance is measured by accounting-based performance measures, whereas Model 2 includes all effect sizes, where financial performance is measured by market-based performance measures. We perform a mixed-effects meta-regression with family firm performance as dependent variable. All variables are defined in Table 3.3. All test statistics are defined in Table 3.5. Regression coefficients are reported with heteroscedasticity-robust standard errors in parentheses. Significance levels are denoted by asterisks, *** 1%, ** 5%, and * 10%.

show the same result of a positive and significant effect of GDP growth on family firm performance. Additionally, we find negative effects for a higher inflation rate on family firm performance. Thus, our previous results are robust with regard to alternative variable constructions for business cycle variables.

3.4.3.4 Alternative regression type

As a further robustness check, we used an unrestricted weighted least squares (WLS) model instead of the standard mixed-effects model. Stanley and Doucouliagos (2015, 2017) showed that this method is superior to mixed-effects meta-regressions under the presence of publication bias. In this model, we used our standard cyclical variable construction for the business cycle variables as in the base model. Model 1 in Table 3.9 reports the regression results. Again, we find a positive and significant effect of GDP growth on the family firm performance relationship as in the mixed-effects regression model. Furthermore, most other effects are similar to our base model. Thus, our results are also robust with regard to alternative regression methods.

3.4.3.5 Regression without outlier observations

Finally, we controlled for the potential influence of outliers by calculating DFBETA values. DFBETA values examine the change in the overall effect size estimate when excluding each single effect size (Viechtbauer & Cheung, 2010). There are two common cutoff values to identify outliers: For small to medium datasets, one usually applies a cutoff value of 1, and for larger datasets, a size-adjusted cutoff is calculated by $2/\sqrt{n}$ (Belsley et al., 1980; Kutner et al., 2005). Applying the size-adjusted cutoff, we identified 24 influential outlier observations. We excluded those observations from the sample and ran our base model with the reduced sample. The results (Table 3.9, Model 2) show again the same effect size directions compared to the base model, indicating that our previous results were not biased by potential outliers.

3.5 Discussion and conclusion

Our meta-analysis investigates how the performance of family firms changes over the business cycle. Combining the results of 155 primary studies (528 effect sizes) from 35 countries with data about business cycles, our univariate results indicate an overall positive relationship between family firms and firm performance in Anglo-American and Continental European countries. These results from the HOMA analysis are consistent with prior meta-analyses on the performance of family firms (e.g., Van Essen et al., 2015a; Wagner et al., 2015). On

Table 3.8: MRA with different business cycle variable constructions

	Model 1: Cycl. variable with lags and leads	**Model 2: Hodrick-Prescott filter**
Business cycle variables		
Cycl. GDP growth	1.707 (0.759)**	1.832 (0.671)***
Cycl. interest rate	0.720 (0.892)*	-0.211 (0.846)
Cycl. inflation rate	-1.752 (0.933)*	-0.852 (0.338)**
Country controls		
Ln GDP/capita	-0.221 (0.346)	-0.127 (0.374)
Institutional dev.	-0.109 (0.196)	-0.053 (0.197)
Family firm controls (Ref.: Fam. ownership)		
Fam. management	-0.031 (0.018)*	-0.032 (0.018)*
Fam. control	-0.024 (0.016)	-0.024 (0.016)
Strong fam. infl.	0.002 (0.019)	0.002 (0.019)
Mixed fam. infl.	-0.042 (0.027)	-0.044 (0.034)
Founder inv.	0.045 (0.034)	0.047 (0.034)
Later gen.	0.004 (0.045)	0.004 (0.045)
Fin. measure controls (Ref.: Tobin's Q/MTB)		
Stock return	-0.025 (0.022)	-0.023 (0.022)
Other mark. meas.	0.023 (0.029)	0.024 (0.029)
ROA	0.044 (0.014)***	0.046 (0.013)***
ROE	0.013 (0.016)	0.015 (0.015)
ROS/PM	0.041 (0.020)**	0.043 (0.020)**
Sales growth	-0.009 (0.019)	-0.008 (0.019)
Other acc. meas.	0.035 (0.022)	0.037 (0.022)*
Sample & study controls		
SMEs	0.022 (0.018)	0.019 (0.018)
Listed firms	0.501 (0.475)	0.373 (0.479)
Priv. & listed firms	1.081 (0.959)	0.801 (0.990)
Published	-0.044 (0.090)	-0.042 (0.089)
Performance study	-0.130 (0.128)	-0.136 (0.134)
Study FE	*yes*	*yes*
Country FE	*yes*	*yes*
Year FE	*yes*	*yes*
Constant	2.110 (2.908)	1.312 (3.077)
k (number effect sizes)	522	528
N (number studies)	152	154
C (number countries)	35	35
Y (number years)	29	30
Q	475.16 ***	479.56 ***
I^2 *(%)*	31.67	31.88
Pseudo-R^2 *(%)*	80.27	79.90
F	3.79 ***	3.76 ***

This table reports the results of mixed-effects meta-regressions with different business cycle variable constructions as robustness checks. In Model 1, the business cycle variables are constructed as cyclical variables with two lag and two lead periods. In Model 2, the business cycle variables are constructed with the cyclical component of the Hodrick-Prescott filter with a smoothing parameter for yearly observations of 100. All variables are defined in Table 3.3. All test statistics are defined in Table 3.5. Regression coefficients are reported with heteroscedasticity-robust standard errors in parentheses. Significance levels are denoted by asterisks, *** 1%, ** 5%, and * 10%.

Table 3.9: MRA with different regression method and without outliers

	Model 1: Unrestricted WLS model	**Model 2: Mixed-effects MRA without outliers**
Business cycle variables		
Cycl. GDP growth	1.520 (0.498)***	1.315 (0.499)***
Cycl. interest rate	0.292 (0.548)	0.217 (0.542)
Cycl. inflation rate	-0.594 (0.764)	-0.895 (0.689)
Country controls		
Ln GDP/capita	0.174 (0.382)	-0.160 (0.362)
Institutional dev.	-0.051 (0.169)	-0.052 (0.183)
Family firm controls (Ref.: Fam. ownership)		
Fam. management	-0.012 (0.014)	-0.016 (0.017)
Fam. control	-0.020 (0.013)	-0.017 (0.016)
Strong fam. infl.	0.011 (0.013)	0.004 (0.018)
Mixed fam. infl.	-0.024 (0.021)	-0.045 (0.028)
Founder inv.	0.022 (0.023)	0.032 (0.043)
Later gen.	0.034 (0.027)	0.026 (0.040)
Fin. measure controls (Ref.: Tobin's Q/MTB)		
Stock return	-0.020 (0.023)	-0.030 (0.021)
Other mark. meas.	0.033 (0.032)	0.021 (0.029)
ROA	0.054 (0.011)***	0.049 (0.013)***
ROE	0.026 (0.013)**	0.022 (0.015)
ROS/PM	0.056 (0.017)***	0.052 (0.019)***
Sales growth	-0.004 (0.014)	-0.003 (0.018)
Other acc. meas.	0.042 (0.020)**	0.034 (0.021)
Sample & study controls		
SMEs	0.018 (0.020)	0.020 (0.019)
Listed firms	0.071 (0.542)	0.085 (0.466)
Priv. & listed firms	0.068 (0.959)	0.093 (0.962)
Published	-0.044 (1.057)	-0.001 (0.085)
Performance study	-0.112 (0.281)	-0.105 (0.132)
Study FE	*yes*	*yes*
Country FE	*yes*	*yes*
Year FE	*yes*	*yes*
Constant	-1.311 (3.176)	-1.241 (2.997)
k (number effect sizes)	523	499
N (number studies)	152	149
C (number countries)	35	35
Y (number years)	29	29
Q		393.25 ***
I^2 *(%)*		21.53
Pseudo-R^2 *(%)*	75.81	75.15
F	5.21 ***	2.60 ***

This table shows the results of robustness checks with an alternative regression method and the results of a robustness check without outlier observations. In Model 1, we perform an unrestricted weighted least squares regression with family firm performance as dependent variable. Regression coefficients are reported with standard errors in parentheses. In Model 2, we perform a mixed-effects meta-regression after excluding 24 outlier observations. Regression coefficients are reported with heteroscedasticity-robust standard errors in parentheses. All variables are defined in Table 3.3. All test statistics are defined in Table 3.5. Significance levels are denoted by asterisks, *** 1%, ** 5%, and * 10%.

the other hand, for emerging markets and non-OECD countries, we did not find general outperformance. Testing the impact of the business cycle on this family firm performance relationship, we found evidence for a pro-cyclical performance behavior of family firms. This finding supports those studies arguing for weaker performance of family firms in difficult times (Bae et al., 2012; Baek et al., 2004; Lemmon & Lins, 2003; Lins et al., 2013). However, we observe these findings in various manifestations for different country types and governance systems. As the appearance of family firms in emerging markets differs from that in developed markets (Steier, 2009), the underlying mechanisms of the observed business cycle performance effects might be different ones.

First, the pro-cyclical effects for emerging markets support the findings of Baek et al. (2004) and Lemmon and Lins (2003), who find evidence for expropriation activities by controlling owner families in countries with weak corporate governance systems during the Asian crisis. In emerging markets, family firms mostly appear in the form of a few, large, powerful and well-diversified business groups in the hands of a few family dynasties (Almeida & Wolfenzon, 2006; Claessens et al., 2000; La Porta et al., 1999). Control mechanisms such as pyramid structures (Almeida & Wolfenzon, 2006) and cross-shareholdings (Morck et al., 2005) in these groups allow the controlling owners to protect their own private benefits. Due to a strong family wealth concentration in the firm (Anderson & Reeb, 2003b), the survival of the family's economic interests becomes central, even at the expense of minority shareholders (Attig et al., 2016; Lins et al., 2013). Examples are investment cuts, intragroup transactions from healthier to stricken group firms, or the tunneling of profits to firms where the family owns larger cash flow rights (Bertrand et al., 2002; Lins et al., 2013; Masulis et al., 2011). These actions lower not only a firm's market valuation but also its profitability (Joh, 2003). However, apart from crisis times, family ownership of firms in less developed markets can also have benefits for minority shareholders that come to light in normal times (Khanna & Palepu, 2000). First, family firms often have good networks and are closely intertwined with the state and the public sector (Bertrand et al., 2002; Bertrand & Schoar, 2006; Chen & Nowland, 2010). Such close ties may be particularly helpful in regions with weaker market institutions and weaker legal protection (Li et al., 2008), as they provide good access to human, financial, and technological resources (Anderson et al., 2003; Dinh & Calabrò, 2019; Xu et al., 2013). Second, as a sort of quasi-capital market, they share risk (Khanna & Yafeh, 2005) and provide financial resources (Almeida & Wolfenzon, 2006), and thus compensate for imperfect country capital and product markets. Finally, owner families may use not only their powerful position to expropriate minority shareholders, but also their private wealth to prop up their firms with badly needed financial capital and other resources (Friedman et al., 2003) to not lose transgener-

ational control. During recovery and growth periods, controlling shareholders can benefit more from profitable firm investments than from expropriation strategies and thereby also benefit minority shareholders (Bae et al., 2012; Friedman et al., 2003).

However, opportunities for expropriation activities are less likely in countries with a high level of regulation and thus not a plausible explanation for a cyclical performance behavior of family firms in countries such as the United States (Masulis et al., 2011; Shleifer & Vishny, 1997). Previous research (Bassanini et al., 2013; Block, 2010; Sraer & Thesmar, 2007; Van Essen et al., 2015b) shows that family firms have lower turnover rates in their workforce and lay off fewer employees even in recession periods. A mass layoff of employees often accompanies a loss in firm reputation, which attacks the owner family's socioemotional wealth (Berrone et al., 2010; Gomez-Mejia et al., 2007). In the short term, with a deterioration in orders during economic downturns, a constant workforce means relatively higher costs and therefore lower profitability. On the other hand, the firm faces lower turnover costs and keeps a well-running workforce intact. Furthermore, employees value the implicit job security and gain trust in the firm's interest in a long-term employment relationship (Wayne et al., 1997). Consequently, they acquire firm-specific knowledge and demand even lower wages, which can lead to a competitive advantage for the firm in the long term (Le Breton–Miller & Miller, 2006; Van Essen et al., 2015b). Furthermore, Zellweger (2007) finds that family firms are more prevalent in cyclical industries and argues that these industries are more attractive for long-term oriented family firms compared to more short-term oriented investors. In this manner, the cyclical performance effect in our study would not only be a result of different business strategies but also due to industry effects. For the sample of Continental European countries and thus similar to the results of Van Essen et al. (2013), we do not find any support for different performance of family firms with regard to the business cycle.

The results observed in our study do not confirm the results of those studies reporting outperformance of family firms in more difficult times (Allouche et al., 2008; Amann & Jaussaud, 2012; Desender et al., 2008; Joe et al., 2019; Kashmiri & Mahajan, 2014; Leung & Horwitz, 2010; Minichilli et al., 2016; Van Essen et al., 2015b; Zhou et al., 2017). Why do the results of our meta-analysis differ from prior works on this topic? The question can be answered in multiple ways. One possible reason lies in the very nature of a meta-analysis, which combines the results of a multitude of empirical studies and is therefore more robust against outliers resulting from specific country or industry contexts or time periods. Moreover, it corrects for publication bias. Another reason could be that in our meta-analysis, we not only consider the performance of family firms in crisis or recession periods but also base our evidence on studies from all phases or stages

of the business cycle, including both recession and recovery periods. Finally, our meta-analytic approach covering a broad range of countries allows us to control for many country-specific factors, such as the level of development or the strength of the corporate governance system.

There are additional implications for further research. First, several influential studies used multi-country datasets and investigated family firm performance across several years (e.g., Ellul et al., 2010; Masulis et al., 2011). However, no study thus far has investigated the sensitivity of family firm performance over several business cycles. A large-scale study could therefore provide further evidence for the findings from our study. Furthermore, it would provide insights into strategic decisions of family firms over decades and thereby test attributed characteristics such as long-term orientation or noneconomic goals. In this sense, outcome variables aside from firm performance such as investment behavior would be of high interest. Second, a significant share of listed firms all over the world currently is owned by wealthy businesses families, especially in Continental Europe and in emerging markets (Aminadav & Papaioannou, 2020). As emerging markets in particular will be the driving forces of prospective world-wide growth, family firms in those countries will be responsible for a large share of economic expansion in upcoming years (Le Breton-Miller & Miller, 2018). Therefore, not only the sensitivity of family firms to business cycle developments but also the impact of family firm prevalence on countries' economic development and business cycle fluctuations are promising future research directions.

Our study has limitations. First, a more balanced sample regarding the distribution of studies and effect sizes per country and years would be desirable. Early family business research had a strong US focus, but research on European and East Asian countries has grown steadily in recent years (Evert et al., 2016). Thus far, only few empirical studies exist on family firms in Arab and African countries. Second, to create a match between business cycle data and family firm performance, we are mainly limited to single-country single-year studies. Studies with panel datasets spanning several countries and years can only be included in our dataset if the respective study reports effect sizes separately for each country and year. Due to this limitation, our estimation dataset had to be reduced significantly, as we had to exclude several studies from (top-tier) finance, management, and economics journals.

Chapter 4

What determines the value of family firms?

Abstract. *This study examines the relationship between family firm status and firm value. To do so, we estimate a meta-analytic structural equation model (MASEM) and test the direct impact of family firm status on firm value as well as the mediating role of firms' strategic choices and profitability. We argue that family firms achieve higher profitability due to lower owner-manager conflicts, which should result in a market value premium, and that they make more risk-averse strategic choices than non-family firms, which should result in a market value discount. Using a sample of 515 primary studies, we do not find any direct effect of family firm status on firm value. However, we find support for most of the proposed mediating effects. On the one hand, family firms are more profitable, which increases their value. On the other hand, family firms have lower R&D intensity, which hampers their value. Further analyses show that the type of family influence (ownership vs. management) determines these mediator relationships significantly. Whereas higher profitability is mainly dependent on family ownership, risk-averse strategic decisions result from family management.*[22]

[22] This chapter is based on Hansen et al. (2019).

4.1 Introduction

Family firms are ubiquitous all around the globe, not only among privately held firms but also among firms listed on stock markets (Bertrand & Schoar, 2006). In contrast to popular beliefs, a significant share of listed firms is controlled by blockholders, and most often, these blockholders are owner families. In some countries, family firms constitute even up to 60 percent of all firms (Faccio & Lang, 2002; La Porta et al., 1999). However, families are a unique shareholder type that differs in many respects from other blockholders like institutional investors or states, which makes them an intriguing research subject. First, family owners are, most often, descendants of the firm's founder and have often inherited the firm over multiple generations. For example, German pharmaceutical company Merck was founded in 1668 and is nowadays still predominantly held by family members in the eleventh generation. Also in Ford Motor Company, founded in 1903, the founder family holds 40 percent of the shares and William Clay Ford, the great-grandson of Henry Ford, serves as executive chairman. Both examples illustrate the transgenerational intent that is valid for most entrepreneurial families. Furthermore, families often have noneconomic goals (Chrisman et al., 2012; Zellweger et al., 2013), which distinguishes them from purely financially oriented investors. Academic research has recognized the practical importance of family firms and hence, the field of family business research has grown steadily over the last two decades (Evert et al., 2016).

One of the topics mostly addressed is the question whether and why family firms financially outperform other types of businesses -– unfortunately with quite inconclusive results. Investigating family firm performance, researchers focused on accounting-based profitability measures as well as market-based performance measures. While accounting measures reflect the firm's profitability of a past period, market measures reflect investors' assessment for the future expected performance of the firm (Demsetz & Villalonga, 2001). In this study, we focus primarily on the impact of family firm status on firms' market performance expressed in terms of firm value. Empirical findings so far are ambiguous. Some studies have shown that family firms obtain lower firm values than non-family competitors (Cronqvist & Nilsson, 2003; Jameson et al., 2014; King & Santor, 2008), while others find beneficial effects (Anderson & Reeb, 2003a; Maury, 2006) or even no difference (Miller et al., 2007). Others have further investigated the impact of different types of family influence and find diverging results for family firms with founder, successor, or hired CEOs (Andres, 2008; Pérez-González, 2006; Sraer & Thesmar, 2007; Villalonga & Amit, 2006).

However, relatively little is still known about the mechanisms of public family firms' market valuation. Existing studies and meta-analyses on family firm performance so far especially lack to explain the relationship between both perfor-

mance types and further important firm determinants of family firms' valuation such as a firm's strategy. Although family firms have shown to outperform non-family firms in terms of profitability measures, they do not so in the same extent in terms of market performance (Wagner et al., 2015). Generally, a firm's profitability and firm value are closely linked, since a high profitability signals successful business activities and leads to better expectations of future investment returns. If family firms, however, outperform in profitability but not in firm value, they should possess attributes that decrease their value on the other hand. One possibility might be distinctive corporate governance attributes of family firms. Family firms rely heavily on control-enhancing mechanisms like pyramid structures (Almeida & Wolfenzon, 2006), dual-share structures (Ben-Amar & André, 2006), or cross-shareholdings (Morck et al., 2005), which increase conflicts of interests with minority shareholders and can result in valuation discounts (King & Santor, 2008). In the second place, family firms differ from non-family firms in their strategic choices in the sense that they act overly risk-averse due to a fear of loss in socioemotional wealth (SEW; Gomez-Mejia et al., 2007; Gomez-Mejia et al., 2011). Business strategy is, however, an important factor for firms' ability to create value and achieve competitive advantages (Carney, 2005). We close the gap of family firms' valuation by creating a conceptual framework that investigates the immediate impact of family firm status on firm value and incorporates firm profitability as well as strategic choices as mediating factors.

To do so, we summarize empirical findings from 515 study samples and estimate a meta-analytic structural equation model (MASEM; Cheung & Chan, 2005). Going beyond the analysis of a simple bivariate relationship, MASEM allows to include multiple constructs simultaneously and to test mediation hypotheses (Bergh et al., 2016). Applying agency theory, we argue that family firms archive on the one hand profitability advantages, which should reflect in higher market valuations. On the other hand, applying behavioral agency theory, we argue that due to their owners' fear of loss in SEW family firms differ from other firms in their strategic decisions, which reflects in a different capital structure, R&D intensity, and different levels of product diversification and internationalization. The results of our MASEM reveal no direct effect of family firm status on firm value. Instead, family firms' value is influenced by indirect mediation effects. We find that family firms show indeed a higher profitability, which has a positive mediating impact on firm value. On the other hand, family firms have lower R&D intensity and show less international activities, which hampers firm value. We find no mediating effects for capital structure and product diversification. Furthermore, we consolidate our analysis and investigate the separate influences of family ownership and management. The results of this post-hoc analysis reveal that the observed mediation effects are induced by different types of family influence. The positive effect on

profitability is mainly caused by family ownership, whereas family management has no impact. On the other hand, family involvement in management leads to more risk averse strategic choices in terms of diversification and internationalization. Finally, we test our model for developed and emerging markets separately to control for potentially higher agency costs in countries with weak institutions. However, the institutional development does not moderate the direct relationship between family firm status and firm value.
With our study, we contribute to the existing literature in several ways. Concerning theory advancement, we are the first to differentiate between profitability and firm value as distinct performance measures in MASEM and combine them into a consistent conceptual framework. In this manner, we extend the findings of previous MASEM studies on family firms (Van Essen et al., 2015a) and other ownership types (Carney et al., 2011; Tihanyi et al., 2019), which conflate those two different concepts (Demsetz & Villalonga, 2001) into one financial performance category. We show that family firms can archive higher firm valuations due to higher profitability levels. In contrast, their risk aversion especially in terms of R&D intensity dampens their firm value. Second, we show that these mediation effects arise from different types of family influence. Whereas profitability advantages arise mainly from family ownership, family managers are responsible for distinctive strategic choices. Finally, we show that even in emerging markets family firms are not automatically related to expropriation activities and higher agency conflicts, as our results do not report any significant valuation discount.

4.2 Theory and hypotheses

4.2.1 Prior literature on family firm value

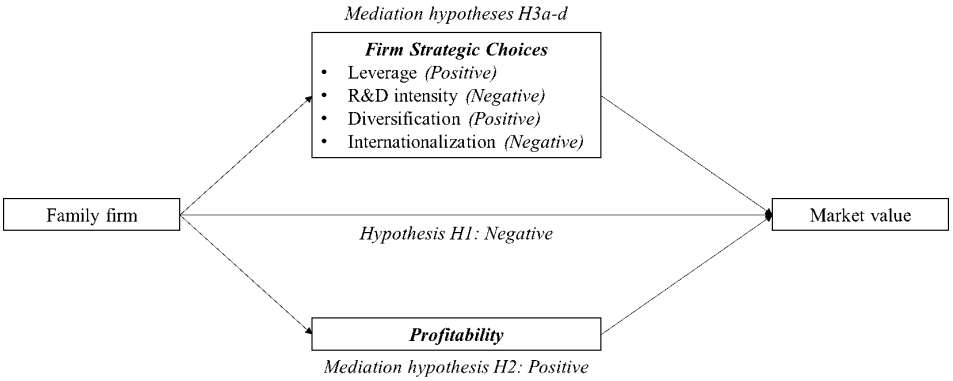
The question of whether family firm status or different family influence types directly impact a firm's value has been investigated by several studies so far. In their seminal work on a sample of S&P 500 firms, Anderson and Reeb (2003a) conclude that family firms perform at least as well as non-family firms in terms of market value and that family ownership can reduce agency problems in well-regulated and transparent markets. With these findings, they set against other early studies conducted in East Asian countries (e.g., Claessens et al., 2000; Faccio et al., 2001; Lins, 2003) that find mainly negative effects for family business groups on firm value due to excessive expropriation activities. Subsequently, further studies investigated the performance of publicly listed family firms, often in terms of both firm value and profitability. Villalonga and Amit (2006) and Barontini and Caprio (2006) show that valuation premiums hold mainly for firms with active founders, whereas descendants as CEOs do not impact or even destroy value. King and Santor (2008) also find a valuation discount for family owner-

ship, which results primarily from the excessive use of dual-class share structures. Jameson et al. (2014) even find a consistently negative effect for all types of family and founder influence among Indian firms. These conflicting results show that the literature on family firms' impact on firm value is inconclusive so far.
However, most of these studies lack to point out further moderating or mediating mechanisms of family firms' market valuation. One possibility widely neglected is the relationship between family firms operating profitability and their firm value. Isakov and Weisskopf (2014) address this issue and show that the market does not value family ownership by itself but solely a firm's profitability, suggesting that profitability serves as a mediator on firm value. Their results show furthermore that if families become, however, too powerful, investors fear expropriation and nonetheless value those firms at a discount, suggesting that at a certain level of family ownership, agency costs exceed the benefits of higher profitability.
Furthermore, tensions between family owners and minority shareholders and therefore valuation differences are also likely to result from different reference points in strategic decision making (Martin et al., 2017). Family owners typically follow more conservative strategies to avoid a loss of wealth or control and to preserve the firm for the next generation (Le Breton-Miller et al., 2011). These family-specific goals result in non-value maximizing strategies and increased agency costs, which is usually not in the interest of other shareholders (Young et al., 2008). For example, owner families avoid risky investments in R&D projects and might be apt to suppress creative self-destruction in order to protect cash flows from existing business units (Morck & Yeung, 2003). Missing profitable investment opportunities or ignoring important trends, however, can jeopardize the future competitiveness of the firm. Investors, usually being aware of market and industry dynamics, closely follow a firm's decisions and incorporate them into valuation. Thus, there should be also a mediating effect of family firms' distinctive strategic choices on their firm value. Figure 4.1 shows our conceptual model of public family firms' valuation mechanism, which incorporates a direct effect of family firm status on firm value as well as two mediating paths via profitability and strategic choices. In the following, we derive hypotheses for each path and empirically test these hypotheses in our MASEM.

4.2.2 The effect of family firm status on firm value

Compared to other types, family firms are a special form of public companies. Public family firms are generally defined as firms in which members of a family act collectively as the major shareholder and often occupy positions in the management or supervisory board of the firm. The family's high ownership stake and occupation of influential positions gives it the power to control the strategic direc-

Figure 4.1: Conceptual model



tion of the firm. The dominant position of controlling families implies advantages as well as disadvantages for other shareholders and stakeholders of the firm. On the positive side, owner families are interested in the firms' long-term success and sustainability, thereby benefiting also all other shareholders and stakeholders (Le Breton-Miller & Miller, 2009). Furthermore, they can provide crucial financial resources to the company, especially in times of economic distress, or a better access to unique resources via informal networks (Peng & Jiang, 2010). On the other hand, their dominant position gives the family owners the possibility to not only pursue value-maximizing actions for the firm but also extract private benefits of control (Demsetz & Lehn, 1985; Villalonga & Amit, 2006). This conflict is known as the principal–principal conflict, in which family owners act as quasi-agents for minority shareholders. Whereas early studies focused mainly on the conflict between owners and managers, researchers shifted their focus more and more to the conflict between majority and minority shareholders, and called attention to its potentially harmful consequences for minority investors and the overall economy (Morck et al., 2005; Young et al., 2008). Martin et al. (2017) show that those conflicts are prevalent especially in family-managed firms where the founder is no longer active. Families actively use control-enhancing instruments such as pyramid structures (Almeida & Wolfenzon, 2006), dual-class shares (King & Santor, 2008) or cross-shareholdings (Morck et al., 2005), which enable them to extract private benefits at the expense of minority shareholders. As a result of these instruments and the increasing corporate opacity (Anderson et al., 2009), investors value family firms with a discount due to the fear of being expropriated (Claessens et al., 2000; Johnson et al., 2000; Villalonga & Amit, 2006), which in turn increases the firm's financing costs (Chen et al., 2009). In the same manner, Pérez-González (2006) shows that appointing a family CEO significantly hurts firm value.

Hypothesis 1: *Family firm status has a negative direct effect on firm value.*

4.2.3 The mediating effect of profitability

In terms of profitability, academic scholars have focused less on the conflict between majority and minority owners and more on the conflict between owners and managers. Classical agency theory (Jensen & Meckling, 1976) suggests lower agency costs in family firms, as the interests of family owners and managers from the owner family are aligned (Fama & Jensen, 1983). Although owner-manager family firms are a common phenotype for small and medium-sized companies, Anderson and Reeb (2003a) show that they are also common even among the world's largest firms and find that combined family ownership and management significantly improves profitability even for large listed firms. Having shareholders and managers from the same family decreases the need for incentives and leads managers to engage in firm performance-maximizing actions rather than behaving in their own interests (McConaughy, 2000). Family members on top of a firm furthermore ensure a higher degree of continuity, which effects in turn performance outcomes. In this regard, family firms face lower CEO turnover (Tsai et al., 2006), and their CEOs have significantly longer tenures than CEOs of non-family firms (Le Breton–Miller & Miller, 2006). Longer tenure periods reduce the pressure on CEOs to take short-term oriented actions for the sake of personal benefits (Antia et al., 2010) but incentivize them to undertake actions that benefit the firm in the long run and make it resistant to temporary economic downturns (Le Breton–Miller & Miller, 2006; Zellweger, 2007).

But even if families act only as block holders and do not hold management positions in the firm, there are good arguments that family firms still outperform non-family firms in terms of profitability. Compared to other financial investors, families are relatively undiversified in terms of their wealth (Anderson & Reeb, 2003a). While normal investors can easily split up their investments across different assets and asset classes, the vast majority of the wealth of owner families is often concentrated in the firm. This gives them the incentive to closely monitor the firm's hired management (Pollak, 1985). As a result, family members often hold supervisory board positions, which gives them the necessary supervisory control even if they withdraw from top management positions.

As predicted by classical valuation approaches, a higher firm profitability leads to a higher expected (future) return for shareholders, which results in a higher firm valuation. We thus assume a positive indirect effect of family influence on firm value via profitability.

Hypothesis 2: *Family firm status has a positive effect on profitability; a higher profitability has a positive effect on firm value.*

4.2.4 The mediating effect of firms' strategic choices

In addition to profitability, we propose a firm strategy to be a predictor of firm value. The specific characteristics of family firms should lead to different strategic orientations and positioning compared to non-family firms (Harris et al., 1994; Sirmon et al., 2008). Thus, family firms' distinctive strategic choices can act as mediators on their firm valuation. Investigating strategic choices in family firms, the behavioral agency model (Wiseman & Gomez-Mejia, 1998) provides an alternative perspective to traditional agency theory by integrating concepts drawn from prospect theory (Kahneman & Tversky, 1979) into strategic decision making (Martin et al., 2013). It argues that the reason for different strategic and investment decisions of family firms is their owners' will to preserve SEW. The specific characteristics of family firms can create trade-off situations where they have to weigh between economic and noneconomic gains or losses (Gomez-Mejia et al., 2014). Typically, firms with weakly diversified owners, such as family owners, make less risky economic investments and decisions than firms with diversified shareholders do (Faccio et al., 2011; Lyandres et al., 2019). However, the fear of noneconomic or SEW losses often outweighs potential economic gains in family firms (Berrone et al., 2010). In these situations, family owners may even accept higher financial risks to prevent losses in SEW. This risk aversion may thus have implications for performance outcomes and reflect in various domains in the context of family firms, such as financing decisions (Croci et al., 2011; Mishra & McConaughy, 1999), R&D investments (Gomez-Mejia et al., 2014), acquisitions (Gomez-Mejia et al., 2018), and internationalization (Alessandri et al., 2018).

Leverage. Capital structure decisions determine the source of finance for firm investments. Public firms can typically choose to raise debt money through loans or bonds, or to issue new shares. Raising debt money increases the leverage ratio of a firm and has divergent implications for firms in general and for family firms in particular, as it increases a firm's investment opportunities and its bankruptcy risk at the same time. Being undiversified shareholders, owner families have a strong incentive to reduce the risk on the firm level (Schmid, 2013) because bankruptcy risk threatens their SEW. Facing lower managerial agency costs, their need for debt as a disciplinary tool is also less pronounced than for widely held firms (Harris & Raviv, 1991; Jensen & Meckling, 1976). For both reasons, family firms are more likely to adapt lower leverage ratios (Mishra & McConaughy, 1999) or even be zero-leveraged (Strebulaev & Yang, 2013), and increase their debt levels only when they need to finance growth (González et al., 2013).
The implications of capital structure for firm value have been debated controversially among finance researchers for a long time (Harris & Raviv, 1991; Myers, 2001). In their seminal work, Modigliani and Miller (1958) propose that firms'

capital structure is irrelevant to their firm value. In contrast, subsequent research questioned this proposition and emphasized potentially positive and negative implications of leverage on firm value. On the one hand, debt usually has tax advantages compared to equity (Modigliani & Miller, 1963) and can be used to prevent managerial entrenchment (Jensen, 1986; Jensen & Meckling, 1976), both increasing shareholder value. On the other hand, debt increases a firm's bankruptcy risk and a debt overhang might lead to an unwillingness to finance even profitable projects (Myers, 1977). Furthermore, higher debt levels potentially increase the influence of creditors on corporate decisions. These negative effects would thus suggest a negative effect on firm value and provide a good reason to operate at relatively low leverage ratios (Myers, 2001). Accordingly, Graham and Leary (2011) empirically observe a negative relationship between leverage and firm value.

Hypothesis 3a: *Family firm status has a negative effect on leverage; lower leverage has a positive effect on firm value.*

R&D intensity. Also with regard to R&D intensity, family firms have been shown to be more risk-averse than non-family firms (Block, 2012; Duran et al., 2016; Munari et al., 2010; Muñoz-Bullón & Sanchez-Bueno, 2011). R&D investments are highly risky by nature, and their returns are insecure and skewed; that is, a small minority of innovations yield the majority of all innovations' total economic value (Scherer & Harhoff, 2000). Their reluctance to attract new equity capital in exchange for control makes family firms also more capital-rationed with regard to R&D investment abilities (Munari et al., 2010). Thus, they are prone to lower R&D intensity in general and only increase their investments when the firm's performance is below aspiration levels (Chrisman & Patel, 2012). Instead, they rather invest in less risky capital expenditures to secure long-term success (Anderson et al., 2012; Croci et al., 2011). Furthermore, owner families tend to block creative self-destruction from innovation activities within their firms to protect cash flows from current business activities (Morck & Yeung, 2003). Nevertheless, innovation activities are indispensable for long-term business success. Despite their insecure outcomes, R&D investments are associated with subsequent earnings (Lev & Sougiannis, 1996) and are thus valued positively by the market (Hall et al., 2005; Hall & Oriani, 2006; Sandner & Block, 2011).

Hypothesis 3b: *Family firm status has a negative effect on R&D intensity; lower R&D intensity has a negative effect on firm value.*

Diversification strategy. Next, family firms' diversification activities are likely to differ from those of non-family firms and to impact the value of family firms. From a risk perspective, there are theoretical reasons for the manifestations of both a higher and a lower diversification ratio of family firms. From a classical agency theoretical point of view, business segment diversification mitigates firm risk due to a lower dependency from single segments (Anderson & Reeb, 2003b). On the other hand, it generally increases an organization's complexity and requires additional financial and human resources, which often accompanies a loss of control and thereby attacks a family's SEW. In this trade-off, Gomez-Mejia et al. (2010) identify a dominance of SEW-preserving over financial risk-reducing motives. In their sample of US publicly listed firms, family firms diversify less in terms of business segments as well as international markets, as the loss of control and the required acquisition of external human and financial resources for diversification activities would diminish the owner families' SEW. In the same manner, Muñoz-Bullón et al. (2018) find a lower diversification level along with a greater level of family influence across 27 European countries. While Gomez-Mejia et al. (2010) remark that these noneconomically grounded decisions might in fact lead to riskier strategic choices from a financial point of view, Anderson and Reeb (2003b) argue that specialization in one business segment might also be a source of competitive advantage for family firms. In the same manner, Hennart et al. (2019) find that family firms have a lower degree of foreign sales in mass markets than non-family firms, but that this difference decreases if they follow a niche strategy.

Although a broader diversification might better cushion a profitability shock and lower business risk, the stock market usually does not value a high amount of diversification and rates diversified firms at a discount (Lang & Stulz, 1994; Lins & Servaes, 1999; Rajan et al., 2000). This discount is especially severe for diversification activities in unrelated segments (Berger & Ofek, 1995). Mansi and Reeb (2002) argue that the valuation discounts stem from risk-reducing effects of diversification, whereas Campa and Kedia (2002) argue that diversification choices are a response to exogenous changes in the firm's environment that can also affect firm value, such as declining growth rates in their core segments.

Hypothesis 3c: *Family firm status has a negative effect on diversification; lower diversification intensity has a positive effect on firm value.*

Internationalization strategy. The effect of family influence on the internationalization activities of firms is yet unclear and empirical findings are ambiguous (Arregle et al., 2017; Pukall & Calabrò, 2014). While some studies propose that family firms internationalize less in scale and scope (Alessandri et al., 2018; Gomez-

Mejia et al., 2010; Sánchez-Bueno & Usero, 2014), others find the opposite (Carr & Bateman, 2009; Zahra, 2003) or no difference (Cerrato & Piva, 2012). Similar to diversification activities, internationalization requires specific knowledge that family firms often need to acquire from outside (Graves & Thomas, 2006). While expanding business activities to other countries offers many potential benefits such as gaining unique knowledge and substantial growth opportunities on the one hand, managers have to deal with a high amount of uncertainty on the other hand (Hitt et al., 2006). Fernández and Nieto (2006) find that family firms have, due to their conservatism and risk aversion, more problems building a portfolio of strategic resources than non-family firms, which makes it more difficult for them to succeed in foreign markets. Facing trade-offs between greater returns and a potential loss in SEW due to internationalization activities, family firms often fear these risk more than non-family firms do (Alessandri et al., 2018) or they choose market-entry strategies that do not require relinquishing control (Pukall & Calabrò, 2014). If a family member acts as the CEO, family firms therefore often prefer less risky home regional markets instead of more risky global markets (Banalieva & Eddleston, 2011). With a non-family CEO in place, a higher share of independent directors or a higher share of foreign or financial ownership, family firms acquire additional human and financial resources and extend the scale and scope of international activities (Arregle et al., 2012; Majocchi & Strange, 2012; Ray et al., 2018; Sánchez-Bueno & Usero, 2014).

There is still a lack of consensus regarding the impact of internationalization on firm value (Hitt et al., 2006). Proponents of internationalization highlight the potential in terms of economies of scale and scope, the access to new resources and capabilities, and the potential to reduce risks and use arbitrage opportunities (Hennart, 2011; Lu & Beamish, 2004). Opponents, on the other hand, emphasize the costs of internationalization such as increased complexity and cultural and regulatory diversity (Hitt et al., 1997), which can result in a significant valuation discount (Denis et al., 2002). Previous research shows that the effect direction on shareholder value depends strongly on the relatedness of internationalization activities to the core business of a firm, being positive for related and negative for unrelated activities (Doukas & Lang, 2003). Overall, Marano et al. (2016) find a dominance of advantages in their meta-analysis of 359 primary studies, resulting in a positive relationship between internationalization and firm value.

Hypothesis 3d: *Family firm status has a negative effect on internationalization; lower internationalization has a negative effect on firm value.*

4.3 Methodology

4.3.1 Sample and coding

To test our stated hypotheses, we built a database of research articles that report a relationship between family businesses and financial performance within a correlation matrix. We pursued several search strategies to compile our sample. First, we identified previous meta-analyses in the field of family firm performance and included the analyzed primary studies (Arregle et al., 2017; Carney et al., 2015; Duran et al., 2016; Van Essen et al., 2015a; Wagner et al., 2015; Wang & Shailer, 2017). Second, we searched the electronic research databases EBSCOhost, Google Scholar, JSTOR, and SSRN. The list of search terms included "family firm", "family business", "family ownership", "family management", "family control", "ownership structure", "block holder", "corporate governance", "firm value", "firm performance", and "financial performance" singularly and in combinations. Third, we browsed leading family business, entrepreneurship, management, and finance journals that frequently publish articles related to topics of family businesses. Finally, we sent emails to the authors of articles missing relevant information, for instance correlation tables, and asked them to send us the missing information.
The identified articles come from a wide range of research areas and deal with various topics, such as finance, accounting, corporate governance, strategic management, or CSR. The sample contains published articles from journals of different impact levels as well as working papers and theses. Including all types of research articles reduces the risk for publication bias (Sutton, 2009). To be included in our sample, the studies needed to fulfill the following inclusion criteria. First, as our research focus is the value of public family firms, we kept only those studies that used a sample of public firms and dropped those investigating private firms or mixed samples. Second, we included only articles analyzing differences between family and non-family firms and thus excluded studies investigating only family firms. Last, studies needed to use at least one of the financial performance measures Tobin's Q, market-to-book value, return on assets, return on equity, or return on sales. For the remaining studies, we transcribed the correlation coefficients for all relevant variable combinations. We also coded sample characteristics such as the number of observations and the country of the study. Our final sample consists of 515 studies with 6,749 effect sizes.

4.3.2 Method

To test our hypotheses, we use meta-analytic structural equation modeling (MASEM; Cheung & Chan, 2005). The advantage of MASEM compared to other

meta-analytic techniques is that it allows testing for intermediate mechanisms in a chain of relationships (Bergh et al., 2016). In addition, including several correlated predictor variables allows estimating their unique effects while controlling for the respective other variables. By these means, confounder bias or omitted variable bias is reduced. Next to this advantage for the estimation of specific direct and indirect effects, a MASEM (like any other structural model) prescribes an overall causal structure, whose implications can be empirically tested. In addition, various measures of model-data consistency (i.e., fit indexes) allow the evaluation of a model.

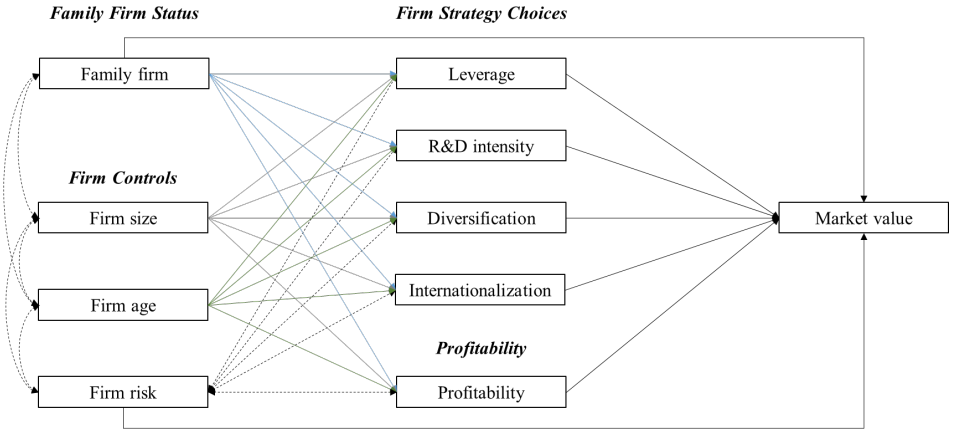
MASEM typically consists of two stages (Cheung & Chan, 2005; Viswesvaran & Ones, 1995). In the first stage, a pooled correlation matrix is derived from all included primary studies' correlation matrices. Meta-analysts nowadays face the problem that studies often report multiple correlations of the same construct. In our case, some studies reported several family firm variables (e.g., family ownership and family management) or multiple profitability measures (e.g., ROA and ROE). Therefore, we applied the approach of Wilson et al. (2016), who combine multilevel modeling with MASEM. This procedure allows us to include multiple effect sizes from the same study that measure the same construct while controlling for the statistical dependencies of these effect sizes (Konstantopoulos, 2011; Van den Noortgate et al., 2013). Consequently, the overall variation of coefficients is decomposed into sampling error, true heterogeneity due to differences within studies, and true heterogeneity between studies. To estimate the pooled correlation matrix, we used a multilevel mixed-effects weighted meta-regression (Wilson et al., 2016). Technically, this was done by regressing the vector of correlation coefficients on a set of dummy variables that represented the cells of the correlation matrix. By excluding the intercept, the "regression coefficients" represented the weighted average in each of the dummy-categories (i.e., cells).

In the second step, we fitted a structural equation model based on the estimated pooled correlation matrix. In addition, we added the asymptotic covariance matrix as a weight matrix, which indicates the precision of the correlation coefficients as a reflection of the different sample sizes for each correlation (Cheung, 2014; Cheung & Chan, 2005). Following the suggestion of Cheung and Chan (2005), we used the sum of the sample size of all studies as the sample size for fitting the model. We conducted our analyses with the metaSEM package (Cheung, 2015) and the metaphor package (Viechtbauer, 2010) for R.

4.3.3 Empirical model and variables

As argued in the hypothesis section, we assume that, next to a potential direct effect, family firms' market valuation is mediated by profitability advantages due to lower agency costs and by their strategic choices due to differences in executives'

Figure 4.2: Empirical model



Notes: For clarity of presentation, this figure does not include endogenous error terms of the strategic choice variables and profitability.

and owners' risk taking and loss aversion. In addition to the family firm status, MASEM allows us to control for the effect of firm size and firm age on a firms' strategic choices and profitability. Both are likely predictors since larger firms tend to have a higher financial leverage, are more diversified and internationally established, and can benefit from economies of scale and scope. Figure 4.2 illustrates the empirical model.

Family firm status. In this construct, we aggregated variables that define family firms or measure different family influences. In family business research, there exists a wide variety of family firm definitions and measurements of family influence (for an overview, see Diaz-Moriana et al., 2019; Mazzi, 2011). Researchers typically refer to family ownership, management, and supervisory control to evaluate the influence of specific types of family involvement on firm performance or to define family business in their studies. *Family firm* combines all those influence types into an overall measure.

Firm controls. As previously mentioned, it is important to control for general firm characteristics when investigating firms' strategic choices or performance outcomes. In primary studies, *Firm size* is typically measured by the amount of total assets, sales, or the number of employees. *Firm age* reflects the number of years since foundation. Finally, we control for *Firm risk* in terms of stock market volatility.

Firm strategic choices. As described in our hypothesis, we identified several variables that characterize firms' strategic decisions and are likely to affect their firm

value. We included *Leverage*, measured by the debt-to-assets or debt-to-equity ratio, to reflect a firm's capital structure. *R&D intensity* reflects a firm's investment strategy and is operationalized by R&D investments over assets or sales. *Diversification* measures a firm's product segment diversification by its number of segments or by diversification measures such as the entropy index. Last, *Internationalization* measures the international scope of a firm, usually in terms of international to total sales.

Profitability. To reflect a firm's *Profitability*, we incorporated the accounting-based measures return on assets (ROA), return on equity (ROE), and return on sales (ROS).

Firm value. Finally, our main construct of interest is *Firm value*. Following the vast majority of published articles in family firm research, we define it by the two widely used and similar concepts Tobin's Q and market-to-book ratio. They express the ratio of a firm's market valuation by investors to its book value of equity or its replacement costs, respectively.

4.4 Results

4.4.1 Main results

Table 4.1 shows the pooled correlation matrix for our study sample. Each cell in the lower triangle reports the weighted mean effect size between two corresponding variables and its standard error in parentheses. The cells in the upper triangle report the number of observations and the number of studies drawn from in parentheses. The pooled correlation matrix shows a negative correlation between family firm status and firm size and firm age, meaning that family firms are on average smaller and younger than non-family firms. Family firm status is also negatively correlated with firm risk, leverage, R&D intensity, and internationalization. Similar to previous meta-analyses, we find a positive mean correlation coefficient for the relationship between family firm status and profitability. Finally, and most importantly, there is no significant correlation between family firms and firm value.
Firm value itself correlates negatively with leverage and diversification, while it correlates positively with R&D intensity, internationalization and profitability. The directions of the mean correlation coefficients between the control and mediator variables are also plausible. Firm size, e.g., positively correlates with firm age, diversification, internationalization, and profitability, which itself negatively correlates with leverage.
Table 4.2 reports the results of the MASEM in the form of simultaneous equations (Carney et al., 2011; Tihanyi et al., 2019). Consistent with our hypotheses, we find a positive and significant impact of family firm status on profitability

Table 4.1: Pooled correlation matrix main results

	Family firm	Firm size	Firm age	Firm risk	Leverage	R&D intensity	Diversi-fication	Interna-tional.	Profita-bility	Firm value
Family firm		625	333	131	495	109	61	54	644	401
		(482)	(230)	(97)	(383)	(78)	(42)	(41)	(446)	(309)
Firm size	-0.08***		225	94	375	77	40	42	479	295
	(0.01)		(225)	(94)	(375)	(77)	(40)	(42)	(434)	(294)
Firm age	-0.03***	0.16***		51	175	53	27	26	231	142
	(0.01)	(0.01)		(51)	(175)	(53)	(27)	(26)	(205)	(142)
Firm risk	-0.03**	-0.08***	-0.10***		76	21	9	7	93	69
	(0.01)	(0.02)	(0.02)		(76)	(21)	(9)	(7)	(87)	(69)
Leverage	-0.02***	0.14***	0.03**	0.02		63	28	31	374	240
	(0.01)	(0.01)	(0.01)	(0.02)		(63)	(28)	(31)	(338)	(240)
R&D intensity	-0.03*	-0.04***	-0.12***	0.09***	-0.10***		14	18	66	48
	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)		(14)	(18)	(62)	(48)
Diversification	-0.03	0.19***	0.13***	-0.05	0.04	0.01		15	39	17
	(0.02)	(0.02)	(0.03)	(0.05)	(0.03)	(0.04)		(15)	(36)	(17)
International.	-0.04*	0.18***	0.05	0.03	-0.05*	0.13***	0.13***		38	12
	(0.02)	(0.02)	(0.03)	(0.06)	(0.03)	(0.04)	(0.04)		(37)	(12)
Profitability	0.02***	0.09***	0.01	-0.09***	-0.15***	-0.05**	0.02	0.05**		286
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)		(253)
Firm value	0.00	-0.02*	-0.06***	0.03	-0.07***	0.15***	-0.07*	0.08*	0.21***	
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.04)	(0.04)	(0.01)	

Notes: This table reports the mean correlation coefficients between the included variables and their respective standard error in parentheses in the lower diagonal. The upper diagonal reports the number of effect sizes and the number of study samples in parentheses. ***, **, and * denote the significance at the 1%, 5%, and 10% level, respectively.

Table 4.2: MASEM main results

	Leverage	R&D intensity	Diversification	Interna-tionalization	Profitability	Firm value
Family firm	-0.01 (0.01)	-0.03 (0.01)***	-0.01 (0.03)	-0.02 (0.01)**	0.03 (0.01)***	-0.00 (0.02)
Firm size	0.14 (0.02)***	-0.03 (0.02)	0.17 (0.03)***	0.17 (0.04)***	0.09 (0.01)***	
Firm age	0.01 (0.01)	-0.12 (0.03)***	0.11 (0.01)***	0.01 (0.02)	-0.03 (0.04)	
Firm risk						0.03 (0.02)
Leverage						-0.03 (0.02)
R&D intensity						0.15 (0.04)***
Diversification						-0.08 (0.02)***
Internationalization						0.05 (0.02)**
Profitability						0.21 (0.05)***
Studies	515					
N effect sizes	6,749					
Sample size	239,593					
DF	3					
RMSEA	0.0057					
Chi^2	26.42					
CFI	0.99					

Notes: standard error in parentheses; ***, **, and * denote the significance at the 1%, 5%, and 10% level.

($\beta = 0.03$, $p =< 0.01$), and a negative and significant impact on R&D intensity ($\beta = -0.03$, $p =< 0.01$) and internationalization ($\beta = -0.02$, $p =< 0.01$). These results are consistent with higher profitability due to lower agency costs and a higher risk aversion due to the fear of loss in SEW. However, family firm status has no effect on leverage ($\beta = -0.01$, $p = 0.19$) and the level of diversification ($\beta = -0.01$, $p = 0.59$). Consistent with the pooled correlation matrix, we find no direct effect of family firm status on firm value at all. Thus, we cannot confirm Hypothesis 1. We rather find the strategic choice variables and profitability to be important determinants of firms' market value. Except for leverage ($\beta = -0.03$, $p = 0.26$), all strategic choice variables show significant effects in the expected directions. Whereas investors value R&D investments ($\beta = 0.15$, $p =< 0.01$) and internationalization positively ($\beta = 0.05$, $p = 0.03$), segment diversification ($\beta = -0.08$, $p =< 0.01$) is valued negatively. Last, profitability has the strongest influence on firm value ($\beta = 0.21$, $p =< 0.01$), as a higher profitability results also in higher future expected returns.

Next, we test the significance of the mediation effects of profitability and the strategic choice variables. Test statistics reveal a significant mediation of family firm status on firm value via profitability (Sobel, $z = 2.22$, $p = 0.03$; Aroian, $z = 2.18$, $p = 0.03$; Goodman, $z = 2.27$, $p = 0.02$) and R&D investments (Sobel, $z = -2.68$, $p =< 0.01$; Aroian, $z = -2.63$, $p =< 0.01$; Goodman, $z = -2.73$, $p =< 0.01$). Thus, we can confirm Hypothesis 2 and Hypothesis 3b. Profitability positively mediates the relationship between family firm status and firm value, whereas R&D intensity negatively mediates this relationship. The mediations via leverage (Sobel, $z = 0.90$, $p = 0.37$; Aroian, $z = 0.79$, $p = 0.43$; Goodman, $z = 1.07$, $p = 0.29$), diversification (Sobel, $z = 0.43$, $p = 0.66$; Aroian, $z = 0.43$, $p = 0.67$; Goodman, $z = 0.44$, $p = 0.66$), and internationalization (Sobel, $z = -1.57$, $p = 0.12$; Aroian, $z = -1.50$, $p = 0.13$; Goodman, $z = -1.66$, $p = 0.10$) are, however, insignificant.

4.4.2 Post-hoc analysis: Distinguishing between family ownership and management

To increase the understanding of our observed results, we conducted a post-hoc analysis and investigated the separate impact of family ownership and family management on firm value and the mediator variables. We therefore split up the family firm construct and dropped all family firm definitions that used several family firm characteristics simultaneously. Table 4.3 reports the pooled correlation matrix with the two family variables. It shows that most of the correlations of family ownership and management point in the same direction. However, family ownership significantly and negatively correlates with firm risk, leverage and R&D intensity, whereas family management does not. Additionally, family ownership

Table 4.3: Pooled correlation matrix with family ownership and management

	Family own.	Family man.	Firm size	Firm age	Firm risk	Leverage	R&D intensity	Diversi-fication	Interna-tional.	Profita-bility	Firm value
Family own.		60	311	154	63	255	58	26	26	321	208
		(60)	(311)	(154)	(63)	(255)	(58)	(26)	(26)	(291)	(208)
Family man.	0.50***		84	54	21	61	15	7	7	88	54
	(0.02)		(83)	(54)	(21)	(60)	(15)	(7)	(7)	(82)	(54)
Firm size	-0.10***	-0.11***		225	94	375	77	40	42	479	295
	(0.01)	(0.02)		(225)	(94)	(375)	(77)	(40)	(42)	(434)	(294)
Firm age	-0.03**	-0.05**	0.16***		51	175	53	27	26	231	142
	(0.01)	(0.02)	(0.01)		(51)	(175)	(53)	(27)	(26)	(205)	(142)
Firm risk	-0.04**	-0.01	-0.08***	-0.10***		76	21	9	7	93	69
	(0.02)	(0.03)	(0.02)	(0.02)		(76)	(21)	(9)	(7)	(87)	(69)
Leverage	-0.02**	-0.03	0.14***	0.03**	0.02		63	28	31	374	240
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)		(63)	(28)	(31)	(338)	(240)
R&D intensity	-0.05**	0.00	-0.04***	-0.12***	0.09***	-0.10***		14	18	66	48
	(0.02)	(0.04)	(0.02)	(0.02)	(0.03)	(0.02)		(14)	(18)	(62)	(48)
Diversification	-0.02	-0.08	0.19***	0.13***	-0.05	0.04	0.01		15	39	17
	(0.03)	(0.06)	(0.02)	(0.03)	(0.05)	(0.03)	(0.04)		(15)	(36)	(17)
International.	-0.03	-0.07	0.18***	0.05	0.03	-0.05*	0.13***	0.13***		38	12
	(0.03)	(0.06)	(0.02)	(0.03)	(0.06)	(0.03)	(0.04)	(0.04)		(37)	(12)
Profitability	0.03***	0.00	0.09***	0.01	-0.09***	-0.15***	-0.05**	0.02	0.05***		286
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)		(286)
Firm value	0.00	0.01	-0.02*	-0.06***	0.03	-0.06***	0.15***	-0.07*	0.08*	0.21***	
	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)	(0.04)	(0.05)	(0.01)	

Notes: This table reports the mean correlation coefficients between the included variables and their respective standard error in parentheses in the lower diagonal. The upper diagonal reports the number of effect sizes and the number of study samples in parentheses. ***, **, and * denote the significance at the 1%, 5%, and 10% level, respectively.

Table 4.4: MASEM with family ownership and management

	Leverage	R&D intensity	Diversification	Interna-tionalization	Profitability	Firm value
Family ownership	-0.00 (0.03)	-0.07 (0.03)**	0.04 (0.05)	0.02 (0.03)	0.04 (0.01)***	-0.01 (0.02)
Family management	-0.01 (0.01)	0.03 (0.01)***	-0.07 (0.03)	-0.06 (0.01)***	-0.01 (0.01)	-0.01 (0.02)
Firm size	0.14 (0.04)***	-0.03 (0.04)	0.17 (0.04)***	0.17 (0.06)***	0.08 (0.01)***	
Firm age	0.01 (0.02)	-0.12 (0.03)***	0.11 (0.02)***	0.01 (0.02)	-0.03 (0.02)	
Firm risk						0.03 (0.03)
Leverage						-0.02 (0.02)
R&D intensity						0.15 (0.03)***
Diversification						-0.08 (0.03)***
Internationalization						0.06 (0.04)*
Profitability						0.21 (0.04)***
Studies	513					
N effect sizes	5,769					
Sample size	237,206					
DF	3					
RMSEA	0.0048					
Chi^2	26.18					
CFI	0.99					

Notes: standard error in parentheses; ***, **, and * denote the significance at the 1%, 5%, and 10% level.

significantly and positively correlates with profitability.
Table 4.4 reports the results of the MASEM with both family variables and reveals a more fine-grained picture of family firms' strategic decision making. Similar to the overall model, we find no effect for family ownership ($\beta = -0.00$, $p = 0.99$) or family management ($\beta = -0.01$, $p = 0.38$) on leverage. Concerning the effect on R&D intensity, ownership and management have an opposing impact. Whereas family ownership reduces R&D intensity ($\beta = -0.07$, $p = 0.04$), family management has an increasing effect ($\beta = 0.03$, $p =< 0.01$). We observe furthermore a negative and significant effect of family management on diversification ($\beta = -0.07$, $p = 0.02$) and internationalization ($\beta = -0.06$, $p =< 0.01$), whereas the effect of ownership on both variables is insignificant. These results suggest a more focused strategic orientation of family firms in terms of product market and international diversification if family members are active in firm management. On the other hand, family ownership shows a positive and significant effect on profitability ($\beta = 0.04$, $p =< 0.01$), whereas family management has no effect ($\beta = -0.01$, $p = 0.27$). Last, and similar to the base model, neither of the two variables has a direct effect on firms' market value.
Again, we test the mediation effects of all strategic choice variables and profitability on the value of family firms. The test statistics confirm a negative and significant mediation effect of family ownership on firm value via R&D intensity (Sobel, $z = -1.92$, $p = 0.06$; Aroian, $z = -1.89$, $p = 0.06$; Goodman, $z = -1.95$, $p = 0.05$), and a positive and significant mediation effect via *Profitability* (Sobel, $z = 2.67$, $p =< 0.01$; Aroian, $z = 2.65$, $p =< 0.01$; Goodman, $z = 2.71$, $p =< 0.01$). The relationship between family management and firm value is positively mediated by R&D intensity (Sobel, $z = 2.57$, $p = 0.01$; Aroian, $z = 2.53$, $p = 0.01$; Goodman, $z = 2.60$, $p =< 0.01$) and diversification (Sobel, $z = 1.89$, $p = 0.06$; Aroian, $z = 1.83$, $p = 0.07$; Goodman, $z = 1.95$, $p = 0.05$), and slightly negatively mediated by internationalization (Sobel, $z = -1.66$, $p =< 0.10$; Aroian, $z = -1.63$, $p = 0.10$; Goodman, $z = -1.68$, $p = 0.09$).

4.4.3 Post-hoc analysis: The influence of institutional development

Although family firms are prevalent around the world (La Porta et al., 1999), their manifestation and behaviors differ across countries and strongly depend on their respective institutional environment (Morck & Steier, 2005; Steier, 2009; Wright et al., 2014). Therefore, institutional theory has gained increased attention in exploring firm outcomes in general strategic management (Peng et al., 2009; Peng et al., 2008; Wan & Hoskisson, 2003) and family business research (Gedajlovic et al., 2012; Liu et al., 2012; Soleimanof et al., 2018) in recent years. Institutional development defines the potential scope of action for managers and domi-

Table 4.5: Pooled correlation matrix OECD countries

	Family firm	Firm size	Firm age	Firm risk	Leverage	R&D intensity	Diversi-fication	Interna-tional.	Profita-bility	Firm value
Family firm		327	178	82	248	49	40	32	323	198
		(233)	(114)	(56)	(179)	(38)	(25)	(24)	(210)	(145)
Firm size	-0.11***		113	56	173	38	24	24	225	142
	(0.01)		(113)	(56)	(173)	(38)	(24)	(24)	(207)	(142)
Firm age	-0.05***	0.20***		29	85	25	14	13	115	66
	(0.01)	(0.01)		(29)	(85)	(25)	(14)	(13)	(104)	(66)
Firm risk	-0.01	-0.08***	-0.12***		39	12	6	6	51	39
	(0.02)	(0.02)	(0.03)		(39)	(12)	(6)	(6)	(48)	(39)
Leverage	-0.04***	0.16***	0.05***	-0.02		31	16	20	172	111
	(0.01)	(0.01)	(0.02)	(0.02)		(31)	(16)	(20)	(156)	(111)
R&D intensity	-0.02	-0.07***	-0.11***	0.13***	-0.12***		9	8	30	26
	(0.02)	(0.02)	(0.03)	(0.04)	(0.03)		(9)	(8)	(27)	(26)
Diversification	-0.06***	0.20***	0.14***	-0.05	0.04	0.02		11	22	9
	(0.02)	(0.03)	(0.04)	(0.06)	(0.04)	(0.05)		(11)	(20)	(9)
International.	-0.07***	0.16***	0.09**	0.04	-0.06*	0.11***	0.14***		20	7
	(0.03)	(0.03)	(0.04)	(0.06)	(0.03)	(0.05)	(0.04)		(19)	(7)
Profitability	0.03***	0.09***	0.03*	-0.11***	-0.12***	-0.11***	0.00	0.05		129
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)	(0.03)	(0.03)		(116)
Firm value	0.01	-0.04***	-0.08***	0.04*	-0.08***	0.18***	-0.07	0.06	0.16***	
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.03)	(0.05)	(0.06)	(0.01)	

Notes: This table reports the mean correlation coefficients between the included variables and their respective standard error in parentheses in the lower diagonal. The upper diagonal reports the number of effect sizes and the number of study samples in parentheses. ***, **, and * denote the significance at the 1%, 5%, and 10% level, respectively.

Table 4.6: MASEM OECD countries

	Leverage	R&D intensity	Diversification	Interna-tionalization	Profitability	Firm value
Family firm	-0.02 (0.01)*	-0.03 (0.01)***	-0.03 (0.04)	-0.05 (0.01)***	0.04 (0.01)***	0.01 (0.03)
Firm size	0.16 (0.02)***	-0.05 (0.04)	0.17 (0.06)***	0.14 (0.04)***	0.09 (0.01)***	
Firm age	0.02 (0.02)	-0.11 (0.03)***	0.11 (0.01)***	0.05 (0.02)***	-0.02 (0.04)	
Firm risk						0.03 (0.03)
Leverage						-0.05 (0.04)
R&D intensity						0.19 (0.04)***
Diversification						-0.08 (0.02)***
Internationalization						0.03 (0.03)
Profitability						0.18 (0.06)***
Studies	246					
N effect sizes	3,356					
Sample size	115,163					
DF	3					
RMSEA	0.0044					
Chi^2	9.72					
CFI	0.99					

Notes: standard error in parentheses; ***, **, and * denote the significance at the 1%, 5%, and 10% level.

nant shareholders and might in turn impact investors' market valuations. Strong institutions offer a higher level of protection and limit the possibilities for expropriation (Shleifer & Vishny, 1997) or the extraction of private benefits of control (Leuz et al., 2003). On the other hand, their strong position in combination with low transparency and weak institutions allows dominating family owners to expropriate minority shareholders (Peng & Jiang, 2010), who in turn value these firms at a discount. Furthermore, the institutional environment might have an impact on the strategic choices of family firms and thus an indirect effect on performance. Instead of focusing on one business sector, diversification might become more attractive in countries with weak institutions and imperfect markets (Khanna & Yafeh, 2007). Diversified business groups can become a sort of quasi-capital market that shares risk (Khanna & Yafeh, 2005) and provides financial resources (Almeida & Wolfenzon, 2006) for their affiliated companies.

In a MASEM, one can test moderator hypotheses by using subgroup analysis (Jak & Cheung, 2018). To investigate a potential moderating influence of countries' corporate governance development on family firms' market value, we divided our sample into developed and emerging markets using the OECD membership status of a country.[23] The OECD membership status is a valid indicator for high standards of corporate governance, as the corporate governance principles for membership countries are designed to support economic efficiency, sustainable growth and financial stability, and to ensure the protection of shareholders and stakeholders.

Table 4.5 shows the pooled correlation matrix, and Table 4.6 shows the respective simultaneous regressions for the sample of OECD countries. The results of the structural equation model for the OECD countries are consistent with those of the complete dataset. Family firms tend to invest significantly less in R&D and undertake less international business activities, but show higher profitability ratios than non-family firms. Furthermore, family firms rely less on debt finance. Again, there is no direct effect of family involvement on firm value, which indicates that beneficial and disadvantageous effects are fully mediated by the strategic choice variables. The mediation effects of R&D intensity (Sobel, $z = -2.32$, $p = 0.02$; Aroian, $z = -2.27$, $p = 0.02$; Goodman, $z = -2.37$, $p = 0.02$) and profitability (Sobel, $z = 2.05$, $p = 0.04$; Aroian, $z = 2.00$, $p = 0.05$; Goodman, $z = 2.12$, $p = 0.03$) are again significant.

Tables 4.7 and 4.8 report the results for non-OECD countries. The pooled correla-

[23] OECD member countries in our sample are: Australia, Belgium, Canada, Chile, France, Germany, Greece, Italy, Japan, Korea, Mexico, Netherlands, Norway, Poland, Portugal, South Korea, Spain, Sweden, Switzerland, Turkey, UK, US. Non-OECD countries in our sample are: Bangladesh, Brazil, China, Colombia, Cyprus, Egypt, Hong Kong, India, Indonesia, Iran, Jordan, Kuwait, Malaysia, Pakistan, Peru, Philippines, Saudi Arabia, Singapore, South Africa, Sri Lanka, Taiwan, Thailand, Tunisia, UAE, Venezuela, Vietnam.

tion matrix shows that family firms correlate negatively and significantly only with firm size and risk, but not with any of the strategic choice variables, profitability, or firm value. These results are also reflected in the MASEM. Family firms have only a lower R&D intensity, whereas they do not differ from non-family firms in any other strategic choice variable or profitability. Although slightly negative, the impact of family firm status on firm value is also insignificant, which rejects the assumption of valuation discounts from more severe agency II conflicts in emerging markets. The effects of strategic choices and profitability on firm value are largely similar to those of the OECD countries. Only in terms of internationalization, we find a positive and significant effect in non-OECD countries, whereas this effect is not significant in the OECD subsample. Thus, investors value the international activities of emerging market firms, which might be a sign of their international competitiveness, positively.

4.5 Discussion and conclusion

In our study, we examined the effect of family firm status on publicly listed firms' market valuation in a meta-analytic structural equation model (MASEM). Our results based on 515 primary studies revealed, on average, no direct family effect on firm value. We found no effect in either the pooled correlation matrix, reflecting the unconditional relationship between family firms and firm value, or in the MASEM, controlling for mediation mechanisms. This finding contradicts the results of many prominent studies observing valuation discounts (Jameson et al., 2014; King & Santor, 2008) as well as premiums (Anderson & Reeb, 2003a; Andres, 2008) for family firms, but supports the findings of Wagner et al. (2015), who did not find significant effects for family firms' market performance. It is important to mention that we do not deny the potential existence of severe principal–principal conflicts and resulting valuation discounts for family firms under certain conditions, such as during times of economic distress (Lins et al., 2013), or for the excessive use of control-enhancing mechanisms (King & Santor, 2008). However, we cannot confirm the existence of such family firm valuation discounts (or premiums) in general or across countries.

We also did not find any direct effect on firm value when dividing family influence into family ownership and family management. Agency theory predicts an increased risk for expropriation activities in family firms, particularly in the case of family presence on the management board (Martin et al., 2017). Moreover, previous research has highlighted the harmful influence of nepotism and family altruism on firm performance (Schulze et al., 2001). The occupation of CEO positions with inadequately talented family members should therefore be reflected in

Table 4.7: Pooled correlation matrix non-OECD countries

	Family firm	Firm size	Firm age	Firm risk	Leverage	R&D intensity	Diversi-fication	Interna-tional.	Profita-bility	Firm value
Family firm		276	147	47	223	54	21	21	299	189
		(231)	(111)	(39)	(186)	(36)	(17)	(16)	(200)	(153)
Firm size	-0.06***		108	37	185	36	16	17	237	143
	(0.01)		(108)	(37)	(185)	(36)	(16)	(17)	(211)	(142)
Firm age	-0.01	0.12***		21	86	27	12	12	112	73
	(0.01)	(0.02)		(21)	(86)	(27)	(12)	(12)	(97)	(73)
Firm risk	-0.05***	-0.07***	-0.09***		34	9	3	1	40	30
	(0.02)	(0.03)	(0.03)		(34)	(9)	(3)	(1)	(37)	(30)
Leverage	-0.01	0.12***	0.00	0.05**		63	11	11	188	119
	(0.01)	(0.01)	(0.02)	(0.03)		(63)	(11)	(11)	(168)	(119)
R&D intensity	-0.03	-0.02	-0.16***	0.05	-0.09***		5	10	35	18
	(0.02)	(0.03)	(0.03)	(0.05)	(0.03)		(5)	(10)	(34)	(18)
Diversification	0.02	0.18***	0.12***	-0.06	0.05	-0.02		3	17	8
	(0.03)	(0.04)	(0.04)	(0.09)	(0.05)	(0.07)		(3)	(16)	(8)
International.	0.00	0.20***	-0.02	-0.01	-0.02	0.14***	0.03		17	5
	(0.03)	(0.04)	(0.05)	(0.15)	(0.05)	(0.05)	(0.09)		(17)	(8)
Profitability	0.01	0.09***	-0.01	-0.05***	-0.18***	0.01	0.03	0.06		148
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)	(0.04)	(0.04)		(129)
Firm value	-0.02	0.01	-0.04***	0.01	-0.05***	0.14***	-0.07	0.11	0.24***	
	(0.01)	(0.01)	(0.02)	(0.03)	(0.01)	(0.04)	(0.05)	(0.07)	(0.01)	

Notes: This table reports the mean correlation coefficients between the included variables and their respective standard error in parentheses in the lower diagonal. The upper diagonal reports the number of effect sizes and the number of study samples in parentheses. ***, **, and * denote the significance at the 1%, 5%, and 10% level, respectively.

Table 4.8: MASEM non-OECD countries

	Leverage	R&D intensity	Diversification	Interna-tionalization	Profitability	Firm value
Family firm	0.00 (0.01)	-0.03 (0.01)**	0.03 (0.06)	-0.02 (0.02)	0.01 (0.02)	-0.02 (0.03)
Firm size	0.12 (0.03)***	-0.00 (0.04)	0.17 (0.05)***	0.20 (0.10)**	0.08 (0.01)***	
Firm age	-0.01 (0.02)	-0.16 (0.05)***	0.10 (0.01)***	-0.04 (0.02)**	-0.03 (0.06)	
Firm risk						0.02 (0.02)
Leverage						0.00 (0.03)
R&D intensity						0.12 (0.07)*
Diversification						-0.08 (0.02)***
Internationalization						0.08 (0.03)**
Profitability						0.23 (0.07)***
Studies	247					
N effect sizes	3,141					
Sample size	97,202					
DF	3					
RMSEA	0.0088					
Chi^2	25.68					
CFI	0.96					

Notes: standard error in parentheses; ***, **, and * denote the significance at the 1%, 5%, and 10% level.

lower market valuations. However, family management itself does not accompany lower firm value in our model, indicating that investors do not inherently consider family managers to imply expropriation risks or insufficient talent.

Instead, our results revealed that the level of profitability and the strategic choices of family firms significantly mediate their firm value. On the one hand, and in accordance with previous meta-analyses (Van Essen et al., 2015a; Wang & Shailer, 2017), public family firms outperform other types of firms in terms of profitability. As predicted by classical valuation methods, profitable firms also have higher valuations, as a high profitability reflects a successful firm strategy, superior products or services, and efficient operations. Thus, our results show that profitability serves as a positive mediator in the relationship between family firm and firm value. According to our further analyses, the positive effect on profitability mainly stems from family ownership, whereas family management has no impact. Due to their strong wealth concentration, owner families have strong incentives to monitor the firm and establish efficient operations. Furthermore, their long-term, cross-generational investment horizon reduces the pressure on firm management to maximize short-term returns that jeopardize a company's assets.

Next to profitability, we investigated the mediating effect of strategic choices on family firms' value, and found a negative mediating impact of R&D intensity and internationalization, which was, however, not significant, and no effect for leverage and diversification for all types of family influence. When splitting up family influence into management and ownership, family management was shown to be the key driver for these different strategic choices in family firms. In this manner, family participation in management results in less international activity and less corporate diversification in terms of business segments. From a purely financial risk point of view, family involvement should result in more diversification to lower the risk at the firm level (Anderson & Reeb, 2003b). Our results thus support the behavioral agency point of view. In this sense, segment and product diversification strain a family firm's financial and human resources and constitute a potential loss in SEW, as owner families need to give up control in order to obtain these resources (Gomez-Mejia et al., 2011). The effects on firm value for both diversification types are, however, different. As shown by previous studies (Berger & Ofek, 1995; Lang & Stulz, 1994; Marano et al., 2016), segment diversification results in valuation discounts since it increases a firm's complexity and can reduce its strategic focus, whereas international diversification is seen positively. Family firms, especially those with family members in management, might thus benefit from a strong focus on specific segments, where they can utilize their tacit knowledge. Internationalization, on the other hand, might be seen more and more as a necessity in a globalized world with rising competitors in emerging

markets and new foreign entrants into home markets. By placing too great a focus on home markets, especially in industries with portable goods or services, family firms potentially run into the danger of disregarding new competitors and losing market share in the long run.

Our model furthermore confirmed the results of Duran et al. (2016), who observe a lower R&D intensity for family firms in their meta-analysis. In our base model, family influence in general showed a negative and significant impact. Splitting our family firm variable showed that this negative effect mainly stems from family ownership, confirming that family owners eschew risky investments (Block, 2012; Croci et al., 2011; Munari et al., 2010), whereas family management had a positive impact on R&D intensity. This positive impact might likely be attributed to the inclusion of founder CEOs, who are generally less risk-averse and have a stronger growth focus (Duran et al., 2016). Investors, however, value a high innovation orientation (Hall et al., 2005; Hall & Oriani, 2006; Sandner & Block, 2011), which is reflected in higher firm valuations. Our model therefore identifies family firms' investment strategy in terms of R&D intensity as a negative mediator for firm value.

Last, we did not find a significant difference between family and non-family firms in terms of capital structure. Although a high degree of leverage implies higher firm risk, it has no unique impact on firm value and might be seen on the individual firm level. Lang et al. (1996) find that high leverage reduces growth not for firms that are known to have good investment opportunities but only for firms whose growth opportunities are not recognized by the market or whose opportunities are not sufficiently valuable to overcome the negative effects of their debt overhang.

In the subsample analysis on economic and institutional development, we observed that the previous results might be mainly driven by Western countries. In emerging markets, family firms did not differ from non-family firms in terms of strategic choices. For example, family influence has no impact on diversification and internationalization levels, indicating that family firms in these countries might use diversification and internationalization as necessary means to overcome weaknesses in their home-country environment. Moreover, and maybe most surprisingly, we did not find a direct negative impact of family firm status on firm value in emerging markets. These results contradict the image of ubiquitous agency conflicts between family owners and minority shareholders in those countries.

Our study contributes to the existing literature manifold and has several implications for future research. First, we extend previous MASEM studies on family firms and other ownership types (e.g., Carney et al., 2011; Tihanyi et al., 2019; Van Essen et al., 2015a) by dividing firm performance into profitability and firm

value and by treating those two types of performance measures as different concepts. Referring to traditional firm valuation concepts, we argued that a firm's profitability is a predictor of its firm value and therefore treated it as a mediator variable. Our results confirmed this perspective, as profitability was the most important determinant of firm value. This aspect also has implications for future empirical studies on family firms' market performance. Excluding profitability as a control variable might evoke omitted variable bias and thus lead to false conclusions if family firms have higher profitability than non-family firms. In the past, also some of the most prominent studies did not control for profitability in their regressions on market performance (e.g., Anderson & Reeb, 2003a; Andres, 2008; Maury, 2006). Second, we show that different types of family influence have different impacts on strategic decision making and firm outcomes in family firms. Whereas family ownership enhances profitability due to lower agency costs, family management is the key driver for distinctive strategic choices. Therefore, if possible, the authors recommend the use of multiple family variables in empirical studies to enlarge the understanding of effect mechanisms in family firms. Last, we introduce a relatively new variation of MASEM, which combines hierarchical modeling with meta-analytic structural equation modeling (Wilson et al., 2016), into the management research field. Management studies are often characterized by the use of multiple variables of the same construct (e.g., different family variables). Previous studies ignored the dependencies of multiple effect size observations from the same study, which might inflate the results. We therefore recommend using these more advanced methods to achieve more robust results.
Finally, our study also faces some limitations: First, we could not control for firm-specific governance variables, such as dual-class shares, CEO duality or pyramid structures, which may be prevalent in one family firm but not in another and which may significantly influence the value of these firms. Second, we face some restrictions with regard to the frequency of variables included in the studies. While the disclosure of some variables, such as R&D expenditure, is compulsory in the United States, this is not the case in European countries, which limits the number of observations for some variable combinations in these countries. Thus, a more frequent use of these variables in countries outside the United States could increase the understanding of family firms' strategic choices and their impact on firm value.

Chapter 5

Public family firms and leverage

Abstract. *In this study, we examine the impact of family firm status on publicly listed firms' leverage ratios. Furthermore, we investigate the moderating role of a country's institutional setting, especially its creditor and shareholder rights, on this relationship. Conducting a meta-analysis on 780 effect sizes from 550 studies, we find overall a slightly negative but significant relationship between family firm status and leverage. Our results reveal a large amount of heterogeneity and considerable mean effect size differences across the 45 countries included in the study. The results of our meta-regression analysis report a significant moderating impact of creditor and shareholder rights on family firms' capital structure decisions. Whereas stronger creditor rights have a negative impact on family firm leverage, stronger shareholder rights have a positive impact on family firm leverage. Our study combines the two dominating and competing views on family firm leverage. On the one hand, the overall lower leverage ratio of family firms confirms the risk aversion view on family firms. On the other hand, also control considerations have a significant impact on leverage ratios, as family firms adjust their capital structure dependent on creditor and shareholder rights in their home country to ensure their dominant position in the firm and prevent potentially harmful conflicts with minority shareholders or creditors. In this sense, we highlight the importance of the institutional setting on financing patterns of firms.*[24]

[24]This chapter is based on Hansen and Block (2019).

5.1 Introduction

Since Modigliani and Miller (1958), researchers intensively discuss the determinants of firms' capital structure decisions and their (ir)relevance for firm value. Two major theoretical views have been developed to explain capital structure decisions and their consequences (Fama & French, 2002; Graham & Leary, 2011). On the one hand, trade-off theory focuses on the costs and benefits of debt and predicts that firms will adjust their leverage ratios accordingly (Lemmon & Zender, 2010). Costs can arise from a higher bankruptcy risk or agency conflicts with creditors and shareholders, whereas benefits can arise from tax shields or mitigated shareholder-manager conflicts (Jensen & Meckling, 1976; Modigliani & Miller, 1963). On the other hand, pecking-order theory (Myers & Majluf, 1984; Myers, 1984) argues that firms follow a financing hierarchy to minimize the adverse selection costs of security issuance (Graham & Leary, 2011). In this sense, firms prefer debt to equity when retained earnings are not sufficient to finance new investments. Regardless of the theoretical view, most capital structure decisions are influenced by firms' corporate governance attributes. Berger et al. (1997) and Wen et al. (2002) thereby highlight the impact of CEO characteristics and board structure on the perceived costs and benefits of a firm's financing decisions. Another important governance aspect is the ownership structure of a firm, as different owner types have different goals and incentives. Managerial shareholdings are typically negatively related to leverage because higher leverage ratios increase the management's nondiversifiable risk (Friend & Lang, 1988). This effect can be mitigated by large shareholders, who have the incentives and ability to monitor the firm's management (Brailsford et al., 2002; Friend & Lang, 1988). However, the allocation of power between dominant and minority shareholders also has implications for firms' capital structure, as dominant shareholders often follow different interests than the remaining firm shareholders.

The most common dominant shareholder type around the world is the owner family. In recent years, capital structure decisions of family firms have gained increased scientific interest, and multiple studies have been devoted to this topic (Michiels & Molly, 2017; Motylska-Kuzma, 2017; Thiele, 2017). Family firms are an intriguing research subject because they do not correspond to the image of a company held by atomistic shareholders and managed by hired professionals, as proposed by Berle and Means (1932), but they often combine a controlling ownership stake with managerial power (Bertrand & Schoar, 2006; Burkart et al., 2003). What makes family firms differ from other companies with dominant shareholders is the prevalence of not only economic but also noneconomic goals of the family owners (Chrisman et al., 2012). Both the controlling position and the noneconomic goals of the family owners have the potential for conflicts with minority shareholders (Martin et al., 2017) as well as creditors (Pan & Tian, 2016).

In the family firm literature, there exist two competing views on the relative use of leverage compared to other firm types. The first group of researchers highlights the risk aversion of family firms due to their owners' low wealth diversification (Anderson & Reeb, 2003b) and argues that family firms avoid debt due to the accompanying increased bankruptcy risk (Mishra & McConaughy, 1999). The opposite view highlights the importance of family owners' control considerations for capital structure decisions. Following this argumentation, family firms prefer debt as a non-diluting financing strategy over the issue of new shares (Croci et al., 2011), or they use leverage as a substitute for other control enhancing mechanisms such as cross-shareholdings or pyramids (Ellul, 2009). In this sense, the empirical findings are also inconclusive, and results supporting both viewpoints have been reported for family firms across different countries. Lower leverage ratios have been found for family firms in Chile (Jara et al., 2018), France (Benkraiem et al., 2018; Latrous & Trabelsi, 2012; Margaritis & Psillaki, 2010), Germany (Ampenberger et al., 2013; Schmid, 2013), Saudi-Arabia (Al-Ajmi et al., 2009) or the US (Mishra & McConaughy, 1999). In contrast, other studies found higher leverage ratios for family firms in Australia (Setia-Atmaja, 2010; Setia-Atmaja et al., 2009), Brazil (Kayo et al., 2018), Canada (King & Santor, 2008), Egypt (ElBannan, 2017), Italy (Morresi & Naccarato, 2016), Poland (Jewartowski & Kałdoński, 2015), Thailand and Indonesia (Bunkanwanicha et al., 2008; Wiwattanakantang, 1999), the US (Keasey et al., 2015), and multi-country samples (Croci et al., 2011; Ellul, 2009).

In this study, we conduct a meta-analysis to examine the relationship between family firms and capital structure. Meta-analysis is a powerful tool to summarize the findings of a research field and to identify underlying moderators of a relationship of interest (Gonzalez-Mulé & Aguinis, 2018). Given the contradicting empirical findings and perspectives on family firm leverage, there is clearly a need to shed light on this relationship. We thereby focus on publicly listed firms, which have a wider array of financing choices than private firms, are less credit constrained and can adjust their capital structures at a relatively low cost (Faulkender & Petersen, 2006; Myers, 2001). The motives for capital structure choices might thus not be comparable to those of private firms. Most importantly, private family firms rarely have non-family shareholders and therefore face less minority shareholder conflicts.

Based on a sample of 780 effect sizes from 550 primary studies across 45 countries, our univariate meta-analysis reports an overall negative relationship between public family firms and leverage. This result supports the view of the risk-averse family firm that eschews debt. However, reflecting the results of the previously mentioned studies, we find considerable differences between the different countries included in our study. We further explore the moderating role of shareholder

and creditor rights in a multivariate hierarchical meta-regression analysis. Our results show that control considerations lead to a strategic use of leverage, which guarantees the owner family the highest level of control. Specifically, stronger shareholder rights have a positive moderating impact on the relationship between family firm status and the leverage ratio, whereas stronger creditor rights have a negative moderating impact on the relationship between family firm status and the leverage ratio.

Our study contributes to the existing corporate governance and family business literature in multiple ways. First, we summarize empirical findings on family firms' capital structure decisions in a meta-analysis and thereby extend the understanding of family firms' financing behavior. In recent years, most studies and meta-analyses in family business research have focused on firm performance (e.g., O'Boyle et al., 2012; Van Essen et al., 2015a; Wagner et al., 2015), whereas capital structure has not been considered to date. Second, we show that family firm leverage is not uniform across countries. In this sense, we follow the call for further research by Ampenberger et al. (2013), Gomez-Mejia et al. (2014) and Michiels and Molly (2017) and highlight the importance of countries' institutional settings in family firms' financial decision making, especially concerning capital structure decisions. We identify shareholder and creditor rights as important moderators of the relationship between family firms and leverage because they determine the operational framework for owner families' control considerations. Furthermore, our results thereby enhance the understanding of potential principal-principal conflicts in family firms concerning financing decisions. Finally, we show that the risk-aversion and control-consideration hypotheses are not necessarily mutually exclusive but that the predominance of either one depends on the institutional setting.

The remainder of this study is structured as follows: In the next section, we derive hypotheses for the overall effect of family firm status on financial leverage and the moderation effects of creditor and shareholder rights. In Section 5.3, we introduce the sample and methods used. In Section 5.4, we present the results of our analyses. Finally, we discuss our results critically in Section 5.5 and note possible directions for further research.

5.2 Theory and hypotheses

5.2.1 Family firms and leverage ratio

The theoretical arguments and empirical findings to date are inconclusive about the overall relationship between public family firms and leverage. From an agency theory perspective, the optimal leverage ratio is an interplay of agency conflicts between owners, managers, and creditors. In this sense, agency theory

provides arguments for both higher and lower leverage ratios of family firms compared to non-family firms. Given the conflicting theoretical considerations and empirical findings, we regard the relationship between family firm status and leverage as theoretically undetermined and formulate competing hypotheses.
Concerning the classical owner-manager conflict, debt and the resulting interest and principal payments are a powerful tool to discipline managers and prevent self-serving actions and empire building (Harris & Raviv, 1991; Jensen, 1986; Stulz, 1990). In family firms, agency costs from owner-manager conflicts are typically lower than in companies with dispersed owners (Jensen & Meckling, 1976), as family members often hold management positions and thereby ensure the alignment of interests between the management and the shareholding members of the owner family (Fama & Jensen, 1983). Furthermore, family owners have the incentive to monitor the firm's actions because of the high wealth concentration in the firm, even if they are not actively involved in the management (Grossman & Hart, 1980; Shleifer & Vishny, 1997). The lower agency costs thus result in a lower need for family firms to use leverage as a management incentive and predict a lower leverage ratio compared to non-family firms. A further reason for a lower leverage ratio among family firms is rooted in behavioral agency theory (Wiseman & Gomez-Mejia, 1998). In general, the firm owners' diversification level is positively related to the risk level of corporate investments (Faccio et al., 2011; Lyandres et al., 2019). Family owners are comparably undiversified shareholders (Anderson & Reeb, 2003b) and attach great value to the preservation of socioemotional wealth (SEW; Gomez-Mejia et al., 2007). A higher leverage ratio, however, increases bankruptcy and thereby firm-specific risk, which in turn threatens families' SEW. Family owners' fear of loss in SEW results in more risk-averse strategic decisions, such as lower R&D spending (Chrisman & Patel, 2012) and lower leverage ratios (Jara et al., 2018; Mishra & McConaughy, 1999). According to Strebulaev and Yang (2013), family firms are also more likely to be even zero-leveraged, meaning that these firms do not use any debt at all to finance their operations. Ampenberger et al. (2013), Baek et al. (2016) and González et al. (2013) observe that lower leverage ratios resulting from higher risk aversion are especially pronounced in family firms in which family members serve as managers or directors. On the other hand, avoiding debt can hamper potential growth, which contradicts the interests of purely economically oriented shareholders (Martin et al., 2017).

Hypothesis 1a: *Family firm status has a negative effect on firms' leverage ratios.*

In addition to the owner-manager agency conflict, the conflict between majority and minority shareholders influences capital structure decisions. In family firms,

dominant owners usually have the power to determine the strategic direction of the firm because they hold a significant amount of shares and often appoint family members as CEOs. Furthermore, concentrated power allows the excessive consumption of private benefits of control at the cost of minority shareholders (Shleifer & Vishny, 1997). These expropriation activities are especially severe in the absence of further major shareholders that can monitor families' expropriation behaviors (Jara-Bertin et al., 2008; Sacristán-Navarro et al., 2015; Santos et al., 2014). Owner families typically have a long investment horizon with strong transgenerational intentions and are unwilling to give up control of the firm, which ensures the continuing consumption of private benefits. From this perspective, the choice of financing new investments is, therefore, also a strategic means to maintain control over the firm. Whereas the financing of investments by issuing new equity shares dilutes the control of existing shareholders, debt, on the other hand, is a non-diluting financing strategy and strengthens the position of owner-managers, as they have a higher disposition toward financial resources (Stulz, 1988). Likewise, a higher leverage ratio decreases the risk of hostile takeovers (Harris & Raviv, 1988; Stulz, 1988). In this sense, Croci et al. (2011), Ellul (2009), and King and Santor (2008), among others, observe higher leverage ratios and a strong aversion of family firms to equity financing in their studies. Moreover, they find that family firms implement higher leverage ratios if their voting power is not sufficient on its own and that leverage is used as a substitute for other control-enhancing mechanisms such as cross-shareholdings or pyramids (Ellul, 2009). If ownership concentration exceeds, however, a sufficient controlling threshold, family firms lower their leverage ratio to avoid the risk of bankruptcy (Lo et al., 2016). Having control-enhancing mechanisms in place, equity financing may furthermore be less attractive to family firms, as new shareholders are aware of potential expropriation activities and require a higher return on their investments, making equity financing relatively more expensive (Attig et al., 2008; Boubakri et al., 2010). The control consideration hypothesis, related to agency II conflicts, therefore predicts a pecking order (Myers & Majluf, 1984; Myers, 1984) of family firms in the sense that they prefer debt over equity if retained earnings are not sufficient for investments (Zata Poutziouris, 2001).

Hypothesis 1b: *Family firm status has a positive effect on firms' leverage ratios.*

5.2.2 Country-level creditor and shareholder rights as moderating factors

Previous studies highlight the importance of the institutional environment as a moderating factor for firms' capital structure decisions (Antoniou et al., 2008; Beck et al., 2008; De Jong et al., 2008; Fan et al., 2012; Öztekin, 2015). Chang-

ing the capital structure reallocates the power between controlling and minority shareholders and most often results in a change in the firm's investment policy (La Porta et al., 2000). In particular, shareholder and creditor rights and their enforcement by legal authorities determine the scope of possible strategic actions for firms' controlling shareholders, such as owner families. Thus, from a control consideration perspective, the strength of shareholder and creditor rights extends or limits the power of dominant family shareholders relative to other shareholders and creditors. Likewise, the effectiveness of creditors and shareholders depends mainly on the legal rights they have (Shleifer & Vishny, 1997).

Strong shareholder rights, on the one hand, increase the power of minority shareholders in return for their capital provision and are intended to limit the expropriation activities of dominant shareholders. Shareholder rights include elements such as disclosure and accounting rules, the rights to vote (by mail) and to participate in shareholder meetings, or the rights to call extraordinary shareholder meetings and make legal claims against directors in case of expropriation (La Porta et al., 1997, 2000). Furthermore, they inhibit corporate self-dealing by directors and managers (Djankov et al., 2008). Countries with strong shareholder protection typically have larger and more active markets, as outside investors are more willing to provide capital to firms (La Porta et al., 1997). If countries, however, lack such rules, dominant shareholders have the opportunity to install corporate governance structures that secure their interests (Shleifer & Vishny, 1997). Examples are control-enhancing strategies such as pyramids, dual-class shares or cross-holdings, which often result in a strong separation of voting and cash flow rights and in the extraction of private benefits of control at the expense of minority shareholders (Masulis et al., 2009). Family-controlled firms use these mechanisms intensively, especially in countries with weak legal protection (Claessens et al., 2000). In particular, a dual-class share structure is thereby a mechanism immediately linked to firms' capital structure decisions. Dual-class shares provide dominating family shareholders with multiple voting power or exclude minority shareholders from voting rights and therefore allow family firms to raise equity capital without diluting the control of the owner family. Hagelin et al. (2006) and King and Santor (2008) show that family firms use leverage and dual-class shares as a substitute, as family firms with dual-class shares have lower financial ratios than family firms with a single share class. If country laws do not allow dual-class shares, firms are restricted to financing investments with debt if they do not want to dilute control. Furthermore, strong shareholder rights increase the potential for conflicts with minority shareholders and the contestability of the family owners' controlling position. Thus, equity financing becomes relatively less attractive to debt for dominant family shareholders if shareholder rights are strong. In these countries, family firms will have higher leverage ratios because

dominant family owners are typically reluctant to dilute their control stake.

Hypothesis 2: *Strong country-level shareholder rights positively moderate the relationship between family firm status and leverage ratios.*

Strong creditor rights, on the other hand, increase the power of lenders – banks as well as bondholders. Creditor rights include regulations on debt enforcement, collateral, and the role and rights of lenders in the case of debtors' liquidation or reorganization (Djankov et al., 2007; La Porta et al., 1997). In countries with weak creditor rights, firm owners could invest debt money in overly risky projects and capture the gains in case of success, while not bearing the costs in the case of failure (Jensen & Meckling, 1976). Fearing the risk of being expropriated, creditors require consequently higher collaterals or premiums (Boubakri & Ghouma, 2010). In countries with strong creditor rights, creditors have more influence on the usage of provided credits, the ability to monitor usage more closely after provision, and stronger rights in the case of default, which increases their willingness to provide capital (Qian & Strahan, 2007). Stronger monitoring at the same time incentivizes managers to refrain from investments that increase bankruptcy risk (Rajan & Zingales, 1995). Moreover, the information available to creditors before financing is an important determinant in lending contracts because it mitigates credit risks and enhances credit to the private sector on a country level (Jappelli & Pagano, 2002). Accordingly, Ampenberger et al. (2013) observe lower leverage ratios for family firms in Germany and argue that tight creditor monitoring in the German bank-based market prevents family firms from using a high proportion of debt. Likewise, Schmid (2013) shows in a multi-country study that family firms increase leverage ratios when creditor monitoring is weak but avoid debt in countries where creditors' possibilities to exert influence are high. Hence, we posit that the strength of creditor rights has the opposite effect compared to the strength of shareholder rights. With increasing creditor rights, family firms will be more exposed to the control of credit providers. As a result, they avoid the use of debt.

Hypothesis 3: *Strong country-level creditor rights negatively moderate the relationship between family firm status and leverage ratios.*

5.3 Methodology

5.3.1 Effect size measure and sample

The focus of this study is to examine the capital structure of public family firms compared to other types of firms in a meta-analysis. Meta-analysis allows us to

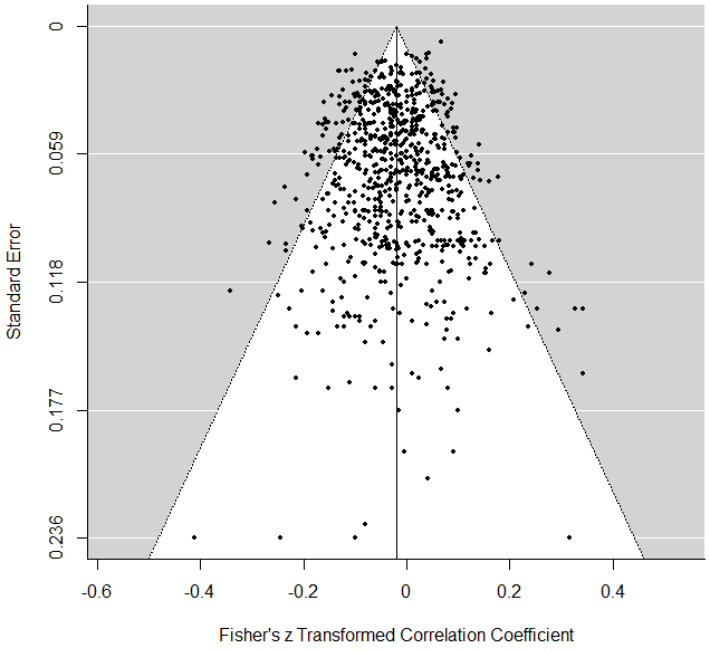
summarize the empirical findings of previous studies and to identify underlying moderators of the relationship investigated (Gonzalez-Mulé & Aguinis, 2018). We thus searched for empirical studies that investigate public firms and report a relationship between family firms and leverage. In this study, our effect size measure was the Pearson correlation coefficient (r), which is commonly used in management and social sciences meta-analyses (Geyskens et al., 2009). Studies had to either report correlation matrices or statistics that can be converted to r, such as standardized mean differences or t-test statistics. We converted these statistics following Lipsey and Wilson (2001). We then transformed all effect sizes by Fisher's Z-transformation (Fisher, 1921) to account for the skewness of the raw correlations (Hedges & Olkin, 1985). Moreover, the transformation has the favorable characteristic that the inverse variance weight needed for the analysis depends only on the effect size and is thus easy to derive (Lipsey & Wilson, 2001).

We identified suitable primary studies for our sample by following different search strategies. First, we explored the electronic databases Google Scholar, EBSCOhost, JSTOR, SSRN, and China National Knowledge Infrastructure (CNKI) using different search term combinations regarding family firms and leverage.[25] Second, we tracked published meta-analyses on other family firm topics such as performance (Van Essen et al., 2015a; Wang & Shailer, 2017), corporate social performance (Canavati, 2018), innovation (Duran et al., 2016), or internationalization (Arregle et al., 2017). Finally, if we identified suitable studies that missed the effect sizes needed, we contacted the author teams and asked them to send us the missing effect sizes. We made no restrictions on the type of study and included published articles as well as working papers, doctoral theses, and student theses. Moreover, we included not only studies written in English but also studies written in Chinese, French, German, Italian, and Spanish. Both strategies, including unpublished and non-English studies, address the potential risk of publication bias (Rosenthal, 1979; Stanley, 2005; Sutton, 2009). In the case of multiple effect sizes in a study, e.g., different leverage measures or different family variables, we included all of them. Including all effect sizes leads to better results and prevents a serious loss of information compared to selecting only one effect size or calculating average values (Bijmolt & Pieters, 2001). The search procedure resulted in a sample of 598 studies with 856 effect sizes.

We then controlled for multiple studies in our sample based on the same dataset. We followed the recommendations of Wood (2008) to identify duplicates and excluded 29 studies (47 effect sizes) from further analysis. We furthermore con-

[25] Search terms for family firms were: "family", "family firm", "family business", "family control", "family ownership", "ownership structure". Search terms for leverage were: "leverage", "capital structure", "debt", "financing", "gearing".

Figure 5.1: Funnel plot of 780 z-transformed effect sizes



Notes: The white area represents the 95% pseudo confidence interval.

ducted an outlier analysis to prevent biased results due to influential outlier observations by calculating DFBETA values. DFBETA values reflect the influence of each observation on the overall mean effect size (Viechtbauer & Cheung, 2010). We applied the size-adjusted cutoff value, which is calculated by $2/\sqrt{n}$ (Kutner et al., 2005), and excluded 29 effect size observations that exceeded this critical value. The final sample contained 780 effect sizes from 550 studies.

5.3.2 Methods used

We possessed two types of meta-analytic techniques: univariate Hedges and Olkin type meta-analysis (HOMA; Hedges & Olkin, 1985) and multivariate meta-regression analysis (MRA; Lipsey & Wilson, 2001).
We used HOMA to identify the overall relation between family firms and leverage for the whole sample and different sub-groups. When conducting a meta-analysis, one must choose between two different models: fixed and random effects (Borenstein et al., 2010; Field, 2001). We opted for a random effects model because it allows for variation in the true effect size from study to study, which was more plausible in our case compared to a fixed effects model, which assumes a common

true effect size across the included studies (Borenstein et al., 2010). We used the inverse variance (w) to weight the effect sizes (Hedges & Olkin, 1985) and used the sum of these weights to calculate the standard error, the Z-statistic, and the confidence interval of the mean effect size, respectively (Lipsey & Wilson, 2001). We used the restricted maximum-likelihood (REML) estimator for the estimation of the between-study variance due to its efficiency and unbiasedness (Viechtbauer, 2005). We further accounted for the dependency of effect sizes from the same study by a multi-level structure (Konstantopoulos, 2011; Raudenbush & Bryk, 2002). Although Bijmolt and Pieters (2001) recommend using the complete set of observations from each study, they caution that ignoring the dependency of these observations may inflate the results. Multiple observations in our case could result from the use of various family firm or leverage variables. We thus controlled for these dependencies by introducing additional study-level random effects.
Second, we used MRA to explore the moderating effect of the study- and country-level variables on the relationship between family firms and capital structure. MRA allowed us to test our moderator hypotheses in a multivariate weighted least squares (WLS) regression. The dependent variable in the regression was the Z-transformed focal effect between family firms and leverage and was regressed on a set of independent and control variables. Again, we weighted all observations by their inverse variance (Lipsey & Wilson, 2001). We followed Gonzalez-Mulé & Aguinis's (2018) best-practice recommendations for meta-regression in management research. In RMA, one has again to choose between two types of models: fixed- and mixed-effects. Mixed-effects models have the same assumptions as random-effects models in HOMA but also incorporate fixed factors in the form of the moderator variables (Gonzalez-Mulé & Aguinis, 2018). We chose the mixed-effects model and the REML estimator for the estimation of residual heterogeneity. Again, we applied a multi-level model and added study-level random effects, resulting in a three-level meta-regression (Van den Noortgate et al., 2013). We conducted our meta-analyses in R and used the metafor package (Viechtbauer, 2010).

5.3.3 Moderator variables

We included several variables in the analyses to investigate moderating effects of the relationship between family firms and leverage. Most importantly, we included variables that reflect a country's level of shareholder and creditor rights to test our hypotheses. In addition, we controlled for further country-specific characteristics. We also controlled for methodological aspects in terms of variable constructions and study characteristics. Table 5.1 lists all variables and data sources.

Country-level creditor and shareholder rights. We obtained the level of share-

Table 5.1: Variable definitions

Variable name	Description
Shareholder & creditor rights	
Shareholder rights	Extent of minority investor protection; average of the "Extent of conflict of interest regulation index" and "Extent of shareholder governance index" (data source: World Bank Doing Business).
Creditor rights	Extent of creditor rights; average of the "Sum of strength of legal rights index" and "Depth of credit information index" (data source: World Bank Doing Business).
Country control variables	
Enforcing contracts index	Measure of time and cost for resolving a commercial dispute and quality of judicial processes (data source: World Bank Doing Business).
Financial structure index	Financial structure index developed by Demirgüç-Kunt and Levine (1999); own calculations based on mean values of the years 1996-2016 (data source: World Bank World Development Indicators, for Taiwan: Statistical Bureau of the Republic of China (Taiwan)). A positive value indicates a more market-based financial system, a negative value indicates a more bank-based financial system.
ln GDP/capita	Natural logarithm of GDP per capital, measured in constant 2010 USD and calculated as the mean of the years 1996-2016 (data source: World Bank World Development Indicators, for Taiwan: Statistical Bureau of the Republic of China (Taiwan)).
Family firm variables	
Family ownership percent	Dummy variable = 1 if family influence is measured by ownership stake.
Family ownership dummy	Dummy variable = 1 if family influence is measured by ownership dummy.
Family management	Dummy variable = 1 if family influence is measured by management (e.g., family CEO).
Family governance	Dummy variable = 1 if family influence is measured by control function (e.g., family member on supervisory board).
Strong family influence	Dummy variable = 1 if firms are defined as family firms, if at least two of the previous influences are prevalent.
Mixed family influence	Dummy variable = 1 if firms are defined as family firms, if either of the previous influences is prevalent.
Family firm generation	
No generational control	Dummy variable = 1 if there is no control on generation.
Founder generation	Dummy variable = 1 if the founder or first generation is active in the firm.
Later generation	Dummy variable = 1 if a firm is in the hands of a later generation.
Leverage ratio variables	
Total debt / assets	Dummy variable = 1 if leverage is measured by total debt / assets.
Total debt / equity	Dummy variable = 1 if leverage is measured by total debt / equity.
Long-term debt / assets	Dummy variable = 1 if leverage is measured by long-term debt / assets.
Long-term debt / equity	Dummy variable = 1 if leverage is measured by long-term debt / equity.

Table 5.1 continues on the next page

Table 5.1: (continued)

Variable name	Description
Firm size	
All listed firms	Dummy variable = 1 if the primary study observes all listed firms in a country.
Small cap	Dummy variable = 1 if the primary study observes only small listed firms.
Large cap	Dummy variable = 1 if the primary study observes only the largest listed firms.
Study control variables	
Published article	Dummy variable = 1 if the primary study is published in an academic journal, and 0 if the primary study is a working paper, PhD thesis or student thesis.
Median year	Median year of the study sample.
Panel dataset	Dummy variable = 1 if the primary study is based on panel data.

holder and creditor rights from The World Bank's Doing Business database. We used the "Minority investor protection index" to measure *Shareholder rights*. The index is calculated for each country as the mean of six different indicators on disclosure requirements, director liability, the ease of shareholder suits, the extent of shareholder rights, protection mechanisms from entrenchment, and corporate transparency. It ranges from 0 to 10, with 10 as the highest level of shareholder rights. Second, we used the "Getting credit score" to measure *Creditor rights*. This index incorporates a country's strength of the legal rights of borrowers and lenders in terms of collateral and bankruptcy laws as well as the scope and accessibility of credit information. It also ranges from 0 to 10, with 10 being the highest value for creditor rights.

Country-level control variables. We included further country-level variables to control for each country's law system, financial system, and economic development. First, we included the "Enforcing contracts index" from the World Bank's Doing Business database (*Enforcing contracts index*). The index incorporates the efficiency of resolving commercial disputes and the quality of judicial processes. Therefore, it does not reflect the written law of a country itself but rather its actual enforcement by the law system.

Next, we controlled for the financial system of a country, which can be either bank-based or market-based. The type of financial system does not per se affect a firm's access to external financing (Demirgüç-Kunt & Maksimovic, 2002) but rather the choice between public financing via stocks and bonds or private financing via bank loans than the level of leverage (Rajan & Zingales, 1995). However, in the case of family firms, the type of financial system might well explain differences compared to non-family firms across countries. Family firms often build up

relational capital with debt providers, which provides them better access to debt and prevents credit restrictions, especially when credit markets are constrained (Crespí-Cladera & Martín-Oliver, 2015; Cucculelli et al., 2019; D'Aurizio et al., 2015). To operationalize the financial system, we adopted the financial structure index (*Financial structure index*) by Demirgüç-Kunt and Levine (1999), which takes into consideration the size, activity, and efficiency of a country's capital market relative to its banking sector. We gathered all necessary ratios from the World Bank's World Development Indicator database and calculated the financial structure index for each country with the mean ratios from 1996 to 2016. Positive values indicate a more market-based financial system, whereas negative values indicate a more bank-based financial system.
Finally, we controlled for the overall economic development of a country in terms of GDP per capita. Again, we used the mean values from 1996 to 2016 and transformed them by taking their natural logarithm (*Ln GDP/capita*).

Family firm variables. In the academic literature, there is a wide array of family firm definitions (for an overview, see Diaz-Moriana et al., 2019, and Mazzi, 2011). Typically, these definitions use ownership, management, and governance attributes alone or in combination. We used six different dummy variables to reflect the different definition types. We set *Family ownership percent* equal to 1 if studies used family ownership as a continuous variable and *Family ownership dummy* equal to 1 if studies used an ownership dummy to measure family influence. Likewise, we set *Family management* and *Family governance* equal to one if studies examined the effect of family members' participation in the management or supervisory board. For combined definitions, we distinguished between two possible variants. *Strong family definition* is equal to 1 if studies required at least two attributes to be prevalent (e.g., ownership and management), whereas *Mixed family definition* required only one of the three various influence types.
In addition to the family firm definition used, we also controlled for generational influence. *Founder generation* is a dummy variable equal to 1 if the family firm variable in the primary study controls for an active founder. *Later generation* is a dummy variable equal to 1 if the family influence is realized through a later generation. If both variables are 0, the study did not control for the generational stage (*No generational control*).

Leverage ratio variables. There were four commonly used alternatives to calculate the leverage ratio, which differ in the numerator and denominator used. Regarding the denominator, researchers either divided the level of debt by a firm's total assets or by a firm's equity. Regarding the numerator, most studies used total debt, but some also used only long-term debt to calculate the leverage ratio. Hence, *Total debt/assets*, *Total debt/equity*, *Long-term debt/assets*, *Long-term debt/equity* are equal to 1 if a study used them to operationalize leverage, respec-

tively.

Sample and study control variables. We included several variables that characterize the samples of the primary studies and the studies themselves. First, we controlled for firm size. In most countries, the number of firms listed on the stock market is rather small. As a consequence, most studies used the complete sample of firms with available data (*All listed firms*). Some studies, however, concentrated only on the largest firms listed or on comparably small firms. Thus, we included the dummy variables *Large cap* and *Small cap*, which are equal to 1 if a study concentrated only on the largest listed companies or small-cap firms, respectively. Further variables controlled for study characteristics. *Published article* is equal to 1 if the study is published in an academic journal an equal to 0 if it is unpublished. Unpublished studies include working papers, Ph.D. theses, or student theses. Furthermore, we coded the median year of the sample period (*Median year*) and the data structure of the study (*Panel dataset*, equal to 1 for a panel data set and 0 for a cross-sectional data set).

5.4 Results

5.4.1 HOMA results

Table 5.2 reports the results of the HOMA for the complete sample and the methodological moderators. The findings show that in general, listed family firms have a lower leverage ratio than non-family firms ($r = -0.018$, $p = 0.00$). The result is based on 780 effect sizes and 391,764 included firms from 550 unique primary studies. Furthermore, we identify a high amount of effect size heterogeneity in terms of residual heterogeneity (Q), indicating the likely presence of moderator variables (Gonzalez-Mulé & Aguinis, 2018). For the proportion of between-study to total variation (I^2), Higgins and Thompson (2002) suggest a threshold of 50 percent as an indicator of substantial heterogeneity. According to our results, more than 56 percent of the total heterogeneity can be attributed to between-study variation. The heterogeneity in terms of test statistics is graphically supported by the funnel plot in Figure 5.1, which shows that there is also a substantial amount of positive effect sizes present in our sample. In total, nearly 58 percent of all effect sizes show negative values, whereas nearly 41 percent are positive and 1.4 percent equal to zero.

Concerning the family definition used, we find strong negative effects for *Family ownership percent* ($r = -0.033$, $p = 0.00$), *Family management* ($r = -0.022$, $p = 0.00$), and *Mixed family influence* ($r = -0.050$, $p = 0.00$). Furthermore, we find only a slightly negative effect for *Strong family influence* ($r = -0.014$, $p = 0.06$) and no effects for *Family ownership dummy* ($r = 0.003$, $p = 0.52$) and

Table 5.2: HOMA complete sample

	k	*n*	*firms*	*r*	*SE*	*95% CI*	*Q*	I^2	*z-test*
Overall effect (H1)	780	550	391,764	-0.018 ***	0.003	-0.025; -0.012	1,741.48 (0.00)	56.57 %	
Family variables									
Family ownership percent	186	164	76,307	-0.033 ***	0.006	-0.045; -0.022	322.06 (0.00)	42.80 %	*Ref. cat.*
Family ownership dummy	212	188	135,107	0.003	0.005	-0.006; 0.012	409.49 (0.00)	44.93 %	z = 4.93 ***
Family management	109	86	49,907	-0.022 ***	0.008	-0.038; -0.007	216.72 (0.00)	50.01 %	z = 1.14
Family governance	60	52	18,104	-0.004	0.011	-0.025; 0.017	90.52 (0.01)	35.41 %	z = 2.42 **
Strong family influence	112	93	55,270	-0.014 *	0.008	-0.029; 0.001	225.13 (0.00)	52.74 %	z = 1.98 **
Mixed family influence	100	95	56,870	-0.050 ***	0.008	-0.066; -0.033	279.74 (0.00)	65.54 %	z = 1.62
Family firm generation									
No generational control	721	535	362,004	-0.018 ***	0.003	-0.025; -0.012	1,611.62 (0.00)	56.29 %	*Ref. cat.*
Founder generation	35	31	16,077	-0.034 ***	0.011	-0.056; -0.012	50.03 (0.04)	34.94 %	z = 1.36
Later generation	24	18	13,683	-0.021	0.020	-0.059; 0.018	71.09 (0.00)	68.11 %	z = 0.12
Financial leverage									
Total debt / assets	463	335	238,585	-0.013 ***	0.004	-0.022; -0.005	1,132.34 (0.00)	59.74 %	*Ref. cat.*
Total debt / equity	146	92	66,786	-0.019 ***	0.007	-0.033; -0.005	257.19 (0.00)	47.35 %	z = 0.63
Long-term debt / assets	149	118	80,369	-0.033 ***	0.006	-0.046; -0.020	293.45 (0.00)	54.09 %	z = 2.54 **
Long-term debt / equity	20	16	5,890	-0.008	0.017	-0.042; 0.026	22.96 (0.24)	29.33 %	z = 0.30
Firm size									
All listed firms	655	452	362,485	-0.014 ***	0.003	-0.020; -0.007	1,494.96 (0.00)	56.20 %	*Ref. cat.*
Small cap	10	7	2,160	-0.060 *	0.035	-0.129; 0.009	13.12 (0.16)	43.35 %	z = 1.30
Large cap	115	91	27,119	-0.044 ***	0.010	-0.063; -0.025	187.54 (0.00)	46.61 %	z = 2.91 ***

This table reports the results of the univariate Hedges and Olkin type meta-analysis (HOMA) on family firm leverage. All variables are described in Table 5.1. *k* denotes the number of effect size. *n* denotes the number of studies. *r* denotes the mean effect size. *SE* denotes the standard error. *95% CI* denotes the 95% confidence interval. *Q* denotes the amount of residual heterogeneity and its significance (p-value in parentheses). I^2 denotes the proportion of between-study variance to total variance. *z-test* denotes the significance test for mean effect size differences between two groups. ***, **, and * denote the significance at the 1%, 5%, and 10% level, respectively. Mean effect sizes are calculated with random effects corresponding to the study level.

Table 5.3: HOMA country sample

	k	*n*	*firms*	*r*	*SE*	*95% CI*	*Q*	I^2
Australia	6	4	3,282	0.008	0.036	-0.062; 0.079	8.84 (0.12)	64.56 %
Bangladesh	11	9	1,027	-0.094 ***	0.032	-0.156; -0.031	4.45 (0.92)	0.00 %
Belgium	3	2	401	-0.098	0.063	-0.221; 0.025	2.73 (0.25)	28.85 %
Brazil	19	12	5,442	0.030 **	0.014	0.003; 0.057	13.30 (0.77)	0.00 %
Canada	12	11	4,120	0.023	0.017	-0.010; 0.055	11.03 (0.44)	5.98 %
Chile	7	6	1,046	-0.026	0.037	-0.098; 0.046	8.01 (0.24)	26.92 %
China	11	7	8,831	-0.003	0.034	-0.069; 0.062	51.24 (0.00)	83.09 %
Colombia	1	1	104	0.018	0.100	-0.177; 0.213		
Cyprus	1	1	101	0.080	0.101	-0.118; 0.278		
Egypt	1	1	154	0.026	0.081	-0.133; 0.186		
France	18	15	3,426	-0.038 **	0.018	-0.073; -0.002	17.11 (0.45)	6.36 %
Germany	23	16	6,304	-0.053 ***	0.016	-0.084; -0.021	30.39 (0.11)	23.80 %
Greece	6	6	1,394	0.003	0.027	-0.051; 0.056	4.36 (0.50)	0.56 %
Hong Kong	23	20	7,537	-0.024 *	0.014	-0.052; 0.003	30.62 (0.10)	28.03 %
India	26	23	10,535	0.002	0.018	-0.034; 0.039	54.12 (0.00)	61.06 %
Indonesia	18	15	4,325	0.003	0.022	-0.041; 0.047	23.07 (0.15)	37.99 %
Iran	4	4	480	-0.007	0.053	-0.111; 0.097	2.92 (0.40)	18.23 %
Italy	47	26	7,388	-0.017	0.015	-0.047; 0.014	46.03 (0.47)	23.68 %
Japan	26	8	26,065	-0.067 ***	0.014	-0.094; -0.039	52.70 (0.00)	54.71 %
Jordan	15	12	1,776	-0.055 **	0.024	-0.102; -0.008	12.68 (0.55)	0.00 %
Kuwait	3	2	398	0.033	0.051	-0.067; 0.132	1.81 (0.41)	0.00 %
Malaysia	47	40	14,965	-0.021 **	0.010	-0.042; 0.000	52.79 (0.23)	25.29 %
Mexico	12	9	1,059	-0.047	0.031	-0.109; 0.014	7.46 (0.76)	0.00 %
Morocco	1	1	29	-0.004	0.196	-0.388; 0.380		
Netherlands	3	2	277	-0.048	0.061	-0.168; 0.072	0.22 (0.89)	0.00 %
Norway	3	3	214	-0.190 ***	0.070	-0.327; -0.053	1.47 (0.48)	0.00 %
Pakistan	24	17	3484	0.049 **	0.023	0.004; 0.095	28.26 (0.21)	26.88 %
Peru	5	1	295	-0.108 *	0.060	-0.226; 0.009	0.04 (1.00)	0.00 %
Philippines	1	1	54	0.079	0.140	-0.196; 0.353		
Poland	16	7	3,287	0.045 *	0.024	-0.001; 0.091	11.46 (0.72)	21.09 %
Portugal	5	4	309	0.068	0.058	-0.046; 0.183	0.06 (1.00)	0.00 %
Saudi Arabia	9	7	712	-0.045	0.043	-0.130; 0.041	8.69 (0.37)	17.94 %
Singapore	3	2	443	-0.059	0.048	-0.153; 0.035	0.02 (0.99)	0.00 %
South Korea	16	14	12,805	-0.096 ***	0.016	-0.128; -0.064	25.71 (0.04)	51.91 %
Spain	32	18	3,176	0.014	0.022	-0.029; 0.056	29.12 (0.56)	13.54 %
Sweden	15	9	2,699	-0.070 **	0.029	-0.126; -0.014	15.31 (0.36)	33.40 %
Switzerland	3	3	481	-0.069	0.046	-0.159; 0.021	1.97 (0.37)	0.00 %
Taiwan	83	56	63,512	0.015 ***	0.006	0.004; 0.026	114.70 (0.01)	31.33 %
Thailand	12	9	4,292	-0.019	0.017	-0.051; 0.014	9.17 (0.61)	6.83 %
Tunisia	3	3	118	0.002	0.107	-0.209; 0.212	2.74 (0.25)	17.18 %
Turkey	21	13	3,388	0.039 **	0.017	0.005; 0.073	10.32 (0.96)	0.00 %
UAE	1	1	40	-0.110	0.164	-0.433; 0.212		
UK	9	6	1,746	-0.052 *	0.029	-0.109; 0.006	9.02 (0.34)	20.50 %
USA	103	73	78,945	-0.060 ***	0.007	-0.074; -0.046	268.02 (0.00)	63.64 %
Vietnam	1	1	655	-0.090 **	0.039	-0.167; -0.013		
Several	70	55	100,433	-0.003	0.007	-0.017; 0.011	241.12 (0.00)	69.12 %

This table reports the results of the univariate Hedges and Olkin type meta-analysis (HOMA) on family firm leverage for each of the included countries. All variables are described in Table 5.1. *k* denotes the number of effect size. *n* denotes the number of studies. *r* denotes the mean effect size. *SE* denotes the standard error. *95% CI* denotes the 95% confidence interval. *Q* denotes the amount of residual heterogeneity and its significance (p-value in parentheses). I^2 denotes the proportion of between-study variance to total variance. *z-test* denotes the significance test for mean effect size differences between two groups. ***, **, and * denote the significance at the 1%, 5%, and 10% level, respectively. Mean effect sizes are calculated with random effects corresponding to the study level.

Family governance ($r = -0.004$, $p = 0.71$). The mean effect size differences between *Family ownership percent* and *Family ownership dummy*, *Family governance*, and *Strong family influence* are statistically significant. Founder firms have a smaller mean effect size than later-generation family firms, but this difference is insignificant. Dividing the sample based on the leverage definitions, we find negative mean effect sizes for all subsamples (insignificant for *Long-term debt/equity*). The mean effect size is lowest for *Long-term debt/assets* ($r = -0.033$, $p = 0.00$) and highest for *Long-term debt/equity* ($r = -0.008$, $p = 0.64$). Finally, we divided our sample by firm size. Samples that investigate only the largest or smallest public firms show smaller effect sizes than mixed samples. However, only the difference between *All listed firms* and *Large cap* is statistically significant.
In Table 5.3, we performed an analysis for each country separately to explore the differences between the included countries. We were able to analyze 45 different countries from all continents. Furthermore, 55 primary studies observed multiple countries in their study samples. We find significant and negative effects for Bangladesh, France, Germany, Hong Kong, Japan, Jordan, Malaysia, Norway, Peru, South Korea, Sweden, the UK, the US, and Vietnam. On the other hand, the mean effect size is positive and significant only in Brazil, Pakistan, Poland, Taiwan, and Turkey. In these countries, family firms have higher leverage ratios than non-family firms. For all other countries, we did not find significant effects. We do not find a significant effect for studies with samples based on multiple countries.

5.4.2 Meta-regression results

In the meta-regression analysis, we tested our hypotheses on the impact of shareholder and creditor rights on the leverage ratio of family firms. In this analysis, we excluded the observations from multi-country samples because we were not able to merge country-level variables with these observations. Table 5.4 reports the values of the country-level variables used in the regression for each country separately. Table 5.5 reports the correlation coefficients between these variables and the effect sizes. The effect size measure, which reports the relationship between family firms and leverage, is positively correlated with shareholder protection and negatively correlated with creditor rights and the three country-level control variables. With one exception, all country-level variables are positively correlated with each other. The VIF values indicate that we do not face multicollinearity issues in our model.
Table 5.6 reports the results of the hierarchical meta-regression analysis. In Model 1, we tested the regression model without *Shareholder rights* and *Creditor rights* and included only country and methodological control variables. With regard to the family firm variables used, *Family ownership dummy* and *Family governance*

Table 5.4: Country-level variables

	Shareholder rights	*Creditor rights*	*Enforcing contracts index*	*Financial structure index*	*Ln GDP/ Capita*
Australia	6.00	9.00	7.90	0.15	10.79
Bangladesh	5.50	2.50	2.22	-1.19	6.51
Belgium	6.17	6.50	6.43	-0.46	10.65
Brazil	6.50	5.00	6.60	-0.33	9.21
Canada	7.83	8.50	5.71	0.33	10.74
Chile	6.00	5.50	6.58	0.17	9.38
China	6.00	6.00	7.90	-0.43	8.16
Colombia	7.50	9.50	3.43	-0.45	8.67
Cyprus	6.67	6.00	4.86	-1.04	10.26
Egypt.	5.83	6.50	4.28	-0.56	7.73
France	6.67	5.00	7.49	-0.13	10.59
Germany	5.83	7.00	7.04	-0.59	10.61
Greece	6.33	5.00	5.02	-0.70	10.12
Hong Kong	7.83	7.50	6.91	2.51	10.26
India	8.00	8.00	4.12	0.59	7.02
Indonesia	6.33	7.00	4.72	-0.21	7.94
Iran	3.33	5.00	5.82	-0.96	8.58
Italy	5.83	4.50	5.48	-0.47	10.48
Japan	6.00	5.50	6.53	-0.47	10.69
Jordan	4.67	3.50	5.56	0.16	8.13
Kuwait	5.83	3.50	5.96	0.39	10.61
Malaysia	8.17	7.50	6.82	0.03	9.03
Mexico	5.83	9.00	6.70	-0.13	9.08
Morocco	6.00	4.50	6.09	-0.67	7.83
Netherlands	5.83	4.50	5.99	0.07	10.78
Norway	7.50	5.50	8.13	-0.55	11.36
Pakistan	7.17	4.50	4.35	0.82	6.88
Peru	6.33	7.50	6.07	-0.14	8.38
Philippines	4.33	0.50	4.60	0.05	7.58
Poland	6.17	7.50	6.44	-0.73	9.29
Portugal	6.00	4.50	6.79	-1.03	9.98
Romania	6.00	8.00	7.23	0.00	8.88
Saudi Arabia	8.00	4.50	6.34	2.26	9.77
Singapore	8.00	7.50	8.45	1.00	10.62
South Korea	7.33	6.50	8.42	0.40	9.86
Spain	7.00	6.00	7.09	-0.20	10.29
Sri Lanka	6.67	4.00	4.12	-0.84	7.81
Sweden	6.83	5.50	6.76	0.55	10.80
Switzerland	5.00	6.00	6.41	0.72	11.17
Taiwan	7.50	5.00	7.51	0.73	9.76
Thailand	7.50	7.00	6.79	-0.56	8.41
Tunisia	5.67	5.00	5.93	-1.23	8.18
Turkey	7.17	7.50	7.18	0.20	9.20
UAE	7.50	7.00	7.59	-0.56	10.83
UK	7.50	7.50	6.87	0.02	10.54
US	6.47	9.50	7.26	4.65	10.76
Vietnam	5.50	7.50	6.21	-1.14	7.02

Table 5.5: Correlation matrix

	Mean	*SD*	*1)*	*2)*	*3)*	*4)*	*5)*	*VIF*
1) Effect size	-0.02	0.09						
2) Shareholder rights	6.78	0.88	0.12					1.20
3) Creditor rights	6.52	1.84	-0.10	0.21				2.28
4) Enforcing contracts index	6.55	1.15	-0.08	0.20	0.31			1.78
5) Financial structure index	0.79	1.74	-0.13	0.10	0.65	0.30		2.69
6) Ln GDP/Capita	9.65	1.19	-0.16	-0.11	0.27	0.65	0.36	2.17

This table reports the correlation matrix for the effect sizes and the country-level variables, and the variance inflation factors for the country-level variables ($n = 710$).

show a positive and significant effect compared to the reference category *Family ownership percent*. Furthermore, *Later generation* has a positive and slightly significant effect on family firm leverage ($p = 0.06$). We do not find any significant effects regarding the operationalization of leverage used in the primary studies. Both firm size variables, *Small cap* and *Large cap*, show negative but insignificant effects. Last, *Ln GDP/Capita* ($p = 0.08$) and *Financial structure index* ($p = 0.04$) have a negative and significant effect on family firm leverage, whereas the level of *Contract enforcement* does not show any significant effect.
In Model 2, we added *Shareholder rights* and *Creditor rights* to test our moderation hypotheses. Both variables are highly significant and show the predicted effects. The level of *Shareholder rights* has a positive effect on family firm leverage ($p = 0.00$), whereas the level of *Creditor rights* has a negative effect on family firm leverage ($p = 0.02$). These results confirm Hypothesis 2 and Hypothesis 3. In adding these two variables, *Ln GDP/Cap* ($p = 0.41$) and *Financial structure index* ($p = 0.86$) became insignificant. *Contract enforcement* remained insignificant and thus has no impact on public family firms' capital structure decisions. The family firm and leverage ratio control variables also remained unchanged, whereas *Later generation* became more significant ($p = 0.04$).

5.5 Discussion and conclusion

In this study, we examined the relationship between the family firm status of public firms and capital structure and the moderating role of a country's shareholder and creditor rights. The results of our HOMA revealed an overall slightly negative but significant relationship between family firms and leverage ratio. In the first instance, this finding is opposed to many well-published empirical studies investigating family firm leverage as the dependent variable that find higher leverage ratios for family firms (e.g., Croci et al., 2011; King & Santor, 2008; Setia-Atmaja et al., 2009). Rather, it supports the view of the risk-averse family firm

Table 5.6: Meta-regression results

	Model 1	*Model 2*
Shareholder & creditor rights		
Shareholder rights (H2)		0.013 (0.004)***
Creditor rights (H3)		-0.006 (0.003)**
Country control variables		
Contract enforcement index	-0.001 (0.004)	-0.004 (0.004)
Financial structure index	-0.004 (0.002)**	-0.000 (0.003)
Ln GDP/Capita	-0.007 (0.004)*	-0.003 (0.004)
Family firm variables		
Family ownership percent	*Ref. cat.*	*Ref. cat.*
Family ownership dummy	0.031 (0.008)***	0.032 (0.008)***
Family management	0.001 (0.009)	-0.000 (0.009)
Family governance	0.020 (0.012)*	0.019 (0.012)*
Strong family influence	0.013 (0.009)	0.013 (0.009)
Mixed family influence	-0.007 (0.009)	-0.005 (0.009)
Family firm genereation		
No generational control	*Ref. cat.*	*Ref. cat.*
Founder generation	0.015 (0.012)	0.018 (0.012)
Later generation	0.024 (0.013)*	0.027 (0.013)**
Leverage ratio variables		
Total debt / assets	*Ref. cat.*	*Ref. cat.*
Total debt / equity	-0.005 (0.009)	-0.005 (0.009)
Long-term debt / assets	-0.004 (0.008)	-0.005 (0.008)
Long-term debt / equity	0.012 (0.021)	0.008 (0.021)
Firm size		
All listed firms	*Ref. cat.*	*Ref. cat.*
Small cap	-0.040 (0.032)	-0.041 (0.031)
Large cap	-0.016 (0.010)	-0.012 (0.010)
Sample & study characteristics		
Published	0.018 (0.008)**	0.014 (0.008)*
Median year	0.000 (0.001)	0.000 (0.001)
Panel data	0.000 (0.009)	-0.004 (0.009)
Constant	-0.402 (1.511)	-0.540 (1.593)
k	710	710
n	496	496
Pseudo R^2	0.20	0.24
ICC	0.89	0.90
$Q_{Residual}$	1,168.26 ***	1,123.12 ***
Q_{Model}	74.07 ***	89.97 ***
I^2 (%)	45.08	43.63

This table reports the results of the hierarchical meta-regression analysis on family firm leverage. The dependent variable is the z-transformed effect size. All variables are described in Table 5.1. Coefficients are reported with corresponding standard errors in parentheses. *k* denotes the number of effect size. *n* denotes the number of studies. *Pseudo* R^2 denotes the proportion of heterogeneity explained by the included moderators. *ICC* denotes the intraclass correlation coefficient. $Q_{Residual}$ denotes the amount of residual heterogeneity. Q_{Model} denotes the amount of the test statistic for the omnibus test of coefficients. I^2 denotes the proportion of between-study variance to total variance. ***, **, and * denote the significance at the 1%, 5%, and 10% level, respectively.

that eschews debt, as proposed by Mishra and McConaughy (1999). However, our results also revealed a large amount of heterogeneity among the effect sizes. Some of this heterogeneity can be attributed to the methodological choices of the primary studies, such as variable choices or sample characteristics. For example, we found a significant difference between family ownership measured as a continuous variable and family ownership measured as a dummy variable. Previous studies on family firm performance (e.g., Miller et al., 2007) have already highlighted the importance of family firm definitions on performance outcomes. In the same manner, we note the importance of family firm definitions used in studies on capital structure and its potential influence on study outcomes. A large portion of the observed effect size heterogeneity can also be attributed to country-specific characteristics. Conducting univariate analyses for each of the 45 countries included in the sample, we observed considerable mean effect size differences. For most countries, especially those with only one or a few observations, we did not find significant differences in leverage ratios to non-family firms. Among those countries with negative and significant mean effect sizes we found large economies such as France, Germany, Japan, South Korea, and the US. The negative relationship between US family firms and leverage contradicts the findings of Anderson and Reeb (2003b), who do not find different leverage ratios between family and non-family firms. A possible explanation for the different outcomes might be the sample composition of Anderson and Reeb (2003b), who use a sample of S&P 500 firms, whereas other studies in our sample used broader samples in terms of firm size. For France and Germany, our results confirm previous empirical studies (Ampenberger et al., 2013; Benkraiem et al., 2018; Latrous & Trabelsi, 2012; Margaritis & Psillaki, 2010; Schmid, 2013) showing lower leverage ratios for family firms in these two countries. On the other hand, we found a positive and significant relationship between family firm status and leverage only for four emerging economies: Brazil, Pakistan, Taiwan, and Turkey.

In the next step, we tested the moderating impact of country-level corporate governance variables, especially the impact of creditor and shareholder rights. The results of our hierarchical meta-regression analysis reported a significant impact of both variables. Whereas higher shareholder rights lead to higher leverage ratios in family firms, higher creditor rights have the opposite effect. These findings support both moderation hypotheses and show the importance of country-level corporate governance variables in family firms' capital structure decisions. In countries with strong creditor rights, firms are generally more reluctant to use debt and undertake less risky investments, as they fear being forced into bankruptcy by their creditors in times of financial distress (Acharya et al., 2011; De Jong et al., 2008). We show that this effect might be even more pronounced in family firms because their owner families are weakly diversified and have strong control considera-

tions. The plausible loss of control in the case of payment default threatens the owner family's SEW and keeps it away from dispensable debt money. In the same manner, Ampenberger et al. (2013) and Schmid (2013) argue that strong creditor rights and the accompanying tight creditor monitoring impede debt financing among family firms, even during normal business operations. On the other hand, strong shareholder rights increase the power and potential influence of minority shareholders. As a result, family owners rely more strongly on debt and avoid raising equity due to a dilution of control and potential contestability of voting rights (Boubakri & Ghouma, 2010; King & Santor, 2008). These results indicate that family firms use the capital structure as a strategic means to ensure and optimize control over the firm. We thereby show that family firms follow different decision-making processes and strategic considerations in capital structure decisions than non-family firms. Previous studies have also shown these divergences for R&D investments (Block, 2012; Chrisman & Patel, 2012), diversification decisions (Gomez-Mejia et al., 2010), or acquisitions (Caprio et al., 2011). Our results further indicate that the risk aversion and control enhancing views on family firm leverage are not necessarily conflicting theories but that the predominance of one or the other depends on environmental conditions in terms of laws and institutions.

Our study, like every empirical study, also has some limitations that offer opportunities for further research. First, due to the comparably small number of studies investigating the capital structure of family firms as a dependent variable, we used only Pearson correlation coefficients. Partial correlations from regression coefficients could control for a potential omitted variable bias stemming from other firm-specific leverage determinants (Frank & Goyal, 2009; Myers, 2001). However, current articles on meta-analytic best practices (e.g., Combs et al., 2019; Roth et al., 2018) discourage a joint analysis of both data types. For this reason, we relied solely on Pearson correlation effect sizes. Second, our study can reflect the influence of family firm heterogeneity on capital structure only to a limited degree by using different family firm variables. Thus, family firm heterogeneity is also a promising direction for further future research on capital structure decisions, as family firms appear in various forms around the globe (Steier, 2009). This variety includes single-sector family firms in Anglo-American or Continental European countries as well as large multi-sector business groups in East Asian countries, reflecting different corporate governance structures. Previous studies suggest that particularly the separation of ownership and control is an important factor in capital structure decisions in family firms (King & Santor, 2008). Control-enhancing mechanisms such as pyramids or dual-class shares increase agency conflicts with both minority shareholders and creditors (Pindado et al., 2015). These agency conflicts should also impact financing costs and result

in higher required premiums for capital provision (Boubakri & Ghouma, 2010; Lin et al., 2011). However, creditors and shareholders might evaluate the expropriation risk differently and hence require different risk premiums, which in turn impact the financial incentives for family firms to use equity or debt (Paligorova & Xu, 2012). This evaluation might also depend on the countries' institutional settings. Anderson and Reeb (2003b) find lower agency costs of debt and thus lower financing costs for family firms in the US, a country with investor-oriented laws and highly developed capital markets, whereas Boubakri and Ghouma (2010) and Lin et al. (2011) find the opposite for international datasets. Furthermore, not only the legal framework but also the importance of personal relationships with creditors and political connections might be important determinants of capital structure decisions, access to capital and terms of contracts in some countries (Boubakri et al., 2012; Claessens et al., 2008; Houston et al., 2014). Thus, more research on family firm heterogeneity and its impact on capital structure decisions, combined with the impact of the institutional environment, is needed.

Moreover, the structure of the owner family itself might have an impact on the capital structure decisions of the firm. Owner families can differ in terms of size, the extent of involvement in the firm, the generational stage, or the respective family values. These owner family characteristics significantly impact the priorities and hence the strategic decisions of family firms (Chua et al., 2012; Jaskiewicz & Dyer, 2017). Keasey et al. (2015) examine the impact of the life-cycle stage on leverage ratios and find that the preference for higher leverage ratios to prevent a dilution of control holds mainly for young family firms in which the founder is active. In the same manner, the structure of the family – and especially the number of family owners – might impact capital structure decisions. As family firms undergo successions, the ownership stake is often fragmented by inheritance, which increases the number of involved persons and, hence, the potential for diverging interests and conflicts within the family (Bertrand & Schoar, 2006; Kellermanns & Eddleston, 2004). If the owner family no longer acts as one collective blockholder, family-specific interests such as control considerations or risk-aversion might lose their importance, and as a result, leverage ratios might conform to non-family firms.

Another future research direction is the composition of family firm debt. To date, some studies have investigated the debt maturity structure of family firms (e.g., Croci et al., 2011; Jain & Shao, 2015; Shyu & Lee, 2009). However, little is known about the preferences of family firms for public or bank debt. As one of a few studies on the topic, Lin et al. (2013) identify a preference among family firms with a large control-ownership wedge for public debt compared to bank loans, as banks are more effective monitors in deterring expropriation activities. Lin et al. (2011) and Pan and Tian (2016) further show that banks increase loan spreads

as well as required collateral for these firms. Other studies, on the other hand, find that family firms also rely heavily on relationship lending and benefit from better capital access and favorable conditions (Crespí-Cladera & Martín-Oliver, 2015; D'Aurizio et al., 2015; Yen et al., 2015). Maintaining long-lasting lending relationships with banks would therefore suggest a preference for bank lending instead of anonymous public lending. Furthermore, Harvey et al. (2004) show that firms with high managerial agency costs in weak institutional environments can benefit in terms of shareholder value from raising capital in stronger monitored international debt markets, as investors interpret this move as a sign of credibility. These findings suggest that the source of debt in family firms is also heavily influenced by firm- and country-level corporate governance attributes.

To summarize, our study tests the two competing views in the academic literature on the capital structure of family firms and finds a predominance of negative effect sizes in the univariate HOMA model. The result of an overall negative mean effect size thus supports the view of the risk-averse family firm that avoids debt due to a low diversification of their owners' wealth and a fear of loss in their SEW. On the other hand, we also find strong support for the control-consideration view, as family firms adjust their capital structure depending on the strength of creditor and shareholder rights in their country. Stronger shareholder rights have a positive impact on family firm leverage, whereas stronger creditor rights have a negative impact. These results suggest that family firms use leverage strategically to ensure their owner families' dominant position and prevent potentially harmful conflicts with minority shareholders or creditors.

Chapter 6

Conclusion

Abstract. *This final chapter provides a conclusion to the dissertation. Section 6.1 summarizes the main findings of each chapter of the dissertation. Section 6.2 outlines the implications of these findings for academics as well as practitioners. Finally, Section 6.3 discusses the dissertation's limitations and points out possible avenues for future research.*

6.1 Summary of the main findings

This section summarizes the main findings of this dissertation along its research questions. Table 6.1 provides an overview of the eight research questions addressed in the four respective chapters.

Table 6.1: Overview of the research questions addressed in the dissertation

	Research questions	Answered in
RQ 2.1	Do family firms outperform other types of business in terms of financial performance?	Chapter 2
RQ 2.2	Do countries' cultural characteristics and methodological choices of study authors moderate the relationship between family involvement and financial performance?	Chapter 2
RQ 3.1	How does the business cycle influence the relative performance of family firms?	Chapter 3
RQ 3.2	Do business cycle fluctuations affect family firm performance differently in various institutional settings?	Chapter 3
RQ 4.1	Does family firm status have an impact on firms' market value?	Chapter 4
RQ 4.2	How do family firms' profitability levels and strategic choices mediate the relationship between family firm status and market value?	Chapter 4
RQ 5.1	Do publicly listed family firms have higher or lower leverage ratios than non-family firms?	Chapter 5
RQ 5.2	How does a country's strength of creditor and shareholder rights moderate the relationship between family firm status and leverage ratios?	Chapter 5

Chapter 2 addresses the research question if family firms out- or underperform non-family firms (RQ 2.1). To answer this question, the study of O'Boyle et al. (2012) is replicated, generalized and extended. First, an exact replication using the same inclusion criteria reveals a positive relationship between family influence and firm performance ($r = 0.036$) across 236 studies up to the year 2009. Subsequently, these findings are generalized by updating the study sample and rerunning the analyses on a sample of 1,095 empirical studies published up to this date. The results reveal still a significant outperformance of family firms, but at a lower level than in the exact replication. Following current best practice recommendations (Combs et al., 2019; Roth et al., 2018), the generalization and extension analyses investigate Pearson and partial correlation coefficients separately. Mean effect sizes are consistently larger for the partial correlation subsample ($r_{Pearson} = 0.019$, $r_{partial} = 0.034$). Lastly, a multi-level model controls

for the dependency of effect sizes from the same study as a robustness check. Again, the overall mean effect sizes decrease but are still positive and significant ($r_{Pearson} = 0.015$, $r_{partial} = 0.031$). RQ 2.2 addresses the moderating impact of a country's culture and methodological choices of study authors. Subsample analyses along several cultural and methodological variables explore this question. Concerning country culture, family firms show larger mean effect sizes in countries with high levels of individualism, masculinity and long-term orientation, and low levels of power distance. Concerning methodological moderators, performance effects are stronger for samples of listed and large firms, and stronger for accounting-based measures compared to market-based measures. Furthermore, performance effects are stronger if family influence is measured by ownership compared to management or supervisory control.

Chapter 3 focuses more closely on the impact of business cycle fluctuations on family firm performance (RQ 3.1) by combining the results of 155 primary studies from 35 countries with data about business cycles. It finds evidence for a pro-cyclical performance behavior of family firms, meaning that family firms perform relatively stronger in times of economic prosperity and relatively weaker in economically more difficult times. This finding supports previous studies that identify an underperformance of family firms during crisis times (Bae et al., 2012; Baek et al., 2004; Lemmon & Lins, 2003; Lins et al., 2013). The findings are robust against alternative variable measurements and regression methods. RQ 3.2 is answered by conducting a sample split and separate investigations of different governance systems. First, the OECD member status of a country controls for its economic and institutional development. The results report a pro-cyclical performance of family firms in OECD countries, whereas there is no effect of GDP growth on family firm performance in non-OECD countries. Alternatively, the sample is divided into three different corporate governance systems (Steier, 2009). In this setting, pro-cyclical effects are observed in Anglo-American countries and emerging markets, but not in the Continental European governance system.

Next, **Chapter 4** investigates the market value of family firms by using the correlation matrices of 515 empirical studies. Based on this sample, a meta-analytic structural equation model (MASEM; Cheung & Chan, 2005) is conducted. Addressing RQ 4.1, the results show that family firm status has no direct impact on firms' market value. However, family firm status has an indirect effect on market value via profitability and different strategic choices (RQ 4.2). First, family firms' higher profitability positively mediates their market value. Second, their risk aversion entails a lower R&D intensity, which harms their market value. The overall mediating effects of leverage, diversification, and internationalization are, however, insignificant. Further analyses show that the effects on performance and R&D intensity mainly stem from family ownership, whereas family management

leads to significantly lower levels of diversification and internationalization. Finally, these results are mainly true for OECD countries, whereas family firms in non-OECD countries do not distinguish from non-family firms in terms of profitability or strategic choices (except for R&D intensity).
Finally, **Chapter 5** examines the effect of family firm status on leverage ratios of publicly listed firms. Concerning RQ 5.1, the univariate HOMA results based on 780 effect sizes from 550 studies reveal an overall slightly negative but significant relationship between public family firms and leverage. Thus, family firms have, on average, slightly lower leverage ratios than non-family firms, which confirms the view of the risk averse family firm (Mishra & McConaughy, 1999). However, the results also present a large amount of heterogeneity. Thus, this chapter further investigates the mean effect sizes for each included country and finds considerable differences in the mean effect sizes, ranging from strongly negative to positive mean effect sizes across the 45 countries. Subsequently, a hierarchical meta-regression analysis tests the impact of countries' creditor and shareholder rights (RQ 5.2). Its results show that both variables have a significant impact on family firms' leverage ratios. Whereas stronger creditor rights have a negative impact on family firm leverage, stronger shareholder rights lead to higher leverage ratios in family firms. These results confirm the hypothesis that family firms use leverage as a strategic means to ensure their controlling position in the firm (King & Santor, 2008; Schmid, 2013).

6.2 Implications for theory and practice

6.2.1 Implications for theory

This dissertation contributes to the existing literature on family firms manifold. These contributions can divided into three categories. The first category is family firms' overall performance and the impact of several moderating factors. Second, this dissertation contributes to the understanding of family firm status on firm value specifically. Finally, it increases the understanding of family firms' capital structure.

Financial performance of family firms (Chapters 2 and 3)

The question of family firms' outperformance compared to other types of firms is one of the most fundamental questions in family business research (Gedajlovic et al., 2012). Addressing this question, the present dissertation summarizes the empirical evidence most comprehensively so far by conducting a meta-analysis based on the results of 1,095 primary studies. In this manner, the study surpasses prior meta-analyses, which are mostly restricted to certain firm types or

regions and limited to rather small samples (Carney et al., 2015; Duran et al., 2019; O'Boyle et al., 2012; Taras et al., 2018; Van Essen et al., 2015a; Wang & Shailer, 2017). Furthermore, it follows the call to regularly update meta-analyses to prevent outdated scientific conclusions (Lakens et al., 2016). The results generated in this dissertation allow the conclusion that family firms indeed outperform their non-family counterparts on a small but statistically significant level. Thus, on average, the advantages of family influence in firms seem to outweigh its disadvantages. However, this study identified a considerable amount of heterogeneity among effect sizes, confirming the conclusion of O'Boyle et al. (2012) "that family involvement is not, by itself, a competitive advantage (or disadvantage)" (p. 12). Specifically, performance effects are stronger in large and public firms than in private and small ones, suggesting that missing outside monitoring authorities can lead to a higher prioritization of noneconomic goals in private family firms and, hence, a decline in firm performance. Furthermore, this study is the first to investigate the impact of the complete set of countries' cultural dimensions, measured by the frameworks of Hofstede (1980, 2001) and the GLOBE project (House et al., 2004), on family firm performance. Whereas O'Boyle et al. (2012) suggest that family firms can outperform their competitors in countries with a high conformity of society-level culture and their organizational-level culture, the present results indicate that rather the opposite might be true under specific circumstances. For example, a more collectivistic firm culture can turn to become a unique resource and potential competitive advantage in highly individual-oriented countries (Block et al., 2019; Zahra et al., 2004).

Next to the understanding of the impact of country culture on family firm performance, this dissertation also contributes to the understanding of family firms' performance sensitivity to business cycle fluctuations. The pro-cyclical performance of family firms in emerging markets confirms the results of previous studies investigating crisis periods in these countries (Baek et al., 2004; Lemmon & Lins, 2003). During economically difficult times, the survival of the owner families' economic interests becomes central and results in investment cuts, intragroup transactions from healthier to stricken group firms, or the tunneling of profits (Bertrand et al., 2002; Lins et al., 2013; Masulis et al., 2011). These actions hamper performance (Joh, 2003) and are mostly at the expense of minority shareholders (Attig et al., 2016; Lins et al., 2013). Thus, this dissertation highlights also the potential dark side of family involvement. In developed countries, where these expropriation activities are hardly possible, the pro-cyclical effect might have, however, other reasons. Due to the reluctance to lay off parts of the workforce (Bassanini et al., 2013; Block, 2010), family firms face temporarily higher costs during economic downturns but can benefit from this strategy during upswings. Furthermore, their long-term orientation allows them to compete

in more cyclical industries compared to short-term oriented investors (Zellweger, 2007), which can also explain a part of the more cyclical performance pattern.

Firm value of family firms (Chapter 4)

This thesis makes important contributions to the understanding of valuation mechanisms in public family firms for several reasons. First, existing literature lacks a consistent framework for the market valuation mechanism of family firms. Previous MASEM studies on family firms and other types of ownership conflated profitability and firm value into one construct "firm performance" (Carney et al., 2011; Tihanyi et al., 2019; Van Essen et al., 2015a). This dissertation shows that the effect of family firm status on both types of performance measures is not uniform. Relating to traditional firm valuation methods, it suggests that profitability is rather a predictor of firm value and, in this manner, creates a consistent framework for both performance types. In line with previous meta-analyses (Wagner et al., 2015), this dissertation shows that family firms outperform in terms of profitability, but do not distinguish from non-family firms in terms of firm value. Although there is no direct impact of family firm status on firm value, the results reveal that family firms can benefit indirectly by their higher profitability. In this sense, the study highlights the importance of controlling for profitability in future studies on firm value in order to prevent omitted variable bias. Second, this dissertation considers strategic choices of family firms and partly confirms differences described by previous studies (Gomez-Mejia et al., 2011). It confirms furthermore that different strategic choices of family firms can influence their firm value. This is especially true for R&D intensity, which has the most significant negative indirect impact. Finally, by investigating the separate influences of family ownership and management, this study contributes by showing that different family influence types have different impacts on family firms' strategic choices and firm outcomes. While family ownership benefits firm profitability, family involvement in management leads to more risk averse strategic choices in terms of diversification and internationalization.

Capital structure of family firms (Chapter 5)

Finally, this dissertation contributes to the understanding of family firms' leverage ratios as it is the first study to summarize empirical findings on this topic in a meta-analysis. On the one hand, the dissertation confirms that family firms have, on average, slightly lower leverage ratios, which supports the view of a higher risk aversion in family firms (Mishra & McConaughy, 1999). On the other hand, it builds a bridge to the counterview, which posits that family firms use more debt to ensure the controlling position of their family owners (Croci et al., 2011). Testing

for the moderating impact of countries' creditor and shareholder rights, the results show that family firms adjust their leverage ratios strategically to the respective country-specific circumstances. In countries with stronger creditor rights family firms reduce leverage ratios, whereas stronger shareholder rights have the opposite effect. By choosing a capital structure that avoids potentially harmful conflicts with minority shareholders or creditors, respectively, owner families aim to ensure their dominant position within the firm.

6.2.2 Implications for practice

The findings of this dissertation have not only implications for theory but also practitioners. Potential addressees are investors, policymakers, and family firm owners themselves. The results of this dissertation help these groups to better understand the consequences of family firm prevalence and family firms' actions.

Investors

First, the findings of this dissertation have several implications for investors and business analysts. On the one hand, the results from the univariate HOMA and the MASEM show that family firms, on average, outperform other types of firms in terms of profitability. The higher average profitability indicates that family blockholders are efficient monitors of a firm and thus can also be beneficial for minority shareholders. On the other hand, there are no performance differences in terms of firm value in the MASEM and only weak differences in the HOMA. This indicates that family firms do not per se suffer from more conflicts with minority shareholders. Nevertheless, family owners have also strong control considerations, as observed in the analysis on capital structure. Furthermore, the results on financial performance show a large amount of heterogeneity with also negative performance outcomes of family influence. Especially when family firms are held by later generations, financial performance often deteriorates and is on average lower compared to firms with still active founders. Therefore, investors need to be cautious and investigate corporate governance structures prior to potential investments in family firms.

The performance of family firms is also dependent on certain country-level characteristics and the macroeconomic environment. With regard to country culture, the results show that family firms can develop unique resources in certain cultural environments. Especially in highly individualistic cultures, family firms outperform their non-family firms stronger. In these countries, a more collectivistic firm culture, which is typically attributed to family firms, can become a unique resource through a higher identification of employees. Moreover, family firm performance is on average more sensitive to business cycle fluctuations. Performing

relatively weaker during economically more difficult times, they do even better when the economic climate is more favorable. This finding is important for investors who evaluate the performance of family firms in a certain point of time.

Policymakers

The results of this dissertation show that a country's economy can benefit from the presence of family firms as they are on average financially sound and show higher profitability levels than other firm types. Since family firms are typically locally embedded in their home regions, providing a favorable environment for family firms can increase the overall welfare of a region or country. On the other hand, policymakers need to establish efficient laws and rules that also protect minority shareholders. Chapter 5 shows that family firms have strong control considerations and avoid financing sources that are protected by strong laws. However, a disparity between family blockholders and minority shareholders or creditors increases the potential for conflicts and the risk of expropriation activities.

Family firm owners

Finally, also family firm owners themselves can gain valuable insights from this dissertation's findings. For owners of public family firms, the MASEM results provide important evidence for investors' valuation criteria. Investors value especially a high future orientation in terms of constant investments in R&D activities, whereas a low R&D intensity lowers firm value. Family firms can thus increase their firm value by consistently pursuing R&D projects and publicly promoting their innovation activities. Furthermore, family firms can benefit from a strong strategic focus on their core competencies, since the market usually does not value a high level of business segment diversification. In line with previous research, corporate diversification results in significant valuation discounts. Therefore, public family firms should refrain from growth via corporate diversification, but rather build on their tacit knowledge to create competitive advantages in their primary business segment. Furthermore, it can be beneficial for family firms with family members in management positions to attract further external management competencies to advance internationalization. Family-led public firms show typically a lower degree of international activities, which become, however, more and more important with new global markets developing.
The outcomes of this dissertation highlight furthermore the importance of successions in family firms. Although it does not directly address this issue by investigating succession processes or providing best-practice recommendations, the meta-analytic results reveal, on average, lower performance outcomes for later-generation family firms. Therefore, owner families have to plan succession pro-

cesses carefully to prevent a deteriorating business performance. In some cases, transferring management responsibilities to professional managers and concentrating on supervisory functions can turn out to be more beneficial in the long run, if no suitable successors are available.

6.3 Limitations and avenues for future research

This dissertation faces also some limitations, which offer at the same time possibilities for future researchers and studies. First, owed to the method meta-analysis, the single studies in this dissertation cannot make conclusions on firm-level characteristics of family firms and their respective outcomes. Instead, a meta-analysis rather summarizes empirical findings on the study level to find an overall average effect size and to identify potential moderators of a relationship. However, the group of family firms is highly diverse, as each business family brings in its own structure, values and goals. Furthermore, the influence of each family and its single members, also compared to other shareholders, is different in each firm, respectively. This variety is reflected only to a certain degree in the analyses by different family firm definitions and different family influence types, which sometimes show indeed different effects on firm performance or capital structure. Although Chapter 2 identifies an overall outperformance, this result does therefore not imply that family influence in firms is always beneficial. More research is needed to understand performance-enhancing and performance-decreasing characteristics of family firms and owner families. So far, meta-analyses on family firm outcomes concentrated mainly on comparisons between family firms and non-family firms. With regard to this specific research method, a meta-analysis concentrating on the heterogeneity of family firms could add considerable value in the understanding of owner family characteristics and their firm outcomes.
Concerning Chapter 2, future research investigating the interplay of country culture and family firm characteristics and its resulting firm outcomes might also be promising. Due to the univariate approach used in this study, there is also the potential to test the results in a multivariate analysis that controls for multiple potential influences at the same time. A recent meta-analysis by Duran et al. (2019) investigates the impact of several formal and informal institutions on family firm performance in emerging markets. However, a study that includes also developed countries and focuses on more attributes of country culture, e.g., by using the dimensions of Hofstede (1980, 2001), GLOBE (House et al., 2004) or the recently published Global Preference Survey (Falk et al., 2018), could complete the picture of informal institutions' impact on family firm performance.
Also Chapter 3 faces some limitations in investigating family firms' performance sensitivity to business cycles. To create a match between business cycle data

and family firms' performance outcomes, the meta-analytic sample is restricted to studies that use either cross-sectional data or report effect sizes for single years in single countries. This methodological restriction reduces the study sample significantly, as most studies nowadays, especially those published in top-tier journals, use panel datasets. A future study that uses a panel dataset spanning several business cycles and countries could therefore validate the results derived in this dissertation and add important knowledge on family firms' business activities over the business cycle. For example, it would be of high interest how family firms make strategic investment decisions dependent on the business cycle and how these decisions impact performance outcomes.

An important limitation of Chapter 4 is the missing information on specific corporate governance attributes of family firms. Previous studies on family firm performance find a negative impact for control-enhancing mechanisms such as dual-share structures (King & Santor, 2008) or excess shareholdings (Villalonga & Amit, 2006). Whereas some family firms might use these instruments and suffer from valuation discounts, others might not and receive higher valuations. However, the MASEM results do not reveal any direct family influence on firm value, which indicates that family firms do not use control-enhancing mechanisms excessively and generally. A second limitation with regard to the strategic choices is the scarce use of variables such as R&D intensity in empirical studies outside the United States. A disclosure of these figures is not compulsory in many countries, which limits the possibilities to conduct more fine-grained subsample analyses. Although this study shows valuation mechanisms of family firms, a deeper understanding of investors' perceptions and valuation motives is needed. In two recent studies, Lude and Prügl (2019) and Santiago et al. (2019) investigate investment decisions and perceptions of private investors and find that a high firm reputation, perceived longevity and perceived trust affect nonprofessionals' investment decisions towards family firms. However, little is known about the perceptions and investment decisions of professional investors.

Family firm heterogeneity aspects and corporate governance attributes are also likely to influence the capital structure of family firms, but cannot be regarded by meta-analytic techniques. Another aspect that Chapter 5 does not investigate is the debt maturity structure and source of debt in public family firms. However, the question if and under what conditions family firms prefer private or public debt has not been addressed sufficiently yet, but constitutes an intriguing research question for future studies. Whereas Lin et al. (2013) identify a preference among family firms with a large control-ownership wedge for public debt compared to bank loans, other studies observe a strong reliance on relationship lending and better access to bank loans for family firms (Crespí-Cladera & Martín-Oliver, 2015; D'Aurizio et al., 2015; Yen et al., 2015). Although the financial system

of a country is used as a control variable, it can reflect distinctive financial market characteristics only to a certain degree. While it is a good indicator for the reliance on either bank-based or market-based financing, it does not consider the overall development of the financial markets relative to other countries (Demirgüç-Kunt & Levine, 1999) or the importance of personal relationships or political connections in raising capital. Furthermore, this study concentrates solely on the capital structure of listed firms, whereas it does not consider private firms. In small private family firms, other equity shareholders are rather unusual and new financing is mostly limited to bank loans. In these firms, control considerations might therefore be less pronounced due to less potential conflicts with minority shareholders.

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Appendix

The Appendix lists the included studies in the analyses of Chapters 3-5. The list of studies included in the analyses of Chapter 2 will be provided upon request.

Table A.1: Study list Chapter 3

Auhtor	Year	Journal	Country	Observation period	Sample size
Abdullah et al.	2015	AF	Malaysia	2008	221
Abdullah et al.	2012	WP	Malaysia	2008	841
Abdullah	2014	JMG	Malaysia	2007	100
Abdullah et al.	2011	COC	Malaysia	2007	100
Achmad	2007	PHD	Indonesia	2003	149
Ahluwalia et al.	2017	JSBS	USA	2011	43
Akhtaruddin et al.	2009	JAMAR	Malaysia	2002	105
Aldamen et al.	2011	WP	Australia	2008	656
Alfraih	2016	JFRC	Kuwait	2010	134
Ali et al.	2007	JAE	USA	2002	500
Allouche et al.	2008	FBR	Japan	1998, 2003	312
Amann & Jaussaud	2011	APBR	Japan	1998, 2003, 2007	190
Amit et al.	2015	JCF	China	2007	1453
Aragón-Sánchez & Sánchez-Marín	2005	JSBM	Spain	2000	776
Arosa et al.	2012	IC	Spain	2006	586
Audretsch et al.	2013	JFBS	Germany	2004	386
Audretsch et al.	2010	WP	Germany	2006	386
Ayerbe et al.	2014	EJFB	Spain	2010	1916
Baek et al.	2004	JFE	Korea	1996	644
Bannò	2016	JFBS	Italy	2008	229
Barth et al.	2005	JCF	Norway	1996	438
Barua	2017	STH	USA	2010-2015	260
Bauweraerts & Colot	2013	RSG	Belgium	2005-2009	100
Beldi et al.	2014	RdE	France	2011	141
Bernini et al.	2014	SIN	Italy	2006, 2011	141
Bjuggren et al.	2018	CGIJBS	Sweden	2008	817
Blanco-Mazagatos et al.	2007	FBR	Spain	2000	654
Block et al.	2015	WP	Germany	2013	714
Bornhäll et al.	2016	JEPP	Sweden	2012	1000
Bughin & Colot	2008	RFG	Belgium	2000-2003	66
Carney & Gedajlovic	2002	JMS	Hong Kong	1993	106
Carvalhal & Cochrane	2011	COC	Brazil	2008	238
Cascino & Gassen	2010	WP	Germany, Italy	2006	252, 153
Cavalluzzo & Sankaraguruswamy	2000	WP	USA	1993	1344
Cesaroni et al.	2017	AJBM	Italy	2007, 2009, 2014	128
Chang & Shin	2007	PBFJ	Korea	2000	240
Chau & Gray	2010	JIAAT	Hong Kong	2002	273
Chau & Leung	2006	JIAAT	Hong Kong	2002	397
Chen	2014	WP	China	2010, 2011	402
Chin et al.	2017	WP	Malaysia	2008	82
Choi et al.	2012	CGIR	Korea	2000	301
Chrisman et al.	2004	ETP	USA	1998	1141
Chung & Pruitt	1996	JBF	USA	1986	404
Coleman & Carsky	1999	FBR	USA	1993	2808
Colombo et al.	2014	JSBM	Italy	2007	288
Connelly & Limpaphayom	2012	JBF	Thailand	2005	216
Croci & Grassi	2014	EFM	Italy	2008	282
Darmadi	2013	CGIJBS	Indonesia	2007	354
Darmadi	2013	IJCM	Indonesia	2007	160
Darmadi & Sodikin	2013	ARA	Indonesia	2010	304
Das & Dey	2016	AJBE	India	2014	75
D'Aurizio et al.	2014	JCF	Italy	2007, 2009	2909

Table A.1 continues on the next page

Table A.1: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Davis & Stout	1992	ASQ	USA	1983	467
De Massis et al.	2014	JSBM	Italy	2009	787
De Massis et al.	2016	ETP	Italy	2000	294
Deman et al.	2018	MD	Belgium	2010	329
Desai et al.	2012	JAEPP	India	2003	160
Dharmadasa et al.	2014	JSAD	Sri Lanka	2013	189
Dobija & Kravchenko	2017	JMBA	Poland	2010, 2015	206
Dou et al.	2014	FBR	China	2008	2821
Ducassy & Prevot	2010	JFBS	France	2008	207
Ducassy & Montandrau	2015	RIBF	France	2010	41
Duygun et al.	2018	EM	Indonesia	2013	369
Ebrahim & Fattah	2015	JIAAT	Egypt	2007	116
Ehrhardt et al.	2006	WP	Germany	2003	124
Engel et al.	2019	JBR	Germany	2008, 2009	203
Ermel & Do Monte	2018	RBE	Brazil	2010-2013	224
Filatotchev et al.	2005	APJM	Taiwan	1999	228
Filatotchev et al.	2011	APJM	Hong Kong	2006	447
Firth et al.	1999	OMEGA	Hong Kong	1995	351
Galbreath	2017	BSE	Australia	2012	300
Ge & Micelotta	2019	OST	China	2009	3075
Ghazali & Weetman	2006	JIAAT	Malaysia	2001	87
Goes et al.	2017	REGE	Brazil	2013	251
Gonenc et al.	2007	EMFT	Turkey	2000	200
Gunduz & Tatoglu	2003	EBR	Turkey	1999	202
Hadani et al.	2007	IJABW	USA	2000	420
Hadani	2007	BS	USA	1998, 2000	430
Haji & Mubaraq	2015	JAEE	Malaysia	2006	92
Haniffa & Cooke	2002	ABA	Malaysia	1995	167
Hansson et al.	2011	EJF	Finland	2007	852
Haque et al.	2011	RIBF	Bangladesh	2005	101
Hashim & Devi	2007	RAEE	Malaysia	2004	280
Herrero	2018	FBR	Spain	2014	178
Hybrechts et al.	2013	FBR	Belgium	2001	740
Huybrechts	2011	PHD	Belgium	2001	771
Iskander & Hassan	2017	JP	Malaysia	2014	74
Ismail & Sinnadurai	2012	JBPR	Malaysia	2007	185
Iyer & Lulseged	2013	SAMPJ	USA	2010	397
Jaffar et al.	2013	JP	Indonesia	2008	104
Jameson et al.	2014	JCF	India	2011	1796
Jaskiewicz	2006	PHD	France, Spain, Germany	2003	419, 73, 293
Kamardin	2014	EGCC	Malaysia	2006	112
Kamaruzaman et al.	2019	IJMFA	Malaysia	2014	156
Kaserer & Moldenhauer	2008	RMS	Germany	2003	247
Koch	2017	STH	Germany	2008-2015	160
Kortelainen	2007	STH	Norway	2005	1842
Laitinen	2008	IJAF	Finland	2003	116
Lam & Lee	2008	CGIR	Hong Kong	2003	128
Lee	2004	SAM	USA	2002	126
Leiber	2008	PHD	Germany	1999, 2004	515
Lengsfeld et al.	2016	ZFKE	Germany	2012	153
Leung et al.	2014	JCAE	Hong Kong	2006	487

Table A.1 continues on the next page

Table A.1: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Li & Zhu	2015	JCS	China	2010	2098
Lokman et al.	2012	COC	Malaysia	2007	275
Lopez-Delgado & Dieguez-Soto	2015	JFBS	Spain	2007	3890
Machek et al.	2015	WP	Czech Rep.	2007, 2012	542
Machek & Hnilica	2015	PE	Czech Rep.	2007-2012	1564
Mamede & Allouche	2018	WP	Portugal	2012, 2016	60
Margaritis & Psillaki	2010	JBF	France	2005	3253
Markin	2004	STH	Canada	2004	251
Martínez-Alonso et al.	2019	EJInM	Spain	2012	152
McConaughy et al.	2001	JSBM	USA	1986-1988	240
Menéndez-Requejo	2006	BOOK	Spain	2002	6094
Michiels	2012	PHD	Belgium	2011	246
Mishra et al.	2001	JIFMA	Norway	1996	120
Monteiro	2019	STH	Belgium	2017	102
Murphy et al.	2010	WP	Australia	2008	354
Németh & Németh	2015	WP	Hungary	2013	198
Ng	2012	PHD	Malaysia	2007, 2008	314
Nikolov	2017	IIBEAJ	USA	2001-2010	2000
Oreland	2007	WP	Sweden	2004	196
Parikka	2017	STH	Finland	2013	636
Pinto & Leal	2013	RAC	Brazil	2008, 2009	315
Prabowo & Simpson	2011	APEL	Indonesia	2003	152
Prabowo & Simpson	2009	WP	Indonesia	2002	190
Rabbiosi & Stucchi	2012	WP	India	2009	2447
Ramaswamy et al.	2000	MIR	India	1992	150
Sacrístán-Navarro & Gómez-Ansón	2006	BOOK	Spain	2002	86
Saito	2008	JJIE	Japan	1990	1818
Sandhu & Singh	2019	JFRA	India	2015	140
Sciascia et al.	2015	JPIM	Italy	2000	240
Svalland & Vangstein	2009	WP	Norway	2005	43606
Tan et al.	2001	APJM	Singapore	1995-1997	81
Teal et al.	2003	JDE	USA	1996	337
Testera Fuertes & Cabeza Garcia	2013	InCap	Spain	2007	109
Tinaikar	2014	JMG	USA	2001	420
Tsao et al.	2016	IJHRM	Taiwan	2009	218
Uhlaner et al.	2011	WP	Netherlands	2007	689
Villalonga & Amit	2010	FM	USA	2000	2110
Vintila & Gherghina	2012	IBR	USA	2011	155
Waelchli & Zeller	2012	WP	Switzerland	2006	694
Wahlqvist & Narula	2014	STH	Norway	2001	182913
Wahyuni & Prabowo	2012	IJRB	Indonesia	2002	158
Wei & Tsao	2018	CMS	Taiwan	2011	119
Wiener-Fererhofer	2017	JFBM	Austria	2015	440
Xia	2008	CJAR	China	2004	229
Xiang et al.	2018	TFSC	China	2015	958
Xiang et al.	2018	WP	China	2015	1185
Yasser et al.	2017	IJPPM	Pakistan	2014	475
Zahra	2003	JBV	USA	1997	409
Zahra & Hayton	2004	ETP	USA	1997	536
Zattoni et al.	2015	JM	Norway	2003	421
Zellweger	2007	ZFKE	Switzerland	2004	358
Zhang et al.	2015	EJF	Hong Kong	2006	447

Table A.2: Study list Chapter 4

Auhtor	Year	Journal	Country	Observation period	Sample size
Ab Razak & Palahuddin	2017	COC	Malaysia	2005-2013	140
Abdullah & Ismail	2016	ARA	Malaysia	2008-2011	603
Abdullah et al.	2012	WP	Malaysia	2008	841
Abeysekera & Fernando	2018	JCF	USA	2001-2009	232
Achleitner et al.	2014	EAR	Germany	1998-2008	838
Achleitner et al.	2013	WP	Germany	1998-2008	708
Aguilera et al.	2011	WP	several	2004-2008	1007
Ahmad et al.	2018	TEL	Pakistan	2009-2014	80
Ahn & Cho	2017	JABR	several	1994-2008	536
Ahunov & Eriksson	2019	STH	Sweden	2008-2015	167
Akhtaruddin et al.	2009	JAMAR	Malaysia	2002	105
Al Farooque	2010	MAR	Bangladesh	1995-2002	65
Al Farooque et al.	2019	APJM	Thailand	2000-2011	419
Al Nasser	2018	PHD	several	2009-2013	243
Al-Ajmi et al.	2009	JRF	Saudi Arabia	2003-2007	53
Al-Dubai et al.	2015	JP	Saudi Arabia	2007-2011	75
Al-Dubai et al.	2014	ASS	Saudi Arabia	2007-2011	75
Alessandri et al.	2018	GSJ	USA	2003-2006	935
Alfraih	2016	JFRC	Kuwait	2010	134
Alghambi	2016	PHD	Saudi Arabia	2006-2013	98
Alghamdi	2012	PHD	Saudi Arabia	2006-2009	93
Al-Hadi et al.	2016	IJA	several	2007-2011	135
Alipour	2013	MRR	Iran	2005-2009	60
Al-Malkawi	2017	COC	Saudi Arabia	2005-2012	69
Al-Malkawi	2007	JEAS	Jordan	1989-2000	160
Al-Musali et al.	2019	IJIME	several	2011	119
Almustafa	2018	PHD	Jordan, UAE	2008-2014	113, 40
Al-Najjar & Kilincarslan	2016	CGIJBS	Turkey	2003-2012	264
Al-Okaily & Naueihed	2019	MD	UK	2005-2013	359
Al-Qadasi et al.	2018	MAJ	Malaysia	2009-2012	544
Al-Qahtani & Ajina	2017	JEIEFB	Saudi Arabia	2012-2015	100
Alqatamin et al.	2017	JAAR	Jordan	2008-2013	201
Al-Saidi	2013	JJBA	Kuwait	2009-2012	130
Alwshah	2009	PHD	Jordan	2004-2006	134
Al-Yahyaee et al.	2017	IRF	several	2007-2011	120
Alzoubi	2016	IJAIM	Jordan	2006-2013	62
Ameer et al.	2010	CGIJBS	Malaysia	2002-2007	277
Amran & Ahmad	2009	JFRA	Malaysia	2000-2003	896
An	2015	IBM	Korea	2000-2008	509
Anderson & Reeb	2003	JF	USA	1992-1999	403
Anderson & Reeb	2003	JLE	USA	1993-1999	319
Andersson et al.	2004	STH	Sweden	1999-2003	87
Andrei et al.	2019	WP	Germany	2008-2015	186
Angeloudis	2016	STH	Greece	2011-2015	70
Arena & Michelon. G.	2018	BSE	Italy	2012-2013	167
Asaba & Wada	2019	FBR	Japan	1995-2007	39
Ashwin et al.	2015	APJM	India	2003-2009	172
Attig et al.	2017	WP	several	2002-2012	623
Attig et al.	2013	JMG	several	2000-2002	2723
Attig et al.	2016	FM	several	2006-2010	923
Baek & Fazio	2015	JFBM	USA	1999-2007	194
Banalieva et al.	2015	SMJ	China	2004-2009	490

Table A.2 continues on the next page

Table A.2: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Barontini & Bozzi	2018	JEB	several	1998-2010	199
Barroso Casado et al.	2016	CGIR	Switzerland	2002-2010	116
Barua	2017	STH	USA	2010-2015	187
Baschieri et al.	2014	WP	Italy	1999-2007	182
Bates & Hennessy	2010	CGIR	Canada	2002-2007	103
Bauguess & Stegemoller	2008	JCF	USA	1994-2005	315
Beldi et al.	2014	RdE	France	2011	201
Ben Ali & Lesage	2014	JABR	USA	2006-2008	1100
Ben Ali & Lesage	2013	CJAR	France	2006-2008	244
Ben Hassen	2014	AAJFA	France	2007-2010	92
Benavides et al.	2009	WP	Peru	1999-2005	59
Benkraiem et al.	2018	EB	France	2008-2016	89
Bennouri et al.	2018	JBF	France	2001-2010	394
Bermejo-Sánchez et al.	2015	IJESB	several	2002-2010	1275
Berrone & Gomez-Mejia	2009	AMJ	USA	1997-2003	469
Berrone et al.	2010	ASQ	USA	1998-2002	194
Beuselinck et al.	2012	WP	several	2005-2009	5070
Bingham et al.	2011	JBE	USA	1991-2005	706
Biswas et al.	2018	MD	Bangladesh	1996-2011	165
Block	2010	FBR	USA	1994-2003	414
Block et al.	2015	SMF	Germany	2013	714
Bolin & Widerberg	2019	STH	Sweden	2009-2017	153
Bona Sanchez & Perez Aleman	2009	CDG	Spain	1997-2003	102
Bona Sanchez et al.	2008	SAR	Spain	1997-2003	90
Bona-Sánchez et al.	2017	BRQ	Spain	2004-2012	94
Bona-Sánchez et al.	2019	SJFA	Spain	2003-2013	80
Boonyawat	2013	PHD	Thailand	1994-2007	348
Boubaker et al.	2015	JMG	France	2001-2007	597
Boubakri et al.	2011	JELS	Canada	2002-2005	181
Bozec & Bozec	2013	IJAF	Canada	2002-2008	242
Bozec & Di Vito	2018	FBR	Canada	2002-2008	303
Bozzi et al.	2017	COC	several	1998-2010	76
Briano-Turrent & Poletti-Hughes	2017	JFBS	several	2004-2010	125
Broye et al.	2018	FCS	several	2014	117
Buachoom	2017	ARA	Thailand	2000-2014	432
Byun et al.	2013	JCF	Korea	2001-2007	174
Cabeza-García et al.	2017	JFBS	Spain	2004-2010	122
Cai et al.	2006	EFM	UK	1999-2003	114
Cannelly et al.	2015	AMJ	USA	1991-2005	742
Carrera Junior	2018	PHD	Brazil	2001-2015	239
Carvalhal & Cochrane	2011	COC	Brazil	2008	233
Cascino & Gassen	2010	WP	Germany, Italy	2006	252, 153
Casillas et al.	2019	FBR	Spain	2008-2012	126
Chae & Oh	2016	JABR	Korea	2000-2010	260
Chaganti & Damanpour	1991	SMJ	USA	1983-1985	80
Chakraborty & Sheikh	2008	IFR	USA	1994-1999	137
Chakraborty et al.	2018	MD	Canada	2009-2014	221
Chang	2003	AMJ	Korea	1986-1996	419
Chang et al.	2010	AJBM	Taiwan	1998-2005	62
Chang et al.	2010	BJM	Taiwan	1999-2005	181
Chang et al.	2012	ACFR	Taiwan	2006-2009	573
Chau & Gray	2010	JIAAT	Hong Kong	2002	273

Table A.2 continues on the next page

Table A.2: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Chauhan et al.	2016	JCAE	India	2003-2013	84
Chen	2011	GJBR	Taiwan	2000-2006	216
Chen & Chang		WP	Taiwan	1999-2011	154
Chen & Chen	2015	APJAE	Taiwan	2006-2010	1080
Chen & Chen	2007	JAR	USA	1996-2000	1311
Chen & Hsu	2013	JSBM	Taiwan	2000-2007	77
Chen & Hsu	2009	FBR	Taiwan	2002-2007	369
Chen & Huang	2019	WP	Taiwan	2008-2012	1580
Chen & Jaggi	2000	JAPP	Hong Kong	1993-1994	87
Chen et al.	2008	WP	USA	1996-2005	1204
Chen et al.	2013	APJAE	Taiwan	1996-2007	398
Chen et al.	2010	WP	USA	1997-2006	1500
Chen et al.	2009	CGIR	several	1998-2005	2741
Chen et al.	2013	EAR	USA	1996-2005	1204
Chen et al.	2010	JFE	USA	1996-2000	1003
Cheng & Firth	2006	MDE	Hong Kong	1994-2002	336
Cheng & Firth	2005	CGIR	Hong Kong	1994-1999	336
Cheng et al.	2012	AAF	Hong Kong	2000-2003	370
Cheng et al.	2016	WP	USA	1996-2011	510
Cheung et al.	2011	JIFMA	several	2001-2004	495
Cheung et al.	2005	JEF	Hong Kong	1995-1998	412
Chiu & Wang	2019	PBFJ	Taiwan	1996-2015	989
Chiu et al.	2019	EMFT	Taiwan	2006-2012	1113
Chizema	2008	CGIR	Germany	2002-2005	126
Choi & Yoo	2005	WP	Korea	1993-2002	443
Choi et al.	2012	CGIR	Korea	2000	301
Chou & Shih	2019	QREF	Taiwan	2000-2014	1264
Chourou	2010	CJAS	Canada	2001-2004	42
Chrisman & Patel	2012	AMJ	USA	1998-2007	964
Chu	2009	SBE	Taiwan	2002-2006	341
Chung & Luo	2012	SMJ	Taiwan	1996-2005	573
Cid-Aranda & Mosqueira	2016	MBR	Chile	2005-2014	131
Cieslak	2018	JMG	Sweden	2001-2013	200
Ciftci et al.	2019	IBRE	Turkey	2010-2013	210
Combs et al.	2010	ETP	USA	2002-2005	389
Connelly et al.	2012	JBF	Thailand	2005	216
Cordeiro et al.	2017	APJM	India	2007-2010	335
Correa Flores	2018	PHD	Mexico	2012-2017	142
Croci & Grassi	2014	EFM	Italy	2008	282
Croci et al.	2012	JBF	several	2001-2008	754
Cruz et al.	2014	ETP	several	2001-2010	598
Cuadrado-Ballesteros et al.	2015	IBRE	several	2003-2009	575
Cui et al.	2016	JBE	USA	2003-2010	500
Daadaa & Jouini	2018	IJGFI	France	2010-2014	102
Darmadi	2011	WP	Indonesia	2006-2007	255
Darmadi	2013	CGIJBS	Indonesia	2007	354
Darmadi	2016	ARA	Indonesia	2005-2007	300
Darmadi & Sodikin	2013	ARA	Indonesia	2010	103
Das & Dey	2016	AJBE	India	2014	75
Davis & Stout	1992	ASQ	USA	1980-1990	467
de Andrade et al.	2017	JMG	Brazil	2000-2012	462
Dejsakultorn	2017	PHD	Thailand	2006-2013	361

Table A.2 continues on the next page

Table A.2: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Delbufalo et al.	2016	JMD	Italy	2005-2011	83
Denicolai et al.	2018	IBRE	several	2008-2011	178
Dharmadasa et al.	2014	JSAD	Sri Lanka	2013	189
Din & Javid	2011	WP	Pakistan	2004-2009	29
Ding	2014	STH	China	2009-2013	273
Ding	2019	STH	USA	2011-2016	321
Dobija & Kravchenko	2017	JMBA	Poland	2010-2015	206
Donelson et al.	2018	WP	USA	2006-2012	2332
Ducassy & Montandrau	2015	RIBF	France	2010	41
Ducassy & Prevot	2010	JFBS	France	2008	207
Duygun et al.	2018	EM	Indonesia	2013	369
Ebihara et al.	2012	WP	Japan	2006-2008	2339
Eelderink	2014	STH	Netherlands	2010-2013	80
ElBannan	2017	EMRE	Egypt	2006-2013	154
Eng et al.	2018	JIFMIM	China, USA	2004-2014	802, 777
Engel et al.	2019	JBR	Germany	2008-2009	203
Espinoza Aguiló & Espinoza	2012	CdA	Mexico	2000-2010	101
Eulaiwi et al.	2016	EMRE	several	2005-2013	185
Fagerland & Nilsen	2012	STH	Sweden	2001-2010	300
Fagernäs	2006	WP	India	1998-2004	309
Fang et al.	2018	GSJ	USA	2002-2007	758
Fehre & Weber	2019	BEER	Germany	2003-2012	110
Feito-Ruiz et al.	2018	WP	UK	1998-2016	330
Fernandez-Rodriguez et al.	2004	CGIR	Spain	1998-2000	48
Ferramosca & Allegrini	2018	JFBS	Italy	2007-2015	793
Filatotchev et al.	2011	APJM	Hong Kong	2006	447
Filatotchev et al.	2005	APJM	Taiwan	1999	228
Firth et al.	1999	OMEGA	Hong Kong	1995	351
Fiss & Zajac	2004	ASQ	Germany	1990-2000	112
Fiss & Zajac	2006	AMJ	Germany	1990-2000	112
Gaaya et al.	2017	MAJ	Tunisia	2008-2013	55
Galbreath	2017	BSE	Australia	2012	300
Gama & Rodrigues	2013	CGIJBS	Italy	2000-2006	208
Gan et al.	2013	IJLIC	Malaysia	2006-2008	100
Garcia et al.	2006	LABR	Venezuela	1984-2002	51
Garro Paulin	2013	PHD	Mexico	2001-2006	35
Gavana et al.	2017	SUS	Italy	2006-2015	226
Gavana et al.	2016	EJEFAS	Italy	2004-2013	230
Gedajlovic et al.	2005	OST	Japan	1996-1998	247
Georgiou	2010	PHD	Cyprus	2002-2007	101
Ghazali & Weetman	2006	JIAAT	Malaysia	2001	87
Gill & Kaur	2015	VIK	India	2006-2010	231
Goes et al.	2017	REGE	Brazil	2013	251
Golden & Kohlbeck	2017	AA	USA	1996-2000	885
Gomez-Mejia et al.	2017	JM	USA	2004-2011	523
Gomez-Mejia et al.	2010	JMS	USA	1998-2001	360
Gomez-Mejia et al.	2014	ETP	USA	2004-2009	610
González & García-Meca	2014	JBE	several	2006-2009	435
Greco et al.	2014	IJLIC	Italy	2006-2010	136
Guedri & Hollandts	2008	CGIR	France	2000-2006	230
Guerra Pérez et al.	2015	BRQ	Spain	2003-2012	115
Guillaume	2018	STH	Poland	2014-2016	403

Table A.2 continues on the next page

Table A.2: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Guizani	2010	WP	Tunisia	2004-2010	42
Guizani et al.	2018	MF	France	2012-2014	81
Gupta	2019	IUPAF	India	2011-2015	212
Gupta & Nashier	2017	QJFA	India	2007-2014	1100
Habbash	2016	SRJ	Saudi Arabia	2007-2011	81
Habbash et al.	2016	IJAAPE	Saudi Arabia	2007-2011	97
Hachana & Hajri	2008	COC	Tunisia	2000-2006	21
Hadani	2007	BS	USA	1997-2000	430
Hadani et al.	2007	IJABW	USA	2000	420
Hajawiyah et al.	2018	SRJ	Indonesia	2013-2015	198
Haji & Mubaraq	2015	JAEE	Malaysia	2008-2010	94
Hamberg et al.	2013	MF	Sweden	2001-2010	375
Han An & Naughton	2006	WP	Korea	2000-2005	509
Haque et al.	2011	RIBF	Bangladesh	2005	101
Harijono et al.	2004	WP	Australia	1998-2002	856
Hashim & Devi	2007	RAEE	Malaysia	2004	280
Hashmi et al.	2018	MRR	Pakistan	2009-2015	238
He	2010	STH	USA	2003-2008	2186
He	2008	JBV	USA	1998-2002	1143
Hermes & Katsigianni	2011	WP	Greece	2004-2007	124
Hidalgo et al.	2011	JBE	Mexico	2005-2007	100
Hillier et al.	2017	ETP	USA	2001-2010	716
Ho	2011	WP	Taiwan	2005-2009	633
Ho & Kang	2013	AJPT	USA	2000-2008	1100
Ho & Wong	2001	JIAAT	Hong Kong	1994-1997	98
Ho et al.	2018	WP	Taiwan	2006-2011	1115
Högberg	2011	WP	several	2008	1363
Homayoun & Hakimzadeh	2017	IJEFI	Iran	2007-2014	60
Hooy et al.	2019	EMFT	Malaysia	2001-2012	295
Hou. T.C.-T.	2018	CSREM	Taiwan	2010-2014	640
Hsu et al.	2018	CGIR	Taiwan	1996-2015	1139
Huang	2012	PHD	Taiwan	1996-2008	291
Huijbregts	2019	STH	several	2018	236
Husnin et al.	2016	ARA	Malaysia	2006-2008	300
Hussain & Shah	2015	AAJFA	Pakistan	1999-2012	150
Hussain et al.	2019	CE	Malaysia	2001-2018	605
Hwang & Kim	2009	JFE	USA	1996-2005	96
Ibrahim & Samad	2011	IJEF	Malaysia	1999-2005	290
Ilmas et al.	2018	CEF	Pakistan	2009-2014	100
Ismail & Sinnadurai	2012	JBPR	Malaysia	2007	71
Iyer & Lulseged	2013	SAMPJ	USA	2010	397
Jaafar & El-Shawa	2009	RAEE	Jordan	2002-2005	103
Jaafar et al.	2012	WRBR	Malaysia	2007-2009	537
Jabeen et al.	2012	JBASR	Pakistan	2006-2009	62
Jackling & Johl	2009	CGIR	India	2004-2006	180
Jaffar & Abdul-Shukor	2016	JAEE	Malaysia	2004-2007	520
Jaffar et al.	2013	JP	Indonesia	2008	104
Jaggi & Leung	2007	JIAAT	Hong Kong	1999-2000	262
Jaggi et al.	2009	JAPP	Hong Kong	1998-2000	399
Jaiswall & Firth	2009	IJCG	India	1999-2003	194
Jamaludin et al.	2018	WP	Malaysia	2012-2015	887
Jara-Bertin & Sepulveda	2016	ARLA	Chile	1998-2007	179

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Table A.2: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Jaskiewicz	2006	PHD	Germany, France, Spain	2003	293, 419, 73
Jeong	2011	PHD	South Korea, Taiwan	1996-2005	884, 779
Jewartowski & Kaldonski	2015	EMFT	Poland	2006-2010	105
Jiang & Peng	2011	APJM	several	1996-1997	877
Jo & Harjoto	2011	JBE	USA	1993-2004	2493
Joe et al.	2018	AE	Korea	1995-2014	1625
Johl et al.	2016	IJAUD	India	2004-2012	1712
Juanda	2017	PHD	Germany, Indonesia, UK	2008-2012	43, 43, 43
Kabbach de Castro et al.	2012	WP	several	2004-2009	960
Kaldonski	2015	GN	Poland	2003-2012	166
Kamardin	2014	EGCC	Malaysia	2006	112
Kang	2017	IJAUD	USA	2002-2010	1070
Kaserer & Moldenhauer	2008	RMS	Germany	1998-2003	247
Kashmiri & Mahajan	2014	IJRM	USA	2000-2009	275
Kathuria et al.	2019	WP	India	2008-2018	3800
Keasey et al.	2015	JCF	several	2000-2009	1050
Khan et al.	2015	BAR	Bangladesh	2005-2013	136
Khan et al.	2013	SI	Pakistan	2006-2010	100
Kiatapiwat	2010	PHD	Thailand	2005-2007	298
Kim & Lee	2018	APBR	Korea	2009-2011	200
Kim & Lee	2008	OS	Korea	1998-2003	253
Kim et al.	2009	WP	Korea	1998-2003	381
Koch	2017	STH	Germany	2008-2015	160
Kohlbeck et al.	2018	WP	USA	2001-2013	987
Kohli	2018	InJCG	India	2009-2013	290
Komati	2017	STH	South Africa	2004-2014	143
Kouki & Guizani	2015	IBR	Tunisia	2004-2010	42
Krivogorsky	2006	IJA	several	2000-2001	87
Kuo et al.	2017	APMR	Taiwan	2006-2012	437
Kuzucu	2015	IJBM	Turkey	2006-2013	142
Labelle et al.	2018	JBE	several	2007	1264
Laffranchini & Braun	2014	JFBM	Italy	2006-2010	117
Lai & Tai	2018	PBFJ	Taiwan	2008-2014	1075
Lamb & Butler	2016	BS	USA	1994-2006	153
Le	2019	STH	Vietnam	2007-2015	655
Le	2017	WP	Indonesia, Malaysia, Philippines, Singapore, Thailand	2004-2013	83, 87, 54, 67, 95
Lee	2019	JFBS	Taiwan	2010-2015	175
Lee	2016	STH	Korea	2009-2011	105
Lee & Barnes	2017	JDA	Hong Kong	2008-2012	75
Lehmann	2018	STH	Chile	2008-2015	140
Lei & Deng	2014	JIFMA	Hong Kong	2001-2009	948
Lengsfeld et al.	2016	ZFKE	Germany	2012	153
Leung et al.	2012	JCAE	Hong Kong	2003-2005	399
Li	2010	STH	China	1998-2008	1575
Li & Hung	2013	RPBFM	Taiwan	2001-2009	740

Table A.2 continues on the next page

Table A.2: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Li et al.	2006	MIR	Hong Kong	1996-1998	433
Lien & Li	2013	FBR	Taiwan	2000-2009	205
Lien & Li	2013	JBR	Taiwan	1999-2003	205
Lien et al.	2005	IBRE	Taiwan	1995-1999	228
Lien et al.	2016	FBR	Taiwan	1996-2009	252
Lim	2012	STH	Malaysia	1996-2009	701
Lim et al.	2014	JCAE	Malaysia	1996-2009	599
Lin	2010	SJA	Taiwan	2001-2007	6090
Lin	2012	EMJ	Taiwan	2000-2008	656
Lin & Hsu	2014	JAEC	Taiwan	2004-2009	985
Lin & Wang	2019	APJM	Taiwan	2000-2005	179
Lin et al.	2014	IJEF	Taiwan	2002-2011	364
Lin et al.	2016	APJM	Taiwan	1996-2011	798
Lioupi	2017	STH	Greece	2011-2016	81
Lisboa	2015	EJABM	Portugal	1999-2012	51
Liu	2011	JFR	USA	1992-2006	370
Liu et al.	2017	JBR	USA	2003-2010	300
Liu et al.	2016	JMO	Taiwan	2006-2010	516
Liu et al.	2017	APJM	Taiwan	2002-2008	278
Lokman et al.	2012	COC	Malaysia	2007	275
López-González et al.	2019	CSREM	several	2006-2014	956
Lorenco et al.	2018	MeAR	Portugal	2007-2015	45
Lukens	2016	STH	Netherlands	2010-2014	104
Luo & Chung	2013	OS	Taiwan	1996-2005	641
Luo & Chung	2005	ASQ	Taiwan	1973-1996	168
Mafrolla & D'Amico	2016	JFBS	Italy	2006-2011	183
Mani	2019	APJM	India	2001-2009	1728
Markin	2004	STH	Canada	2004	251
Martinez & Ramalho	2014	IBR	Brazil	2001-2012	441
Martínez et al.	2007	FBR	Chile	1995-2004	175
Martínez-Ferrero et al.	2017	JSBED	several	2007-2014	536
Martins et al.	2017	CGIR	several	2008-2013	300
Martins Valcanover	2019	STH	Brazil	2010-2017	228
Martinsen & Schonberg-Moe	2018	STH	Norway	2000-2015	26
Masud et al.	2018	AJSSR	several	2009-2016	88
Matzler et al.	2015	JPIM	Germany	2000-2009	136
McGuire et al.	2012	JBR	USA	2000	473
Memili et al.	2015	MD	USA	2002-2006	57
Mendes-da-Silva & Grzybovski	2005	WP	Brazil	1997-2001	176
Merino et al.	2018	JMG	Spain	2007-2012	73
Miller et al.	2013	OS	USA	1996-2000	898
Minichilli et al.	2015	CGIR	Italy	2002-2012	219
Mishra & Kapil	2017	CGIJBS	India	2010-2014	391
Mishra et al.	2001	JIFMA	Norway	1996	120
Monteiro	2019	STH	Belgium	2017	102
Moreno-Gómez & Calleja-Blanco	2018	IJGE	Colombia	2008-2015	54
Morresi & Naccarato	2016	IJEF	Italy	2000-2006	107
Mullins	2011	PHD	USA	2001-2005	363
Mullins et al.	2014	HRM	USA	2001-2005	492
Mulyani et al.	2016	JIFMIM	Indonesia	1990-2011	410
Munari et al.	2010	RP	several	1996	1000
Munir & Gul	2011	WP	Malaysia	2004-2005	231

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Table A.2: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Muñoz-Bullón & Sánchez-Bueno	2012	JWB	several	2005-2009	2596
Muñoz-Bullón & Sánchez-Bueno	2011	FBR	Canada	2004-2009	736
Murphy et al.	2010	WP	Australia	2008	354
Muttakin	2012	JAEE	Bangladesh	2005-2009	126
Nagar & Sen	2016	CGIR	India, USA	1988-2010	1430, 1752
Nekhili et al.	2017	JBR	France	2001-2010	91
Ng	2012	PHD	Malaysia	2007-2008	314
Nguyen	2011	PBFJ	Japan	1996-2003	1252
Nikolov & Wen	2018	JFBM	USA	2001-2010	2000
Nor et al.	2010	IJEM	Malaysia	2005-2006	111
Nowicki	2018	FRFU	Poland	2006-2015	608
Oh et al.	2018	JM	USA	2004-2010	1559
Oh et al.	2019	JBR	Korea	2003-2007	290
Omar et al.	2015	JAEE	Malaysia	2003-2009	370
Panicker et al.	2019	JWB	India	2005-2014	2364
Perrini et al.	2008	CGIR	Italy	2000-2003	297
Phuong	2018	STH	Japan	2011-2016	1492
Pindado et al.	2015	JBFA	several	1996-2006	645
Pinto & Leal	2013	RAC	Brazil	2008-2009	315
Poutziouris et al.	2015	JFBS	UK	1998-2008	141
Prabowo & Simpson	2011	APEL	Indonesia	2003	152
Prasad et al.	2019	EJMBE	India	2013-2017	438
Prencipe et al.	2011	CGIR	Italy	2001-2004	135
Purkayastha et al.	2019	JBR	India	2006-2015	675
Purkayastha et al.	2017	APJM	India	2000-2010	185
Rajverma et al.	2019	CEF	India	2006-2017	457
Ramaswamy et al.	2000	MIR	India	1992	150
Ramli et al.	2010	IJBGE	Malaysia	2002-2007	277
Randoy & Goel	2003	JBV	Norway	1996-1998	68
Randoy et al.	2009	SBE	Sweden	1996-1998	98
Razzaque et al.	2016	PBFJ	Bangladesh	2006-2011	122
Razzaque et al.	2018	WP	Bangladesh	2006-2011	122
Reddy et al.	2017	WP	several	2006-2015	1768
Rees & Rodionova	2014	CGIR	several	2002-2012	3893
Requejo et al.	2018	JFBS	several	2007-2015	4387
Rodríguez-Ariza et al.	2016	BEER	several	2004-2010	550
Roy	2016	META	India	2007-2012	58
Roy	2014	WP	India	2009-2012	41
Rubino et al.	2017	JMG	Italy	2003-2013	193
Sacristán-Navarro & Gómez-Ansón	2006	BOOK	Spain	2002	86
Sacristán-Navarro et al.	2011	FBR	Spain	2002-2008	118
Sacristán-Navarro et al.	2015	CGIR	Spain	2004-2010	126
Saeed et al.	2018	EMFT	India	2004-2014	294
Saeed et al.	2017	CCSM	China, India	2004-2013	253, 278
Sakawa & Watanabel	2018	MD	Japan	2007-2016	1500
Saleh et al.	2019	AJMS	Malaysia	2012-2015	407
San Martin-Reyna	2018	JEFAS	Mexico	2005-2015	67
Sandhu & Singh	2019	JFRA	India	2015	140
Saravanan	2009	WP	India	2001-2005	771
Saravanan et al.	2017	SRJ	India	2005-2014	284
Sarhan & Ntim	2019	JAEE	several	2009-2014	100
Schmid et al.	2015	CGIR	Germany	1995-2009	701

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Table A.2: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Schwarz	2014	STH	Germany	2008-2012	103
Sekerci	2018	IRF	Sweden	1998-2014	220
Seluzicka	2018	STH	Germany	2015-2017	267
Sener	2014	RdE	Turkey	2007-2010	210
Sener & Selcuk	2019	MF	Turkey	2006-2014	50
Setiawan et al.	2016	JABS	Indonesia	2006-2012	102
Shahzad et al.	2017	IJBS	Pakistan	2007-2014	95
Shahzad et al.	2018	CSREM	Pakistan	2007-2017	190
Shakir	2008	PRPRJ	Malaysia	1999-2005	81
Sharma & Huang	2014	AFE	USA	1992-2008	1500
Shehata	2013	PHD	several	2009	270
Sheikh et al.	2017	AE	Pakistan	2005-2012	225
Shen	2008	WP	Taiwan	2002-2006	465
Shim & Okamuro	2011	JBF	Japan	1955-1973	1202
Shiri et al.	2018	JFBM	Iran	2011-2015	221
Shyu & Lee	2009	CGIR	Taiwan	2002-2006	611
Siagian	2011	IJBHT	Indonesia	2003-2004	116
Siagian et al.	2007	WP	Indonesia	2003-2004	96
Silva & Majluf	2008	JBR	Chile	2000-2003	165
Singal	2008	PHD	USA	1992-2006	500
Singal & Gerde	2015	FBR	USA	1991-2011	952
Singh & Delios	2017	JWB	India	2001-2008	2152
Singh & Gaur	2013	JIM	India	2002-2009	1634
Singla et al.	2017	JBR	India	2002-2008	101
Soler Vila	2013	PHD	Spain	2003-2011	90
Stadler et al.	2018	GSJ	Germany	2000-2009	262
Steenbakkers	2009	STH	USA	1992-2003	499
Strike et al.	2015	JMS	USA	1997-2009	264
Su	2019	PHD	USA	1998-2016	573
Subramaniam	2018	IJBM	Malaysia	2010-2014	712
Subramaniam et al.	2011	AJBM	Malaysia	2004-2006	300
Sun et al.	2018	JFBS	USA	1992-2015	2391
Syed & Butt	2017	SRJ	Pakistan	2009-2013	56
Tai	2017	CMR	Taiwan	2002-2004	871
Tasawar	2017	WP	Pakistan	2007-2013	132
Tee	2019	IJAUD	Malaysia	2002-2015	745
Testera Fuertes & Cabeza Garcia	2013	InCap	Spain	2007	109
Tinaikar	2014	JMG	USA	2001	420
Tinaikar	2009	WP	USA	1997-1999	420
Ting et al.	2018	IE	Malaysia	2002-2013	183
Ting et al.	2016	IE	Malaysia	2002-2011	201
Tiscini & di Donato	2008	WP	Italy	2001-2006	126
Tong	2008	AA	USA	1992-2003	255
Torres et al.	2017	JFBS	Chile	2000-2014	88
Tran	2014	BAR	Germany	2006-2008	146
Tsao & Lien	2013	MIR	Taiwan	2000-2009	776
Tsao et al.	2009	FBR	Taiwan	2004-2006	91
Tsao et al.	2016	IJHRM	Taiwan	2009	218
Tzioumis	2013	AE	USA	1992-2001	1915
Unite et al.	2019	IAER	Philippines	2003-2014	240
Van Essen et al.	2015	CGIR	several	2004-2009	2949
Vieira	2016	AAR	Portugal	1999-2011	58

Table A.2 continues on the next page

Table A.2: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Vieira	2017	IJMF	Portugal	1999-2014	65
Vintila & Gherghina	2012	IBR	USA	2011	155
Vural	2018	AiE	Sweden	2001-2010	314
Wagner	2010	JBE	USA	1993-2003	252
Wahyuni & Prabowo	2012	IJRB	Indonesia	2002	158
Wan Ismail	2011	PHD	Malaysia	2003-2008	527
Wan Mohammad et al.	2014	COC	Malaysia	2004-2009	201
Wang	2014	WP	several	2002-2010	316
Wang	2015	PHD	several	2002-2011	335
Wan-Hussin	2009	IJA	Malaysia	2001-2002	64
Wei et al.	2011	CJAR	China	2004-2008	1486
Wellalage & Locke	2016	IJCG	Sri Lanka	2006-2014	210
Wesley	2010	PHD	USA	2004-2006	268
Wong & Wang	2017	AJM	Taiwan	2007-2011	78
Wu et al.	2019	ARA	USA	1996-2006	358
Xia	2008	CJAR	China	2004	229
Yahya	2017	PHD	Pakistan	2010-2014	284
Yamak et al.	2015	EJIM	Turkey	1999-2002	178
Yang	2010	FBR	Taiwan	2001-2008	490
Yasser et al.	2017	IJPPM	Pakistan	2014	475
Yen et al.	2015	JFSR	Taiwan	2000-2010	775
Yeung	2018	APJFS	Hong Kong	2008-2010	246
Yoo	2015	APBR	Korea	1998-2011	100
Yoo & Jung	2015	SCJM	France, South Korea	1998-2009	130, 192
Yoo & Koh	2014	ABM	Korea	2000-2009	450
Yoo & Rhee	2013	ABM	Korea	1999-2008	100
Yoshikawa & Rasheed	2010	JMS	Japan	1998-2002	210
Yoshikawa & Shim	2015	WP	Japan	1997-2002	3500
Young et al.	2008	JBFA	Taiwan	2001-2002	492
Yousaf & Hassan	2016	WP	Pakistan	2005-2012	100
Yu et al.	2015	ABM	Taiwan	2007-2012	73
Yu-Thompson et al.	2016	RAF	USA	2008-2013	500
Zhang et al.	2015	EJF	Hong Kong	2006	447
Zulfiqar et al.	2017	AJSS	Pakistan	2010-2015	120
Zulfiqar et al.	2019	EOJNSS	Pakistan	2008-2013	120

Table A.3: Study list Chapter 5

Auhtor	Year	Journal	Country	Observation period	Sample size
Ab Razak & Palahuddin	2017	COC	Malaysia	2005-2013	140
Abdullah et al.	2011	IRBRS	Pakistan	2003-2008	54
Abdullah et al.	2015	AF	Malaysia	2008	221
Abdullah et al.	2011	COC	Malaysia	2007	100
Abeysekera & Fernando	2018	JCF	USA	2001-2009	232
Abid et al.	2018	IJFS	Pakistan	2009-2013	183
Abu-Tapanjeh	2006	JKSU	Jordan	1992-2004	39
Acero & Alcade	2016	RMS	Spain	2004-2011	173
Achleitner et al.	2014	EAR	Germany	1998-2008	838
Adigüzel	2013	ACFR	Turkey	2006-2010	82
Aguenaou et al.	2013	GBR	Morocco	2004-2010	29
Aguilera et al.	2011	WP	several	2004-2008	1007
Ahmad et al.	2018	TEL	Pakistan	2009-2014	80
Ahn & Cho	2017	JABR	several	1994-2008	536
Ahn et al.	2015	RJBM	USA	1994-1999	167
Ahunov & Eriksson	2019	STH	Sweden	2008-2015	55
Akhtaruddin et al.	2009	JAMAR	Malaysia	2002	105
Al Farooque	2010	MAR	Bangladesh	1995-2002	65
Al Farooque et al.	2019	APJM	Thailand	2000-2011	432
Al Nasser	2018	PHD	several	2009-2013	243
Al-Ajmi et al.	2009	JRF	Saudi Arabia	2003-2007	53
Al-Akra & Hutchinson	2013	RAR	Jordan	2000-2004	160
Aldamen et al.	2019	A&F	Australia	2007-2009	645
Al-Dubai et al.	2014	ASS	Saudi Arabia	2007-2011	75
Alessandri et al.	2018	GSJ	USA	2003-2006	935
Alessandri et al.	2018	JBR	USA	2003-2006	818
Alfraih	2016	JFRC	Kuwait	2010	134
Alghambi	2016	PHD	Saudi Arabia	2006-2013	98
Alghamdi	2012	PHD	Saudi Arabia	2006-2009	93
Al-Ghamdi & Rhodes	2015	IJEF	Saudi Arabia	2006-2013	99
Al-Hadi et al.	2016	IJA	several	2007-2011	136
Alipour	2013	MRR	Iran	2005-2009	60
Alkilani et al.	2019	IJAFRM	Jordan	2012-2016	117
Allouche et al.	2008	FBR	Japan	1998-2003	246
Al-Malkawi	2017	COC	Saudi Arabia	2005-2012	69
Al-Malkawi	2007	JEAS	Jordan	1989-2000	160
Almeida-Santos et al.	2013	MRJIAM	Brazil	2000-2010	123
Al-Musali et al.	2019	IJIME	several	2011	119
Almustafa	2017	PHD	several	2008-2014	113
Al-Najjar & Kilincarslan	2016	CGIJBS	Turkey	2003-2012	264
Al-Okaily & Naueihed	2019	MD	UK	2005-2013	359
Al-Qadasi et al.	2018	MAJ	Malaysia	2009-2012	544
Alqatamin	2018	IJARAF	Jordan	2014-2016	165
Alqatamin et al.	2017	JAAR	Jordan	2008-2013	201
Al-Saidi	2013	JJBA	Kuwait	2009-2012	130
Alwshah	2009	PHD	Jordan	2004-2006	134
Al-Yahyaee et al.	2017	IRF	several	2007-2011	120
Alzoubi	2016	IJAIM	Jordan	2006-2013	62
Amann & Jaussaud	2011	APBR	Japan	1998-2007	190
Ameer et al.	2010	CGIJBS	Malaysia	2002-2007	277
Amit et al.	2015	JCF	China	2007	1453
An	2015	IBM	Korea	2000-2008	509
Anderson	2010	WP	USA	2003-2007	2000

Table A.3 continues on the next page

Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Anderson et al.	2003	JFE	USA	1993-1998	252
Anderson et al.	2012	JBF	USA	2003-2007	2000
Andersson et al.	2004	STH	Sweden	1999-2003	87
Andres	2008	JCF	Germany	1998-2004	275
Ang	2017	PHD	several	2004-2010	17688
Angeloudis	2016	STH	Greece	2011-2015	70
Arcot & Bruno	2012	WP	UK	1998-2004	180
Arena & Michelon. G.	2018	BSE	Italy	2012-2013	167
Asaba & Wada	2019	FBR	Japan	1995-2007	39
Ashwin et al.	2015	APJM	India	2003-2009	172
Attig et al.	2013	JMG	several	2000-2002	2723
Attig et al.	2017	WP	several	2002-2012	623
Baber et al.	2006	WP	USA	1997-2002	386
Bagnoli et al.	2011	AoF	USA	2005	500
Baguess & Stegemoller	2010	WP	USA	1994-2005	498
Banogli & Liu	2008	WP	USA	1985-2005	415
Bansal et al.	2018	AS	several	2006-2014	1072
Barroso Casado et al.	2016	CGIR	Switzerland	2002-2010	116
Barua	2017	STH	USA	2010-2015	187
Bataineh et al.	2018	AAFSJ	Jordan	2011-2016	43
Bates & Hennessy	2010	CGIR	Canada	2002-2007	103
Bathala	1996	TFR	USA	1982-1986	281
Bauguess & Stegemoller	2008	JCF	USA	1994-2005	498
Beldi et al.	2014	RdE	France	2011	201
Ben Ali & Lesage	2014	JABR	USA	2006-2008	1097
Ben Ali & Lesage	2013	CJAR	France	2006-2008	159
Benavides et al.	2009	WP	Peru	1999-2005	59
Bennouri et al.	2018	JBF	France	2001-2010	394
Bermejo-Sánchez et al.	2015	IJESB	several	2002-2010	1275
Bernini et al.	2014	SIN	Italy	2005-2011	141
Beuselinck et al.	2012	WP	several	2005-2009	5070
Bingham et al.	2011	JBE	USA	1991-2005	706
Biswas et al.	2018	MD	Bangladesh	1996-2011	165
Block	2010	FBR	USA	1994-2003	414
Block	2012	JBV	USA	1994-2003	154
Block & Thams	2007	WP	USA	1994-1999	153
Boh et al.	2012	WP	Taiwan	2001-2008	344
Bolin & Widerberg	2019	STH	Sweden	2009-2017	153
Bona Sanchez et al.	2008	SAR	Spain	1997-2003	90
Bona-Sánchez et al.	2017	BRQ	Spain	2004-2012	94
Bona-Sánchez et al.	2019	SJFA	Spain	2003-2013	80
Boonlert-U-Thai & Kuntisook	2009	WP	Thailand	2000-2006	331
Boonyawat	2013	PHD	Thailand	1994-2007	441
Boubaker et al.	2015	JMG	France	2001-2007	597
Boubakri et al.	2011	JELS	Canada	2002-2005	181
Bozec & Bozec	2013	IJAF	Canada	2002-2008	242
Briano-Turrent & Poletti-Hughes	2017	JFBS	several	2004-2010	125
Buachoom	2017	ARA	Thailand	2000-2014	432
Butt et al.	2018	JRFM	Pakistan	2010-2016	101
Byun et al.	2013	JCF	Korea	2001-2007	174
Cabeza-García et al.	2017	JFBS	Spain	2004-2010	105
Cai et al.	2006	EFM	UK	1999-2003	114
Calabrò et al.	2019	WP	several	2007-2015	6298

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Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Carney & Gedajlovic	2002	JMS	Hong Kong	1993	106
Carrera Junior	2018	PHD	Brazil	2001-2015	239
Carvalhal & Cochrane	2011	COC	Brazil	2008	238
Cascino et al.	2010	FBR	Italy	1998-2004	114
Casillas et al.	2019	FBR	Spain	2008-2012	126
Catuogno et al.	2018	JFBS	Italy	2008-2012	70
Cella	2009	WP	several	1992-2006	2048
Chae & Oh	2016	JABR	Korea	2000-2010	260
Chaganti & Damanpour	1991	SMJ	USA	1983-1985	80
Chakraborty et al.	2018	MD	Canada	2009-2014	221
Chang	2003	AMJ	Korea	1986-1996	419
Chang & Shin	2006	CGIR	Korea	1993-2002	543
Chang et al.	2010	AJBM	Taiwan	1998-2005	62
Chang et al.	2012	ACFR	Taiwan	2006-2009	573
Chau & Gray	2010	JIAAT	Hong Kong	2002	273
Chau & Leung	2006	JIAAT	Hong Kong	2002	397
Chauhan et al.	2016	JCAE	India	2003-2013	84
Chen	2006	WP	USA	1997-2002	500
Chen	2011	GJBR	Taiwan	2000-2006	216
Chen & Chen	2015	APJAE	Taiwan	2006-2010	1080
Chen & Hsu	2013	JSBM	Taiwan	2000-2007	77
Chen & Hsu	2009	FBR	Taiwan	2002-2007	369
Chen & Huang	2019	WP	Taiwan	2008-2012	1580
Chen & Jaggi	2000	JAPP	Hong Kong	1993-1994	87
Chen & Wang	2018	PBFJ	Taiwan	1997-2011	761
Chen et al.	2010	WP	USA	1997-2006	1500
Chen et al.	2009	CGIR	several	1998-2005	2741
Chen et al.	2013	EAR	USA	1996-2005	1204
Chen et al.	2010	JFE	USA	1996-2000	1003
Chen et al.	2014	JFQA	USA	2003-2009	646
Chen et al.	2011	APJAE	Taiwan	2001-2004	104
Chen et al.	2013	APJAE	Taiwan	1996-2007	398
Chen et al.	2014	IREF	Taiwan	2005-2010	1065
Chen et al.	2019	JCF	USA	2003-2016	863
Cheng & Firth	2005	CGIR	Hong Kong	1994-1999	336
Cheng & Firth	2006	MDE	Hong Kong	1994-2002	336
Cheng & Tzeng	2011	GRAF	Taiwan	2000-2009	244
Cheng et al.	2012	AAF	Hong Kong	2000-2003	370
Cheng et al.	2007	WP	USA	1996-1999	1145
Cheng et al.	2016	WP	USA	1996-2011	510
Cheung et al.	2011	JIFMA	several	2001-2004	495
Cheung et al.	2005	JEF	Hong Kong	1995-1998	412
Chi et al.	2015	IREF	Taiwan	2006-2012	378
Chiang & Lin	2007	CGIR	Taiwan	1999-2003	232
Chin et al.	2017	WP	Malaysia	2008	82
Chiu & Wang	2019	PBFJ	Taiwan	1996-2015	989
Chiu et al.	2019	EMFT	Taiwan	2006-2012	1113
Choi et al.	2012	CGIR	Korea	2000	301
Chou & Shih	2019	QREF	Taiwan	2000-2014	1264
Chu	2009	SBE	Taiwan	2002-2006	341
Chung et al.	2015	JCF	Taiwan	2005-2009	1000
Cid-Aranda & Mosqueira	2016	MBR	Chile	2005-2014	131
Ciftci et al.	2019	IBRE	Turkey	2010-2013	210

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Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Cirillo et al.	2015	MD	Italy	2000-2011	113
Colot & Bauweraerts	2016	IJFR	France	2002-2011	109
Connelly et al.	2012	JBF	Thailand	2005	216
Cordeiro et al.	2017	APJM	India	2007-2010	335
Correa Flores	2018	PHD	Mexico	2012-2017	142
Cortés et al.	2018	INN	Colombia	2008-2014	104
Costa et al.	.	WP	Brazil	2009-2011	233
Croci & Grassi	2014	EFM	Italy	2008	282
Cuadrado-Ballesteros et al.	2016	LRP	several	2002-2010	547
Cui et al.	2016	JBE	USA	2003-2010	500
Cumming et al.	2018	BJM	several	2002-2014	787
Daadaa & Jouini	2018	IJGFI	France	2010-2014	102
Darmadi	2016	ARA	Indonesia	2005-2007	300
Darmadi & Sodikin	2013	ARA	Indonesia	2010	304
Dashtbayaz et al.	2019	JFBM	Iran	2013-2017	139
Davis & Stout	1992	ASQ	USA	1980-1990	467
de Andrade et al.	2017	JMG	Brazil	2000-2012	462
De Massis et al.	2018	EJF	China	2006-2010	81
Defrancq et al.	2016	JFBS	several	2005-2013	3485
Dehlen	2013	PHD	several	1990-2010	179
Dejsakultorn	2017	PHD	Thailand	2006-2013	361
Desai et al.	2012	JAEPP	India	2003	160
Deslandes et al.	2016	JFBM	Canada	2003-2008	299
Díez-Esteban et al.	2017	RIBF	several	2001-2013	791
Din & Javid	2011	WP	Pakistan	2004-2009	29
Ding	2014	STH	China	2009-2013	273
Ding	2019	STH	USA	2011-2016	321
Ding et al.	2008	MIR	China	1999-2004	1011
Dobija & Kravchenko	2017	JMBA	Poland	2010-2015	206
Donelson et al.	2018	WP	USA	2006-2012	2332
Ducassy & Montandrau	2015	RIBF	France	2010	41
Duran et al.	2016	JWB	Chile	2004-2012	207
Duygun et al.	2018	EM	Indonesia	2013	369
Ebihara et al.	2012	WP	Japan	2006-2008	2339
Eelderink	2014	STH	Netherlands	2010-2013	69
ElBannan	2017	EMRE	Egypt	2006-2013	154
Ellul	2008	WP	several	1994-2004	3608
Ellul et al.	2007	WP	several	1988-2002	1072
Eng et al.	2018	JIFMIM	several	2004-2014	802
Engel et al.	2019	JBR	Germany	2008-2009	203
Espinoza Aguiló	2017	STH	Mexico	2000-2015	106
Espinoza Aguiló & Espinoza Aguiló	2012	IJMP	Mexico	2000-2010	101
Fagerland & Nilsen	2012	STH	Sweden	2001-2010	300
Feito-Ruiz et al.	2018	WP	UK	1998-2016	330
Feldman et al.	2014	SMJ	USA	1994-2010	2110
Fernandez-Rodriguez et al.	2004	CGIR	Spain	1998-2000	48
Fernando et al.	2013	FBR	USA	1998-2006	295
Fernando et al.	2015	IJAF	USA	1999-2005	337
Filatotchev et al.	2011	APJM	Hong Kong	2006	447
Fiss & Zajac	2006	AMJ	Germany	1990-2000	112
Gaaya et al.	2017	MAJ	Tunisia	2008-2013	55
Galve-Górriz & Salas-Fumas	1996	MDE	Spain	1990-1991	81

Table A.3 continues on the next page

Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Galve-Górriz & Salas-Fumas	2010	INN	Spain	1990-2004	51
Gama & Rodrigues	2013	CGIJBS	Italy	2000-2006	208
Gan et al.	2013	IJLIC	Malaysia	2006-2008	100
Garro Paulin	2013	PHD	Mexico	2001-2006	35
Gavana et al.	2017	SRJ	Italy	2004-2013	230
Gavana et al.	2017	SUS	Italy	2006-2015	226
Gavana et al.	2019	AS	Italy	2007-2017	172
Georgiou	2010	PHD	Cyprus	2002-2007	101
Ghazali & Weetman	2006	JIAAT	Malaysia	2001	87
Gomez-Mejia et al.	2010	JMS	USA	1998-2001	360
Gonenc et al.	2007	EMFT	Turkey	2000	200
González & García-Meca	2014	JBE	several	2006-2009	435
Greco et al.	2015	FBR	Italy	2006-2010	142
Guerra Pérez et al.	2015	BRQ	Spain	2003-2012	112
Guillaume	2018	STH	Poland	2014-2016	403
Guizani	2010	WP	Tunisia	2004-2010	42
Gunduz & Tatoglu	2003	EBR	Turkey	1999	202
Gupta	2019	IUPAF	India	2011-2015	212
Gupta & Nashier	2017	QJFA	India	2007-2014	1100
Gurarda et al.	2016	IJFS	Turkey	2008-2012	22
Habbash et al.	2016	IJAAPE	Saudi Arabia	2007-2011	97
Hachana & Hajri	2008	COC	Tunisia	2000-2006	21
Hagelin et al.	2006	GFJ	Sweden	1997-2001	192
Hajawiyah et al.	2018	SRJ	Indonesia	2013-2015	66
Haji & Mubaraq	2015	JAEE	Malaysia	2006-2010	94
Halili	2014	PHD	Australia	1998-2010	677
Hamadi & Heinen	2015	WP	Belgium	1991-2006	197
Han An & Naughton	2006	WP	Korea	2000-2005	509
Hanazaki & Liu	2007	JAsE	several	1994-2000	370
Haniffa & Cooke	2002	ABA	Malaysia	1995	167
Haque et al.	2011	RIBF	Bangladesh	2005	101
Hashim	2011	JBPR	Malaysia	2007-2009	154
Hashmi et al.	2018	MRR	Pakistan	2009-2015	238
Hazir	2019	BOOK	Turkey	2013-2017	173
He	2010	STH	USA	2003-2008	2186
He et al.	2012	JBE	Hong Kong	2003-2007	256
Hermes & Katsigianni	2011	WP	Greece	2004-2007	124
Hernández-Trasobares & Galve-Górriz	2017	BRQ	Spain	2000-2005	99
Hidalgo et al.	2011	JBE	Mexico	2005-2007	100
Hillier et al.	2017	ETP	USA	2001-2010	716
Ho	2011	WP	Taiwan	2005-2009	633
Ho & Kang	2013	AJPT	USA	2000-2008	1100
Ho & Wong	2001	JIAAT	Hong Kong	1994-1997	98
Ho et al.	2018	WP	Taiwan	2006-2011	1115
Homayoun & Hakimzadeh	2017	IJEFI	Iran	2007-2014	60
Hooy et al.	2019	EMFT	Malaysia	2001-2012	295
Hoque et al.	2010	WP	Bangladesh	2001-2006	108
Hou. T.C.-T.	2018	CSREM	Taiwan	2010-2014	640
Hsu et al.	2017	WP	USA	2001-2014	3776
Hsu et al.	2018	CGIR	Taiwan	1996-2015	1139
Huang & Su	2015	WP	Taiwan	2008-2012	786
Huang et al.	2014	MRR	Taiwan	2004-2007	673

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Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Huijbregts	2019	STH	several	2018	236
Husnin et al.	2016	ARA	Malaysia	2006-2008	300
Hussain et al.	2019	CE	Malaysia	2001-2018	605
Ianniello et al.	2015	IJAF	Italy	2007-2010	179
Ibrahim & Samad	2011	IJEF	Malaysia	1999-2005	290
Ilmas et al.	2018	CEF	Pakistan	2009-2014	100
Isakov & Weisskopf	2009	WP	Switzerland	2003-2007	178
Isakov & Weisskopf	2015	JCF	Switzerland	2003-2010	187
Ishak et al.	2012	AAMJ	Malaysia	2002-2005	145
Isik	2017	ASSRJ	Turkey	2005-2012	193
Iyer & Lulseged	2013	SAMPJ	USA	2010	397
Jaafar & El-Shawa	2009	RAEE	Jordan	2002-2005	103
Jaafar et al.	2012	WRBR	Malaysia	2007-2009	537
Jaballah & Pouget	2017	WP	France	2009-2013	241
Jabeen et al.	2012	JBASR	Pakistan	2006-2009	62
Jackling & Johl	2009	CGIR	India	2004-2006	180
Jaffar & Abdul-Shukor	2016	JAEE	Malaysia	2004-2007	520
Jaffar et al.	2013	JP	Indonesia	2008	104
Jaggi & Leung	2007	JIAAT	Hong Kong	1999-2000	262
Jaggi et al.	2009	JAPP	Hong Kong	1998-2000	399
Jeong	2011	PHD	several	1996-2005	5840
Jewartowski & Kaldonski	2016	FRFU	Poland	2008-2012	189
Jewartowski & Kaldonski	2015	EMFT	Poland	2006-2010	105
Jiang & Peng	2011	APJM	several	1996-1997	877
Jiraporn & DaDalt	2009	AEL	USA	1994-1999	805
Joe et al.	2018	AE	Korea	1995-2014	1625
Johl et al.	2016	IJAUD	India	2004-2012	1713
Juniarti	2015	IJBG	Indonesia	2008-2011	105
Kabbach de Castro et al.	2012	WP	several	2004-2009	1322
Kaldonski	2015	GN	Poland	2003-2012	166
Kamardin	2014	EGCC	Malaysia	2006	112
Kang	2017	IJAUD	USA	2002-2010	1070
Kao et al.	2018	CGIJBS	Taiwan	1997-2015	682
Kaserer & Moldenhauer	2008	RMS	Germany	1998-2003	246
Kayo et al.	2018	RAC	Brazil	2003-2013	257
Keasey et al.	2015	JCF	several	2000-2009	1050
Khan et al.	2013	SI	Pakistan	2006-2010	100
Khan et al.	2015	BAR	Bangladesh	2005-2013	155
Khan et al.	2017	WP	Pakistan	2010-2016	100
Khosa	2017	IJAIM	India	2008-2012	317
Kiatapiwat	2010	PHD	Thailand	2005-2007	298
Kim & Lee	2018	APBR	Korea	2009-2011	600
Kim et al.	2009	WP	Korea	1998-2003	381
Kim et al.	2014	FM	USA	1992-1996	403
Kladou	2017	STH	Greece	2012-2015	744
Kohlbeck et al.	2018	WP	USA	2001-2013	987
Kohli	2018	InJCG	India	2009-2013	290
Koopmann	2010	STH	Germany	2000-2007	279
Kota & Singh	2016	SJM	India	2005-2015	287
Kowalewski et al.	2010	FBR	Poland	1997-2005	217
Krismiaji & Jati	2018	IJEBM	Indonesia	2010-2013	437
Kryzanowski & Zhang	2013	JCF	Canada	1997-2006	354
Kuan et al.	2011	JBR	Taiwan	1997-2008	1164

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Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Kuo & Hung	2012	CGIR	Taiwan	2001-2008	1115
Kuo et al.	2017	APMR	Taiwan	2006-2012	437
Kuzucu	2015	IJBM	Turkey	2006-2013	142
Kweh et al.	2015	HJE	Taiwan	2005-2012	42
Labelle et al.	2018	JBE	several	2007	1264
Lai & Tai	2018	PBFJ	Taiwan	2008-2014	1075
Lam & Lee	2008	CGIR	Hong Kong	2003	128
Lam & Lee	2012	CGIJBS	Hong Kong	2001-2003	116
Lamerikx	2012	STH	Germany	2008-2011	255
Lang et al.	2004	JAR	several	1996	1048
Latrous & Trabelsi	2012	IJCG	France	1998-2002	118
Le	2017	WP	several	2004-2013	378
Le	2019	STH	Vietnam	2007-2015	655
Lee	2019	JFBS	Taiwan	2010-2015	175
Lee	2016	STH	Korea	2009-2011	105
Lehmann	2018	STH	Chile	2008-2015	140
Lei & Deng	2014	JIFMA	Hong Kong	2001-2009	948
Lei & Song	2011	PBFJ	Hong Kong	2002-2004	181
Lengsfeld et al.	2016	ZFKE	Germany	2012	153
Leung et al.	2012	JCAE	Hong Kong	2003-2005	399
Li	2010	STH	China	1998-2008	1575
Li & Hung	2013	RPBFM	Taiwan	2001-2009	740
Lien & Filatotchev	2015	JWB	Taiwan	1999-2003	96
Lien & Li	2013	FBR	Taiwan	2000-2009	205
Lien et al.	2005	IBRE	Taiwan	1995-1999	228
Lien et al.	2016	FBR	Taiwan	1996-2009	252
Liew et al.	2017	IJOL	Malaysia	2007-2009	530
Liew et al.	2018	WP	Malaysia	2004-2014	370
Lim	2012	STH	Malaysia	1996-2009	701
Lim et al.	2014	JCAE	Malaysia	1996-2009	599
Lin	2010	SJA	Taiwan	2001-2007	6090
Lin	2016	TQM	Taiwan	1996-2012	1282
Lin & Hsu	2014	JAEC	Taiwan	2004-2009	985
Lin et al.	2014	IJEF	Taiwan	2002-2011	364
Lin et al.	2016	APJM	Taiwan	1996-2011	1193
Lin et al.	2019	JEM	Taiwan	2005-2014	417
Lioupi	2017	STH	Greece	2011-2016	81
Liu et al.	2017	JBR	USA	2003-2010	300
Lokman et al.	2012	COC	Malaysia	2007	275
López-González et al.	2019	CSREM	several	2006-2014	956
Lukens	2016	STH	Netherlands	2010-2014	104
Luo & Chung	2013	OS	Taiwan	1996-2005	631
Macciocchi & Tiscini	2016	COC	Italy	2006-2010	221
MacKay	2012	PHD	Canada	2000-2010	159
Mafrolla & D'Amico	2016	JFBS	Italy	2006-2011	183
Majocchi & Strange	2012	MIR	Italy	2005-2007	78
Mard & Marsat	2012	CCA	France	2004-2008	220
Markin	2004	STH	Canada	2004	251
Martinez & Ramalho	2014	IBR	Brazil	2001-2012	441
Martínez et al.	2007	FBR	Chile	1995-2004	175
Martínez-Ferrero et al.	2016	JFBM	several	2002-2010	1275
Martínez-Ferrero et al.	2017	JSBED	several	2007-2014	536
Martin-Reyna & Duran-Encalada	2015	IJFS	Mexico	2005-2011	75

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Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Martins et al.	2017	CGIR	several	2008-2013	300
Martins Valcanover	2019	STH	Brazil	2010-2017	228
Martinsen & Schonberg-Moe	2018	STH	Norway	2000-2015	26
Masud et al.	2018	AJSSR	several	2009-2016	88
Matzler et al.	2015	JPIM	Germany	2000-2009	136
Maury	2006	JCF	several	2003	1448
McGuire et al.	2012	JBR	USA	2000	473
Meirelles de Castro	2016	STH	Brazil	1997-2007	420
Memili et al.	2015	MD	USA	2002-2006	57
Merino et al.	2018	JMG	Spain	2007-2012	75
Miele	2017	PHD	Canada	2000-2012	1258
Minichilli et al.	2015	CGIR	Italy	2002-2012	219
Mishra & Kapil	2017	CGIJBS	India	2010-2014	391
Mishra et al.	2001	JIFMA	Norway	1996	120
Mohd-Saleh et al.	2009	AAMJAF	Malaysia	2005-2007	264
Monteiro	2019	STH	Belgium	2017	102
Moore et al.	2017	JBR	USA	1999-2013	267
Morresi & Naccarato	2016	IJEF	Italy	2000-2006	107
Mukarram et al.	2018	ABM	India	2008-2014	61
Mukherjee & Padgett	2005	WP	UK	2003	199
Mukherjee & Sen	2019	IRJBS	India	2012-2016	139
Mullins et al.	2014	HRM	USA	2001-2005	492
Mulyani et al.	2016	JIFMIM	Indonesia	1990-2011	410
Munari et al.	2010	RP	several	1996	1000
Munir & Gul	2011	WP	Malaysia	2004-2005	231
Muñoz-Bullón & Sánchez-Bueno	2012	JWB	several	2005-2009	2596
Muñoz-Bullón & Sánchez-Bueno	2011	FBR	Canada	2004-2009	736
Murphy et al.	2010	WP	Australia	2008	354
Musallam et al.	2018	SRJ	Indonesia	2009-2013	139
Muttakin	2012	JAEE	Bangladesh	2005-2009	126
Mylonas	2016	STH	Greece	2010-2014	165
Nandi & Gosh	2012	DSL	India	2000-2010	60
Nassar et al.	2018	WP	Turkey	2005-2015	88
Nekhili et al.	2016	JBE	France	2001-2010	394
Nekhili et al.	2017	JBR	France	2001-2010	91
Ng	2012	PHD	Malaysia	2007-2008	314
Nikolov	2017	IIBEAJ	USA	2001-2010	2000
Nikolov & Wen	2018	JFBM	USA	2001-2010	2000
Nor et al.	2010	IJEM	Malaysia	2005-2006	111
Nowicki	2018	FRFU	Poland	2006-2015	608
Oh et al.	2018	JM	USA	2004-2010	1559
Oh et al.	2019	JBR	Korea	2003-2007	290
Omar et al.	2015	JAEE	Malaysia	2003-2009	370
Oreland	2005	WP	Sweden	1985-2000	144
Ossorio	2018	IJMFA	Italy	2010-2013	106
Palaiologou	2016	STH	Greece	2008-2014	210
Palia et al.	2008	JRE	USA	1992-2000	460
Pellicani et al.	2019	EMFT	Brazil	1997-2007	399
Perrini et al.	2008	CGIR	Italy	2000-2003	297
Phuong	2018	STH	Japan	2011-2016	1492
Pindado & De la Torre	2008	MF	Spain	1990-1999	135
Pindado et al.	2013	JEF	several	1999-2006	802
Pindado et al.	2011	JCF	several	1996-2006	684

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Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Poletti-Hughes & Williams	2017	IRFA	Mexico	2004-2013	101
Pooser et al.	2017	JII	USA	2006-2014	86
Poutziouris et al.	2015	JFBS	UK	1998-2008	141
Powell & Rapp	2016	WP	Germany	2001-2012	242
Prencipe et al.	2008	FBR	Italy	2001-2003	44
Prencipe et al.	2011	CGIR	Italy	2001-2004	135
Pukthuanthong et al.	2013	IJMF	Canada	1999-2007	158
Purkayastha et al.	2017	APJM	India	2000-2010	185
Purkayastha et al.	2019	JBR	India	2006-2015	675
Rajverma et al.	2019	CEF	India	2006-2017	457
Randolph et al.	2017	LRP	USA	2002-2006	386
Randoy & Goel	2003	JBV	Norway	1996-1998	68
Randoy et al.	2003	WP	several	1996-1998	141
Randoy et al.	2009	SBE	Sweden	1996-1998	98
Rashid & Lodh	2008	RAEE	Bangladesh	2003-2007	21
Razzaque et al.	2016	PBFJ	Bangladesh	2006-2011	122
Razzaque et al.	2018	WP	Bangladesh	2006-2011	122
Reddy et al.	2017	WP	several	2006-2015	1768
Rees & Rodionova	2014	CGIR	several	2002-2012	3893
Requejo et al.	2018	JFBS	several	2007-2015	4387
Requero Puerto	2010	PHD	several	1996-2006	684
Rizzato et al.	2018	COC	Italy	2013	159
Rodríguez-Ariza et al.	2016	BEER	several	2004-2010	550
Rouyer	2016	MD	France	2006-2008	250
Roy	2014	WP	India	2009-2012	41
Rubino et al.	2017	JMG	Italy	2003-2013	193
Rusmin & Evans	2017	ARA	Indonesia	2010-2011	251
Sacramento Santos et al.	2014	JMG	several	2002-2006	694
Sacristán-Navarro & Gómez-Ansón	2006	BOOK	Spain	2002	86
Sacristán-Navarro et al.	2011	FBR	Spain	2002-2008	118
Sacristán-Navarro et al.	2015	CGIR	Spain	2004-2010	126
Saeed et al.	2018	EMFT	India	2004-2014	294
Sahasranamam et al.	2019	APJM	India	2008-2015	1564
Saito	2008	JJIE	Japan	1990-1998	1818
Saleh et al.	2019	AJMS	Malaysia	2012-2015	407
San Martin-Reyna	2012	JFBS	Mexico	2005-2009	90
San Martin-Reyna	2018	JEFAS	Mexico	2005-2015	67
Sandhu & Singh	2019	JFRA	India	2015	140
Saravanan	2009	WP	India	2001-2005	771
Sarhan & Ntim	2019	JAEE	several	2009-2014	100
Schmid	2013	JBF	Germany	1995-2009	695
Schmid et al.	2010	WP	Germany	1995-2006	660
Schuster et al.	2018	ETP	USA	1992-2013	800
Schwarz	2014	STH	Germany	2008-2012	103
Segura & Formigoni	2014	BBR	Brazil	2004-2009	356
Sekerci	2018	IRF	Sweden	1998-2014	220
Seluzicka	2018	STH	Germany	2015-2017	267
Sener	2014	RdE	Turkey	2007-2010	210
Sener & Selcuk	2019	MF	Turkey	2006-2014	50
Setia-Atmaja	2010	IJMF	Australia	2000-2005	316
Setia-Atmaja	2017	IRJBS	Indonesia	2003-2009	336
Setiawan et al.	2016	JABS	Indonesia	2006-2012	102
Shahzad et al.	2017	IJBS	Pakistan	2007-2014	95

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Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Shakir	2008	PRPRJ	Malaysia	1999-2005	81
Shehata	2013	PHD	several	2009	270
Shen	2008	WP	Taiwan	2002-2006	465
Shiri et al.	2018	JFBM	Iran	2011-2015	221
Shyu & Lee	2009	CGIR	Taiwan	2002-2006	611
Shyu & Shen	2011	EJFBS	Taiwan	2002-2006	465
Siagian	2011	IJBHT	Indonesia	2003-2004	116
Siagian et al.	2007	WP	Indonesia	2003-2004	96
Silva & Majluf	2008	JBR	Chile	2000-2003	165
Singal & Gerde	2015	FBR	USA	1991-2011	952
Soler Vila	2013	PHD	Spain	2003-2011	90
Souha & Anis	2016	CEF	France	2008-2012	77
Strike et al.	2015	JMS	USA	1997-2009	264
Su	2019	PHD	USA	1998-2016	573
Subramaniam	2018	IJBM	Malaysia	2010-2014	712
Subramaniam et al.	2011	AJBM	Malaysia	2004-2006	300
Sun et al.	2018	JFBS	USA	1992-2015	2391
Syed & Butt	2017	SRJ	Pakistan	2009-2013	56
Tahir et al.	2015	WP	Pakistan	2002-2013	280
Tai	2017	CMR	Taiwan	2002-2004	871
Tan	2001	APJAE	Singapore	1996	188
Tanaka	2014	JJIE	Japan	2005-2008	196
Tang	2014	RQFA	USA	1999-2005	280
Tee	2019	IJAUD	Malaysia	2002-2015	745
Telles Portal & Cruz Basso	2015	COC	Brazil	2005-2012	347
Testera Fuertes & Cabeza Garcia	2013	InCap	Spain	2007	109
Theeravanich	2013	JEB	Thailand	2002-2008	363
Tinaikar	2009	WP	USA	1997-1999	420
Tinaikar	2014	JMG	USA	2001	420
Ting et al.	2016	IE	Malaysia	2002-2011	201
Ting et al.	2018	IE	Malaysia	2002-2013	183
Tiscini & di Donato	2008	WP	Italy	2001-2006	126
Tiscini & di Donato	2012	COC	Italy	2002-2004	126
Tong	2008	AA	USA	1992-2003	500
Torres et al.	2017	JFBS	Chile	2000-2014	88
Tran	2014	BAR	Germany	2006-2008	146
Tsai et al.	2006	FBR	Taiwan	1998-2002	199
Tsao & Lien	2013	MIR	Taiwan	2000-2009	776
Vaknin	2010	WP	USA	1992-1999	193
van Essen et al.	2015	CGIR	several	2004-2009	2949
Venanzi & Moresi	2010	WP	Italy	2000-2004	119
Vieira	2014	MF	Portugal	1999-2010	58
Vieira	2017	IJMF	Portugal	1999-2014	65
Vieira	2016	AAR	Portugal	1999-2011	58
Vieira	2018	CGIJBS	Portugal	2002-2013	63
Villalonga & Amit	2006	JFE	USA	1994-2000	508
Villalonga & Amit	2010	FM	USA	2000	2110
Vintila & Gherghina	2012	IBR	USA	2011	155
Vural	2018	AiE	Sweden	2001-2010	314
Wan Ismail	2011	PHD	Malaysia	2003-2008	527
Wang	2014	WP	several	2002-2010	316
Wang	2015	PHD	several	2002-2011	335
Wang	2019	PHD	USA	2001-2010	890

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Table A.3: (continued)

Auhtor	Year	Journal	Country	Observation period	Sample size
Wan-Hussin	2009	IJA	Malaysia	2001-2002	64
Warrad et al.	2012	IJEF	Jordan	2005-2007	77
Wei et al.	2011	CJAR	China	2004-2008	1486
Wellalage & Locke	2016	IJCG	Sri Lanka	2006-2014	210
Wu et al.	2019	ARA	USA	1996-2006	358
Yamak et al.	2015	EJIM	Turkey	1999-2002	178
Yang	2010	FBR	Taiwan	2001-2008	500
Yasser	2011	GJM	Pakistan	2003-2008	132
Yasser et al.	2017	IJPPM	Pakistan	2014	475
Yen et al.	2015	JFSR	Taiwan	2000-2010	775
Yeung	2018	APJFS	Hong Kong	2008-2010	246
Yoo & Jung	2015	SCJM	several	1998-2009	130
Yoo & Koh	2014	ABM	Korea	2000-2009	450
Yoshikawa & Shim	2015	WP	Japan	1997-2002	3500
Young et al.	2008	JBFA	Taiwan	2001-2002	492
Yousaf & Hassan	2016	WP	Pakistan	2005-2012	100
Yu et al.	2015	ABM	Taiwan	2007-2012	73
Yu-Thompson et al.	2016	RAF	USA	2008-2013	500
Zhang et al.	2015	EJF	Hong Kong	2006	447
Zhang et al.	2017	MD	Taiwan	2009-2010	177
Zhou	2012	WP	several	2006-2010	658
Zulfiqar et al.	2019	EOJNSS	Pakistan	2008-2013	120

Journal list: A&F = Accounting & Finance; AA = Advances in Accounting; AAF = Accounting and Finance; AAFSJ = Academy of Accounting and Financial Studies Journal ; AAJFA = Afro-Asian Journal of Finance and Accounting; AAMJ = Asian Academy of Management Journal; AAMJAF = Asian Academy of Management Journal of Accounting and Finance; AAR = Australian Accounting Review; ABA = Abacus; ABM = Asian Business & Management; ACFR = Accounting and Finance Research; AE = Applied Economics; AEL = Applied Economics Letters; AF = Accounting Forum; AFE = Applied Financial Economics; AiE = Accounting in Europe; AJBE = Asian Journal of Business Ethics; AJBM = African Journal of Business Management; AJM = Australian Journal of Management; AJMS = Asian Journal of Multidisciplinary Studies; AJPT = Auditing: A Journal of Practice & Theory; AJSS = Abasyn Journal of Social Sciences; AJSSR = Asian Journal of Sustainability and Social Responsibility; AMJ = Academy of Management Journal; AoF = Annals of Finance; APBR = Asia Pacific Business Review; APEL = Asian Pacific Economic Literature; APJAE = Asia-Pacific Journal of Accounting & Economics; APJFS = Asia-Pacific Journal of Financial Studies; APJM = Asia Pacific Journal of Management; APMR = Asia Pacific Management Review; ARA = Asian Review of Accounting; ARLA = Academia Revista Latinoamericana de Administración; AS = Administrative Sciences; ASQ = Administrative Science Quarterly; ASS = Asian Social Science; ASSRJ = Advances in Social Sciences Research Journal; BAR = The British Accounting Review; BBR = Brazilian Business Review; BEER = Business Ethics: An European Review; BJM = British Journal of Management; BOOK = Book Chapter; BRQ = Business Research Quarterly; BS = Business & Society; BSE = Business Strategy and the Environment; CCA = Comptabilité - Contrôle - Audit; CCSM = Cross Cultural & Strategic Management; CdA = Cuadernos de Administración; CDG = Cuadernos de Gestión; CE = Contemporary Economics; CEF = Cogent Economics & Finance; CGIJBS = Corporate Governance: The international journal of business in society; CGIR = Corporate Governance: An International Review; CJAR = China Journal of Accounting Research; CJAS = Canadian Journal of Administrative Sciences; CMR = Corporate Management Review; CMS = Chinese Management Studies; COC = Corporate Ownership and Control; CSREM = Corporate Social Responsibility and Environmental Management; DSL = Decision Science Letters; EAR = European Accounting Review; EB = Economics Bulletin; EBR = European Business Review; EFM = European Financial Management; EGCC = Ethics, Governance and Corporate Crime: Challenges and Consequences; EJABM = European Journal of Applied Business Management; EJEFAS = European Journal of Economics, Finance and Administrative Sciences; EJF = European Journal of Finance; EJFB = European Journal of Family Business; EJFBS = Electronic Journal of Family Business Studies; EJIM = European Journal of International Management; EJInM = European Journal of Innovation Management; EJMBE = European Journal of Management and Business Economics; EM = Economic Modelling; EMFT = Emerging Markets Finance & Trade; EMJ = European Management Journal; EMRE = Emerging Markets Review; EOJNSS = European Online Journal of Natural and Social Sciences; ETP = Entrepreneurship Theory and Practice; FBR = Family Business Review; FCS = Finance Contrôle Stratégie; FM = Financial Management; FRFU = Finanse, Rynki Finansowe, Ubezpieczenia; GBR = Global Business Review; GFJ = Global Finance Journal; GJBR = Global Journal of Business Research; GJM = Global Journal of Management and Business Research; GN = Gospodarka Narodowa; GRAF = Global Review of Accounting and Finance; GSJ = Global Strategy Journal; HJE = Hitotsubashi Journal of Economics; HRM = Human Resource Management; IAER = International Advances in Economic Research; IBM = International Business Management; IBR = International Business Research; IBRE = International Business Review; IC = Innova Ciencia; IE = Institutions and Economies; IFR

= International Finance Review; IIBEAJ = International Interdisciplinary Business-Economics Advancement Journal; IJA = The International Journal of Accounting; IJAAPE = International Journal of Accounting, Auditing and Performance Evaluation; IJABW = International Journal of the Academic Business World; IJAF = International Journal of Accounting and Finance; IJAFRM = International Journal of Accounting, Finance and Risk Management; IJAIM = International Journal of Accounting & Information Management; IJARAF = International Journal of Academic Research in Accounting, Finance and Management Sciences; IJAUD = International Journal of Auditing; IJBG = International Journal of Business and Globalisation; IJBGE = International Journal of Business Governance and Ethics; IJBHT = International Journal of Business, Humanities and Technology; IJBM = International Journal of Business and Management; IJBS = International Journal of Business and Society; IJCG = International Journal of Corporate Governance; IJCM = International Journal of Commerce and Management; IJEBM = International Journal of Economics, Business and Management Research; IJEF = International Journal of Economics and Finance; IJEFI = International Journal of Economics and Financial Issues; IJEM = International Journal of Economics and Management; IJESB = International Journal of Entrepreneurship and Small Business; IJFR = International Journal of Financial Research; IJFS = International Journal of Financial Studies; IJGE = International Journal of Gender and Entrepreneurship; IJGFI = International Journal of Governance and Financial Intermediation; IJHRM = International Journal of Human Resource Management; IJIME = International Journal of Islamic and Middle Eastern Finance and Management; IJLIC = International Journal of Learning and Intellectual Capital; IJMF = International Journal of Managerial Finance; IJMFA = International Journal of Managerial and Financial Accounting; IJMP = International Journal of Management Practice; IJOL = International Journal of Organizational Leadership; IJPPM = International Journal of Productivity and Performance Management; IJRB = Interdisciplinary Journal of Research in Business; IJRM = International Journal of Research in Marketing; InCap = Intangible Capital; InJCG = Indian Journal of Corporate Governance; INN = Innovar: Revista de ciencias administrativas y sociales; IRBRS = International Review of Business Research Papers; IREF = International Review of Economics and Finance; IRF = International Review of Finance; IRFA = International Review of Financial Analysis; IRJBS = International Research Journal of Business Studies; IUPAF = IUP Journal of Applied Finance; JAAR = Journal of Applied Accounting Research; JABR = Journal of Applied Business Research; JABS = Journal of Asia Business Studies; JAE = Journal of Accounting and Economics; JAEC = Journal of Audit & Economics; JAEE = Journal of Accounting in Emerging Economies; JAEPP = Journal of Accounting, Ethics & Public Policy; JAMAR = Journal of Applied Management Accounting Research; JAPP = Journal of Accounting and Public Policy; JAR = Journal of Accounting Research; JAsE = Journal of Asian Economics; JBASR = Journal of Basic and Applied Scientific Research; JBE = Journal of Business Ethics; JBF = Journal of Banking & Finance; JBFA = Journal of Business Finance & Accounting; JBPR = Journal of Business and Policy Research; JBR = Journal of Business Research; JBV = Journal of Business Venturing; JCAE = Journal of Contemporary Accounting & Economics; JCF = Journal of Corporate Finance; JCS = The Journal of Chinese Sociology; JDA = The Journal of Developing Areas; JDE = Journal of Develpmental Entrepreneurship; JEAS = Journal of Economic & Administrative Sciences; JEB = Journal of Economics and Business; JEF = Journal of Empirical Finance; JEFAS = Journal of Economics, Finance and Administrative Sciences; JEIEFB = Journal of Emerging Issues in Economics, Finance and Banking; JELS = Journal of Empirical Legal Studies; JEM = Journal of Economics and Management; JEPP = Journal of Entrepreneurship and Public Policy; JF = Journal of Finance; JFBM = Journal of Family Business Manage-

ment; JFBS = Journal of Family Business Strategy; JFE = Journal of Financial Economics; JFQA = Journal of Financial and Quantitative Analysis; JFR = The Journal of Financial Research; JFRA = Journal of Financial Reporting & Accounting; JFRC = Journal of Financial Regulation and Compliance; JFSR = Journal of Financial Services Research; JIAAT = Journal of International Accounting, Auditing & Taxation; JIFMA = Journal of International Financial Management & Accounting; JIFMIM = Journal of International Financial Markets, Institutions & Money; JII = Journal of Insurance Issues; JIM = Journal of International Management; JJBA = Jordan Journal of Business Administration; JJIE = Journal of The Japanese and International Economics; JKSU = Journal of King Saud University - Administrative Science; JLE = Journal of Law and Economics; JM = Journal of Management; JMBA = Journal of Management and Business Administration. Central Europe; JMD = Journal of Management Development; JMG = Journal of Management and Governance; JMO = Journal of Management & Organization; JMS = Journal of Management Studies; JP = Jurnal Pengurusan (UKM Journal of Management); JPIM = Journal of Product Innovation Management; JRE = Journal of Regulatory Economics; JRF = The Journal of Risk Finance; JRFM = Journal of Risk and Financial Management; JSAD = Journal of South Asian Development; JSBED = Journal of Small Business and Enterprise Development; JSBM = Journal of Small Business Management; JSBS = Journal of Small Business Strategy; JWB = Journal of World Business; LABR = Latin American Business Review; LRP = Long Range Planning; MAJ = Managerial Auditing Journal; MAR = Malaysian Accounting Review; MBR = Multidisciplinary Business Review; MD = Management Decision; MDE = Managerial And Decision Economics; MeAR = Meditari Accountancy Research; META = Metamorphosis; MF = Managerial Finance; MIR = Management International Review; MRJIAM = Management Research: The Journal of the Iberoamerican Academy of Management; MRR = Management Research Review; OMEGA = Omega - The International Journal of Management Science; OS = Organization Science; OST = Organization Studies; PBFJ = Pacific-Basin Finance Journal; PE = Politická ekonomie; PHD = PHD Thesis; PRPRJ = Pacific Rim Property Research Journal; QJFA = Quarterly Journal of Finance and Accounting; QREF = The Quarterly Review of Economics and Finance; RAC = Revista de Administração Contemporânea; RAEE = Research in Accounting in Emerging Economies; RAF = Review of Accounting and Finance; RAR = Research in Accounting Regulation; RBE = Revista Brasileira de Finanças; RdE = Revue de l'Entrepreneuriat; REGE = REGE - Revista de Gestão; RFG = Revue francaise de gestion; RIBF = Research in International Business and Finance; RJBM = Research Journal of Business Management; RMS = Review of Managerial Science; RP = Research Policy; RPBFM = Review of Pacific Basin Financial Markets and Policies; RQFA = Review of Quantitative Finance and Accounting; RSG = La Revue des Sciences de Gestion; SAM = SAM Advanced Management Journal; SAMPJ = Sustainability Accounting, Management and Policy Journal; SAR = Spanish Accounting Review; SBE = Small Business Economics; SCJM = Scandinavian Journal of Management; SI = Science International; SIN = Sinergie, Italian Journal of Management; SJA = Soochow Journal of Accounting; SJFA = Spanish Journal of Finance and Accounting; SJM = Serbian Journal of Management; SMF = Sustainability Management Forum; SMJ = Strategic Management Journal; SRJ = Social Responsibility Journal; STH = Student Thesis; SUS = Sustainability; TEL = Theoretical Economics Letters; TFR = The Financial Review; TFSC = Technological Forecasting & Social Change; TQM = Total Quality Management & Business Excellence; VIK = Vikalpa: The Journal for Decision Makers; WP = Working Paper; WRBR = World Review of Business Research; ZFKE = Zeitschrift für KMU und Entrepreneurship