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Implications of Alternative Governance Models on Corporate Behaviour

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Empirical Evidence from Corporate Time Horizons and M&A

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Summary

This dissertation covers two main areas of family firm research that are relatively unexplored to date, namely corporate time horizons and mergers & acquisitions (M&A).

Chapter 1 introduces these two research fields.

Chapter 2 gives a comprehensive overview of the state of the family firm literature centred on the question “Are family firms different from non-family firms?” and highlights the research gaps that this dissertation sets out to close, namely corporate time horizons and M&A.

Chapter 3 provides an overview of previous family firm literature in the area of corporate time horizons and develops testable hypotheses that are derived within an agency framework. The hypotheses are separately formulated for family-managed firms and family-owned firms. The core methodological contribution of Chapter 3 is the development of an aggregate index that allows an approximation of corporate time horizons across three main areas of corporate policy, namely investing policy, employee policy, and financing policy. As such, it extends previous work which has generally focussed on single indicators for making inferences about corporate time horizons, such as R&D. The major advantage of the method is the ability of the index to account for shifts and trade-offs between different areas of corporate policy related to corporate time horizons and to allow applicability across different industries and business models. Results support the hypothesis that family management positively influences corporate time horizons, possibly due to a cross-generational family utility element that enters the utility-maximising manager’s utility function. In contrast, results fail to document any significant effect of family ownership or a patient capital effect on corporate time horizons. Empirically, this chapter contributes to the literature by studying a large set of more than 5,000 observations, which was previously not possible, given limitations of sample firms to specific (typically R&D-intensive) industries. The results are robust to a range of alternative variable measurements as well as alternative econometric model specifications. Endogeneity concerns are addressed using a fixed effects specification that controls for time-invariant omitted variables. In addition, propensity score matching is applied and adds confidence that results are not

affected by a reverse causality problem. Chapter 3 is based on Kappes and Schmid (2012).

Chapter 4 first provides a comprehensive overview of the previous literature that deals with the M&A-behaviour of family firms. Testable hypotheses are developed using a corporate control framework that argues that family firm behaviour is driven to a large extent by control maximisation intentions of the controlling family. The main empirical contribution is the use of a novel hand-collected dataset that covers 8,941 firm-year observations of both listed and unlisted firms. To date, M&A research has exclusively focussed on listed firms. The dataset used in this chapter contains detailed ownership structure information, management board and supervisory board information, balance sheet data, profit & loss (P&L) accounts, and data on 2,286 M&A deals. The major advantage of including unlisted firms into the analysis is that it is possible to isolate the effect of access to public capital on M&A decision-making, a factor which is implicitly assumed in previous research that focusses exclusively on listed firms. Results show that family firms conduct fewer M&A transactions than non-family firms. This is in line with the *control consideration hypothesis* that posits decision-making in family firms to be strongly affected by the decision's impact on the family's degree of control in the firm. This result is observable in listed firms as well as in unlisted firms. Notably, outside block-holders (another category of concentrated owners) only affect M&A propensity in an unlisted setting, suggesting that the family effect on M&A is not a mere ownership concentration effect. A range of robustness tests affirm the validity of the results obtained, including alternative family firm variable definitions and a range of sub-sample tests. Endogeneity concerns are addressed using *accounting standard* as an instrumental variable (IV). IV regressions provide support for the hypothesis that results are not biased by endogeneity. Chapter 4 is based on Kappes, Schmid, and Volk (2012).

Chapter 5 summarises and concludes.

Contents

List of abbreviations	IX
List of figures	XIV
List of tables.....	XVIII
List of definitions.....	XXI
1 Introduction	1
1.1 Research questions.....	2
1.1.1 Corporate time horizons in family firms	2
1.1.2 Mergers & acquisitions in family firms	3
1.2 Structure of this dissertation	3
2 Literature review.....	5
2.1 Empirical relevance	5
2.2 Theoretical foundation	6
2.2.1 Owner-manager conflict	7
2.2.2 Majority-minority conflict	10
2.2.3 Shareholder-debtholder conflict.....	13
2.3 Prior empirical findings	16
2.3.1 The impact of family governance on performance.....	16
2.3.1.1 Family ownership effects.....	16
2.3.1.2 Family management effects	25
2.3.1.3 Founder effect.....	32
2.3.1.4 Summary of prior performance-related findings.....	36
2.3.2 The impact of family governance on investment behaviour.....	37
2.3.2.1 Investment cash-flow sensitivity.....	37
2.3.2.2 Capital expenditure	41
2.3.2.3 Research & development	42
2.3.2.4 Mergers & acquisitions	46

2.3.2.5	Summary of prior investment-related findings.....	51
2.3.3	The impact of family governance on financing behaviour	52
2.3.3.1	Internal versus external finance	53
2.3.3.2	The debt-equity choice.....	54
2.3.3.3	Characteristics of lending contracts	62
2.3.3.4	Summary of prior financing-related findings	64
2.3.4	Summary of prior empirical findings	65
2.4	Research gaps in the family firm literature	66
2.4.1	Corporate time horizons in family firms	66
2.4.2	Mergers & acquisitions in family firms	67
3	Corporate time horizons in family firms	68
3.1	Literature review.....	68
3.1.1	Prior evidence of investment-related corporate time horizons in family firms.....	68
3.1.1.1	Research & development	69
3.1.1.2	Internationalisation	71
3.1.1.3	Capital expenditure	71
3.1.1.4	Investment cash-flow sensitivity.....	73
3.1.1.5	Summary of evidence of investment-related corporate time horizons in family firms.....	73
3.1.2	Prior evidence of the reaction to pressure as an indication of corporate time horizons in family firms.....	76
3.1.2.1	Industry cyclicality	76
3.1.2.2	Propping	76
3.1.2.3	Sensitivity to profit shocks.....	77
3.1.2.4	Divestiture in crisis	78
3.1.2.5	Summary of evidence of the reaction to pressure as an indication of corporate time horizons in family firms	78
3.2	Hypotheses exploring the effect of family governance on corporate time horizons.....	80
3.2.1	Theoretical framework.....	80
3.2.1.1	Principal-agent theory.....	80
3.2.1.2	Intertemporal choice in an agency framework	82
3.2.1.3	Agency conflicts related to intertemporal choice	82
3.2.2	Hypotheses development	84

3.2.2.1	The effect of family management on corporate time horizons	85
3.2.2.1.1	Transgenerational effect.....	85
3.2.2.1.2	Family consumption effect	86
3.2.2.1.3	Hypotheses on the effect of family management on corporate time horizons.....	87
3.2.2.2	The effect of family ownership on corporate time horizons.....	88
3.2.2.2.1	Risk aversion effect	88
3.2.2.2.2	Patient capital effect.....	89
3.2.2.2.3	Hypotheses on the effect of family ownership on corporate time horizons	91
3.2.2.3	The impact of pressure on the relationship between family governance and corporate time horizons.....	91
3.2.2.3.1	The effect of family management	92
3.2.2.3.2	The effect of family ownership	94
3.3	Methodology.....	96
3.3.1	Definitions	96
3.3.1.1	Corporate time horizons.....	96
3.3.1.1.1	Limitations of single indicator approaches	96
3.3.1.1.2	Index approach	96
3.3.1.2	Family governance.....	101
3.3.1.2.1	Definition of the relevant family.....	104
3.3.1.2.2	Classification criteria	106
3.3.1.3	Pressure variables	111
3.3.1.4	Control variables.....	114
3.3.2	Dataset	116
3.3.2.1	Composition.....	116
3.3.2.2	Data sources.....	117
3.3.3	Descriptive statistics	119
3.3.4	Econometric methods	123
3.4	Results	123
3.4.1	Regression results	123
3.4.1.1	Corporate time horizons in family firms	123
3.4.1.1.1	Family management.....	124
3.4.1.1.2	Family ownership	125
3.4.1.1.3	Family generation	125
3.4.1.1.4	Outside block-holders	127
3.4.1.1.5	Other effects	128
3.4.1.2	The impact of pressure.....	131
3.4.2	Robustness tests	140

3.4.2.1	Variable and model specification	140
3.4.2.1.1	Index measurement	140
3.4.2.1.2	Family influence measurement	146
3.4.2.1.3	Econometric models	148
3.4.2.2	Endogeneity	152
3.5	Discussion.....	155
3.5.1	Contribution.....	156
3.5.1.1	Theoretical contribution.....	156
3.5.1.2	Methodological contribution.....	157
3.5.1.3	Empirical contribution	158
3.5.2	Implications of results.....	159
3.5.2.1	Implications for investors	159
3.5.2.2	Implications for family firms	160
3.5.2.3	Implications for policy makers	160
3.5.3	Limitations.....	161
3.5.3.1	Variable measurement	161
3.5.3.2	Scope of research	162
3.5.3.3	Institutional context	163
3.5.3.4	Sample selection	163
3.5.4	Suggestions for future research.....	164
3.5.4.1	Analysis of within-family firm variation.....	164
3.5.4.2	Analysis of additional drivers of time horizons.....	164
3.5.4.3	Event study designs analysing external shocks	165
3.5.4.4	Research into additional geographies.....	165
3.5.4.5	Analysis of the impact of corporate time horizons	165
4	Mergers & acquisitions in family firms	167
4.1	Literature review.....	167
4.1.1	Prior evidence of M&A in family firms	167
4.1.1.1	Acquisition probability	167
4.1.1.2	Types of M&A transactions.....	169
4.1.1.3	Financing of M&A transactions.....	169
4.1.1.4	M&A announcement returns.....	171
4.1.2	Prior research on the effects of listing on M&A	175
4.2	Hypotheses exploring the effect of family governance on M&A	182
4.2.1	The effect of family ownership on M&A.....	183

4.2.1.1	Control considerations in family firms.....	183
4.2.1.2	The impact of M&A on the distribution of control in the acquiring firm	184
4.2.1.3	Hypothesis on the effect of family ownership on M&A	186
4.2.2	The impact of listing on M&A.....	187
4.2.2.1	Differences between listed and unlisted firms from the perspective of investors.....	187
4.2.2.2	Hypothesis on the effect of listing on M&A	188
4.2.3	The impact of listing on the relationship between family ownership and M&A	189
4.2.4	The effect of ownership concentration.....	190
4.2.4.1	Differences between family and other concentrated owners	190
4.2.4.2	Hypotheses on the effect of outside block-holders on M&A	191
4.3	Methodology.....	192
4.3.1	Definitions	192
4.3.1.1	Family ownership	192
4.3.1.1.1	Definitional features of previous research of family firms on M&A.....	192
4.3.1.1.2	Additional definitional aspects relevant in the analysis of listed and unlisted firms.....	197
4.3.1.1.3	Definition used in empirical analysis.....	198
4.3.1.2	Equity listing.....	199
4.3.1.3	Control variables.....	199
4.3.2	Dataset	202
4.3.2.1	The Hoppenstedt database	202
4.3.2.2	Sample identification	204
4.3.3	Descriptive statistics	211
4.3.3.1	Sample firm statistics.....	211
4.3.3.1.1	Equity listings of sample firm-years by market segment	211
4.3.3.1.2	Industry distribution of sample firm-years	214
4.3.3.1.3	Age distribution of sample firm-years	216
4.3.3.1.4	Ownership concentration of sample firm-years.....	217
4.3.3.1.5	Mean ownership of key shareholders.....	219
4.3.3.1.6	Number of observations per block-holder category	220
4.3.3.1.7	Number of observations per outside block-holder category	221
4.3.3.1.8	Descriptive statistics - all firms.....	223
4.3.3.1.9	Descriptive statistics - listed and unlisted firms	225
4.3.3.2	M&A statistics.....	227

4.3.3.2.1	M&A activity evolution of sample firms by listing status and ownership category	227
4.3.3.2.2	Frequency distribution of M&A activity	229
4.3.3.2.3	M&A activity of sample firms by degree of diversification	231
4.3.3.2.4	Summary of descriptive statistics	236
4.3.4	Econometric methods	236
4.3.4.1	Calculation of standard errors	237
4.3.4.2	Estimation of model fit	237
4.3.4.2.1	Analysis of multicollinearity	238
4.4	Results	238
4.4.1	Regression results	238
4.4.1.1	M&A propensity	238
4.4.1.2	Diversifying M&A	248
4.4.2	Robustness tests	251
4.4.2.1	Variable and model specifications	251
4.4.2.1.1	Types of outside block-holders	251
4.4.2.1.2	Definition thresholds	255
4.4.2.1.3	Types of family effects	256
4.4.2.1.4	Insider ownership	258
4.4.2.1.5	Industry classification	260
4.4.2.1.6	Econometric model	261
4.4.2.2	Endogeneity	263
4.5	Discussion	269
4.5.1	Contribution	269
4.5.1.1	Theoretical contribution	269
4.5.1.2	Empirical contribution	270
4.5.2	Implications of results	272
4.5.3	Limitations	275
4.5.4	Suggestions for future research	276
5	Conclusion.....	278
5.1	Corporate time horizons in family firms	278
5.2	Mergers & acquisitions in family firms	278
	Appendices	280
	References	286

List of abbreviations

1FF	First generation family firm (cf. Definition 3.6)
AktG	Aktiengesetz (German Stock Corporation Act)
ATT	Average treatment effect for the treated
BaFin	Bundesanstalt für Finanzdienstleistungsaufsicht (German Federal Financial Supervisory Authority)
BE	Between effects
c.	Circa
CapEx	Capital expenditure
CDAX	Deutscher Composite Aktien Index (German Composite Stock Index)
CEO	Chief executive officer
cf.	Confer
CFO	Chief financial officer
COO	Chief operating officer
DAX	Deutscher Aktien Index (German Stock Index)
DGAP	Deutsche Gesellschaft für Ad-hoc-Publizität (German Society for Ad-hoc Disclosure)
e.g.	Exempli gratia (for example)
EBIT	Earnings before interest and tax
EC	European Commission

EHUG	Gesetz über elektronische Handelsregister und Genossenschaftsregister sowie das Unternehmensregister (German Electronic Business Register, Commercial Register, and Cooperatives Register Act)
et al.	Et alii (and others)
et seq.	Et sequens (and the following)
etc.	Et cetera (and so on)
EU	European Union
FE	Fixed effects
FF	Family firm (cf. Definition 3.2)
FF EU	Family firm according to EU definition (cf. Definition 4.1)
FM	Family management (cf. Definition 3.4 and Definition 4.5)
FO	Family ownership (cf. Definition 3.3)
GAAP	Generally Accepted Accounting Principles
GmbH & Co. KG	Gesellschaft mit beschränkter Haftung & Compagnie Kommanditgesellschaft (German limited partnership with a limited liability company as general partner)
GmbH	Gesellschaft mit beschränkter Haftung (German limited liability company)
HGB	Handelsgesetzbuch (German Commercial Code)
i.e.	Id est (that is)
IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
IPO	Initial public offering
ISIN	International security identification number
IT	Information technology

IV	Instrumental variable
KG	Kommanditgesellschaft (limited partnership company)
LFF	Later generation family firm (cf. Definition 3.5)
ln	Natural logarithm
Log	Logarithm
LTI res.	Restricted long-term index (Definition cf. Figure 3.6)
LTI	Long-term index (Definition cf. Figure 3.6)
m	Million(s)
Max	Maximum
M&A	Mergers & acquisitions
m€	Millions of Euros
MB	Management board
MDAX	Deutscher Mid-cap Aktien Index (German mid-cap stock index)
Min	Minimum
NFF	Non-family firm
NPV	Net present value
OLS	Ordinary least squares
P&L	Profit and loss
p.	Page
PE	Private equity
PublG	Publizitätsgesetz (German Public Disclosure Act)
Q	Tobin's Q
R&D	Research & development
R ²	Coefficient of determination

RBV	Resource based view
RE	Random effects
ROA	Return on assets
S&P	Standard & Poor's
SB	Supervisory board
SDAX	Deutscher Small-cap Aktien Index (German small-cap stock index)
SDC	Securities Data Company (now part of Thomson Reuters)
SEO	Seasoned equity offering
SET	Stock Exchange of Thailand
SEW	Socio-emotional wealth
SIC	Standard industrial classification
SME	Small and/ or medium-sized enterprise
St.Dev.	Standard deviation
TecDAX	Deutscher Technology Aktien Index (German technology stock index)
U.S.	United States (of America)
UK	United Kingdom
U.S.-GAAP	Generally Accepted Accounting Principles of the United States
VC	Venture capital
VC/ PE	Venture capital and/ or private equity
VIF	Variance inflation factor
vs.	Versus
WC	Thomson Financial Worldscope database unique item identifier

WKN	Wertpapierkennnummer (German Security Identification Number)
WpHG	Wertpapierhandelsgesetz (German Securities Trading Act)
XETRA	Exchange Electronic Trading (electronic securities trading platform operated by Frankfurt Stock Exchange)

List of figures

Chapter 2

Figure 2.1: Overview of prior evidence of higher performance in family-owned firms.....	20
Figure 2.2: Overview of prior evidence of lower performance in family-owned firms.....	23
Figure 2.3: Overview of prior evidence reconciling opposing evidence of performance in family-owned firms.....	25
Figure 2.4: Overview of prior evidence of higher performance in family-managed firms.....	29
Figure 2.5: Overview of prior evidence of lower performance in family-managed firms.....	32
Figure 2.6: Overview of prior evidence of the founder effect on performance.....	36
Figure 2.7: Overview of prior evidence of investment cash-flow sensitivity in family firms.....	40
Figure 2.8: Overview of prior evidence of CapEx in family firms.....	42
Figure 2.9: Overview of prior evidence of R&D in family firms.....	46
Figure 2.10: Overview of prior evidence of M&A in family firms.....	51
Figure 2.11: Overview of prior evidence of a preference for internal sources of finance in family firms.....	54

Figure 2.12: Overview of prior evidence of lower debt levels in family firms.....	57
Figure 2.13: Overview of prior evidence of higher debt levels in family firms.....	59
Figure 2.14: Overview of prior evidence reconciling different findings on debt levels in family firms.....	61
Figure 2.15: Overview of prior evidence of debt terms in family firms	64

Chapter 3

Figure 3.1: Overview of prior evidence of corporate time horizons in family firms.....	75
Figure 3.2: Overview of prior research on reaction to pressure as an indication of corporate time horizons in family firms	80
Figure 3.3: Long-term index composition - investment-related index variables.....	97
Figure 3.4: Long-term index composition - employee-related index variables.....	98
Figure 3.5: Long-term index composition - financing-related index variables.....	99
Figure 3.6: Long-term index composition - aggregate index.....	100
Figure 3.7: Long-term index composition - sub-indices.....	101
Figure 3.8: Family firm definitions used in prior research on corporate time horizons.....	102
Figure 3.9: Family firm definitions used in prior studies on the reaction to pressure as an indication of corporate time horizons	103
Figure 3.10: Key family firm definition criteria used in previous research on corporate time horizons.....	104

Chapter 4

Figure 4.1: Previous research on M&A decision in family firms	174
Figure 4.2: Previous research on the effect of listing on M&A - direct evidence	177
Figure 4.3: Previous research on the effect of listing on M&A - evidence from IPOs	180
Figure 4.4: Previous research on the effect of listing on M&A - evidence from surveys	181
Figure 4.5: Overview of family firm definitions used in previous research on M&A in family firms	193
Figure 4.6: Overview of information contained in the Hoppenstedt database.....	204
Figure 4.7: Overview of sample elimination criteria and effect on final sample composition.....	207
Figure 4.8: Summary of final sample items and sources information used	210

List of tables

Chapter 3

Table 3.1: Descriptive statistics - all firm-years	120
Table 3.2: Descriptive statistics - family versus non-family firm-years	122
Table 3.3: Regression results - long-term index - family versus non-family firms.....	130
Table 3.4: Regression results - LTI-performance under pressure - family versus non-family firms	133
Table 3.5: Regression results - LTI-performance under pressure by type of family influence	137
Table 3.6: Regression results - LTI-performance under pressure by family generation	139
Table 3.7: Robustness test results - LTI-performance using alternative index specifications	143
Table 3.8: Robustness test results - LTI-performance by sub-index.....	145
Table 3.9: Robustness test results - LTI-performance using alternative family influence specifications.....	148
Table 3.10: Robustness test results - LTI-performance using alternative econometric models.....	152
Table 3.11: Robustness test results - propensity score matching	155

Chapter 4

Table 4.1: Descriptive statistics - equity listings of sample firm-years by market segment	213
Table 4.2: Descriptive statistics - industry distribution of sample firm-years.....	215
Table 4.3: Descriptive statistics - age distribution of sample firm-years	217
Table 4.4: Descriptive statistics - ownership concentration of sample firm-years.....	219
Table 4.5: Descriptive statistics - mean ownership stakes of key shareholder types	220
Table 4.6: Descriptive statistics - number of observations per block-holder category	221
Table 4.7: Descriptive statistics - number of observations per outside block-holder category	223
Table 4.8: Descriptive statistics - control variables of all firms	225
Table 4.9: Descriptive statistics - control variables of listed versus unlisted firms	227
Table 4.10: Descriptive statistics - M&A activity evolution of sample firms by listing status and ownership category.....	229
Table 4.11: Descriptive statistics - frequency distribution of M&A activity	230
Table 4.12: Descriptive statistics - M&A activity of sample firms by degree of diversification.....	235
Table 4.13: Regression results - M&A propensity of families and outside block-holders	245
Table 4.14: Regression results - M&A propensity of families and outside block-holders - by ownership category	247

Table 4.15: Regression results - diversifying M&A by families and outside block-holders - share of acquisitions in other industry (2-digit SIC code)	250
Table 4.16: Regression results - diversifying M&A by families and outside block-holders - share of acquisitions in other country	251
Table 4.17: Robustness test results - M&A propensity of families and other key block-holders by type	254
Table 4.18: Robustness test results - M&A propensity of families and outside block-holders using uniform thresholds for listed and unlisted firms.....	256
Table 4.19: Robustness test results - M&A propensity of family-managed firms.....	258
Table 4.20: Robustness test results - M&A propensity of families, outside block-holders, and insider owners	260
Table 4.21: Robustness test results - M&A propensity of families and outside block-holders using alternative industry classification.....	261
Table 4.22: Robustness test results - probit model - M&A propensity of families and outside block-holders.....	263
Table 4.23: Descriptive statistics - sample firm-years by listing status and reporting standard used.....	266
Table 4.24: Robustness test results - instrumental variable regression accounting for listing-related endogeneity concerns	268

List of definitions

Chapter 3

Definition 3.1: Intertemporal choice	82
Definition 3.2: Family firm (FF)	110
Definition 3.3: Family ownership (FO).....	111
Definition 3.4: Family management (FM)	111
Definition 3.5: Later generation family firm (LFF).....	111
Definition 3.6: First generation family firm (1FF)	111
Definition 3.7: Loss	113
Definition 3.8: Underperformance	113
Definition 3.9: Negative momentum.....	113
Definition 3.10: Family management board (MB)	146
Definition 3.11: Family supervisory board (SB)	146

Chapter 4:

Definition 4.1: Family firm EU (FF EU).....	198
Definition 4.2: Outside block-holder EU	199
Definition 4.3: Listing.....	199
Definition 4.4: M&A propensity	237
Definition 4.5: Family management.....	257

1 Introduction

Family firms are a common type of organisation on a global basis (e.g., Faccio and Lang (2002), La Porta, López-De-Silanes, and Shleifer (1999), Shleifer and Vishny (1997), Villalonga and Amit (2006)). For this reason, the question as to whether family firms fundamentally differ from non-family firms has been approached from many different angles in the previous literature. For example, a large body of research focusses on the performance effects of family governance. Other areas of research focus on the investment behaviour of family firms, their financing decisions, or their employee policy (e.g., Block (2010), Dyer (1988), Le Breton-Miller and Miller (2006), Schulze et al. (2001), Tagiuri and Davis (1996), Ward (1988)). Two areas which are still relatively unexplored are corporate time horizons and mergers & acquisitions (M&A) in family firms.

The first area, corporate time horizons, is often assumed to differ significantly in family firms, and the assumption of longer time horizons in family firms is frequently used in research exploring the differences between family and non-family firms (e.g., Anderson and Reeb (2003a), Bertrand and Schoar (2006), James (1999), Le Breton-Miller and Miller (2006), Lumpkin and Brigham (2011), Miller and Le Breton-Miller (2005), Sirmon and Hitt (2003), Zahra, Hayton, and Salvato (2004), Zellweger (2007)). In some cases, the criterion of longer corporate time horizons even appears in family firm definitions (e.g., Chua, Chrisman, and Sharma (1999), Chua, Chrisman, and Chang (2004), Le Breton-Miller and Miller (2009)). Yet, empirical evidence that demonstrates longer corporate time horizons in family firms is scarce, inconclusive, and (to date) highly focussed on R&D-behaviour. While corporate time horizons are not directly measurable or observable, additional insight into the intertemporal preferences of family firms would support various streams of family firm research that are built on the assumption of extended time horizons in these firms.

The second area, M&A-behaviour of family firms, has received little attention to date despite some compelling evidence of a connection between corporate

ownership structures and M&A-behaviour (e.g., Bhaumik and Selarka (2012), Chen, Huang, and Chen (2009), Croci and Petmezas (2010), Faccio and Masulis (2005)). This is also surprising given the close link between M&A and many aspects frequently discussed in the context of family firms, including risk-taking preferences, entrenchment behaviour, and control considerations. Only a handful of authors have contributed to shedding light on the influence of the unique factors governing family firms on M&A. The prior research also exclusively focusses on listed firms. However, the great majority of firms are not listed on a stock market. This is not only the case in bank-based economies like Germany. It is also observable in market-based economies such as the U.S. or the UK. However, little is known about the M&A-behaviour of unlisted firms. Additional research into this high-stake decision-making situation would be helpful in order to gain insights into the factors driving investment choices in family firms and into the implications of family involvement for investment policy.

1.1 Research questions

The two major research gaps in the family firm literature, as outlined above, are addressed in the following chapters. Corporate time horizons are discussed in Chapter 3, and mergers & acquisitions (M&A) are addressed in Chapter 4.

1.1.1 Corporate time horizons in family firms

The first research area, corporate time horizons, is approached using an *agency* theoretic framework to analyse whether family firms differ from non-family firms with regards to their intertemporal preferences. A new methodology, an aggregate index of investment, employee, and financing policy indicators, is used to calculate a comprehensive measure of corporate time horizons. It therefore goes beyond previous studies that focus on individual indicators such as R&D or CapEx. Based on this new index, it is possible to address the following research questions in Chapter 3:

Question 1a: Does the corporate policy of family firms reflect different intertemporal preferences of family firms and non-family firms?

Question 1b: Are corporate time horizons in family firms driven by family ownership or family management?

Question 1c: Do corporate time horizons in family firms differ by family generation?

Question 1d: Does pressure moderate the relationship between family governance and corporate time horizons?

1.1.2 Mergers & acquisitions in family firms

The second research area, M&A, uses an emerging theory in the family firm literature which posits that decision-making in family firms is strongly influenced by control considerations of the owner-family. Because of the significant amounts of capital required in order to undertake M&A transactions, M&A has the potential to significantly change the distribution of control within a firm. Using a control retention framework, Chapter 4 presents analysis with the objective of establishing whether family firms exhibit different M&A-behaviour than non-family firms. In particular, a novel dataset covering both listed and unlisted firms facilitates the generation of insights into potential differences between listed and unlisted firms. Based on this dataset, the following research questions are addressed in Chapter 4:

Question 2a: Does a stock market listing influence M&A-behaviour?

Question 2b: Does family ownership influence M&A-behaviour?

Question 2c: Does listing mediate the effect of family ownership on M&A-behaviour?

Question 2d: Does the influence of family firms on M&A represent a unique family firm effect or does ownership concentration explain M&A choices?

1.2 Structure of this dissertation

Chapter 2 provides an overview of the current state of the family firm literature that analyses whether the behaviour of family firms differs from that of non-family firms. Based on this overview, gaps in the literature are identified, namely corporate time horizons and M&A. The research in Chapter 3 and Chapter 4 aims to contribute to closing these gaps.

Chapter 3 contains a detailed literature review on the first major research gap, corporate time horizons. Based on existing theoretical and empirical work, hypotheses are developed in order to explore the behaviour of family firms with

Chapter 1: Introduction

regards to their intertemporal preferences. Theoretical predictions are developed in an agency framework. A new methodology for approximating corporate time horizons, empirical evidence, and robustness tests are presented. The chapter is concluded with a discussion of the results.

Chapter 4 presents an in-depth overview of prior literature regarding the behaviour of family firms with regards to mergers & acquisitions (M&A). Hypotheses exploring the behaviour of family firms in a theoretical framework centred on the *control retention hypothesis* are provided separately for listed and unlisted firms. A new dataset covering both listed and unlisted firms is presented in detail, followed by empirical evidence, robustness tests, and a discussion of the results.

Chapter 5 discusses the findings of Chapters 3 and 4 and concludes with regard to their contribution to both theory and practice. Limitations are discussed and avenues for future research are presented.

2 Literature review

2.1 Empirical relevance

Family firms are one of the most prevalent organisational types around the globe. According to previous research, the share of family firms in national economies depends on a number of factors. For example, family firms are less frequent in low investor protection countries, and family control is more likely in non-financial firms compared to financial firms (Faccio and Lang (2002), La Porta, López-De-Silanes, and Shleifer (1999), Shleifer and Vishny (1997)).

According to Franks and Mayer (2001), 20.5% of German firms have a family shareholder that holds a minimum of 25% of shares, and in 16.4% of German corporations, a family holds more than 50% of shares. Their study is based on a sample of 171 listed firms in the year 1990. A larger study covering 704 listed German firms conducted by Faccio and Lang (2002) shows that 64.42% of German listed firms are family-controlled. In comparison to other Western European countries, Germany ranks second only to France, where 64.62% of firms are family-controlled. The study of Faccio and Lang (2002) uses an ownership threshold of 20%.

Because empirical surveys (such as the ones mentioned above) show that family firms are a frequent alternative to the organisational model promoted by Berle and Means (1991) who describe the modern corporation as one with separate ownership and control, many scholars devote their attention to the implications of this alternative (i.e., family) governance model.

A range of theoretical concepts have been developed with the objective of explaining whether and, if so, how family firms differ from non-family firms. Most prominently, *agency theory* (and alterations thereof) has been applied to explain differences between family and non-family firms. In addition, the concept of *familiness*, a sub-category of the resource based view (RBV) of the firm, has

emerged as an alternative leading theory in the area of family research (cf. Chrisman, Chua, and Sharma (2005), Dyer (2006)).

The body of theoretical research on family firms is rich and investigates both advantages and disadvantages of the family governance model compared to widely-held firms. While *agency theory* remains the theory of choice in research relating to corporate governance and finance topics, the RBV-based *familiness theory* is predominantly used in management science. For this reason, *agency theory* is applied in the following chapters. Where helpful, *agency theory* is complemented with insights from the RBV-based *familiness* literature.

Chapter 2.2 provides an overview of the family firm literature that discusses family governance in the context of *agency theory*. Chapter 2.3 summarises empirical evidence regarding the question as to whether family firms differ from non-family firms. Empirical evidence is divided into the areas of performance (Chapter 2.3.1), investment behaviour (Chapter 2.3.2), and financing behaviour (Chapter 2.3.3).

2.2 Theoretical foundation

Based on the research of Berle and Means (1991), *agency theory* was applied to situations of separate ownership and management in firms by Ross (1973), Jensen and Meckling (1976), and Fama (1980). In its most general form, the theory argues that in situations where an agent (manager) acts on behalf of a principal (owner), the interests of principal and agent may diverge. In such situations, incomplete and potentially asymmetric information, bounded rationality, and the inability to create complete contracts that take all possible contingencies into account can result in sub-optimal outcomes from the perspective of the principal. The welfare loss incurred as a result of an agency situation consists of monitoring costs, bonding costs, and any residual loss. This welfare loss is described as agency cost (Fama and Jensen (1983)).¹

The great majority of research on family governance, in particular empirical research, is conducted in an *agency* framework. In addition to the owner-manager conflict described above, *agency* theoretic applications relevant in the context of family firms include potential conflicts of interests between majority owners and

¹ Eisenhardt provides a detailed overview of the evolution of agency theory and its applications in and insights from various fields of research (Eisenhardt (1989)).

minority owners (e.g., Morck, Shleifer, and Vishny (1988)) as well as agency conflicts between shareholders and debt providers (e.g., Myers (1977)).

Details on all three areas of potential agency conflict in family firms are provided in the following. Chapter 2.2.1 focusses on the owner-manager conflict. Chapter 2.2.2 addresses the majority-minority conflict. Lastly, Chapter 2.2.3 discusses the shareholder-debtholder conflict.

2.2.1 Owner-manager conflict

In a family firm, it is argued that the lower degree of separation of ownership and control leads to a better alignment of the interests of the principal with those of the agent. Zero agency costs are posited to be the result of full concurrence of ownership and management, such as in an owner-managed firm, where the owner holds all of the firm's share capital (Jensen and Meckling (1976)). In such a setting, principal and agent are unified in one person. Therefore, the agent will naturally act in the principal's (his/ her own) interest.

However, the universe of family firms is heterogeneous and the application of *agency theory* regarding family firms can therefore be more complex than in the case of the *zero agency cost firm* that is solely managed by its only owner (Sharma, Chrisman, and Chua (1997)). Family firm heterogeneity arises from differences in numerous family and firm dimensions, including the number of family members involved, the number of generations involved, or the distribution of decision-making power between family members. Also, the type of involvement of family members in ownership, management, and/ or control functions and the existence of corporate governance devices can differ between firms and may change over time in reaction to internal as well as external events. In addition, the co-existence of family and non-family members in ownership, management, and control can impact the degree of interest alignment between owners and managers. Zellweger, Eddleston, and Kellermanns (2010) provide an overview of three classification types for family firm definitions. These are definitions by involvement, definitions by essence, and definitions by identity. The factors discussed by the authors provide insight into the variation within the group of family firms and therefore indicate the complexity involved in analysing family firms. Based on the high degree of heterogeneity in the family firm universe, it is therefore difficult to make general inferences about the behaviour of family firms as a group. This circumstance is reflected in the literature, which draws an increasingly

differentiated picture of the agency situation in family firms. With regards to the owner-manager conflict, the main position of *agency* theorists central to the family firm literature is the *interest alignment hypothesis*.

The *interest alignment hypothesis* is based on the lower separation of ownership and control in family firms compared to widely-held firms. This lower degree of separation of ownership and control can either be the result of the same family member(s) owning and managing the firm or of different members of the same family being involved as shareholders and managers.² Even in the case of different members of the family being responsible for ownership and control, it is assumed that family ties and shared values create goal congruence between owners and managers (e.g., Eisenhardt (1989), James (1999)). As such, the agent is likely to have a lesser incentive for moral hazard. In particular, non-economic family goals, such as the perpetuation of the family business through multiple family generations and the resulting long-term orientation (e.g., Dreux (1990), James (1999)) have the potential to reduce moral hazard potential for both principal and agent, according to leading family firm scholars. This is because a deviation from common goals could negatively impact family relationships. Further, factors such as the common history of family members, high levels of firm-specific knowledge, and strong intra-family relationships (cf. Sirmon and Hitt (2003)) can decrease information asymmetries in family firms. In particular, deep firm-specific knowledge on the part of family owners, who may have been managing the firm in the past, leads to a high level of transparency and makes self-interested behaviour that negatively affects the owner more difficult for the agent. Mutual trust and strong relationships may also reduce the incentive and necessity for expensive monitoring or bonding activities (Daily and Dollinger (1992)). Based on altruistic attitudes, family members are also likely to be paid well (Chua, Chrisman, and Bergiel (2009)), so that the incentive for on-the-job consumption may be less pronounced. Goal congruence, in particular non-economic objectives such as the perpetuation of the family business through generations and a strong sense of commitment to the family and the business further have the potential to motivate family managers to work hard and refrain from shirking (Donnelley (1964)). Overall, the literature supporting the *alignment of interests hypothesis* has identified superiority of the family firm governance model with regards to each of the core elements of *agency theory*. This includes a lower potential for self-interest on the part of the principal,

² Some studies even include firms managed by more than one family into the group of family firms.

a lower probability that the agent will engage in moral hazard, and a lower degree of asymmetric information between principal and agent.

However, the evolution of *agency theory* in the context of family firms has also pointed to limitations of the *alignment of interests hypothesis*. For example, Schulze, Lubatkin, and Dino (2003a) describe how the distribution of shares within concentrated ownership settings is decisive for agency outcomes. In particular, they argue that high dispersion of ownership among family members, particularly in equal parts such as in a sibling partnership, has a high potential for creating intra-family conflict due to potential rivalries among family members. As such, the level of interest alignment may actually be lower in some family firms than in the average non-family firm.

Karra, Tracey, and Phillips (2006) focus on the effect of altruistic attitudes of family members and point out that altruism may only lead to alignment of interests if it is reciprocal and symmetrical. For example, if only owners display altruistic attitudes, while managers do not behave altruistically, a situation of free-riding may result, creating agency costs in the absence of effective monitoring. This is in spite of high monitoring incentives that should exist in family firms according to Shleifer and Vishny (1986) who base their argumentation on the wealth concentration of family owners. Karra, Tracey, and Phillips (2006) also separately discuss various generations of family firms. In later generation family firms, the authors posit moral hazard to be more common and corrective actions to occur less frequently. The authors suggest that this is driven by a negative effect of altruism in later generation family firms, where parents find it challenging to discipline their children. Because of this lack of corrective action, the children are therefore enabled to act according to their own interests at the expense of the firm's owners.

Blanco-Mazagatos, Quevedo-Puente, and Castrillo (2007) provide additional input into the discussion of family firm differences by generation. The authors posit that both the type and magnitude of the agency conflict in a family firm may be contingent on the family firm's generation. Specifically, they argue that alignment of interests is highest in first generation family firms due to typically high concentration of decision-making and ownership in the hands of the founder, who is likely to be surrounded by a "nuclear" family. This close circle of family members is likely to be characterised by cooperation based on mutual intra-family trust and altruism according to the authors. In contrast, they argue that later generation family firms have a higher probability of suffering from kinship-based hiring and promotion policies as well as from intra-family conflict. In particular,

the authors reason that higher dispersion of shareholdings and increasing diversity of management roles held by family members, potentially across competing business units, may even lead to misalignment of interests. Dispersion of ownership and diversity of management roles may also result in increasing information asymmetries, which may facilitate moral hazard.

Altogether, the *alignment of interests hypothesis* as well as its extensions that claim a lower alignment of interests in family firms compared to the *zero agency cost firm* indicate a number of reasons why family firms may behave differently from non-family firms. However, the direction and magnitude of the effect cannot be ascertained from theory alone, and are thus empirical matters.

2.2.2 Majority-minority conflict

The *alignment of interests hypothesis* focusses on the relationship between owner and manager. In the context of family firms, the discussion is focussed on family owners and their relationships with family managers. An additional viewpoint is expressed in the *entrenchment hypothesis*.

Scholars supporting the *entrenchment hypothesis* examine the effects of family governance beyond the immediate effects of family shareholders and family managers. Entrenchment describes those types of situations in which managers apply certain strategies that make it difficult, and potentially costly, for shareholders to replace them (e.g., Shleifer and Vishny (1989), Stulz (1988)). Examples include prevention of takeovers or the execution of manager-specific investments that are only valuable as long as the manager who initiated these projects is in office. In the context of family firms, this research stream points to the problems resulting from a lack of separation of ownership and control when non-family minority shareholders are also invested in the firm (Moreck, Shleifer, and Vishny (1988)).

In situations where a family owns the majority of shares, the family is able to appoint managers from their own ranks. A manager appointed by his/ her own family tends to enjoy a significant amount of freedom in decision-making which may be reflected in a low monitoring intensity (Le Breton-Miller and Miller (2006)). In the extreme case where ownership and management are completely unified, then monitoring may become ineffective. Even if different members of the family are responsible for management and control, respectively, then mutual trust, affection, and altruistic attitudes may discourage strict monitoring, objective

setting, rigorous performance evaluation, and the enforcement of disciplining measures (Chua, Chrisman, and Bergiel (2009), Gómez-Mejía, Núñez-Nickel, and Gutierrez (2001), Schulze et al. (2001)). As such, the personal relationships between owners and managers in family firms may facilitate entrenchment.

In a family firm, it is not only the manager who has an interest in keeping his/ her job. Family owners are also likely to have an interest in their family member staying in office. As a result, entrenchment may be actively encouraged by family owners. This is because the desire for transgenerational transfer of the firm (Dreux (1990), James (1999)) requires the family to stay in control. Because control may be exercised via either ownership or family representation on the board, simultaneous involvement in both ownership and management maximises control. As a result, all family members involved may have an incentive to support entrenchment activities.

In a situation of entrenchment, managers reduce the power shareholders have over them and their activities. In a family firm, entrenched managers are likely to act in the family's interest. This may happen at the cost of non-family owners. In particular, scholars have pointed to the fact that non-economic goals pursued by the family can play an essential role in family firms (Chrisman, Chua, and Sharma (2005), Chua and Schnabel (1986), Zellweger et al. (2011)) and may result in lower financial returns. An entrenched family manager will find it easier to pursue such non-economic goals than a manager that is not entrenched. However, the consequences of lower financial returns are borne by all shareholders, including non-family shareholders, while only family members benefit from non-financial returns (Gómez-Mejía, Núñez-Nickel, and Gutierrez (2001)). For example, these non-financial returns may come in the form of employment of (not necessarily qualified) family members (Bertrand and Schoar (2006), Claessens et al. (2002)), risk reduction at the firm-level to reduce risk exposure of under-diversified family members (Anderson and Reeb (2003a), Miller, Le Breton-Miller, and Lester (2010)), or control retention by the family despite attractive takeover offers (Miller, Le Breton-Miller, and Lester (2010), Stulz (1988)).

Chrisman, Chua, and Litz (2004) argue that the pursuit of non-economic goals by the family cannot be considered an agency cost in a family firm, whereas it would be classified as an agency cost in a non-family firm. However, this argumentation only applies as long as the firm is 100% family-owned. This is because only in a fully family-owned firm (, only in a lone owner-managed firm) is it possible to achieve complete goal congruence between owners and managers. However, in a

situation of co-existence of family and non-family shareholders, goal congruence between family owners and family managers encourages cooperation and facilitates expropriation of minority shareholders. For example, this might happen in the form of generous compensation of family managers (Chua, Chrisman, and Bergiel (2009)). According to Schulze et al. (2001), altruistic attitudes of family owners can even explain situations in which family managers are encouraged to free-ride, to engage in hold-up, or to limit effort expenditure by other family members. The authors even note that because the use of incentives is more challenging in a situation characterised by asymmetric altruism,³ family managers will be more likely to be entrenched, less dedicated, and more likely to behave opportunistically. Such asymmetric altruism, as opposed to reciprocal altruism, may create agency costs rather than agency benefits. Morck and Yeung (2003) focus on family business groups which, according to the authors, are characterised by their own agency problems in addition to the problems discussed above that relate to the case of a stand-alone family firm. This is because managers in these firms have incentives to pursue the interests of the controlling family rather than to act in the interest of all shareholders. This can be achieved via the establishment of pyramidal ownership structures, family entrenchment, and tunnelling. The in-depth example provided by the authors describes how family groups invested in established technologies may have an interest in avoiding innovation of affiliated firms that would make their existing investments obsolete.

Overall, with the exception of Chrisman, Chua, and Sharma (2005) and Corbetta and Salvato (2004), advocates of the *entrenchment hypothesis* provide support for the view that family firms differ from non-family firms based on their different governance systems. As is the case for the *alignment of interests hypothesis*, the magnitude and the direction of the effect are empirical questions. However, the *entrenchment hypothesis*, as the *alignment of interests hypothesis*, has been criticised by many scholars, particularly in the context of family firms. For example, Chrisman, Chua, and Sharma (2005) stress that the role of entrenchment may not necessarily be a family-specific one, but rather the result of concentration of ownership as such. Similarly, Corbetta and Salvato (2004) posit that entrenchment is not driven by family involvement, but rather connected to the types of relationships within a firm. According to the authors, the prevalence of agency or stewardship relationships can explain outcomes of agency situations, independent of family relations. Moreover, Le Breton-Miller and Miller (2006)

³ Cf. p.9.

state that the higher discretion family managers tend to have in comparison to non-family managers is a key driver of strategic long-term investments that may provide family firms with a competitive advantage over its rivals.

Some attempts have been made to reconcile the *alignment of interests hypothesis* with the *entrenchment hypothesis*. For example, Le Breton-Miller and Miller (2009) provide a reconciliation of *agency theory*, under which families exploit other stakeholders of the firm, and *stewardship theory*, under which family governance benefits all stakeholders based on psychological drivers such as self-actualisation. The authors borrow from the sociology literature and argue that it is owed to the type of social embeddedness of the family firm owner or manager which type of behaviour (self-serving or steward-like) will be adopted. Specifically, the authors posit that those owners and managers that are more strongly embedded in the family are more likely to pursue the family's interests, while those more strongly embedded in the business have a higher likelihood of acting in the firm's best interest. Another explanation is offered by Morck, Shleifer, and Vishny (1988), who argue that family involvement causes higher alignment of interests in younger firms, while older family firms are more likely to suffer from agency costs related to entrenchment of founders and their families. Miller and Le Breton-Miller (2006) posit that the higher the family's ownership position relative to its control, the less likely these family firms are to expropriate other shareholders. They further propose that if independent directors and non-family shareholders are responsible for monitoring, agency costs are likely to be lower.

2.2.3 Shareholder-debtholder conflict

Both the owner-manager conflict and the majority-minority conflict implicitly assume equity financing of the family firm. However, in reality the great majority of modern firms use a mix of equity and debt financing. For example, Brav (2009) shows that, for a sample of 54,285 UK firms, the average leverage ratio is 32.7% for unlisted firms and 22.7% for listed firms, indicating substantial use of debt financing in the British economy. Similarly, Schmid (2012) shows for a sample of 695 German firms that these firms have market leverage ratios of 25% on average, while 4,007 firms from 21 other countries have market leverage ratios of 35% on average.

Jensen and Meckling (1976) and Myers (1977) describe why shareholders may have an incentive, and the ability, to expropriate debt providers. Debt providers supply firms with debt capital based on the firm's risk profile. Because debt capital, other than equity, does not entitle its providers to voting rights, debt providers have limited influence on corporate decision-making. While they are able to impose covenants on the contracting party (*ex ante*), incomplete contracting and asymmetric information expose debt providers to risks with regards to *ex post* changes in the firm's risk profile. Because the cost of debt depends on the risk of the underlying firm, shareholders have an incentive to understate the risk of their investment plans, in order to lower their cost of debt. Moreover, they have an incentive, and the discretion, to increase the risk of the firm after receiving an infusion of debt capital, as the returns from such excessive risk-taking accumulate to equity providers only, while debt providers are exposed to the downside risk without participation in the case of any upside scenarios. To the extent that debtholders anticipate such appropriation, capital costs will reflect the additional risk in the form of higher risk premia. To the extent that they do not anticipate changes in the firm's risk profile, debt providers incur agency costs.

The majority of scholars agree that the interests of family firms are more aligned with those of debtholders. Anderson, Mansi, and Reeb (2003) describe how shareholder-debtholder interest alignment may be affected by the shareholder structure of the firm. In the context of family firms, the authors posit that "founding families are different from other shareholders in at least two respects: the family's interest in the firm's long-term survival and the family's concern for the firm's (family's) reputation" (Anderson, Mansi, and Reeb (2003), p.267). As a result, they are more likely than non-family owners to maximise enterprise value rather than focussing on the value of the firm's equity only. This is because a default scenario is characterised by the risk of debtholders taking the firm into liquidation (cf. Hart and Moore (1994)). Anderson, Mansi, and Reeb (2003) explain that, as a result, the interests of founding families are more aligned with those of debt providers than is the case in a firm with separate ownership and management. In addition, the cross-generational presence of a family in the firm and any spill-over effects from the family's reputation to the firm's reputation translate into a unique incentive for families to treat their debt providers well. This is because non-compliance may result in "longer-lasting economic consequences for the firm" (Anderson, Mansi, and Reeb (2003), p.268). Their argumentation is similar to the reasoning of Shleifer and Vishny (1997), who discuss corporate governance devices as mechanisms for investors to get a return on their investments. The authors argue

that most debt contracts have short durations, so that managers have to re-finance their investments at regular intervals. As such, they may have incentives to build positive reputations by cooperating with debt providers in a way that will not erode future lending ability.

Some authors also argue that the sustained presence of the family in their firm allows them to build relationships with external partners more successfully (Anderson and Reeb (2003a)). For example, Le Breton-Miller and Miller (2006) posit that family governance facilitates long-term relationships with external partners (including banks). This is because management teams are stable, reducing the risk of reversal of decisions following a change in management. Tenure periods also tend to be longer in family firms (Zellweger (2007)). As a result, family CEOs have the discretion to fulfil their commitments vis-à-vis external stakeholders (Gómez-Mejía, Núñez-Nickel, and Gutierrez (2001), Morck and Yeung (2003)).

An additional reason why the interests of family owners may be more aligned with those of debt providers is a higher congruence of risk attitudes between family owners and debt providers that results from the concentration of family wealth within the family firm. The family firm literature documents that family firm owners have a tendency to invest the majority of their wealth in the family business, and as such their investment portfolios tend to be under-diversified. Because of their substantial exposure to the family firm investment, they are likely to be more risk-averse than (more diversified) non-family firm owners (Anderson and Reeb (2003a), Fama and Jensen (1985), Heaney and Holmen (2008), La Porta, López-De-Silanes, and Shleifer (1999), Miller, Le Breton-Miller, and Lester (2010), Morck and Yeung (2003), Shleifer and Vishny (1986)). As such, family firm owners have an incentive to limit the firm's downside risk, even at the expense of limiting its upside potential. As a result, their interests may be more aligned with debt providers.

Overall, scholars appear to agree that family firms differ from non-family firms with regards to the shareholder-debtholder agency conflict. As with the owner-manager conflict and the majority-minority conflict, the magnitude of this effect is an empirical question. However, in contrast to the other two agency conflicts, consensus appears to exist about the direction in the case of the shareholder-debtholder interest alignment effect.

2.3 Prior empirical findings

Chapter 2.3 summarises the key empirical findings on the question as to whether family firms differ from non-family firms. While the section aims to provide a comprehensive overview, it cannot provide a complete review of the literature. Within the discipline of corporate finance, three areas are at the core of empirical research that aims to establish as to whether family firms differ from non-family firms. These three areas comprise performance, investment behaviour, and financing behaviour. In addition to the question as to whether family firms differ from non-family firms, this research also deals with the implications of family governance on a range of other stakeholders involved in these firms. The following is a summary of the prior research in these three areas.

2.3.1 The impact of family governance on performance

The largest stream in the empirical family firm literature investigates the implications of family governance on various metrics of firm performance. Performance studies have generated both supporting evidence of higher performance in family firms and indication of lower performance in family firms. Depending on the performance metrics used and the direction of the effect observed, these results are interpreted as either a lower owner-manager conflict or a more pronounced majority-minority conflict in firms with family governance.

The following is a summary of the key performance studies, presented separately for family ownership (p.16 et seq.) and for family management (p.26 et seq.).

2.3.1.1 Family ownership effects

In their paper named “Agency costs and ownership structure,” Ang, Cole, and Lin (2000) approximate agency costs as the efficiency gap between a given sample firm and a 100% manager-owned firm. Their rationale is based on the theory of Jensen and Meckling (1976), according to whom a 100% manager-owned benchmark firm is assumed to be a *zero agency cost firm*. The results obtained by Ang, Cole, and Lin (2000) show that agency costs are lower in firms with managerial ownership, suggesting a reduced owner-manager conflict. Further, the data shows that agency costs increase with the number of non-manager

shareholders. This may be due to multiplicity of interests among shareholders and resulting coordination-related inefficiencies. The authors conclude that family firms may benefit from (owner-manager) agency advantages due to their concentrated ownership structures. In addition, common family objectives may align interests among family shareholders and therefore reduce the problem resulting from multiple interests by alleviating coordination problems.

Firm value is also found to be higher in manager-owned firms studied by Claessens et al. (2002). The authors analyse a sample of 1,301 listed firms across eight East Asian countries in the year 1996. They find a significant and positive relationship between firm value on the one hand and cash-flow ownership of the largest shareholder on the other hand. Further analysis reveals that these findings are driven by family ownership, rather than ownership concentration. The authors conclude that their results are in line with better owner-manager interest alignment in family firms due to family-specific incentives. Anderson and Reeb (2003a) confirm the results of Claessens et al. (2002) for a panel dataset consisting of 403 S&P firms over the period from 1992 to 1999. Their data shows that performance benefits particularly materialise in those family firms where the CEO is a family member. The authors suggest that this is because “the family understands the business and that involved family members view themselves as the stewards of the firm” (Anderson and Reeb (2003a), p.1324). Such steward-like behaviours may be the result of family-specific incentives and motivations. The authors suggest that both the improved transparency, due to deep firm-specific knowledge, and steward-like attitudes have the potential to reduce conflicts between owners and managers.

Lee (2006), studying employment growth and revenue development, also finds evidence of a positive family ownership effect. The effect is particularly positive in those firms where founding family members participate in management. Again, his evidence suggests a reduced owner-manager conflict in family compared to non-family firms, similar to the authors of earlier studies. In the European context, Maury (2006) finds a positive effect of family ownership on firm value. His cross-sectionally structured sample covers 1,672 Western European firms. The author finds that performance effects are particularly strong in firms where the family holds at least one of the top two officer positions. He concludes that “family ownership lowers the classical agency problem between owners and managers” (Maury (2006), p.339). As such, his results confirm earlier research findings.

McConaughy et al. (1998) document that, in a cross-sectional sample of 238 large U.S. firms, family-owned firms tend to perform better than non-family firms both

with regards to efficiency and with regards to valuations. Later, McConaughy, Matthews, and Fialko (2001) confirm this finding in a panel study that covers 219 listed U.S. firms for the 3-year period from 1986 to 1988. The authors conclude that this evidence indicates a better alignment of owner and manager interests in firms with family ownership. The positive effect on valuations further suggests that all shareholders, not just family owners, benefit from the improved efficiency in family firms. Accordingly, the lower owner-manager agency conflict does not appear to be offset by a more pronounced majority-minority conflict.

Focussing on Germany, Andres (2008) finds a positive effect of family ownership on both return on assets (ROA) and Tobin's Q in a panel dataset covering 275 listed German firms over the period from 1998 to 2004. Further analysis reveals that higher valuations in family firms are the result of more efficient deployment of capital. The efficiency gains documented point to a lower owner-manager conflict. This may be due to a more parsimonious approach to the allocation of company resources (cf. Chrisman, Chua, and Kellermanns (2009)). On the other hand, evidence of higher valuations suggests that all shareholders, rather than family-shareholders only, benefit from the higher efficiency in family firms. This result is similar to the finding of McConaughy, Matthews, and Fialko (2001) which implies that a lower owner-manager agency conflict is not necessarily related to a stronger majority-minority conflict in family firms.

In the Canadian context, King and Santor (2008) find similar results to those of previously mentioned authors. In their 618 firms analysed over the period from 1998 to 2005, the authors find family ownership to positively affect return on assets (ROA). However, in contrast to previous authors, King and Santor (2008) do not find family ownership to affect Tobin's Q. The authors conclude that "family ownership is not negative for the performance of Canadian firms" (King and Santor (2008), p.2431). The results actually point to a lower owner-manager conflict. This reduced owner manager agency conflict appears to be offset by a majority-minority conflict, as not all shareholders appear to benefit from higher accounting performance. This is reflected in similar levels of Tobin's Q in family and non-family firms.

A somewhat different approach that shows lower agency costs in family firms is applied by Daily and Dollinger (1991). In their cross-sectional sample of 486 small U.S. manufacturing firms observed in the year 1988, the authors show that family firms have higher levels of efficiency. This is found to be based on their use of social rather than formal methods of control. In addition, the authors show that

family firms prioritise profit over growth and refrain from profit diluting growth more often than their non-family counterparts. Again, the results suggest higher alignment of owners' and managers' interests. Unfortunately, the study by Daily and Dollinger (1991) does not allow any inferences regarding the effect of higher efficiency levels in family firms for these firms' shareholders.

Overall, these studies suggest a positive effect of family ownership on various metrics of firm performance. In particular, some studies indicate that a lower conflict between owners and managers in family firms leads to improvements in efficiency by improving capital deployment. If these efficiency gains do not translate into benefits for all shareholders, then the reduced owner-manager conflict may coincide with an increased majority-minority conflict. Some studies are supportive of this theory. Figure 2.1 summarises the evidence suggesting higher performance in family-owned firms.

Figure 2.1: Overview of prior evidence of higher performance in family-owned firms

Author(s)	Sample	Key findings
Daily and Dollinger (1991)	486 small U.S. manufacturing firms in the year 1988	Family firms rely on social rather than formal methods of control, which increases their efficiency compared to non-family firms
McConaughy et al. (1998)	238 large U.S. firms in the year 1987	Family firms have higher efficiency and higher firm value than non-family firms
Ang, Cole, and Lin (2000)	1,708 small U.S. firms in the year 1992	Agency cost (efficiency disadvantages over a perfectly aligned firm) increases with the number of non-manager shareholders
McConaughy, Matthews, and Fialko (2001)	219 listed U.S. firms over the period 1986-1988	Family-controlled firms have higher market-to-book ratios based on better operating performance
Claessens et al. (2002)	1,301 listed firms from eight East Asian countries in the year 1996	Firm value increases with cash-flow ownership of the largest shareholder
Anderson and Reeb (2003a)	403 S&P500 firms (2,713 firm-years) over the period 1992-1999	Family ownership has a positive effect on Tobin's Q Family ownership has a positive effect on ROA
Bárontini and Caprio (2006)	675 listed Western European firms over the period 1990-2001	Family control is positive for European firms in terms of ROA and Tobin's Q, despite a more frequent use of control-enhancing devices
Lee (2006)	403 S&P500 firms over the period 1992-2002	Growth of employment and revenues is higher in family firms
Maury (2006)	1,672 Western European firms in the year 2003	Passive family control is associated with higher firm value, but does not affect profitability
Andres (2008)	275 listed German firms (1,701 firm-years) over the period 1998-2004	Family ownership has a positive influence on ROA Family ownership has a positive influence on Tobin's Q
King and Santor (2008)	618 Canadian firms (2,758 firm-years) over the period 1998-2005	In family firms with a single class of shares, Tobin's Q and ROA are higher

However, evidence suggesting negative effects of family ownership on firm performance is also abundant. For instance, data by Faccio, Lang, and Young (2001) suggests family ownership to be associated with the use of control-enhancing devices. The authors show that, in a sample of 5,232 firms across 13 Western European countries, pyramidal ownership structures are used in 81% of family firms. Pyramidal structures can lead to a divergence of voting rights and cash-flow rights, so that owners are able to exercise significant amounts of voting

control without proportional exposure to the cash-flow implications of corporate decisions. The study by Faccio, Lang, and Young (2001) covers the four-year period from 1996 to 1999 and thus belongs to the early works in this field. The authors interpret the use of control-enhancing devices as an indication of entrenchment activities by family owners. If family members benefit from control-enhancing devices at the cost of non-family shareholders, then these results suggest that a majority-minority conflict may exist in family firms. Similarly, in the Asian sample of Claessens et al. (2002),⁴ the authors link the application of control-enhancing devices to performance. They show that entrenchment via control-enhancing devices creates majority-minority agency costs. This is reflected in lower firm valuations. Their study shows that while family ownership is associated with higher owner-manager interest alignment, the use of control-enhancing devices reverses the otherwise positive relationship between family ownership and performance. By the same token, Cronqvist and Nilsson (2003) find family ownership to be associated with the use of control-enhancing devices in their 309 Swedish sample firms. The authors find the combination of family ownership and the use of control-enhancing devices to result in entrenchment costs in the form of lower Tobin's Q in family firms. Their study further affirms evidence of entrenchment strategies in family firms by showing that family-owned firms are less likely to be taken over. The lower takeover probability is likely to be the result of family-specific strategies that aim to achieve long-term family presence in the firm, even if a takeover by another entity may be value-creating for shareholders. The evidence of Cronqvist and Nilsson (2003) thus supports the hypothesis that majority-minority agency conflicts are likely to exist in family firms.

Maury and Pajuste (2005) show that, in a panel of 136 Finnish listed firms observed over the period from 1993 to 2000, ownership concentration has a negative effect on firm value. In particular, the authors present data showing that a concentration of voting rights in family hands has a particularly negative effect on firm value. Again, these results suggest that family owners may expropriate non-family owners by deriving private benefits of control at the expense of their co-investors. The study by King and Santor (2008)⁵ also presents evidence of an interaction of family ownership and control-enhancing devices. Specifically, the authors show that the use of dual-class shares by family firms reduces firm value even if an effect on operating performance cannot be detected. These results do not

⁴ Cf. p.17.

⁵ Cf. p.18.

suggest differences with regards to alignment of owner-manager interests between family and non-family firms. However, they indicate that investors are worse off in the case that family firms use control-enhancing devices. This is reflected in the valuation discount of family firms in comparison to non-family firms with similar operating performance. Similarly, Bennedsen and Nielsen (2010) demonstrate a negative effect of control-enhancing devices on valuations of firms across 14 Western European countries between 1996 and 1998. Their results show that both dual-class shares and pyramidal structures lead to agency costs in the form of valuation discounts. Notably, the authors show that this discount is three times as high in family firms, suggesting that investors are concerned about the interaction of family ownership and control-enhancing devices. This can be interpreted as evidence of a majority-minority conflict in family firms.

Overall, this literature appears to indicate that family ownership may have net negative effects on firm performance. The majority of these studies suggest that not family ownership as such, but the combination of family ownership and the use of control-enhancing devices (pyramidal ownership structures or dual-class shares) may be driving negative performance effects. Most authors conclude that investors consider a combination of family ownership and the use of control-enhancing devices as a signal that minority (non-family) owners are at risk of expropriation by control-oriented family owners. Figure 2.2 summarises the evidence indicating lower performance in family-owned firms.

Figure 2.2: Overview of prior evidence of lower performance in family-owned firms

Author(s)	Sample	Key findings
Faccio, Lang, and Young (2001)	5,232 firms in 13 Western European countries over the period 1996-1999	Family firms frequently use control-enhancing devices
Claessens et al. (2002)	1,301 listed firms from eight East Asian countries in the year 1996	Firm value decreases if control rights exceed cash-flow rights
Cronqvist and Nilsson (2003)	309 Swedish firms over the period 1991-1997	Family firms are more likely to use control-enhancing devices Family firms have lower valuations (Tobin's Q) due to lower ROA and control considerations (reflected in lower probability of being taken over)
Maury and Pajuste (2005)	136 Finnish listed firms (612 firm-years) over the period 1993-2000	Concentration of voting rights in family hands has a negative effect on firm value An unequal distribution of ownership decreases firm value
King and Santor (2008)	618 Canadian firms (2,758 firm-years) over the period 1998-2005	Family firms that use control-enhancing devices (dual-class shares) have lower Tobin's Q than widely-held firms, but similar ROA
Bennedsen and Nielsen (2010)	4,096 observations of listed firms from 14 Western European countries over the period 1996-1998	Firms with a disproportionate ownership structure (dual-class shares and pyramids) have lower valuations This valuation discount is three times as high in family firms

Some authors have undertaken attempts to reconcile studies that suggest positive family ownership implications with those indicating negative effects. The study by Anderson and Reeb (2003a) investigates a potential non-linearity of the positive effect of family ownership on firm value.⁶ It documents that firm performance increases at low levels of family ownership, but decreases at higher levels. Their results suggest that both the alignment of owner-manager interests and a conflict between majority and minority owners may play a role in explaining the effect of family ownership on firm value. Which one of the two effects dominates is contingent on the level of ownership, according to their study. Specifically, their results indicate that an owner-manager interest alignment effect may dominate at low levels of family ownership, potentially through strong monitoring incentives (as described by Shleifer and Vishny (1986)). Entrenchment effects, however, may

⁶ Cf. p.17.

dominate beyond a certain tipping point, potentially because monitoring becomes ineffective, which may result in a majority-minority agency conflict. Similarly, Silva and Majluf (2008) show for a sample of 180 listed Chilean firms over the period from 2000 to 2003 that family ownership can be value-creating at low levels of ownership concentration. Again, the authors assume effective monitoring to prevent expropriation at low levels of ownership. At high levels of ownership concentration, however, they demonstrate that family ownership is associated with lower firm values, suggesting that monitoring may become ineffective, potentially because of a lack of a counterweight amongst shareholders. As a result, expropriation of minority shareholders may be facilitated at high levels of ownership, leading to agency costs for minority shareholders. An earlier study by Morck, Shleifer, and Vishny (1988), on a cross-section of 371 Fortune 500 firms in the year 1980, suggests an even more complex relationship. The authors show that Tobin's Q initially increases, then decreases, and finally increases again as managerial ownership increases. A potential interpretation is that family owners are particularly vulnerable to control loss at certain levels of ownership where their dominating position is most likely to be at risk. This may be particularly the case at intermediate levels of ownership where ownership positions alone do not guarantee decision-making power. As a result, family members may be more likely to entrench themselves at the cost of other shareholders at intermediate ownership levels (creating a majority-minority conflict), while the benefits of aligned owner-manager interests may dominate performance implications in the tails of the ownership distribution.⁷

Non-linear relationships may also explain why two recent studies have failed to document any net effect of family ownership on performance. Sciascia and Mazzola (2008) who studied 620 unlisted Italian SMEs in the year 2000 and Sacristán-Navarro, Gómez-Ansón, and Cabeza-García (2011) who analysed 118 listed Spanish firms over the period from 2002 to 2008 were unable to document either a positive effect or a negative performance effect. It is also possible that this is to some extent due to the comparatively small sample sizes used in these studies. Figure 2.3 summarises the research reconciling findings on both higher and lower performance in family-owned firms.

⁷ This argumentation is also used by Faccio and Masulis (2005) in their interpretation of the payment choices made by family firms in M&A decisions (cf. Chapter 4.1.1.3).

Figure 2.3: Overview of prior evidence reconciling opposing evidence of performance in family-owned firms

Author(s)	Sample	Key findings
Morck, Shleifer, and Vishny (1988)	371 Fortune 500 firms in the year 1980	Tobin's Q increases, then declines, and finally rises with managerial ownership
Anderson and Reeb (2003a)	403 S&P500 firms (2,713 firm-years) over the period 1992-1999	Performance increases at low levels of family ownership, then decreases
Silva and Majluf (2008)	180 listed Chilean firms (331 firm-years) over the period 2000-2003	Family ownership adds value at low levels of ownership concentration Family ownership destroys value at high levels of ownership concentration

2.3.1.2 Family management effects

In addition to the ownership dimension, the influence of family management has been central to the discussion regarding the implications of family governance on firm value. The evolution of family firm research has actually led to a detailed differentiation of both theory and empirical work into the various pathways used by families to influence their firms.

In the study by Anderson and Reeb (2003a),⁸ the authors demonstrate that firms in which family members are part of the management board outperform the control group of non-family firms. Family-managed firms also outperform those firms that are family-owned but not family-managed. The results suggest that alignment of owner-manager interests is linked to a combination of ownership and management in family hands, in line with the theory discussed in Chapter 2.2.1. Results by Bárontini and Caprio (2006) even show that a lack of representation of family members on the board of directors has negative implications for performance. However, performance implications are positive if the family is active in the firm's management in the sample of 675 listed Western European firms studied from 1990 to 2001. This finding suggests positive value effects of family board representation through the alignment of owner and manager interests. This result is similar to the findings of Anderson and Reeb (2003a) who also conclude that the combination of ownership and management in the hands of the family is required to effectively reduce the owner-manager agency conflict. Similarly, Lee (2006)⁹ finds family member involvement in management to be a positive driver of

⁸ Cf. p.17 and p.40.

⁹ Cf. p.18.

employment growth and revenue development. His results suggest that concentration of ownership and management in the same family reduces agency conflicts between owners and managers through interest alignment.

McConaughy (2000) provides evidence of higher alignment of interests in family-managed firms. In a cross-sectional sample of 82 large U.S. firms in the year 1988, the author finds that family CEOs tend to receive lower salaries and less incentive-based compensation than non-family CEOs. The results are interpreted as an indication that financial incentives are required to align interests in non-family firms. In contrast, financial incentives are of lesser importance given lower owner-manager agency costs, due to natural alignment of interests, in family-managed firms, according to the author. Additional evidence is provided by Lin and Hu (2007). In their sample of 232 listed Taiwanese firms observed from 1991 to 2000, they study CEO choices in family firms. Their research shows that whenever expropriation opportunities are high, family CEOs improve performance. This is particularly the case when the family's cash-flow rights are high, suggesting higher alignment of interests of family CEOs compared to non-family CEOs. These results are in line with those of McConaughy (2000) that suggest family managers to naturally exhibit high levels of intrinsic motivation. In the German context, Andres (2008) provides evidence of a positive effect of family management on performance.¹⁰ The author argues that the positive family management effect documented is based on the deeper connection these family managers have with their firms. According to Andres (2008), this stronger bond leads to interest alignment between owners and managers and, as a result, to higher performance.

Ang, Cole, and Lin (2000)¹¹ approximate agency costs as the ratio of operating expenses to sales (labelled *expense ratio*). They find that this ratio tends to be lower in insider-managed firms. An alternative proxy, *asset utilisation*, measured as the ratio of sales to total assets, is also found to be lower in firms with managerial ownership. The study suggests that agency costs decrease as managerial ownership increases, suggesting lower owner-manager conflicts in family firms. Higher alignment of interests is also found to exist in family-managed firms in a study by Maury (2006).¹² The author presents evidence that family management is associated with higher profitability, but not necessarily leads to higher valuations. The author differentiates the countries covered into high and

¹⁰ Cf. p.18.

¹¹ Cf. p.16 et seq.

¹² Cf. p.17.

low regulation economies and finds that “family control can increase firm value in a well-regulated economy” while “family control may harm minority shareholders due to the risk of expropriation when transparency is low” (Maury (2006), p.322). These results highlight the potential of expropriation of minority shareholders by powerful owner-manager families. The conflict can, however, be mitigated by effective regulation, so that minority shareholders in high-regulation countries should be able to benefit from the positive effects of higher alignment of owner-manager interests in family firms. Sraer and Thesmar (2007) analyse French listed firms from 1994 to 2000 and find that both professionally managed family firms and descendent-run family firms tend to outperform widely-held firms. In the case of professionally managed family firms, the authors demonstrate that the performance effect is driven by more efficient capital management. This is reflected in lower interest rates and in more productive acquisitions by family firms in comparison to the control group. Possibly, family-managed firms are more parsimonious, because family members are, in essence, spending their own, as opposed to other people’s, money when making business expenditures (cf. Chrisman, Steier, and Chua (2006)). If this is the case, then owner-manager interests are more aligned in family firms than in non-family firms.

Silva and Majluf (2008) show how family management amplifies the effect of family ownership on firm value.¹³ Specifically, the positive effect on firm value found at low levels of ownership is reinforced if family members are involved in management. This may be due to the fact that managerial discretion facilitates the implementation of value creating decisions that are based on aligned interests of owners and managers. On the other hand, negative effects of entrenchment on firm value may be amplified at high levels of ownership if the family is also active in the firm’s management. Possibly, a concentration of ownership and management in the same hands may facilitate expropriation of minority shareholders because monitoring may not take place, indicating the existence of a majority-minority conflict. This may be the case if the family pursues non-financial goals or if it is organised in a business group where conflicts of interests (such as those described by Morck and Yeung (2003)) may occur. As such, the study by Silva and Majluf (2008) combines an explanation for the occurrence of both higher and lower performance in family firms, contingent on the level of ownership and management. Minichilli, Corbetta, and MacMillan (2010) show, in a sample of 113 Italian industrial firms, that performance is positively affected if a family member

¹³ Cf. p.24.

serves as CEO. This result suggests better alignment of interests in firms with family CEOs compared to the control group with non-family CEOs. However, the authors also show that performance is negatively affected if multiple family members are involved in the business. Possibly, intra-family conflict may adversely affect performance in these firms. For example, if family members are involved in various business units that compete for the firm's resources, agency conflicts may result. Figure 2.4 summarises the evidence of higher performance in family-managed firms.

Figure 2.4: Overview of prior evidence of higher performance in family-managed firms

Author(s)	Sample	Key findings
Ang, Cole, and Lin (2000)	1,708 small U.S. firms in the year 1992	Agency costs (expense ratios) are lower in insider-managed firms Agency costs (asset utilisation ratios) are lower in insider-managed firms Agency costs decrease with increasing managerial ownership
McConaughy (2000)	82 large U.S. firms in the year 1988	Founding family CEOs are paid lower salaries than non-family CEOs Founding family CEOs receive less incentive-based pay
Anderson and Reeb (2003a)	403 S&P500 firms (2,713 firm-years) over the period 1992-1999	Performance (Tobin's Q and ROA) is stronger if a family member is part of the board
Bárontini and Caprio (2006)	675 listed Western European firms over the period 1990-2001	Lack of representation of family members on the board has a negative effect on Tobin's Q and ROA
Lee (2006)	403 S&P500 firms over the period 1992-2002	Firm performance is positively related to family member involvement in management
Maury (2006)	1,672 Western European firms in the year 2003	Active family control (management) is associated with higher firm value and higher profitability
Lin and Hu (2007)	232 listed Taiwanese firms (1,065 firm-years) over the period 1991-2000	If expropriation opportunities are high, then a family CEO improves performance, especially when cash-flow rights are high
Sraer and Thesmar (2007)	2,973 firm-years relating to French listed firms over the period 1994-2000	Professionally managed family firms perform better than widely-held firms due to more efficient capital management (lower interest rates and more productive acquisitions) Firms run by descendants of the founder perform better than widely-held firms
Andres (2008)	275 listed German firms (1,701 firm-years) over the period 1998-2004	Profitability is associated with family board presentation
Silva and Majluf (2008)	180 listed Chilean firms (331 firm-years) over the period 2000-2003	Family management amplifies any effect of family ownership on firm value
Minichilli, Corbetta, and MacMillan (2010)	113 Italian industrial firm (thereof 83 unlisted) in the year 2005	Performance is positively affected if a family member serves as CEO Involvement of multiple family members in the firm has a negative effect on performance

A range of empirical studies have also documented negative agency costs in family-managed firms that indicate the existence of a majority-minority conflict.

The earliest evidence in this field was published by Morck, Shleifer, and Vishny (1988).¹⁴ The authors show that family ownership leads to lower firm value in older firms due to entrenchment costs borne by non-family shareholders. This evidence supports the hypothesis that a majority-minority agency conflict may exist in family firms, particularly in older ones. The previously mentioned study conducted by Sciascia and Mazzola (2008) on Italian SMEs¹⁵ also documents that family management has negative performance implications. The authors assume kinship-based hiring, intra-family conflict, or the pursuit of non-financial goals to be driving these results.

In their sample of Taiwanese firms,¹⁶ Lin and Hu (2007) analyse family management and its interaction with the level of skill required in a given industry. The authors show that when high managerial skill is required, external CEOs improve performance. The performance improvement effect is found to be especially high in situations of low family control. This may indicate that the entrenchment potential, via management control, is particularly high at low levels of family ownership. The authors also show that family CEOs are more common if managerial skill required is low, indicating that controlling families do to some extent trade-off family control and value creation. This suggests a somewhat active management of the majority-minority agency conflict in family firms. In a sample of 3,584 Italian manufacturing firms over the period from 1994 to 2004, Cucculelli and Micucci (2008) study succession decisions in family firms. The authors show that intra-family succession negatively affects performance, suggesting the existence of a negative entrenchment effect. The effect is found to be particularly strong in founder-CEO firms with high performance prior to the succession event as well as in industries with high competition where managerial talent is particularly important. The results obtained by Cucculelli and Micucci (2008) are therefore similar to the findings of Lin and Hu (2007). These studies show that the choice of managers represents a strong signal of the relative importance of family control and firm value, reflecting the existence of some degree of majority-minority conflict.

¹⁴ Cf. p.24.

¹⁵ Cf. p.25.

¹⁶ Cf. p.27.

The study by Bennedsen and Nielsen (2010) which shows entrenchment effects in family-owned firms¹⁷ also documents that family firms employing control-enhancing devices have a five times higher valuation discount when a family member is involved in management. This figure relates to entrenchment via two pathways, i.e., ownership (via control-enhancing devices) and management (via board representation) at the same time. The results suggest that non-family shareholders incur agency costs related to majority-minority conflicts in family firms. Sacristán-Navarro, Gómez-Ansón, and Cabeza-García (2011)¹⁸ also show that family board presence is negatively associated with performance. In their dataset of 118 listed Spanish firms observed over the 2002-2008 period, the authors show that family CEOs and family Chairmen negatively influence return on assets, suggesting that family firms exhibit agency costs. The effect is compounded if control-enhancing devices are employed, indicating that the use of control-enhancing mechanisms may further increase agency costs in family firms. Figure 2.5 summarises the evidence suggesting lower performance in family-managed firms.

¹⁷ Cf. p.22.

¹⁸ Cf. p.25.

Figure 2.5: Overview of prior evidence of lower performance in family-managed firms

Author(s)	Sample	Key findings
Morck, Shleifer, and Vishny (1988)	371 Fortune 500 firms in the year 1980	Tobin's Q is lower in older firms when the firm is run by a member of the founding family
Lin and Hu (2007)	232 listed Taiwanese firms (1,065 firm-years) over the period 1991-2000	When high managerial skill is required, external CEOs improve performance, especially in situations of low family control Family CEOs are more common if managerial skill required is low
Cucculelli and Micucci (2008)	3,584 Italian manufacturing firms over the period 1994-2004	Intra-family succession negatively affects performance, particularly in founder-CEO firms that outperformed the control group prior to the succession event The negative effect is particularly strong in industries with high competition, where managerial talent is important
Sciascia and Mazzola (2008)	620 unlisted Italian SMEs in the year 2000	Family involvement in management is negatively associated with performance
Bennedsen and Nielsen (2010)	4,096 observations of listed firms from 14 Western European countries over the period 1996-1998	Firms with family management have high valuation discounts
Sacristán-Navarro, Gómez-Ansón, and Cabeza-García (2011)	118 listed Spanish firms (711 observations) over the period 2002-2008	Family board presence is negatively associated with performance

2.3.1.3 Founder effect

A range of scholars studying the link between family influence and performance have begun to look for variations within family firms that may explain the different results obtained in the literature. If certain subsets of the family firm universe exhibit substantially different behaviour and some samples studied contain a higher share of these firms than others, then this might explain the differences in the results obtained. As part of the discussion of within-family firm variation, founder firms have played a central role. This is also reflected in the lack of a consensus view as to whether founder firms should be considered as part of the family firm universe or not (e.g., Miller et al. (2007)). From an *agency* theoretical perspective, it appears intuitive to include founder firms, because they significantly differ from widely-held firms with regards to the unification of ownership and control. However, scholars supporting the RBV-based *familiness theory* of the firm tend not to consider founder firms to be family firms. This disagreement regarding founder

firms is also reflected in empirical research. A range of studies separately test for founder effects and later generation family effects.

One of the studies which document a separate founder effect is the paper by Bárontini and Caprio (2006). In their study,¹⁹ the authors provide evidence which shows that the family effect on performance is positive in firms in which the founder serves as CEO. In contrast, the involvement of non-founder family members only affects performance positively if their roles are non-executive. These findings suggest that different agency dynamics exist in founder firms compared to later generation family firms. The owner-manager agency conflict appears to be reduced in founder firms. In contrast, the owner-manager agency conflict is not affected in family firms with non-founder family managers. However, non-founder family members appear to reduce majority-minority conflicts if they are involved in a non-executive role. A founder effect is also documented by Villalonga and Amit (2006) for a sample of 508 Fortune 500 firms that are observed over the period from 1994 to 2000. They present data which demonstrates that family ownership is value-enhancing only if either the CEO position or the Chairman position is held by the founder. They argue that if a founder is the CEO, owner-manager interests will be aligned, reducing agency costs and therefore enhancing firm value. However, when the position of CEO is held by a founder-descendant, value is destroyed due to agency costs. Possibly, founders have unique incentives and motivations that reduce the owner-manager agency conflict, while the behaviour of descendants is more comparable to the behaviour of external CEOs. Such founder-specific incentives and motivations may be the result of the strong bond between the firm's founder and the business.

Miller et al. (2007) analyse 896 Fortune 1,000 firms as well as 100 smaller listed U.S. firms over the period from 1996 to 2000. Like Bárontini and Caprio (2006) and Villalonga and Amit (2006), they document a specific founder-effect. The authors show that while lone founder firms outperform the market, firms with involvement of the founder's relatives tend not to achieve superior valuations. While this does not directly suggest entrenchment costs if relatives are involved, it also does not suggest that owner-manager interests are more aligned in the case of multiple family members being involved. Potentially, the additional coordination complexity in the case of multiple family member involvement reduces efficiency or increases conflict potential when compared to a lone founder firm. This may

¹⁹ Cf. p.26.

particularly be the case if different family members are involved in different parts of the business such as in competing business units.

In the sample studied by Sraer and Thesmar (2007),²⁰ founder-run firms are found to have higher labour productivity, which translates into higher performance. The authors also show firms run by founder-descendants to outperform widely-held firms. However, the effect documented for founder-led firms is significantly stronger than the one observed for founder-descendants. As such, the results of Sraer and Thesmar (2007) suggest higher owner-manager interest alignment in founder-led firms compared to descendant-managed firms. A study by Palia, Ravid, and Wang (2008) investigates founder effects in 972 listed U.S. firms over the period from 1992 to 2000. The authors find founder-run firms to be more productive and therefore more valuable. Notably, this effect materialises despite the authors' finding that founders tend to be more entrenched. Evidence of higher entrenchment is derived from compensation data, in which the authors find founders to be less responsive to incentive-based compensation. It is possible that positive entrenchment effects occur in the case of founder firms. If founders act steward-like or possess unique skills or talents, then entrenchment may provide these founders the necessary discretion to implement value enhancing measures that ultimately benefit all shareholders.

In the study by Andres (2008)²¹ that documents a positive effect of family ownership on firm value, the value effect (Tobin's Q) is most strongly pronounced in those firms where the founder is the CEO. Yet, non-founder family board representation also impacts firm value positively. The author suggests that "founders seem to have a special influence and put forth unique value-adding skills that lead to better performance" (Andres (2008), p.434). Notably, this effect is only found when analysing Tobin's Q. For the accounting performance measures used, no difference between founder-led and heir-managed firms can be found. These results suggest that both types of family firms (founder firms and later generation family firms) benefit from a lower owner-manager conflict. However, a majority-minority conflict appears to exist in heir-led firms. Adams, Almeida, and Ferreira (2009) analyse a set of 321 U.S. firms over the period from 1992 to 1999. They note a positive effect of founder CEOs on ROA as well as on Tobin's Q. The authors argue that founders are benevolent and intrinsically motivated to leave the firm in good shape, suggesting a positive effect from owner-manager interest

²⁰ Cf. p.27.

²¹ Cf. p.18.

alignment in founder firms. High Tobin's Q in these firms indicates that the firm's shareholders also benefit from the founder's participation in management. Lastly, Fahlenbrach (2009) analyses a set of 2,327 U.S. firms over the period from 1992 to 2002. The author documents that founder CEOs are associated with higher valuations and higher stock market performance. Fahlenbrach (2009) provides further evidence that this higher performance in founder CEO firms is based on their unique investment behaviour. According to the author, the investment behaviour of founders more closely follows net present value (NPV) criteria than investment choices in the control group of widely-held firms. As such, his results can be interpreted as evidence of higher alignment of owner-manager interests in founder firms.

Only McConaughy et al. (1998) find descendant-run firms to outperform founder-led firms. Their findings show that descendent-led firms exhibit higher sales growth, higher sales in relation to headcount, and higher cash-flow in relation to headcount. The authors suggest that this is because "descendants are in a position to consolidate the advantages passed on to them by the founders. With an established competitive position, they can exploit a market advantage to generate superior sales growth and high margins." The question as to whether the performance metrics used by McConaughy et al. (1998) translate into higher firm value is not explored by the authors. It is thus possible, that negative price effects cancel out the effect of sales growth on profit, leaving the position of shareholders unchanged when a firm transitions from founder to descendent management. Figure 2.6 summarises previous evidence of the founder effect.

Figure 2.6: Overview of prior evidence of the founder effect on performance

Author(s)	Sample	Key findings
McConaughy et al. (1998)	238 large U.S. firms in the year 1987	Descendent-controlled family firms have higher efficiency levels than founder firms Within founder-controlled firms, younger firms have higher efficiency levels than older firms
Bárontini and Caprio (2006)	675 listed Western European firms over the period 1990-2001	Performance is positively affected if founders are CEOs or if descendants take non-executive roles
Villalonga and Amit (2006)	508 Fortune 500 firms (2,808 firm-years) over the period 1994-2000	Family ownership is value-enhancing if the CEO or Chairman position is held by the founder When the position of CEO is held by a founder-descendant, value is destroyed
Miller et al. (2007)	896 Fortune 1,000 firms and 100 smaller listed U.S. firms over the period 1996-2000	Lone founder firms outperform the market in terms of Tobin's Q
Sraer and Thesmar (2007)	2,973 firm-years relating to French listed firms over the period 1994-2000	Founder-controlled firms perform better than widely-held firms due to higher labour productivity
Andres (2008)	275 listed German firms (1,701 firm-years) over the period 1998-2004	Performance effect is most positive if the firm's founder serves as CEO
Palia, Ravid, and Wang (2008)	972 listed U.S. firms (1,271 matched-pair observations) over the period 1992-2000	Founder-led firms are more valuable due to higher productivity Founders are more entrenched and motivated to a lesser extent by incentive-based compensation
Adams, Almeida, and Ferreira (2009)	321 U.S. firms (2,128 firm-years) over the period 1992-1999	There is a positive effect of founder CEOs on Tobin's Q There is a positive effect of founder CEOs on ROA
Fahlenbrach (2009)	2,327 U.S. firms (13,881 firm-years) over the period 1992-2002	Founder CEOs are associated with higher valuations and higher stock market performance The higher performance is based on founder-specific investment behaviour

2.3.1.4 Summary of prior performance-related findings

The literature summarised above (Chapters 2.3.1.1, 2.3.1.2, and 2.3.1.3) points to significant differences between family and non-family firms with regards to performance. Although scholars do not agree on the magnitude and direction of the effect, only a very small number of studies fail to document any differences

between family firms and non-family firms (e.g., Sacristán-Navarro, Gómez-Ansón, and Cabeza-García (2011), Sciascia and Mazzola (2008)).

With regards to family ownership, the prior evidence is rather inconclusive. While a range of authors show that family firms are characterised by higher efficiency due to better alignment of interests, supporters of the *entrenchment hypothesis* provide evidence that risk aversion and control objectives may negatively impact performance in family firms. The situation is similar for family-managed firms. Supporters of the *alignment of interests hypothesis* argue that family firm performance is driven by higher efficiency and steward-like attitudes of family managers. On the other hand, non-financial benefits are argued to be a main driver by those authors documenting a negative effect of family management on firm performance.

The heterogeneity of family firms across countries, but also within a given institutional setting, suggests that some of the differences in the prior literature may be attributable to the specific make-up of the sample used in a given study. Results also appear to be strongly dependent on the type of family firm definition used. In particular, results may vary depending on whether or not the founder is included in the family definition and whether the definition depends on ownership or management criteria, or a combination thereof.

2.3.2 The impact of family governance on investment behaviour

A growing body of literature investigates the investment behaviour of family firms in comparison to investment patterns of non-family firms. As part of this research stream, four areas have received particular attention. These four areas are investment cash-flow sensitivity, capital expenditure, research & development (R&D), and buy-side mergers & acquisitions (M&A).

2.3.2.1 Investment cash-flow sensitivity

Studies on investment cash-flow sensitivity analyse to what extent the investment behaviour of sample firms is related to the generation of internal cash-flows. The rationale underlying these studies is that high investment cash-flow sensitivity indicates an investment behaviour that is not driven by the availability of investment opportunities, but rather by the disposability of internal funds. Both

underinvestment and overinvestment problems may result from high investment cash-flow sensitivity. On the one hand, if the internal cash-flows generated are significantly smaller than the funds required for the firm to pursue all available positive NPV projects, then underinvestment is likely to result in a firm with high investment cash-flow sensitivity. On the other hand, if the firm generates high cash-flows while facing a lack of positive NPV investment opportunities, then high investment cash-flow sensitivity is likely to result in overinvestment in line with the *free cash-flow hypothesis* of Jensen (1986).

Gugler (2003) finds family firms to have lower investment cash-flow sensitivity than non-family firms in a sample of 214 Austrian firms over the observation period from 1991 to 1999. The author further investigates the payout policies of his sample firms and finds that family firms are more likely to de-prioritise dividends if they face attractive investment opportunities. Non-family firms, however, are more likely to adjust their investment policy in order to meet dividend objectives. Overall, family firms therefore appear to exhibit more efficient investment behaviour than non-family firms. As such, this result can be interpreted as evidence of superior owner-manager interest alignment in family firms. The results of Gugler (2003) are confirmed by Andres (2011) in the German context. The authors analyse the investment behaviour of a sample of 264 German firms over the period from 1997 to 2004. Like Gugler (2003), Andres (2011) finds family firms to be characterised by lower investment cash-flow sensitivity. The author shows that family firms are generally more responsive to investment opportunities than non-family firms and concludes that family firms may be characterised by “more efficient investment decisions and fewer agency conflicts and information asymmetries” (Andres (2011), p.1642).

Pindado, Requejo, and La Torre (2011) also find lower average investment cash-flow sensitivity in family firms compared to the control group of non-family firms. In addition, the authors demonstrate that family firms undertake fewer inefficient investments in their sample of 684 Euro-zone firms covering the period from 1996 to 2006.²² In their sample, investment efficiency is highest in those family firms that are not characterised by a deviation of voting and cash-flow rights. In addition, family management has a positive effect on investment efficiency. Thus, their evidence suggests that family firms may benefit from a reduced owner-manager conflict. The authors conclude that “as a result of family firms' lower dependence

²² This result was also found by Daily and Dollinger (1991) (cf. p.38).

on internally generated funds when undertaking new investment projects, this type of firm is able to reach an investment level closer to the optimum, thus being less likely to suffer from overinvestment and underinvestment problems” (Pindado, Requejo, and La Torre (2011), p.1405). With regards to lower overinvestment probability, family governance may also have the potential to reduce shareholder-debtholder agency costs. However, the higher investment cash-flow sensitivity in family firms that use control-enhancing devices suggests that majority-minority conflicts may exist in some family firms. Kuo and Hung (2012) extend this research by differentiating the effects of investment cash-flow sensitivity into underinvestment and overinvestment problems. The authors analyse a dataset covering 1,115 listed Taiwanese firms over the period from 1999 to 2008. They find that high excess control rights can increase investment cash-flow sensitivity in family firms, and particularly in those firms with low Tobin’s Q. Low Tobin’s Q tends to indicate a lack of attractive growth opportunities. Therefore, high investment cash-flow sensitivity in low Q firms indicates that funds are likely to be invested in unattractive, potentially self-serving, projects. In family firms, this may be symptomatic of investments motivated by private benefits of control, potentially pointing to a majority-minority conflict in these firms. The authors further find that family firms with independent boards and non-family block-holders exhibit reduced investment cash flow sensitivity. This suggests that effective monitoring and strict scrutiny of planned investments may alleviate majority-minority conflicts by counteracting potentially self-serving behaviour of founding families.

The evidence provided by Masulis, Pham, and Zein (2011) suggests another way in which family governance may affect investment practices. The authors analyse a large dataset including 28,635 firms from 45 countries for which they present data for the period from 2003 to 2006. They show that family business groups that are organised in pyramids may benefit from internal capital markets that allow them to react to investment opportunities in a timely manner. In addition, pyramidal structures allow family business groups to invest into more risky projects compared to free-standing and widely-held organisations. This is the case if risky projects are carried out by an entity located at the bottom of the pyramidal structure where decision-making power of controlling families exceeds their cash-flow exposure. As such, family business groups may be an effective organisational solution to overcoming underinvestment problems, according to the authors.

These studies that investigate investment cash-flow sensitivity in the context of family firms have arrived at the general consensus that family firms tend to have

lower levels of investment cash-flow sensitivity than non-family firms. Therefore, the evidence from this research stream tends to indicate that family firms may be more able than non-family firms to overcome underinvestment problems and thus exhibit more efficient investment behaviour that is less dependent on the availability of internal cash-flows. In addition, it appears that family firms are also less prone to overinvestment problems. As such, evidence from the area of investment cash-flow sensitivities points to better alignment of owner-manager interests in family firms as well as to better alignment of shareholder-debtholder interests. However, the existence of control-enhancing devices may negatively affect the relationship between family governance and investment cash-flow sensitivities. Figure 2.7 summarises previous research on investment cash-flow sensitivity in family firms.

Figure 2.7: Overview of prior evidence of investment cash-flow sensitivity in family firms

Author(s)	Sample	Key findings
Gugler (2003)	214 Austrian firms over the period 1991-1999	Investment behaviour of family firms is more reactive to investment opportunities Family firms have lower investment cash-flow sensitivity
Andres (2011)	264 German firms over the period 1997-2004	Investment behaviour of family firms is more responsive to investment opportunities Family firms have lower investment cash-flow sensitivity
Masulis, Pham, and Zein (2011)	28,635 firms from 45 countries over the period 2003-2006	Investment intensity is greater for firms with pyramidal structures The pyramidal structure allows the operation of an internal capital market, resulting in greater ability to invest in risky projects
Pindado, Requejo, and La Torre (2011)	684 Euro-zone firms (6,024 firm-years) over the period 1996-2006	Family firms have lower investment cash-flow sensitivity Family firms undertake fewer inefficient investments
Kuo and Hung (2012)	1,115 listed Taiwanese firms (6,757 firm-years) over the period 1999-2008	High excess control rights increase investment cash-flow sensitivity Board independence and the existence of block-holders reduce investment cash flow sensitivity in family firms

2.3.2.2 Capital expenditure

Capital expenditure (CapEx) falls into the long-term category of investments. High capital expenditure can be indicative of expansion activities via capacity additions. Alternatively, CapEx may be undertaken in order to maintain or upgrade a firm's asset base.

Fahlenbrach (2009) analyses CapEx decisions of founder firms in a sample of U.S. firms.²³ The author finds founder firms to invest more in CapEx than the control group of widely-held firms. His interpretation is that founder-firms may be "more susceptible to an overinvestment problem." If this is the case, then negative (long-term) implications for profitability can be expected, suggesting that an owner-manager agency conflict may exist. The author posits that overinvestment by founders may occur "perhaps because they meet less resistance to investing in poor projects or to undertaking negative NPV acquisitions" (Fahlenbrach (2009), p.462). This interpretation is at conflict with the higher valuations that coincide with these higher CapEx investments by founder firms in the author's sample.

Croci, Doukas, and Gonenc (2011) analyse 777 listed Western European firms over the period from 1998 to 2008 and find that family firms invest similar amounts of funds into CapEx as non-family firms. The authors argue that, in combination with lower R&D expenditure, this result suggests lower overall risk-taking propensity in family firms, potentially driven by control considerations.²⁴ The authors further note that this behaviour may serve to align the interests of shareholders and debt providers. This is because it is unlikely that family firms will engage in excessive risk-taking. At the same time, it is possible that family firms pass up attractive investment opportunities based on their stronger risk aversion. This may result in a majority-minority agency conflict. Results obtained by Anderson, Duru, and Reeb (2012) are similar to those presented by Croci, Doukas, and Gonenc (2011). The authors analyse a panel dataset covering the 2,000 largest U.S. firms over the period from 2003 to 2007. For this dataset, the authors find family firms to exhibit higher CapEx than non-family firms. At the same time, the authors find family firms to invest less in R&D, suggesting that family firms may be substituting less risky CapEx for R&D investments. They conclude that "families' strong incentive

²³ Cf. also p.34.

²⁴ This is because high-risk projects have the potential to change the distribution of power within a firm. Chapter 4.2 (p.200 et seq.) provides a more detailed explanation of this effect.

to reduce firm risk due to the undiversified nature of their holdings dominates the long-term horizon attributes of their ownership stake” (Anderson, Duru, and Reeb (2012), p.1756).

Overall, data on CapEx suggest higher, or at least equal, levels of capital expenditure in family firms. However, there is no consensus about the motives behind this family-specific investment behaviour. One suggested explanation is a substitution effect (substitution of CapEx for R&D) due to higher risk aversion in family firms. This would indicate a lower shareholder-debtholder conflict. Various authors specifically argue that data on CapEx should not be interpreted without simultaneously analysing R&D (and vice versa), as substitution effects may occur. It is likely that lower shareholder-debtholder agency cost results in a conflict between majority and minority shareholders if it leads to an underinvestment in available positive NPV projects. Other authors argue family firms to exhibit more efficient investment behaviour, which would be indicative of better alignment of owner-manager interests. Figure 2.8 summarises previous research on capital expenditure in family firms.

Figure 2.8: Overview of prior evidence of CapEx in family firms

Author(s)	Sample	Key findings
Fahlenbrach (2009)	2,327 U.S. firms (13,881 firm-years) over the period 1993-2002	CapEx is higher in family firms
Croci, Doukas, and Gonenc (2011)	777 listed Western European firms over the period 1998-2008	Family firms and non-family firms invest similar levels into CapEx
Anderson, Duru, and Reeb (2012)	2,000 largest U.S. firms (8,431 firm-years) over the period 2003-2007	Family firms conduct more CapEx than non-family firms Family firms substitute CapEx for higher-risk R&D

2.3.2.3 Research & development

Corporate research & development (R&D) behaviour has received increasing attention due to its importance in the context of innovation capabilities and its resulting impact on competitiveness of firms. In addition, R&D behaviour provides an indication about a firm’s risk-taking preferences. This is because R&D is characterised by high upfront payments, by long payback periods, by high

uncertainty regarding payoffs, and thus by significant risk for investors (cf. Munoz-Bullon and Sanchez-Bueno (2011)).

In the Asian context, Chen and Hsu (2009) analyse 369 Taiwanese electronic firms over the period from 2002 to 2007. The authors find family firms to undertake fewer R&D investments. They argue that this negative impact of family ownership on R&D is based on higher risk aversion of family firm owners compared to diversified firm owners. The authors state that “because of their conservatism or their efficient use of R&D investment, firms with high family ownership use less R&D in relation to firms with low family ownership” (Chen and Hsu (2009), p.358). However, the authors do not provide any additional test in order to answer the question as to whether their results are driven by risk aversion (majority-minority agency costs) or efficiency (lower owner-manager agency costs). However, the authors show that CEO duality and representation of independent directors on the supervisory board moderate the relationship between family ownership and R&D. As such, monitoring and reduction of control appear to serve to reduce R&D related agency costs in family firms. Thus, the evidence points to higher risk aversion in family firms. A study of Munari, Oriani, and Sobrero (2010) focusses on Europe. In their study covering 1,000 listed firms from six European countries in 1996 they confirm the results of Chen and Hsu (2009) by documenting lower R&D investments in family firms. The authors argue that family shareholders have lower risk-taking propensity, which they posit to be “due to the fact that a large part of their wealth is invested in the firm” (Munari, Oriani, and Sobrero (2010), p.1101). These results indicate the potential for a majority-minority conflict in family firms, if non-family shareholders have a stronger risk appetite than family owners. In the study by Croci, Doukas, and Gonenc (2011) on Western European firms,²⁵ family firms are also found to invest fewer resources into R&D. Like Munari, Oriani, and Sobrero (2010) and Chen and Hsu (2009), the authors posit that family owners are characterised by higher risk aversion. They conclude that “the non-risk-seeking behaviour of family firms is confirmed by the nature of their investment decisions. The results show that they commit less capital resources in R&D expenditures than non-family firms” (Croci, Doukas, and Gonenc (2011), p.34). If families reduce risk by avoiding R&D, this may negatively affect minority shareholders who are characterised by a higher risk-taking propensity. As such, the results are indicative of the existence of a majority-minority conflict in family firms. In contrast, the interests of family owners may be

²⁵ Cf. p.40.

more aligned with debt providers, suggesting a lower shareholder-debtholder conflict.

In the North American context, Munoz-Bullon and Sanchez-Bueno (2011) analyse 736 Canadian firms over the period from 2004 to 2009 and again document lower R&D intensity in family firms compared to non-family firms. The authors provide a range of reasons to explain this effect. The arguments presented include control considerations, limited access to capital, agency costs of altruism, private benefits of control, and risk aversion given high levels of uncertainty in R&D investments. Unfortunately, they abstain from providing any additional evidence in order to shed additional light on the motivations behind the R&D behaviour of family firms.

Anderson, Duru, and Reeb (2012)²⁶ also confirm lower R&D investments in family firms for their U.S. sample. The authors further show that R&D efficiency is lower in family firms compared to non-family firms. This is shown by analysing patent approvals and patent citations per unit of R&D expenditure. In this way, the authors alleviate concerns expressed by previous authors such as Chen and Hsu (2009) who have noted that different efficiency levels may skew results. Having ruled out an explanation based on efficiency (lower owner-manager conflict), Anderson, Duru, and Reeb (2012) conclude risk aversion (majority-minority conflict) to be the driving force behind lower R&D investments in family firms. They summarise their findings by stating that “families’ strong incentive to reduce firm risk due to the undiversified nature of their holdings dominates the long-term horizon attributes of their ownership stake” (Anderson, Duru, and Reeb (2012), p.1756). Additional evidence collected in the U.S. context is provided by Block (2012) who presents data from 154 S&P firms over the period from 1994 to 2003. Like Anderson, Duru, and Reeb (2012), the author demonstrates that family firms not only invest less in R&D, but that their R&D productivity is also lower. In this way, the author rules out the possibility that evidence of lower R&D levels could be biased by systematically different levels of efficiency between family firms and non-family firms. In contrast to family firms, Block (2012) finds that founder firms tend to have a positive effect on both R&D expenditure and R&D intensity. He argues that, in comparison to a founder firm, a family firm’s “main ambition is to secure the firm's survival and its dividend payments.” As a result, “the firm strategy of family firms will be less risky and more conservative as compared to the strategy of founder firms” (Block (2012), p.262). He argues that founders have different

²⁶ Cf. also p.41.

incentives and priorities, their focus being on firm growth, which materialises in a high risk-taking propensity. Support for the founder effect demonstrated by Block (2012) is also provided by Fahlenbrach (2009). For his U.S. sample,²⁷ the author shows that R&D intensity is higher in founder firms, suggesting that long-term oriented growth strategies and a high willingness to take risks exist in these firms. Taken together, the results of Block (2012) and Fahlenbrach (2009) suggest that founder firms may behave differently from later generation family firms with regards to R&D, as priorities may change when additional family members are involved in the business. Also, the evolution of the business model from an entrepreneurial (high R&D) firm to an established (low R&D) firm may coincide with the retirement of the founder.

The majority of authors analysing the R&D behaviour of family firms find that family firms invest fewer resources into this high-risk investment category. The evidence is consistent across geographies, including Europe, North America, and Asia. Overall, the previous literature suggests that family firms may be less willing to accept the risks associated with R&D activities. This finding is in line with the hypothesis that family firms derive private benefits from a conservative firm policy, which is likely to occur at the expense of less risk-averse co-investors. On the other hand, evidence from R&D policy in family firms also illustrates that interests of family shareholders may be more aligned with those of debt providers. This lower shareholder-debtholder conflict may provide them with advantages over non-family firms with regards to their ability to issue debt. In addition, they may benefit from more favourable lending terms. Figure 2.9 summarises previous research on R&D in family firms. More detail on the R&D behaviour of family firms is presented in Chapter 3.1.

²⁷ Cf. also p.34.

Figure 2.9: Overview of prior evidence of R&D in family firms

Author(s)	Sample	Key findings
Chen and Hsu (2009)	369 Taiwanese electronic firms (1,845 firm-years) over the period 2002-2007	Family firms conduct fewer R&D investments than non-family firms
Fahlenbrach (2009)	2,327 U.S. firms (13,881 firm-years) over the period 1993-2002	Family firms undertake more R&D investments than non-family firms
Munari, Oriani, and Sobrero (2010)	1,000 listed firms from six European countries in 1996	R&D investment levels are lower in family firms than in non-family firms
Croci, Doukas, and Gonenc (2011)	777 listed Western European firms over the period 1998-2008	Family firms conduct fewer R&D investments than non-family firms
Munoz-Bullon and Sanchez-Bueno (2011)	736 Canadian firms (1,764 firm-years) over the period 2004-2009	Family firms have lower R&D intensity ratios than non-family firms
Anderson, Duru, and Reeb (2012)	2,000 largest U.S. firms (8,431 firm-years) over the period 2003-2007	Family firms conduct fewer R&D investments than non-family firms R&D productivity is lower in family firms than in non-family firms
Block (2012)	154 S&P500 firms (1,088 firm-years) over the period 1994-2003	Family firms conduct fewer R&D investments than non-family firms R&D productivity is lower in family firms than in non-family firms

2.3.2.4 Mergers & acquisitions

The second high-stake situation that has been analysed in the literature to establish whether family firms differ from non-family firms is mergers & acquisitions (M&A) decision-making. Similar to R&D, M&A is characterised by high up-front payments, by high uncertainty, and typically by deferred and uncertain payoffs. Consequently, evidence from M&A is frequently used to make inferences about risk-taking preferences of firms. The analysis of market reactions to M&A announcements further provides insight into value implications of M&A deals by capturing the aggregated reactions of investors to proposed and/ or completed transactions.

Among the studies supporting the hypothesis that the owner-manager agency conflict is pronounced to a lesser extent in family firms is the paper by Ben-Amar and Andre (2006). The authors analyse 327 transactions undertaken by a sample of Canadian listed firms over the period from 1998 to 2002. They find family ownership to add value in M&A deals, as reflected in positive abnormal deal

announcement returns. Their interpretation suggests that transgenerational transfer objectives lead to efficient and sustainable investment decisions in family firms. Such behaviour indicates higher alignment of interests of family decision-makers with shareholders. In the words of the authors, “the sheer amount of wealth families have invested in the firm is a sufficient incentive to maximise firm value and restrain from extracting private benefits which would make it difficult to establish a long-term relationship with the investment community, raise additional capital to grow the firm and would increase the cost of capital” (Ben-Amar and Andre (2006), p.536). In his U.S. sample,²⁸ Fahlenbrach (2009) finds that founder firms make more focussed, but smaller M&A deals than non-founder firms. In addition, deal announcement returns are positive, particularly in cash transactions, suggesting a positive market feedback regarding the M&A decision-making of founder firms. The author argues that the founder’s incentives to engage in value-destroying diversification deals are small given the generally high propensity of founders to take risk. In addition, longer planning horizons and higher equity stakes may lead to more efficient M&A decisions. The study by Fahlenbrach (2009) covers founders only and may therefore not be generalizable to all family firms. This is because a special founder effect may be driving results if founders’ risk-taking and investment preferences differ from those of later generation family firms. Lastly, Feito-Ruiz and Menendez-Requejo (2009) find that family governance is associated with higher valuations of acquiring firms following deal announcements in a sample of 124 deals completed by European listed buyers over the period from 2002 to 2004. Similar to Ben-Amar and Andre (2006) and Fahlenbrach (2009), the authors argue that “the long-term perspective of family firms, in transferring the business to future generations, and their lesser degree of agency conflicts are in accordance with this positive valuation. Shareholders do not perceive families as using M&A to obtain private benefits at the expense of minority shareholders” (Feito-Ruiz and Menendez-Requejo (2009), p.71).

However, a range of authors have published evidence of an M&A-behaviour that suggests a majority-minority agency conflict to exist in firms with founding family involvement.

For example, Bauguess and Stegemoller (2008) analyse 1,411 acquisitions undertaken by 498 S&P500 firms over the years from 1994 to 2005. Their analysis of announcement returns yields support for the hypothesis that acquisitions by

²⁸ Cf. also p.34.

family firms are associated with lower shareholder value. This result suggests that non-family investors may have concerns about the family pursuing objectives that primarily benefit the family, potentially at the expense of non-family shareholders. Using a different approach, Miller, Le Breton-Miller, and Lester (2010) document lower acquisition volumes and values in family firms in a sample of 898 Fortune 1,000 firms observed over the period from 1996 to 2000. The authors posit that lower M&A activity may be driven by non-financial goals pursued by founding families. The non-financial goals mentioned by the authors include risk aversion and transgenerational transfer plans. They conclude that “consistent with agency views, large family owners may avoid an aggressive program of acquisitions to safeguard returns. Moreover, they may minimize acquisitions in order to preserve the legacy, robustness, culture, and relationships of the business” (Miller, Le Breton-Miller, and Lester (2010), p.211). In addition, the authors demonstrate that the propensity of family firms to make diversifying acquisitions increases with their ownership stake. Their interpretation of this finding suggests that this is because diversifying acquisitions are a possibility for family firms to “limit portfolio risk by diversifying family wealth” (Miller, Le Breton-Miller, and Lester (2010), p.211). As such, their results support the hypothesis that decision-makers who are part of the founding family are likely to primarily pursue family goals. Assuming that family firms do not have fewer attractive acquisition opportunities than non-family firms, non-family shareholders may bear the costs of these strategies. In the Continental European context, Caprio, Croci, and Del Giudice (2011) again find for a sample covering 2,275 deals by 777 listed firms that family firms make fewer acquisitions than non-family firms. Their results therefore confirm the findings of Miller, Le Breton-Miller, and Lester (2010). However, unlike authors of previous studies, they do not find an impact of family governance on deal announcement returns. Their interpretation of the lower M&A probability in family firms is based on control maintenance objectives pursued by controlling families that lead to a “specific suspiciousness toward acquisitions” (Caprio, Croci, and Del Giudice (2011), p.1654). By analysing the impact of their sample firms’ investment strategies on growth, the authors further show that the aversion to acquire in family firms is compensated for by pursuing organic growth opportunities. Their interpretation is linked to the institutional context of Continental Europe, an insider system in which it is possible “to accommodate the financial needs of family firms while at the same time avoiding the dilution of family control” (Caprio, Croci, and Del Giudice (2011), p.1654). While their evidence does not specifically suggest a misalignment of interests with external

shareholders (as the acquisition behaviour does not appear to curtail growth), it still provides support for a corporate strategy that prioritises family objectives.

Shim and Okamuro (2011) add evidence from the Asian context by presenting data on 1,202 listed Japanese firms conducting 253 deals between 1955 and 1973. Like the authors of previous studies, they find that family firms engage in fewer M&A transactions. They argue that control considerations drive this more passive approach to M&A. In addition, they show that the operating performance improvements of family firms following a merger stay behind those of non-family firms, a result for which the authors fail to provide an explanation. They conclude that if family firms are “passive towards mergers for the fear of losing control rights, mergers realized by family firms should at least be profitable enough to compensate for this loss. However, on average, they obtain lower gains from mergers than non-family firms do. These results are rather puzzling” (Shim and Okamuro (2011), p.201). Possibly, these results point to other objectives being pursued in M&A deals by family firms. Such objectives may include family-specific non-financial goals.²⁹ For example, family firms may pursue deals in order to create jobs for family members. Such practices, if at the cost of non-family shareholders, would be indicative of a majority-minority agency conflict. Alternatively, it is possible that the financial benefits of deals conducted by family firms only materialise in the long-term, as the planning horizons in family firms may be longer, possibly resulting in different types of deals being undertaken by these firms. In this case, a time horizon-related agency conflict may exist if non-family shareholders prefer significantly shorter payback periods.

An attempt to reconcile inconsistent evidence regarding the motives and outcomes of M&A decisions in family firms is provided by Basu, Dimitrova, and Paeglis (2009). The authors analyse 103 mergers in newly listed U.S. firms over the period from 1993 to 2000. They find that both M&A decision-making in family firms and market reactions to deals announced by family firms are dependent on the level of family ownership in the acquiring firm. While they find deal announcement returns to be positive at high levels of family ownership in the buyer, they document the opposite effect for low levels of family ownership. They conclude that low levels of family ownership motivate family members to engage in entrenchment activities which may be driven by fear of control loss. On the other hand, interests of family owners and non-family owners become aligned at high levels of ownership where

²⁹ Cf. Chapter 4.1.1.2 for details on alternative motivations for M&A transactions.

the family does not need to fear any immediate consequences from (partial) loss of control.

The inconclusive evidence regarding M&A decision-making in family firms shows that multiple drivers may be at play. Evidence from M&A announcement returns tends to support the hypothesis that a reduced owner-manager conflict may exist in family firms. On the other hand, research on deal volumes and types tends to be more supportive of the hypothesis that family interests (rather than shareholder interests) are the primary motivation for deals undertaken by family firms. In addition, interaction effects with other types of investments may also play a role in explaining deviations in results. This is because firms may substitute organic growth for M&A. The contradictory findings so far point to the need for further research in this field in order to better understand both drivers and outcomes of M&A decisions in family firms. Figure 2.10 summarises previous research on M&A in family firms. More detail on the M&A-behaviour of family firms is presented in Chapter 4.1.

Figure 2.10: Overview of prior evidence of M&A in family firms

Author(s)	Sample	Key findings
Ben-Amar and Andre (2006)	327 transactions by Canadian listed firms over the period 1998-2002	Positive abnormal deal announcement returns are greater for family firms
Bauguess and Stegemoller (2008)	1,411 acquisitions by 498 S&P500 firms over the period 1994-2005	Acquisitions by family firms are associated with lower shareholder value
Basu, Dimitrova, and Paeglis (2009)	103 mergers in newly listed U.S. firms over the period 1993-2000	Deal announcement returns are positive at high levels of family ownership in the acquirer Deal announcement returns are negative at low levels of family ownership in the acquirer
Fahlenbrach (2009)	7,070 acquisitions by 2,327 U.S. firms over the period 1992-2002	Founder firms experience positive deal announcement returns, particularly in cash transactions Founder firms conduct more focussed M&A deals
Feito-Ruiz and Menendez-Requejo (2009)	124 deals of European listed buyers over the period 2002-2004	Family involvement positively influences acquiring shareholder valuation in M&A announcements
Miller, Le Breton-Miller, and Lester (2010)	3,144 acquisitions by 898 Fortune 1,000 firms over the period 1996-2000	Family firms conduct fewer acquisitions Acquisitions by family firms tend to be smaller Family firms conduct diversifying M&A in order to reduce risk
Caprio, Croci, and Del Giudice (2011)	2,275 deals of 777 listed large Continental European firms over the period 1998-2008	Family control decreases the probability of making an acquisition No effect of family control on acquisition announcement returns
Shim and Okamuro (2011)	253 deals by 1,202 listed Japanese firms over the period 1955-1973	Family firms conduct fewer deals Family firms underperform with regards to operating performance improvement around the merger

2.3.2.5 Summary of prior investment-related findings

Overall, prior empirical research indicates that the investment decisions of family firms differ from those of non-family firms in a number of ways.

Evidence from investment cash-flow sensitivity indicates that the investment behaviour of family firms tends to be less sensitive to internal generation of cash-flows, suggesting more efficient investment decision-making. Such research supports the hypothesis that the owner-manager agency conflict may be less severe in family firms. Family firms also spend as much, and possibly more, on CapEx,

laying the foundation for maintaining an up-to-date technology base and/ or for supporting expansion of their asset bases. Assuming that these investments are efficient, this behaviour again suggests a less pronounced owner-manager conflict. With regards to R&D, the prior literature shows that risk aversion may inhibit family firms' propensity to invest in innovation. This may lead to a potential conflict with non-family investors. This majority-minority conflict may be particularly severe if the controlling family derives non-financial benefits from such a strategy, which is paid for by minority owners in the form of reduced returns to R&D investments. At the same time, conservative R&D policies may serve to align the interests of shareholders and debtholders, potentially improving access to debt financing or leading to more favourable terms and conditions in lending contracts. Evidence from the M&A-behaviour of family firms is less conclusive. The results obtained in the prior literature suggest both higher risk aversion and greater control incentives to reduce the M&A propensity of family firms. As such, these results are indicative of a majority-minority conflict in family firms. This is because the alignment of business policy with family objectives is likely to primarily benefit the family, while the costs of these strategies are incurred by non-family shareholders. In contrast, evidence from M&A announcement returns tends to support the hypothesis that the owner-manager conflict may be less pronounced in family firms by suggesting more efficient investment behaviour.

Evidence from the above mentioned areas suggests that the behaviour of family firms differs from the behaviour of non-family firms with regards to investment choices in a number of ways. However, a range of potential moderating, interaction, and/ or substitution effects indicate the complexity of the relationship between family governance and investment behaviour. For example, moderating effects may include an influence of the use of control-enhancing devices or the various pathways via which the family influences corporate policy. Interaction and substitution effects may occur between different areas of investment, as previous research shows that family-specific factors may be driving resource allocation decisions between various areas of investment policy.

2.3.3 The impact of family governance on financing behaviour

A significant body of empirical research investigates the financing policies of family firms. This research stream provides a range of detailed insights into the

various financing strategies of family firms and the drivers of their behaviour. Three core areas of financial decision-making have been analysed in the family firm literature. These are the choice between internal and external capital, the decision between equity and debt, and specific characteristics of lending contracts. The following is a summary of prior research in these three areas.

2.3.3.1 Internal versus external finance

A range of authors argue that family firms prefer internal to external sources of finance, suggesting a stronger adherence to the *pecking order theory* (Myers and Majluf (1984)) in family firms than in non-family firms. For example, Romano, Tanewski, and Smyrnios (2001) find a preference for internally generated finance by family firms in a sample of 1,059 small Australian firms in the year 1996. The authors argue that their preference of family businesses for internally generated funds is due to risk aversion and control loss considerations. If this financing behaviour results in underinvestment, then a majority-minority conflict may result, as attractive investment projects may not be realised if internally generated funds are insufficient to cover the capital requirements. This result is confirmed by López-Gracia and Sanchez-Andujar (2007) using a sample covering 858 medium-sized Spanish firms over the period from 1997 to 2004. They find a strong preference for internally generated funds in family firms. The authors' interpretation is that "family firms mainly base their financial policies on internally generated resources, passing up growth if necessary, as their first financing objective is not to lose control of the business" (López-Gracia and Sanchez-Andujar (2007), p.282). This interpretation suggests that there may be significant potential for underinvestment in family firms. This may result in a conflict with non-family shareholders if non-family shareholders are less risk-averse than family owners. Colot and Croquet (2009) confirm these results for a sample of 391 Belgian SMEs over the three year period from 2001 to 2003. According to Colot and Croquet (2009), the preference for internal funds is driven by higher risk aversion in family than in non-family firms and that the "principal motivation within family firms seems to be the maintaining of family control" (Colot and Croquet (2009), p.59). These results indicate that the financing strategies employed by family firms primarily benefit the family, possibly at the expense of non-family shareholders.

Overall, these results are indicative of a strong emphasis on family goals in business policy. The prioritisation of internal finance may result in an

underinvestment problem in family firms if the controlling family prioritises family goals (e.g., control retention) over value creation, which may be reflected in the passing up of attractive investment opportunities in order avoid issuing external finance. If this is the case, then a majority-minority agency conflict exists in family firms. The literature suggests that family firms make a conscious decision to avoid external finance due to the impact of external finance on their control position. However, some authors also suggest that the prioritisation of internal finance is the result of a lack of external finance. For example, Masulis, Pham, and Zein (2011) argue that the frequent occurrence of family business groups in their sample of 28,635 firms (from 45 countries over the period 2003-2006) is due to insufficient access to external capital. The authors further explain that business group structures improve access to internal funding, which can be used to compensate for a lack of external capital. Figure 2.11 provides a summary of the previous evidence that suggests that family firms use a higher share of internal, as opposed to external, sources of finance.

Figure 2.11: Overview of prior evidence of a preference for internal sources of finance in family firms

Author(s)	Sample	Key findings
Romano, Tanewski, and Smyrniotis (2001)	1,059 small Australian firms in the year 1996	Family businesses prefer internally generated funds to external funds
López-Gracia and Sanchez-Andujar (2007)	858 medium-sized Spanish firms (6,864 firm-years) over the period 1997-2004	Family firms prefer internal finance to external finance
Colot and Croquet (2009)	391 Belgian SMEs over the period 2001-2003	Family firms prefer internal finance to debt
Masulis, Pham, and Zein (2011)	28,635 firms from 45 countries over the period 2003-2006	Business group structures facilitate improved internal equity funding Family firms frequently organise in business groups in order to counter lack of external finance

2.3.3.2 The debt-equity choice

Capital structure decisions have been another core area of research in the corporate finance literature. In particular, the debt-equity choice of a firm can provide insights into its risk-taking preferences as well as into its relationships with debt and equity capital providers.

Agrawal and Nagarajan (1990) find a high share of family-ownership in their sample of 142 U.S. all-equity firms covering the period from 1979 to 1983. The authors also find that family firms carry higher liquidity reserves than non-family firms. They conclude that the data is “consistent with the view that managerial choice of an all-equity capital structure signals a strong preference for reducing the risk associated with large undiversifiable investments of personal wealth and family human capital in these firms” (Agrawal and Nagarajan (1990), p.1330-1331). While such behaviour may be beneficial for providers of debt capital, it may also result in financial constraints and therefore limit the ability of family firms to fund value creating investments. This may be negatively perceived by non-family shareholders and therefore create a majority-minority conflict. Gallo and Vilaseca (1996) provide similar results for a dataset covering 104 Spanish firms in the year 1992. The authors argue that the lower leverage ratios documented in family firms are in line with higher risk aversion of the decision-makers of these firms. Similar to Agrawal and Nagarajan (1990), the authors posit that more pronounced risk aversion is driven by a lack of diversification, not only of financial capital, but also of personal and social capital.

Further, a study by McConaughy, Matthews, and Fialko (2001) confirms these findings. The authors find leverage ratios of family firms to be lower than those of non-family firms in a study covering 219 listed U.S. firms from 1986 to 1988. Their interpretation follows that of Gallo and Vilaseca (1996) by stating that more conservative financing in family firms is in line with the hypothesis that families are “more risk averse, perhaps because they have more to lose (quasi-rents)” (McConaughy, Matthews, and Fialko (2001), p. 44). Mishra and McConaughy (1999) also show for a sample of 315 large U.S. firms in the year 1987 that family firms use less debt and, as such, trade growth potential for non-economic goals. Specifically, the authors argue that fear of control loss drives the financing behaviour in family firms. The authors note that, while this behaviour aligns interests with debt providers, it is possible that it may simultaneously trigger conflicts between family shareholders and non-family shareholders.

Ampenberger et al. (2012) also document that family firms have lower leverage ratios in their sample of 660 German listed firms observed over the 11-year period from 1995 to 2006. They document that lower debt ratios are mainly found in family-managed firms and to a much lesser extent in firms that are family-owned only. The effect is particularly strong in those firms where the founder is the CEO. In the bank-based institutional context of the study, the authors argue that family

firms avoid leverage because it exposes them to strict creditor monitoring, which they perceive to be a loss of control. If attractive investment opportunities are passed up based on a desire to avoid debt issues, then the behaviour of family firms indicates a majority-minority conflict. Shyu and Lee (2009) analyse a sample of 611 listed Taiwanese firms over the period from 2002 to 2006 and focus their attention on short-term debt. The authors find that family firms with excess control rights tend to use a smaller amount of short-term debt. They document the same effect in family firms with CEO duality. Their interpretation of this effect is that family firms engaged in expropriation activities avoid what Jensen (1986) describes as the disciplining effect of debt by keeping debt levels low. In contrast, they argue that those family firms that do not aim to engage in expropriation will use high levels of short-term debt as a signal that they are not deterred by the disciplining effect of debt.

Hagelin, Holmén, and Pramborg (2006) also find lower leverage in a panel dataset covering 192 Swedish listed firms over the period from 1997 to 2001. However, additional tests reveal that only family-owned firms with dual class shares are found to use less leverage. In contrast, family firms with a *one share one vote* principle are found to have leverage ratios that are similar to those of widely-held firms. This suggests that the use of control-enhancing devices may limit access to debt capital, as debt providers may interpret the use of minority shareholder expropriation devices as a potential signal that they may be expropriated themselves.

Overall, there is compelling evidence of lower debt levels in family firms. Most authors argue that higher risk aversion in family firms drives this behaviour. The rationale is that concentration of family wealth in the firm (and therefore under-diversified investment portfolios of family owners) and private benefits of control lead to risk aversion of family owners. As such, family owners have an incentive to minimise default risk. In addition, family decision-makers may have an incentive to limit the power of creditors, as they may limit the family's ability to extract private benefits of control. If family owners avoid creditor-monitoring, minority shareholders may incur agency costs resulting from a lack of scrutiny of managerial decision-making. Debtholders may benefit if family firms abstain from excessive risk-taking, however, more severe information asymmetries due to reduced creditor monitoring may offset this positive effect. Alternatively, evidence of lower debt levels may also be indicative of lack of willingness of debt providers to transact with family firms. If this is the case, then the evidence also points to a

significant shareholder-debtholder conflict in family firms. Figure 2.12 is a summary of the prior evidence suggesting lower use of debt in family firms.

Figure 2.12: Overview of prior evidence of lower debt levels in family firms

Author(s)	Sample	Key findings
Agrawal and Nagarajan (1990)	142 U.S. firms over the period 1979-1983	A high share of family firms exists among all-equity firms Family firms use less debt than non-family firms
Gallo and Vilaseca (1996)	104 Spanish firms in the year 1992	Family firms have lower debt ratios non-family firms
Mishra and McConaughy (1999)	315 large U.S. firms in the year 1987	Family firms use less debt than non-family firms As a result, they experience lower growth rates
McConaughy, Matthews, and Fialko (2001)	219 listed U.S. firms over the period 1986-1988	Family firms have lower leverage ratios than non-family firms
Hagelin, Holmén, and Pramborg (2006)	192 Swedish listed firms (427 firm-years) over the period 1997-2001	Family firms with dual class shares have lower leverage than non-family firms
Shyu and Lee (2009)	611 listed Taiwanese firms (3,055 firm-years) over the period 2002-2006	A negative association exists between excess control rights and short-term debt levels A negative association exists between CEO duality and short-term debt levels
Ampenberger et al. (2012)	660 German listed firms over the period 1995-2006	Family firms have lower leverage ratios than non-family firms Family management, in particular founder management, is decisive in explaining lower leverage ratios in family firms

However, a range of scholars have delivered evidence that challenges the findings mentioned above by suggesting that systematically higher debt ratios exist in family firms.

In their sample covering 2,116 Canadian SMEs, Wu, Chua, and Chrisman (2007) find that family firms use more debt than non-family firms. This effect is found both for family-owned firms and for family-managed firms. The authors argue that family firms are averse to equity financing due to control considerations, even to the extent that they are willing to compromise growth. This evidence suggests that family objectives may be aligned with those of debt providers as excessive risk-taking is less likely to occur in family firms. However, such behaviour may, on the other hand, give rise to a potential majority-minority conflict in family firms.

Additional evidence is provided by Colot and Croquet (2009), who analyse a sample of 391 Belgian SMEs from 2001 to 2003. The authors show that if additional capital is required and internal funds are limited, then family firms are more likely to rely on debt rather than equity capital. This is not only because control loss is less direct in the case of debt compared to equity. The authors also argue that family firms have an advantage over non-family firms when issuing debt. According to Colot and Croquet (2009), this is because their lower shareholder-debtholder agency costs facilitate access to long-term debt. Similarly, Croci, Doukas, and Gonenc (2011) find a higher preference for debt financing in 777 listed Western European firms over the period from 1998 to 2008. The authors posit that family firms avoid equity issues, a behaviour that is motivated by control incentives, because debt (as opposed to equity) is non-diluting. In addition, the authors find family firms to have a particular preference for long-term debt. Their interpretation is that family firms benefit from an advantage over non-family firms with regards to access to long-term debt, as they are perceived to be risk-seeking to a lesser extent than non-family firms. This lower risk preference aligns their interests with those of debt providers, making family firms preferred customers for debt providers.

Setia-Atmaja, Tanewski, and Skully (2009) document that family firms use higher debt levels than non-family firms in their sample of 316 Australian listed firms over the period from 2000 to 2005. According to the authors, higher debt levels lead to a reduced agency conflict between majority and minority shareholders based on the disciplining effect of debt posited by Jensen's *free cash-flow hypothesis* (Jensen (1986)). In a similar fashion, Shyu and Lee (2009) show in a sample of 611 listed Taiwanese firms over the period from 2002 to 2006 that family board representation leads to increased use of short-term debt capital. Their interpretation is that short-term debt is used to signal to other shareholders that no expropriation will occur.

Overall, the above evidence suggests higher debt levels in family firms. This may be because of control considerations linked to the dilution effect of equity that makes debt comparably attractive for family firms. This explanation suggests private benefits of control do drive decision-making in family firms, indicating the potential for majority-minority agency costs. An alternative explanation is the improved access to debt based on a more attractive risk profile from the perspective of creditors. This explanation points to an improved alignment of shareholder and debtholder interests. Lastly, signalling based on the disciplining

effect of debt may be driving higher debt ratios in family firms. This third explanation is indicative of aligned owner-manager interest. Figure 2.13 summarises prior evidence of higher debt levels in family firms.

Figure 2.13: Overview of prior evidence of higher debt levels in family firms

Author(s)	Sample	Key findings
Wu, Chua, and Chrisman (2007)	2,116 Canadian SMEs over the period 1998-2000	Family ownership reduces equity financing Owner-management reduces equity financing Family firms prefer private equity financing to public equity financing
Colot and Croquet (2009)	391 Belgian SMEs over the period 2001-2003	Family firms use more debt than non-family firms Family firms prefer debt to equity Family firms issue more long-term debt than non-family firms
Setia-Atmaja, Tanewski, and Skully (2009)	316 Australian listed firms (1,530 firm-years) over the period 2000-2005	Family firms employ higher debt levels than non-family firms
Shyu and Lee (2009)	611 listed Taiwanese firms (3,055 firm-years) over the period 2002-2006	A positive association exists between family board representation and the use of short-term debt
Croci, Doukas, and Gonenc (2011)	777 listed Western European firms over the period 1998-2008	Family firms have a preference for debt-financing Family firms avoid equity issues if possible Family firms use more long-term debt than non-family firms

A reconciliation attempt is provided by Schmid (2012). He provides insight into the influence of the institutional context on capital structure decision-making of family and non-family firms. For this purpose, he analyses 695 German firms over the 14-year period from 1995 to 2009. He also compares the behaviour of these firms to that of 4,007 international firms from 21 countries over the same period. The author shows that German family firms use less debt than non-family firms, and that the opposite effect can be observed in the international dataset. The author concludes that family firms' use of debt depends on the institutional environment. While family firms have an incentive for lower use of debt in creditor-focussed bank-based economies, the opposite incentive exists in markets that primarily focus on shareholder rights. In shareholder-focussed markets, shareholder rights are stronger than creditor rights, increasing the relative loss of control from equity

issues. Overall, the author's evidence is supportive of the hypothesis that families adjust the capital structure of their firms in order to maximise the family's control.

Another reconciliation attempt is made by King and Santor (2008). The authors analyse a dataset covering 618 Canadian firms over the period from 1998 to 2005. By separating the family firms in their sample into those using dual share classes and those with a single share class only, the authors are able to demonstrate that family firms with just one class of shares have higher financial leverage than non-family firms. Family firms with dual class shares have financial leverage ratios similar to non-family firms suggesting that the use of control-enhancing mechanisms reduces generally superior access to debt capital in family firms. This may be because the use of dual-class shares that allows families to expropriate other shareholders is interpreted by debt providers as a signal that the family may act in a self-serving way. As a result, debt providers fear that owner-families may also expropriate debt providers, for example by engaging in risk-shifting activities.

Figure 2.14 is a summary of the previous evidence that reconciles different findings on debt levels in family firms. It also includes a study by Coleman and Carsky (1999) that fails to document any impact of family governance on the use of debt. In their study of 4,637 small U.S. firms, the authors find size, age, and profitability to determine capital requirements and sources of funds. A study of Anderson and Reeb (2003b) is also included in Figure 2.14. Similar to Coleman and Carsky (1999), the authors do not find different leverage ratios for family and non-family firms in their panel dataset of 319 industrial S&P500 firms.

Figure 2.14: Overview of prior evidence reconciling different findings on debt levels in family firms

Author(s)	Sample	Key findings
Coleman and Carsky (1999)	4,637 small U.S. firms in the year 1993	Family firms use debt levels similar to non-family firms Rather, size, age, and profitability determine capital requirements and sources of funds
Anderson and Reeb (2003b)	319 S&P500 firms (2,108 firm years) over the period 1993-1999	Leverage ratios of family firms are similar to those of non-family firms
King and Santor (2008)	618 Canadian firms (2,758 firm-years) over the period 1998-2005	Family firms with one class of shares have higher financial leverage than non-family firms Family firms with dual class shares have financial leverage ratios similar to non-family firms
Schmid (2012)	695 German firms (5,638 firm-years) and 4,007 international firms from 21 countries (26,516 firm-years) over the period 1995-2009	Family firms' use of debt depends on the institutional environment In Germany (a bank-based economy), family firms use less debt than non-family firms Outside of Germany, family firms use more debt than non-family firms

Overall, evidence from capital structure decision-making in family firms is plentiful, yet inconclusive. Most scholars agree that capital structures in family firms differ significantly from those in non-family firms. However, while some scholars argue that family firms use less debt than non-family firms, based on risk aversion and related default risk, others argue that family firms have a preference for debt issues in order to avoid dilution effects from equity issues. Yet again others argue that factors such as firm size or the institutional environment may be explanators of debt ratios in family firms.³⁰ As such, prior research on capital structure decisions highlights the range of potential conflicts of interest in family firms. While specific family characteristics, such as more pronounced risk-aversion, have the potential to reduce shareholder-debtholder agency costs, there is a balance to be found with regards to non-family shareholders that bear the consequences of excessive risk-aversion in the form of majority-minority agency costs.

³⁰ Cf. p.58.

2.3.3.3 Characteristics of lending contracts

A range of studies also provide insight into financing terms used by capital providers when transacting with family firms in comparison to non-family firms. Evidence from characteristics of lending contracts can be insightful with regards to the specific provisions capital providers consider necessary in order to protect their interests.

Anderson, Mansi, and Reeb (2003) analyse firms' cost of debt in a sample of 252 S&P500 firms observed over the period from 1993 to 1998. Their data shows that the cost of debt capital is on average 32 basis points lower in family firms compared to non-family firms. The relationship between debt cost and family ownership is increases between 0% and 12% of ownership, at which point it hits an inflection point, and then decreases. Even at 12%, it remains below the cost of debt for non-family firms. The authors argue that family firms have lower agency costs because they "typically have undiversified portfolios, are concerned with firm and family reputation, and often desire to pass the firm onto their descendants" (Anderson, Mansi, and Reeb (2003), p.283). As a result, their interests are more aligned with those of creditors, making them attractive business partners for debt providers.³¹

Chua et al. (2011) investigate a sample of 1,267 new U.S. ventures in the year 2002. The authors argue that new ventures lack credibility from the perspective of debt providers, a limitation that can be alleviated if the firm is able to "borrow" social capital of the founder's family. In line with this reasoning, the authors show how family management in a new venture increases the chances of obtaining third party guarantees. Transgenerational succession intentions help to establish a positive relationship with debt capital providers, according to the authors. In this way, both family management and family ownership positively affect the amount of debt capital obtained by a new venture via third party guarantees, suggesting that family involvement alleviates agency concerns of debt providers in high-risk firms.

Bagnoli, Liu, and Watts (2009) analyse covenants in private debt contracts in a sample of 415 S&P500 firms. The data from 2,687 private debt contracts shows that contracts with family firms more frequently include liquidity covenants and net worth covenants. These types of provisions limit the firm in its ability to exploit

³¹ As an exception to these findings, Anderson, Mansi, and Reeb (2003) find that founder-descendant CEOs increase the cost of debt.

debt providers by reducing the scope for asset-shifting activities. The authors argue that such covenants are employed by family owners as a signal that they refrain from expropriation of debt providers. As such, they reduce the agency conflict between shareholders and debt providers. In the words of the authors, liquidity covenants and net worth covenants reduce “the agency costs that arise from the concentrated ownership and significant operational influence of family members” (Bagnoli, Liu, and Watts (2009), p.507). Evidence confirming this viewpoint is provided by Steijvers and Voordeckers (2009) for a sample of 443 small U.S. firms observed in the year 1993. They analyse the debt contract terms of family and non-family firms, focussing on interest rates, business collaterals, and personal collaterals. The authors find that family firms are more likely to use personal collaterals in loan contracts to mitigate the bank’s concerns regarding owner-manager opportunism as well as consumption of firm assets for family use. The authors argue that “by demanding personal collateral, the bank reduces the family owner-manager’s discretion, which is a better guarantee that the loan will be repaid” (Steijvers and Voordeckers (2009), p.343). The authors further find family firms to pay higher interest rates, as a risk premium is charged by debt providers in anticipation of expropriation through family managers.

The evidence obtained from studying debt contracts terms incurred by family firms is insightful, but, similar to the evidence from capital structure decisions, inconclusive. Some of the evidence, especially from covenants and the use of personal collateral, suggest higher shareholder-debtholder agency costs in family firms. However, there is also evidence suggesting higher alignment of interests with debt providers and consequently lower agency costs. In particular, data suggesting lower cost of debt and improved access to debt capital points in this direction. Figure 2.15 summarises the evidence of different agency costs in family firms compared to non-family firms derived from observations of differences in debt contract characteristics.

Figure 2.15: Overview of prior evidence of debt terms in family firms

Author(s)	Sample	Key findings
Anderson, Mansi, and Reeb (2003)	252 S&P500 firms over the period 1993-1998	Family ownership reduces cost of debt
Bagnoli, Liu, and Watts (2009)	415 S&P500 firms over the period 1985-2005	Family firms make more frequent use of covenants that restrict the firm's ability to divert cash and /or assets to shareholders Accounting numbers are used in covenants to increase transparency The use of control-enhancing devices increases the use of all types of covenants
Steijvers and Voordeckers (2009)	443 small U.S. firms in the year 1993	Family firms are more likely to pledge personal collateral in debt contracts
Chua et al. (2011)	1,267 new U.S. ventures in the year 2002	Family involvement in new ventures increases access to debt financing

2.3.3.4 Summary of prior financing-related findings

Overall, evidence from the field of financing policies suggests that there are significant differences between family and non-family firms, which may give rise to both family-specific agency costs and benefits.

The consensus view in the literature is that family firms prefer internal to external finance. Prior research indicates that family goals and preferences may result in underinvestment problems, suggesting that a majority-minority shareholder conflict may exist in family firms. Evidence from capital structure decisions is less unanimous. On the one hand, there is evidence that higher risk aversion drives lower debt levels in an effort to minimise default risk in family firms. This behaviour suggests interest alignment with debt providers, yet it also points to a potential conflict between family and non-family shareholders. On the other hand, higher debt levels suggest private benefits of control to drive the behaviour of those family firms that avoid equity issues. Non-family shareholders may bear the cost of these private benefits, indicating the existence of a majority-minority conflict. The body of research on debt contract characteristics is still at an early stage and has so far produced rather insular pieces of evidence. Studies analysing debt covenants and collaterals appear to suggest higher shareholder-debtholder agency costs in family firms. On the other hand, research on the cost of debt and on access to capital appears to suggest the opposite.

Similar to the research on performance and investment behaviour, the evidence regarding financing behaviour may be influenced by the sample and sample period used, the institutional and legal context of the analysis, the family firm definition applied, the use of control-enhancing devices, and, most likely, a number of unobserved factors. These may include the reputation of the respective family (firm), the type of family involvement, the qualifications of the relevant family members, or the choice between relationship financing and arm's length capital market financing.

2.3.4 Summary of prior empirical findings

Previous literature analysing the effects of family governance on performance, investment behaviour, and financing behaviour suggests that family firms differ significantly from non-family firms. Many scholars have provided insights into these three areas, and sub-areas thereof. Yet, the above overview illustrates that the question as to how family firms differ from non-family firms is complex and may be strongly dependent on the specific study parameters.

In particular, the heterogeneity of the family firm universe may be driving variation in results such as in the area of capital structure. Future research that compares various sub-sets of family firms may therefore be helpful in understanding the effects of the specific pathways families may use to influence their firms. Thus, it may prove insightful to capture different effects from family management, family ownership, the use of control-enhancing devices, or different types of generational involvement.

In addition, the above summary suggests that the various areas of corporate policy may be, to some extent, interdependent. For example, decision-making with respect to various sub-areas of investment policy may be jointly optimised, so that substitution effects may occur. Likewise, availability of finance may strongly impact the investment policy of a firm. The interpretation of a single investment or financing decision on a stand-alone basis can thus be challenging. In the future, researchers may want to take this into account when specifying their research designs.

A key challenge faced by researchers studying the drivers of decision-making in family firms is that only indirect or proxy-based approaches may be possible. This is because non-financial benefits, entrenchment, agency costs, or family influence

cannot be directly measured. As a result, the choice of proxies used can have a significant impact on the coefficients obtained.

Lastly, endogeneity concerns represent a fundamental challenge for the majority of corporate governance studies. For example, a range of unobserved factors are likely to have a significant impact on the dependent variable. Such factors may include family reputation, the qualification of the family members involved, or the question as to whether cross-generational transfer objectives apply. These omitted variables may affect results and bias coefficients. Reverse causality concerns are equally warranted given that some of the independent variables may actually drive family governance. For example, families may be more likely to remain invested and involved in high-performance firms rather than in low performance firms, which may bias results obtained in performance studies.

2.4 Research gaps in the family firm literature

2.4.1 Corporate time horizons in family firms

As Chapter 2.2.1 indicates, corporate time horizons have been frequently discussed as a factor differentiating family firms from non-family firms. In particular, research suggests that family firms tend to have longer time horizons than non-family firms due to cross-generational transfer intentions of the business owners (e.g., Dreux (1990), James (1999), Le Breton-Miller and Miller (2006)). Many scholars argue that these longer time horizons may have significant implications on investing and financing decisions and ultimately on performance of family firms (e.g., Bertrand and Schoar (2006), James (1999), Le Breton-Miller and Miller (2006), Zellweger (2007)).

While the theoretical foundation, such as the contributions of James (1999), Le Breton-Miller and Miller (2006), and Lumpkin and Brigham (2011), consistently suggests longer time horizons in family firms, empirical evidence is scarce to date. In addition, empirical studies tend to provide snapshots of corporate behaviour only, such as R&D behaviour (e.g., Block (2012), Munoz-Bullon and Sanchez-Bueno (2011)). However, only limited conclusions can be drawn from these snapshots. For example, R&D behaviour may not be independent from other areas of decision-making in the firm. Further, R&D is only an indicator of one type of long-term investment. Yet, if the theory of Lumpkin and Brigham (2011) holds,

then long-term orientation is an overarching rationale that permeates all areas of decision-making. Ironically, most studies on R&D suggest that family firms may have shorter time horizons, suggesting a significant discrepancy between theory and evidence in the field.

Because of the central role of time horizons in the theory and empirical studies on family firms, additional research shedding light on the time horizon characteristics of family firms would be helpful for advancing research on family firms. For this reason, Chapter 3 presents a novel approach for estimating corporate time horizons and provides empirical evidence regarding the differences in corporate time horizons of family firms compared to non-family firms.

2.4.2 Mergers & acquisitions in family firms

Chapter 2.3.2 has shown that the prior evidence regarding M&A-behaviour of family firms is inconclusive. From a theoretical point of view, various perspectives have been presented that may explain a negative effect of family governance on M&A (risk aversion, control considerations, financing constraints) or a positive effect of family governance on M&A (diversification, dividend trade-off). Additional research would be helpful in order to determine which arguments outweigh under which circumstances.

Another feature of previous research is that it exclusively focusses on listed firms, while unlisted firms have so far been neglected. However, the majority of firms, particularly family firms, do not have a stock market listing, so that the current research only reflects the behaviour of a small, and very specific, sub-set of family firms. Consequently, many of the results obtained may not be representative and thus not generalisable in the context of unlisted firms.³²

Because of the high share of unlisted firms in most economies, Chapter 4 analyses the M&A decision-making in family firms compared to non-family firms by explicitly accounting for the impact of listing on the relationship of family ownership and M&A decisions. It therefore contributes to closing the gap on this previously missing link in the research.

³² Pagano, Panetta, and Zingales (1998) provide an overview of the various reasons to go public.

3 Corporate time horizons in family firms

This chapter is based on Kappes and Schmid (2012).

3.1 Literature review

As discussed in Chapter 2.4.1, the literature on corporate time horizons in family firm is theoretically rich (e.g., Dreux (1990), James (1999), Le Breton-Miller and Miller (2006)). In contrast, the literature is less developed with regards to empirical evidence. Two key literature streams provide some insight into how corporate time horizons are reflected in corporate policy of family and non-family firms, namely:

Evidence from specific decision-making situations of intertemporal choice. Research in this area strongly focusses on R&D investments.

Evidence from special circumstances, such as external shocks, where reactions of firms to external events are investigated.

3.1.1 Prior evidence of investment-related corporate time horizons in family firms

The stream of literature studying the behaviour of firms in specific decision-making situations of intertemporal choice investigates corporate decision-making in the areas of R&D, internationalisation, and CapEx. These types of corporate investment signal a strong future orientation of the firm, as projects of these types tend to be characterised by long pay-off periods. In addition, investment cash-flow sensitivity is analysed as an indication of time horizons. This is based on the rationale that a strong association of the availability of internally generated cash-

flows and investments characterises an investment behaviour rooted in the short-term availability of cash rather than one linked to long-term objectives.

3.1.1.1 Research & development

Research & development (R&D) represents a decision-making situation in which the costs and pay-offs of a project occur in different time periods (e.g., Block (2012), Munoz-Bullon and Sanchez-Bueno (2011)). Large upfront payments have to be committed in order to undertake R&D projects. However, any returns of such investments are deferred and only occur in later periods. As a result, R&D projects initially have a negative implication on profits, while positive profit implications are not observable until later periods. Therefore, a long-term investment horizon is required in order to make R&D investments. Because of this different timing of costs and returns in R&D projects, R&D behaviour is frequently used as an indicator of corporate time horizons.

Chen and Hsu (2009) use a sample of 369 Taiwanese electronic firms to study R&D behaviour of family and non-family firms. The authors find family ownership to negatively influence R&D expenditure. Two explanations for this relationship are provided. The first is that family ownership is characterised by a high degree of conservatism that discourages R&D investment. The second is that R&D productivity may be higher in family firms, leading to a lower demand for R&D investment without compromising R&D output. However, the authors do not provide a measure of R&D productivity in their study. Therefore, the question as to what drives lower R&D investments in family firms remains unanswered. Assuming comparable R&D productivity in family and non-family firms, these results do not support the hypothesis that family firms are more long-term oriented than non-family firms from an R&D perspective. Munari, Oriani, and Sobrero (2010) analyse R&D investments using a sample of 1,000 listed European firms. Like Chen and Hsu (2009), the authors find that family-owned firms tend to invest less in R&D. They interpret lower R&D in family-owned firms to be the result of higher risk aversion of family owners that is based on the concentration of their wealth in the family business. This explanation is similar to the conservatism argument provided by Chen and Hsu (2009) and also suggests that, from an R&D perspective, family firms are less long-term oriented than non-family firms. In addition, Munari, Oriani, and Sobrero (2010) provide evidence that the effect is actually attributable to unique family ownership characteristics. When testing for the impact of state ownership on R&D, they do not find an equivalent effect. This

suggests that ownership identity, as opposed to ownership concentration, is likely to drive R&D investment levels. Munoz-Bullon and Sanchez-Bueno (2011) use a sample of 736 listed Canadian firms to study the effect of family governance on R&D intensity. The results confirm those of Chen and Hsu (2009) and Munari, Oriani, and Sobrero (2010). The higher risk aversion in family firms argued by previous authors is presented as a potential explanation. Moreover, Munoz-Bullon and Sanchez-Bueno (2011) state that intergenerational succession plans may limit risk-taking propensity in family firms. However, they also provide alternative explanations for the lower R&D intensity in family firms. For example, the family objective to remain in control may limit the ability to conduct large R&D projects. Alternatively, families may find it difficult to acquire external financing. Lastly, the authors present agency costs of altruism and agency costs of private benefits of control as a potential explanation, as agency costs may tie up resources that would otherwise be available for investment into R&D. Overall, these results suggest that R&D investments do not serve to support the hypothesis that the behaviour of family firms is more long-term oriented than the behaviour of non-family firms.

Block (2012) analyses both the R&D intensity and the R&D productivity of 154 U.S. firms. He categorises his sample firms into family firms, lone founder firms, and other firms. Similar to Chen and Hsu (2009), Munari, Oriani, and Sobrero (2010), and Munoz-Bullon and Sanchez-Bueno (2011), the author finds that family firms tend to commit fewer investments to R&D than non-family firms. In addition, R&D productivity is also found to be lower in family firms compared to non-family firms. The author argues that these findings indicate higher agency costs in family firms that over-compensate any potential benefits from family governance with regards to time horizons. While this interpretation does not rule out longer corporate time horizons in family firms, it suggests that any effect of extended time horizons is offset by other family-specific attributes. In particular, the author argues that agency costs of altruism may have an effect on corporate policy by focussing decision-making on firm survival and dividend extraction rather than on long-term oriented R&D investments.

Overall, research on R&D expenditure in family firms does not support the hypothesis that family firms are more long-term oriented than non-family firms. The work of Block (2012), which takes R&D productivity into account, adds to previous studies that focus on R&D intensity by ruling out the potential explanation that higher R&D productivity in family firms may explain their lower

R&D expenditure. Thus, a superior long-term orientation of family firms is not reflected in their R&D behaviour.

3.1.1.2 Internationalisation

The rationale for studying internationalisation activities is similar to the rationale for studying R&D. Like R&D, investments in internationalisation lead to a reduction in short-term profits, as resources are committed upfront in order to earn a return at a later point in time. For the investors of firms investing heavily in internationalisation, a long-term horizon is thus required.

Zahra (2003) studies the internationalisation activities of 409 U.S. manufacturing firms. The author analyses two proxies, namely international sales and the number of countries entered. The author finds that family governance has a positive effect on both international sales and the number of countries entered. The author concludes that this behaviour reflects longer time horizons in family firms and argues that these are driven by altruism towards descendants. By driving internationalisation efforts, altruistic family members create wealth and employment opportunities for future generations. As such, altruism motivates family decision-makers to accept short-term reductions in profit, according to the author. If internationalisation efforts can be considered to reflect long-term horizons, then this research suggests family firms to be more long-term oriented than non-family firms. Unfortunately, the study by Zahra (2003) is the only research into the internationalisation behaviour of family firms and may therefore not be generalisable, neither beyond the U.S. context, nor to industries other than the manufacturing sector. Further, it does not control for the status of internationalisation before investments are undertaken (such as the lagged number of countries a firm is active in or a regional concentration index of sales), so that other explanations for his results are possible. For example, family firms may have historically underinvested in internationalisation. Alternatively, family firms may invest into a larger number of smaller countries while non-family firms may concentrate on larger countries.

3.1.1.3 Capital expenditure

Fahlenbrach (2009) investigates three areas of corporate long-term investment in a sample of 2,327 listed U.S. firms. He analyses their R&D spending, capital expenditure (CapEx), and M&A transactions. Like R&D and internationalisation

investments, capital expenditure and M&A transactions require upfront commitments of capital with expected payoffs in later periods, initially leading to a negative effect on profits. Therefore, a long-term horizon is required for these types of investments. Fahlenbrach (2009) finds founder-CEO firms to invest more in R&D and capital expenditure than the control group. In addition, the author finds that founder-CEO firms make more frequent, but smaller and more targeted, acquisitions. Fahlenbrach (2009) argues that founder-CEOs tend to be more willing to take risks and, as a result, they are more likely to capitalise on growth opportunities. This approach is possible as founder-CEOs view their firm as their lifetime's achievement, a view that motivates them to apply a long-term approach in their investment behaviour. Non-founder family firms are included in the control group. As such, the results of Fahlenbrach (2009) support the hypothesis that founder firms (a subset of family firms) tend to be more long-term oriented than the control group. However, inferences about later generation family firms cannot be made from this study.

In a recent study, Anderson, Duru, and Reeb (2012) simultaneously investigate both R&D spending and capital expenditure of family and non-family firms. The authors denote the sum of R&D and capital expenditure as total long-term investment and find family firms to devote 7.5% fewer resources to total long-term investment than non-family firms. These results are unaffected by a differentiation into lone founder firms and multi-member family firms. In addition, these findings are robust to a separate analysis of different management types. Specifically, the results hold for both family-managed and externally managed firms. Anderson, Duru, and Reeb (2012) further find that family firms invest 31.05% less funds in R&D. In further analysis, the authors find that those family firms with high levels of ownership are particularly R&D averse. In addition, family firms with high firm risk (volatile stock returns), are found to invest particularly low shares of total assets into R&D. The authors argue that founding families tend to hold concentrated and undiversified investments (cf. also Heaney and Holmen (2008)). This wealth concentration acts as an incentive for influential family members to limit expenditure related to projects that are characterised by high risk and uncertain outcomes. Instead, they have an incentive to limit their personal risk exposure by restricting firm risk. Because R&D is both risky and characterised by uncertain outcomes, family firms therefore have an incentive to commit fewer resources to R&D. With regards to capital expenditure, Anderson, Duru, and Reeb (2012) find family firms to commit 15.55% more to CapEx than non-family firms. Overall, the results of Anderson, Duru, and Reeb (2012) do not suggest family

firms to be more long-term oriented than non-family firms, particularly from an R&D perspective. Larger investments in CapEx do not over-compensate lower investments in R&D in family firms, suggesting effects of risk aversion to outweigh any impact from extended time horizons in the context of investment policy in family firms.

3.1.1.4 Investment cash-flow sensitivity

Andres (2011) studies the investment cash-flow sensitivity of family versus non-family firms in a sample of 264 German firms. The author finds that the investment behaviour of family firms is less dependent on the availability of internal cash-flows. Rather, he finds the investment patterns of family firms to be more responsive to investment opportunities. Andres (2011) interprets this finding as evidence of lower agency costs of capital and a stronger aptitude to solve intertemporal financing problems. Pindado, Requejo, and La Torre (2011) both find lower investment cash-flow sensitivities in family firms. While they do find investment cash-flow to be associated with investment in family firms, the relationship is significantly weaker in family firms compared to the non-family firms in the authors' sample. They conclude that "family control -and the potential advantages attached to it, such as the longer investment horizons and the reputation concerns of owner families- facilitate less dependence of investment spending on internally generated funds" (Pindado, Requejo, and La Torre (2011), p.1398). This lower dependence on internal cash generation may facilitate long-term oriented investment strategies in family firms, while the stronger dependence on internally available funds is likely to reduce the time horizon-related flexibility of managers' investment strategies in non-family firms.³³

3.1.1.5 Summary of evidence of investment-related corporate time horizons in family firms

Overall, the evidence from R&D, internationalisation, and CapEx indicates that family firms may have shorter corporate time horizons than non-family firms. As such, the empirical evidence stands in contrast to theoretical arguments frequently applied in the family firm literature (e.g., Dreux (1990), James (1999), Le Breton-Miller and Miller (2006)). On the contrary, evidence from investment cash-flow

³³ For additional information regarding the investment cash-flow sensitivity of family and non-family firms, cf. Chapter 2.3.2.1.

sensitivities seems to support the hypothesis that family firms are characterised by longer time horizons than non-family firms. Figure 3.1 summarises the key studies from this stream of literature that provides insight into the differences in corporate time horizons of family and non-family firms.

Figure 3.1: Overview of prior evidence of corporate time horizons in family firms

Study	Sample	Findings	Interpretation of authors
Zahra (2003)	409 manufacturing firms in five U.S. states in the years 1997 and 2000	Internationalisation activities are more frequent in family firms	An altruistic attitude towards future generations motivates risk-taking and long-term orientation in family firms
Chen and Hsu (2009)	369 Taiwanese electronic firms (1,845 firm-years) over the period 2002-2007	R&D investments levels are lower in family firms than in non-family firms	R&D-related agency costs are higher in family firms than in non-family firms
Fahlenbrach (2009)	2,327 U.S. firms (13,881 firm-years) over the period 1993-2002	R&D investment levels are higher in family firms Family firms conduct more CapEx than non-family firms Family firms conduct more focussed M&A transactions	Higher long-term orientation in founder firms
Munari, Oriani, and Sobrero (2010)	1,000 listed firms from six European countries in the year 1996	R&D investments levels are lower in family firms than in non-family firms	Family firms are more risk-averse than non-family firms
Andres (2011)	264 German firms over the period 1997-2004	Cash-flow sensitivity is lower in family firms than in non-family firms	Family firms have a higher ability to solve intertemporal financing problems
Munoz-Bullon and Sanchez-Bueno (2011)	736 Canadian firms (1,764 firm-years) over the period 2004-2009	Family firms have lower R&D intensity ratios than non-family firms	Altruism and risk aversion effects outweigh long-term orientation effects in family firms
Pindado, Requejo, and La Torre (2011)	214 Austrian firms over the period 1991-1999	Cash-flow sensitivity is lower in family firms than in non-family firms	A less short-term oriented investment policy is employed in family firms
Anderson, Duru, and Reeb (2012)	2,000 largest U.S. firms (8,431 firm-years) over the period 2003-2007	Family firms conduct fewer R&D investments Family firms conduct more CapEx	Family firms are more risk-averse than non-family firms
Block (2012)	154 S&P500 firms (1,088 firm-years) over the period 1994-2003	Family firms conduct fewer R&D investments R&D productivity is lower in family firms	Family firms have higher R&D-related agency costs

3.1.2 Prior evidence of the reaction to pressure as an indication of corporate time horizons in family firms

The stream of literature that collects evidence from observing the reactions of family and non-family firms to special circumstances, such as external shocks, provides additional insight into corporate time horizons. A number of studies have analysed such situations of pressure in order to shed light on the effect of family governance on intertemporal choices.

3.1.2.1 Industry cyclicalities

In a sample of 510 European firms, Zellweger (2007) investigates whether family ownership is related to industry cyclicalities. The author argues that investors with long time horizons have lower agency costs of capital. This is because the marginal risk of an investment decreases as time horizons increase. As a result, investments with higher risk or lower return can be acceptable for long-term oriented investors. Therefore, when comparing more cyclical (higher risk) to less cyclical (lower risk) industries, investment into more cyclical industries can be more attractive to long-term oriented investors than to short-term oriented investors. This is because volatility represents a threat to short-term oriented investors. However, because fluctuations cancel out over time, volatility represents a lesser threat to long-term oriented investors. In line with longer time horizons in family firms, Zellweger (2007) finds a positive relationship between family ownership and industry cyclicalities.

3.1.2.2 Propping

In line with Zellweger (2007), a study by Friedman, Johnson, and Mitton (2003) also indicates longer time horizons in family firms. When studying a sample of more than 2,000 firms during the Asian 1997 Financial Crisis, they find that families engage in “negative tunnelling” when their firms experience an external shock. They label this negative tunnelling effect “propping,” which refers to the use of private funds of controlling shareholders to support the firm during a shock, to the benefit of all shareholders. The explanation offered by the authors for this propping behaviour in family firms is their long-term orientation that is the result of the strong bond between the family and the firm. For this reason, families invest in order to support the firm through a profit trough.

3.1.2.3 Sensitivity to profit shocks

Similar to Zellweger (2007) and Friedman, Johnson, and Mitton (2003), Villalonga and Amit (2010) investigate the reaction of family firms to profit shocks. For a sample of more than 2,000 listed U.S. firms, the authors find that family firms are less sensitive to profit shocks than non-family firms. The results therefore provide further evidence in support of the theory that family firms are more long-term oriented than non-family firms. In addition to direct propping, the authors suggest that indirect propping may occur in family firms. Based on their own long-term commitment to the firm, family firms may benefit from longer-term contracts with suppliers (e.g., capital suppliers or suppliers of production input factors). In a situation such as an external shock, these suppliers provide the firm with greater flexibility in payments and therefore greater resilience to the crisis.³⁴ This indirect propping can improve chances of long-term firm survival. In addition, the authors find stock turnover (trading volume in relation to shares outstanding) to be lower in family firms. Stock turnover is used as an approximation of time horizons in their study, the rationale being that the longer the average investor holds on to his/ her shares, the more he/ she is likely to be interested in the long-term development of the firm. Moreover, the longer shareholders hold on to their shares, the longer the payback period they implicitly accept as part of the firm's investment strategy and the higher the acceptance of short-term sacrifices in return for long-term value creation. This data is indicative of patient capital arguments and supports the hypothesis that family firms (can afford to) have longer corporate time horizons than non-family firms.

Lee (2006) further provides evidence from the 2001 recession that shows that family firms are also less likely to make employees redundant when they experience a temporary market downturn. This is despite the fact that family firms are equally impacted by the recession. These results can be interpreted as more long-term oriented behaviour of family firms. This is because these firms show a greater awareness of the future need for their employees as well as the firm-specific skills and capabilities of these employees. In contrast, lay-offs result in a loss of skills and firm-specific capabilities, and firms laying-off significant proportions of their workforce will face recruitment and training costs following

³⁴ The authors refer to the argumentation of Sraer and Thesmar (2007) who apply a similar rationale for lower wages in family firms. Sraer and Thesmar suggest that, based on implicit long-term contracts, employees accept lower wages as they perceive their jobs to be less risky given the credibility of the family's commitment to the firm and its staff.

the crisis, potentially leading to delays in its processes if recruiting and training cannot be completed in time. In addition, some skills and competencies may not be replaced by hiring new employees. This particularly relates to tacit knowledge.

3.1.2.4 Divestiture in crisis

Zhou, Li, and Svejnar (2011) study the divestiture behaviour of family and non-family firms during the 1997 Asian Financial Crisis. Their sample consists of 214 parent companies listed on the Stock Exchange of Thailand (SET), and their 1,145 subsidiaries. The authors find that family firms behave similarly to non-family firms before the crisis. During the crisis, the authors find that family firms divest fewer subsidiaries in core business segments than non-family firms. They also maintain a lower divestiture level following the crisis. This is consistent with the hypothesis that family firms' longer time horizons allow them to avoid "fire-sale" (Zhou, Li, and Svejnar (2011), p.274) of their core assets when the firm is subject to external pressure. As such, the results obtained by Zhou, Li, and Svejnar (2011) can be interpreted as a less short-term oriented behaviour of family firms.

3.1.2.5 Summary of evidence of the reaction to pressure as an indication of corporate time horizons in family firms

The prior evidence from observing the reactions of family and non-family firms in special circumstances, such as external shocks, is generally supportive of longer time horizons in family firms. It is also consistent with the findings of Zahra (2003) on internationalisation activities, the evidence provided by Fahlenbrach (2009) on R&D, CapEx, and M&A, and the evidence with respect to CapEx provided by Anderson, Duru, and Reeb (2012). At the same time, this evidence stands in contrast to most observations regarding R&D behaviour in family firms, such as the findings presented by Block (2012), Chen and Hsu (2009), Munari, Oriani, and Sobrero (2010), and Munoz-Bullon and Sanchez-Bueno (2011).

The inconclusiveness of prior evidence calls for additional research on corporate time horizons in family and non-family firms to provide further insight into the factors driving intertemporal choices. Additional evidence extending the knowledge as to whether intertemporal decision-making is affected by different ownership and/ or governance structures would be particularly helpful in advancing the family firm literature. The above overview of prior evidence indicates that it may be difficult to make inferences about corporate time horizons from studying

individual indicators, such as R&D behaviour on a stand-alone basis. Although all these studies control for a number of factors, they may suffer from omitted variables bias, as reasons other than corporate time horizons may be driving R&D behaviour. Such factors may include differences in business models, the choice to outsource R&D to contract R&D providers, the choice to buy-in R&D knowledge through licensing-in or M&A, the use of R&D joint ventures, differences in accounting practices, or differences in value chain coverage within the same industry. Similar arguments apply to other areas of corporate policy, such as the internationalisation behaviour studied by Zahra (2003). In addition, interdependencies are likely to exist between different areas of investment. For example, large investments into the firms asset base (CapEx) are likely to limit funds available for R&D. Thus, it is possible, that such studies on individual indicators, although valuable in providing evidence with respect to specific decision-making situations, may be insufficient in explaining corporate time horizons on their own. As such, the more integrated studies by Fahlenbrach (2009) on R&D, CapEx, and M&A and of Anderson, Duru, and Reeb (2012) are pointing the way to a more comprehensive approach to assessing corporate time horizons. Figure 3.2 summarises the key studies from this stream of literature that provides insight into the differences in corporate time horizons of family and non-family firms.

Figure 3.2: Overview of prior research on reaction to pressure as an indication of corporate time horizons in family firms

Study	Sample	Findings	Interpretation of authors
Friedman, Johnson, and Mitton (2003)	2,000 firms during the Asian Financial Crisis in 1997	Family firms are more likely to engage in propping during a crisis	Family members are more committed to the firm's long-term development
Lee (2006)	403 S&P500 firms over the period 1992-2002	Family firms show a higher employment stability during a crisis	Family firms are more long-term oriented than non-family firms
Zellweger (2007)	510 European Dow Jones STOXX 600 firms in 2002	Family firms are more often found in industries with high cyclicity	Family firms have a more long-term orientated approach and lower agency cost of capital than non-family firms
Villalonga and Amit (2010)	2,110 listed U.S. firms in 2000	Family firms show a lower sensitivity to profit shocks	Family firms have a longer-term commitment to the firm's success than non-family firms
Zhou, Li, and Svejnar (2011)	214 parent companies and 1,145 subsidiaries listed on the Thai Stock Exchange over the period 1994-2003	Family firms have lower divestiture rates in a crisis than non-family firms	Longer time horizons allow family firms to avoid fire-sale of their core assets in times of crisis

3.2 Hypotheses exploring the effect of family governance on corporate time horizons

3.2.1 Theoretical framework

3.2.1.1 Principal-agent theory

Principal-agent theory (or *agency theory*) was developed by Jensen and Meckling (1976). As described in Chapter 2.2.1, the theory describes situations in which a principal (owner) hires an agent (manager) to act on his/ her behalf. For the agent to act on behalf of the principal, decision-making is delegated to the agent. Two key assumptions underlie *agency theory* and are central to the predictions of

outcomes in a principal-agent setting, namely information asymmetry and utility-maximisation of both principal and agent.

Information asymmetry: The model assumes that informational asymmetries exist between the principal and the agent. Because the agent is more involved in the decision-making, he/ she benefits from superior knowledge.

Utility-maximising subjects: In addition, the theory assumes that both the principal and the agent are interested in maximising their respective utility. However, the utility-maximising course of action for the agent may conflict with the best course of action from the principal's perspective.

Based on the superior information available to the agent, the agent may be in a situation to maximise personal utility at the cost of the principal. Because it is unfeasible to design contracts that cover all potential contingencies, principal-agent situations are therefore costly for the principal. Jensen and Meckling (1976) specify three particular types of costs that principals incur when delegating decision-making power, namely monitoring costs, bonding costs, and a residual loss.

Monitoring costs: Costs may arise as a result of monitoring activities that the principal engages in in order to reduce information asymmetries and accordingly lessen the scope for diverging behaviour by the agent. These costs are incurred by the principal who undertakes the monitoring.

Bonding costs: Agents may engage in activities to reduce information asymmetries and to signal to the principal that he/ she is acting on the principal's behalf. Such activities may include voluntary reporting or the creation of a supervisory board. While the agent makes these bonding decisions, the resources used to finance such bonding are company resources and therefore bonding costs are ultimately incurred by the principal.

Residual loss: Even in the presence of effective monitoring and strong bonding, incomplete contracts still allow for a residual loss to occur. This residual loss represents the reduction in the principal's welfare after paying for monitoring and bonding costs that is due to the divergence of the agent's actions from the best course of action from the principal's perspective.

The sum of monitoring costs, bonding costs, and residual loss make up total agency costs in the framework of Jensen and Meckling (1976).

3.2.1.2 Intertemporal choice in an agency framework

A key area in which the interests of principals and agents may differ is with regards to their respective temporal preferences (Schotter and Weigelt (1992)). In general, the separation of ownership and control enables firms to survive infinitely and beyond the life time of any individual involved in the firm. Owners can appoint a new manager if required, and shareholders can sell their shares to other individuals or institutions, particularly if the firm is listed and a secondary market for equity securities exists. As such, the continuation of the business is independent of either individual owners (principals) or managers (agents). The firm as such can therefore be considered to have an infinite horizon. Because of this, many theories as well as practical concepts are based on a going concern assumption. For example, this is the case in the context of business valuation.

In contrast, the involvement of an individual manager (agent) in a firm is naturally limited. This can either be due to contractual terms that specify a finite employment term, the owner's decision to terminate the employment (for example because of performance reasons), the manager's decision to terminate employment (for example, because of alternative career opportunities), or simply because the manager reaches the age of retirement. As a result, the horizon of a manager is naturally limited by his/ her expected tenure. Similarly, the horizons of individual owners may vary significantly. While some may have very long-term investment horizons, others may not intend to hold on to their shares beyond the short-term.

3.2.1.3 Agency conflicts related to intertemporal choice

In the case of different time horizons of the owner and the manager of a firm, decisions with an intertemporal component may be valued differently by the two parties. Such situations of intertemporal choice occur whenever the costs and pay-offs of a decision are incurred in different time periods (Loewenstein and Thaler (1989)).

Definition 3.1: Intertemporal choice

Decision-making situation, in which the costs and pay-offs occur in different time periods.

For example, an investment undertaken with the objective to develop a new technology requires the up-front decision to commit resources and effort into the development early on while commercialisation and accordingly payback from the investment will occur at a later stage. Such a project requires a preference for the long-term, as the benefits from pursuing the project occur with a significant delay, while the costs are incurred early on.

If a principal and an agent have different temporal preferences, the optimal intertemporal choice from the principal's perspective will differ from the optimal intertemporal choice from the agent's perspective. In such a case, the manager can diverge from the owner's preferred choice if he/ she has an informational advantage. Prior research has revealed a tendency of managers to apply higher average discount rates than shareholders when evaluating long-term projects (e.g., Schotter and Weigelt (1992)). A number of reasons explaining this managerial preference for the short-term have been identified, including job market incentives and takeover threats.

Job market incentives: According to *agency theory*, a manager facing a choice of alternative job opportunities will always choose the opportunity that maximises his/ her utility. For this purpose, a manager compares the utility of his/ her current job with the utility of alternative jobs available. In order to maximise the utility of external job opportunities, managers need to signal their ability on the labour market. Strong short-term results are considered to be a credible signal of managerial ability on the job market, such that managers have an incentive to maximise short-term results. By pursuing projects that pay off over a long period of time, managers forego the opportunity to signal their ability, because such projects have a negative impact on short-term profitability. By investing for the long-term, they thus reduce the number of external job opportunities available to them. Such a course of action does not maximise managerial utility. Instead, managers are more likely to have a preference for safe projects that reveal good news early on (Baysinger, Kosnik, and Turk (1991), Campbell and Marino (1994), Hirshleifer and Thakor (1992), Larcker (1983), Narayanan (1985), Porter (1992)). Recently, Kaplan and Minton (2011) also showed that CEO turnover is strongly linked to stock performance, indicating that managers not focussing on short-term stock price are more likely to be replaced

Takeover threats: If a firm is undervalued, the risk of the firm being taken over increases. In the case of listed firms, stock prices tend to be closely correlated with short-term results. This is because many investors are highly diversified and are

therefore unable to analyse each investment in detail. For reasons of simplicity, short-term results are therefore a frequently used proxy for the attractiveness of a stock. Undertaking long-term investments is therefore challenging for listed firms, as such long-term investments initially have a negative impact on short-term results and are therefore likely to lead to an undervaluation of the firm's shares. Because takeovers typically involve a change in management on the side of the target, managers have an incentive to avoid such under-evaluation if possible as undervalued firms are more likely to become takeover targets. This leads to an incentive to focus on the short-term (Hirshleifer and Thakor (1992), Jacobs (1991)). *Agency theory* predicts that managers will act upon these incentives, resulting in sub-optimal outcomes (agency costs) for the principal.

3.2.2 Hypotheses development

Its generic structure has led to the popularity of *agency theory* in many areas of research. In particular, corporate governance research is frequently based on *agency theory* and represents an area, in which *agency theory* has become a dominant theoretical framework. However, the simplicity of *agency theory* and its strong assumptions have also triggered criticism and a repeated call for refinement of the theory, as well as for caution with regards to the generalisation of predictions derived from *agency theory* (e.g., Eisenhardt (1989)).

The evolution of *agency theory* and the learnings from empirical research conducted within agency frameworks have highlighted that the specific characteristics of both principals and agents can alter the predictions of decision-making outcomes in a principal-agent setting. As a result, many previous studies have taken the identity of subjects into account when deriving predictions and interpreting empirical results (e.g., Cucculelli and Marchionne (2012), Dam and Scholtens (2012), Johnson and Greening (1999), Krishnamurthy et al. (2005), Munari, Oriani, and Sobrero (2010)). Such results do not question that both principals and agents maximise utility. However, they indicate that there may be significant within-agent as well as within-principal variation in utility functions. Prior research shows that this within-variation may be significantly influenced by the specific characteristics and preferences of subjects studied, and that subject identity can be a major determinant, or at least a useful approximation, of these characteristics and preferences.

With regards to owner and manager identity, family firms represent a special case, as family members have been found to have a range of unique characteristics and preferences (e.g., Miller and Le Breton-Miller (2003)). As a result, the applicability of *agency theory* in the context of family firms has been much discussed and alternatives have been proposed (e.g., Chrisman et al. (2007), Le Breton-Miller and Miller (2009), Miller and Le Breton-Miller (2006)). In particular, their unique governance characteristics may have the potential to question the validity of the assumptions of *agency theory* and therefore affect decision-making outcomes. This may be particularly true with respect to corporate time horizons. The following section summarises how family governance may impact agency-theoretical assumptions and therefore result in unique predictions of corporate time horizons in family firms.

3.2.2.1 The effect of family management on corporate time horizons

When studying corporate choices in a principal-agent framework, two main theoretic reasons exist why family managers may have utility functions that differ from those of non-family managers. These two theoretic reasons concern cross-generational family utility and family consumption, both of which may enter utility functions as separate family firm-specific elements and therefore lead to different corporate time horizons in family-managed firms.

3.2.2.1.1 Transgenerational effect

Prior research has found that family managers can be characterised by an altruistic attitude towards other members of the family. For example, Schulze, Lubatkin, and Dino (2003b) summarise the previous literature by noting that “altruism compels parents to care for their children, encourages family members to be considerate of one another, and fosters loyalty and commitment to the family and firm” (Schulze, Lubatkin, and Dino (2003b), p.475). In the case of altruistic attitudes of family managers, the utility function of the manager can include a family utility element. This means that any utility accruing to family members other than the manager indirectly represents utility for the manager himself. Decision-making outcomes that affect another family member’s utility therefore have the potential to influence the manager’s decision-making choice. This type of effect does not exist for a non-family manager, as his/ her family’s utility is typically independent of corporate decisions, with the exception of the manager’s compensation package. However,

because the family and the firm are often closely intertwined in the case of family firms, family utility can significantly influence the family manager's utility function.

If the family's utility is part of a manager's utility function, it is likely that this applies to utility of the whole family. In particular, it may include the utility of multiple generations of the family, therefore including the utility of future family generations (Arregle et al. (2007), Mishra and McConaughy (1999), Schulze et al. (2001), Schulze, Lubatkin, and Dino (2003b), Steier (2003), Zellweger (2007)). This additional utility derived from the wellbeing of future family generations can provide an incentive for the manager to adopt a balanced view with regards to time horizons when making decisions. This is because he/ she will weigh the impact on current family generations and the effect on future generations. Compared to a non-family manager who will exclusively assess the impact on his/ her personal utility, the family utility element in the family manager's utility function may therefore lengthen his/ her decision-making horizon. This creates a unique incentive for family managers to adopt a long-term oriented corporate policy (James (1999), Le Breton-Miller and Miller (2006), Villalonga and Amit (2010)). For example, Zahra (2003) finds that family managers are likely "to proceed with internationalisation if it improves their family's employment and involvement, despite the potential reduction in short-term payoffs as resources are shifted to support internationalisation" (Zahra (2003), p.507). If the concern for future generations drives all areas of corporate decision-making in family firms, as suggested by Lumpkin and Brigham (2011), then family-managed firms can be expected to have longer corporate time horizons than non-family firms. In the following, the above described effect is labelled the *transgenerational effect*.

3.2.2.1.2 Family consumption effect

However, as Schulze, Lubatkin, and Dino (2003b) note, altruism may also have "a dark side in that it can give both parents and children incentive to take actions that can threaten the welfare of the family and firm alike" (Schulze, Lubatkin, and Dino (2003b), p.474).

Agency theory assumes that utility maximising managers have an incentive to consume on the job by using company resources for their personal benefits. For example, this may include the use of a company car for private purposes or more convenient business travel options that negatively impact the firm's profitability (in the cases mentioned either via faster depreciation or an increase in travel expenses)

while representing utility to the manager. An altruistic family manager whose utility function includes family utility may not only have an incentive to maximise personal on-the-job consumption. He/ she may also encourage on-the-job consumption of other family members, especially if additional family members are involved in the business. If this is the case, an incentive exists for the family manager to use firm resources to pursue strategies that primarily benefit the family rather than the owners. For example, the family manager may have an incentive or even be expected by other family members to provide high salaries, interesting careers, expensive perquisites, or large bonus payments for other family members, even if they do not have relevant qualifications or work experience or even if their performance remains below expectations. Such behaviour may lead to productivity loss in the firm (Demsetz (1983)).

When firm resources are used in the interest of the family rather than the in the interest of the firm's shareholders, the opportunity cost of such behaviour is that these resources are not available for productive use in the firm. Resources available for investments into long-term projects are therefore likely to be less abundant in family firms with a high level of family consumption. Family managers may actually want to explicitly avoid long-term projects if those are perceived to deprive the family of consumption (e.g., Block (2012), Miller, Le Breton-Miller, and Lester (2011), Zahra, Hayton, and Salvato (2004)). If this is the case, then family-managed firms are likely to be less long-term oriented than non-family firms. In the following, the above described effect is labelled the *family consumption effect*.

3.2.2.1.3 Hypotheses on the effect of family management on corporate time horizons

The relative impact of the transgenerational effect and the family consumption effect determine whether family firms have comparatively shorter or longer corporate time horizons than non-family firms.

Hypothesis 3.1

If the transgenerational effect dominates the family consumption effect, family management has a positive effect on long-term orientation.

Hypothesis 3.2

If the family consumption effect dominates the transgenerational effect, family management has a negative effect on long-term orientation.

3.2.2.2 The effect of family ownership on corporate time horizons

When analysing corporate choices in a principal-agent framework, two main theoretic reasons exist why family owners may also have a utility function that differs from that of non-family owners. These two theoretical considerations concern family-specific risk preferences and private benefits of control, both of which may enter utility functions as separate family-specific elements and therefore affect corporate time horizons in family-owned firms.

3.2.2.2.1 Risk aversion effect

Prior research has shown that family firms tend to be characterised by high concentration of ownership in the hands of the family. In order to achieve and maintain this high degree of ownership concentration, family firm owners waive the benefits of diversification of unsystematic or specific risk that is inherent in holding a single undiversified investment (Heaney and Holmen (2008), Markowitz (1952)). As a result, family firm owners with concentrated ownership positions are exposed to a higher overall level of risk (the sum of systematic risk and unsystematic risk) than diversified investors. The latter are only exposed to systematic or market risk, however they are not exposed to any unsystematic or diversifiable risk.

For owners that pursue such a concentrated investment approach, an incentive may exist to reduce the risk of the single asset they hold. Because shareholders are able to influence corporate policy via the annual shareholder meeting, it is possible that influential shareholders will vote for a conservative corporate strategy that minimises firm risk and therefore reduces their personal risk exposure. Owners with large blocks of shares, such as controlling families, may even be able to influence management decisions on a more frequent and more direct basis than via the shareholder meeting, because they are likely to have direct access to management, particularly if they have been involved in the firm's operations in the past (e.g., Anderson, Duru, and Reeb (2012), Fama and Jensen (1985), La Porta,

López-De-Silanes, and Shleifer (1999), Miller, Le Breton-Miller, and Lester (2010), Morck and Yeung (2003), Shleifer and Vishny (1986)).

Because a characteristic of long-term projects is that pay-offs only occur far into the future, these payoffs are characterised by a significant degree of uncertainty, as changes in the external environment as well as internal conditions may change between the time of decision-making and the occurrence of returns. As a result, long-term projects tend to be perceived as riskier than short-term projects, *ceteris paribus*. Therefore, they may be less attractive to family owners with concentrated ownership positions (Fama and Jensen (1985)). As a result, family owners may have an incentive to influence management to prioritise low-risk short-term projects.

Moreover, if such large block-owners rely on dividend payments as their main source of personal income, they may also have an incentive to exert pressure on management to produce strong short-term results that allow for such high dividend payments. Family owners with large blocks of shares may specifically use their voting power to veto long-term investments in the firm in an effort to safeguard their personal (short-term) dividend payments. This may result in a shift of managerial attention to the short-term. The opportunity cost of such a policy is a reduction of resources available for investment in long-term projects. If this behaviour is observable, then family firms may be less long-term oriented than non-family firms. In the following, the above described effect is labelled the *risk aversion effect*.

3.2.2.2.2 Patient capital effect

A unique characteristic of family firms is the duality of business and family goals that may determine a family firm's development and decision-making behaviour (e.g., Chrisman, Chua, and Sharma (2005), Chua and Schnabel (1986), Zellweger et al. (2011)). This is because the family's identity, tradition, reputation, and influence are likely to be strongly intertwined with the firm and spill-over effects can occur in both directions. For example, the firm's reputation may be significantly linked to the family's reputation, and changes in the family's reputation can thus have a strong impact on the firm's image. At the same time, the family's reputation may depend on the actions of the business, and any negatively perceived actions of the business can have an effect on the family's reputation in the local community, in the industry, among customers, or among business partners

such as banks or suppliers of input factors (e.g., Block (2010), Dyer and Whetten (2006)).

Because of this mutual dependence, family owners may have an incentive to remain in control of their firm to maintain the basis from which they derive their identity, their tradition, or their reputation (Astrachan and Jaskiewicz (2008), Burkart, Panunzi, and Shleifer (2003), Gómez-Mejía et al. (2007), Zellweger and Astrachan (2008)). Only when the family has sufficient control over corporate decisions, effects of business actions on the family can be influenced according to the family's preferences. This may involve the vetoing of decisions that may have a negative effect on the family or the promotion of business initiatives that enhance the family's reputation. As a result, family owners have an incentive to hold on to their investments and keep their financial capital invested the firm over the long-term.

Some authors argue that these additional benefits family owners derive from being in control of their firms may, to some extent, even lead to a willingness to sacrifice financial returns (e.g., Gómez-Mejía et al. (2007), James (1999), Tagiuri and Davis (1992)). As a result, there may be less pressure on management to produce strong short-term financial results. Rather, family owners may shift the focus to maintaining long-term family control and, in the process, endow the firm with patient capital. This patient capital is unique in that it is committed to the firm for an indefinite period without threat of liquidation in the near term.

For the manager, the firm's endowment with patient capital provides him/ her with a significant degree of flexibility in resource allocation. This particularly applies to resource allocation across periods of time and therefore has the potential to reduce pressure on short-term results and to facilitate investment in projects with longer project periods. As a result, patient capital allows managers to take a long-term view and choose investments that maximise long-term success of the firm (Anderson, Mansi, and Reeb (2003), Graves (1988), Le Breton-Miller and Miller (2006), Porter (1992), Reynolds (1992), Sirmon and Hitt (2003), Stein (1988), Zellweger (2007)). If this is the case, then family-owned firms can be expected to be more long-term oriented than non-family firms. In the following, the above described effect is labelled the *patient capital effect*.

3.2.2.2.3 Hypotheses on the effect of family ownership on corporate time horizons

The relative impact of the risk avoidance effect and the patient capital effect determine whether family firms have comparatively shorter or longer corporate time horizons than non-family firms.

Hypothesis 3.3

If the patient capital effect dominates the risk aversion effect, family ownership positively affects long-term orientation.

Hypothesis 3.4

If the risk aversion effect dominates the patient capital effect, family ownership negatively affects long-term orientation.

3.2.2.3 The impact of pressure on the relationship between family governance and corporate time horizons

External pressure has the potential to impact corporate priorities and therefore to alter decision-making outcomes. This also applies to corporate priorities with regards to intertemporal choices, as increasing pressure on a firm can result in a stronger need for the firm to signal its quality to its stakeholders. This may be particularly relevant in the context of public capital markets.

For example, Campello, Graham, and Harvey (2010) have found that, in response to financial shortages, firms tend to cut technology and capital spending, to reduce employment, to sell assets in order to fund operations, to cancel planned investments, and to pass up attractive investment opportunities. As such, the analysis of situations of increased pressure provides the ultimate “acid test” of corporate priorities because such tests focus on situations where the opportunity costs of certain activities are higher than under non-pressure circumstances. From a methodological point of view, the analysis of shocks (if effects are appropriately isolated) also provides the advantage of reducing concerns regarding reverse causality bias. This is because, by definition, shocks cannot be anticipated and therefore the reactions to rather than the anticipation of a shock will be measured. For these reasons, the analysis of reactions to pressure is a frequently used method

in empirical corporate governance research. Figure 3.2 (Chapter 3.1.2) shows those studies dealing with reactions to pressure that have been conducted previously in the context of family firms.

Both prior empirical findings³⁵ and a number of theoretical rationales suggest that family governed firms may react differently to external pressures than non-family firms. The theoretical arguments particularly focus on variations of those mentioned in Chapter 3.2.2.1 and Chapter 3.2.2.2. These are the transgenerational effect and the family consumption effect in family-managed firms, and the risk aversion effect as well as the patient capital effect in family-owned firms.

The following is a summary of how pressure on a firm may affect time horizons in family firms. Chapter 3.2.2.3.1 focusses on a potential effect of family management. Chapter 3.2.2.3.2 addresses family ownership.

3.2.2.3.1 The effect of family management

Family utility: As described in Chapter 3.2.2.1, the altruistic attitude of a family manager may add a family utility element into the family manager's utility function. This family utility element reflects the utility other members of the family, including future generations of the family, derive from the manager's decision-making and therefore has the potential to lengthen the manager's time horizon. To which extent the manager's time horizon lengthens depends not only on the absolute utility to both the manager himself and the family, but also on the weight applied to family utility in the manager's overall utility function. This can depend on a number of factors, such as the existence of children and/ or grandchildren, the quality of the relationship with the manager's children and grandchildren, the degree of involvement of other members of the family in the business, or the degree to which the family is involved in corporate decision-making (e.g., Astrachan, Klein, and Smyrniotis (2002)).

When a firm is subject to pressure, either due to its standalone underperformance or because of an external shock to the industry or the economy as a whole, the weights applied to different elements of a family manager's utility function may differ from those used under normal conditions. For example, altruistic considerations may lose importance in situations when personal utility is threatened, therefore it is possible that the relative weight assigned to personal

³⁵ Cf. Chapter 3.1.2.

utility increases at the expense of family utility during times of pressure, thus reducing the effect of altruism on time horizons in family firms during times of pressure. Also, vis-à-vis family shareholders that rely on dividend payments of the firm, a strong emphasis on future generations may be difficult to justify during times of pressure when funds are scarce. Vis-à-vis non-family shareholders, family managers may find it even more difficult to make a case of their concern for future generations when improving short-term performance is of particular importance.

Family consumption: As explained in 3.2.2.1, the utility function of a family manager may include a family on-the-job consumption element in addition to a personal on-the-job consumption element. This additional element reflects the use of firm resources in the interest of the family rather than in the interest of the firm and has the potential to divert resources away from long-term investments. In the most extreme case, long-term investments are perceived to deprive the family of consumption and may be discouraged, leading to a shortening in the manager's time horizon.

When the firm comes under pressure, it is possible that family consumption may become a more important pillar of family income. For example if dividend payments are cut in order to manage cash-flow and to pay for day-to-day operating expenses the residual cash available for distribution to shareholders may be lower. If this is the case, then consumption may become even more attractive and pressure on the family manager to facilitate family consumption may rise. As a result, even fewer resources may be available for pursuing long-term strategies, leading to a potential shift in time horizons towards the short-term (Lambert and Larcker (1991)). Overall, the question as to whether family firms are more or less long-term oriented than non-family firms during times of pressure depends on whether the family consumption effect or the transgenerational effect predominates during times of pressure.

Hypothesis 3.5

Compared to non-family firms, family-managed firms are more long-term oriented under pressure if the transgenerational effect dominates the family consumption effect, and vice versa.

3.2.2.3.2 The effect of family ownership

Risk reduction: As described in Chapter 3.2.2.2, family owners typically have a high share of their wealth invested in the firm and are therefore under-diversified investors. Because they forego the benefits of diversification, they are exposed to a higher overall risk than non-family owners. This may result in an incentive for family owners to use their voting power to push for a more conservative corporate strategy in order to decrease their personal risk. As long-term projects are generally perceived to be riskier than short-term projects, family ownership may therefore shorten corporate time horizons. If family owners also rely on dividend payments as their main source of income, this effect may be amplified as resource allocation may be focussed on short-term dividend payments. Even if attractive long-term investments are available to the firm, they may not be realised.

During times of elevated pressure on the firm, family owners may have a stronger incentive than during good times to reduce firm risk. This is because a situation of underperformance or a shock to the firm's industry or to the overall economy may highlight the family owner's dependence on the success of his/ her single investment. Such a situation may then bring to mind the potentially severe consequences of a default scenario.

This increased preference for risk reduction may lead to a shift of corporate time horizons to the short-term, as short-term firm survival may be prioritised over long-term capability building. This can be achieved by reducing long-term investments with long payback periods and uncertain outcomes, such as R&D, and by focussing on established areas of business. Such safeguarding of short-term profits may result in a reduction in future upside potential. In contrast, non-family owners with diversified investment portfolios and no additional interest in control preservation may not get involved in corporate policy to the same extent during a crisis. This is due to their lower degree of risk exposure and their lesser dependence on the success of a single venture.

Patient capital: As explained in Chapter 3.2.2.2, the parallel existence of both business and family goals can incentivise family owners to endow the firm with patient capital. This is because the family's reputation, the perpetuation of the family dynasty, family identity, and family influence may all depend on maintaining a controlling position in the firm. As a result, family owners have a unique incentive to keep their capital invested in the firm for the long-run and may even sacrifice financial returns to some extent in order to maintain control.

When a firm becomes subject to external pressures, patient capital may become a substantial factor for firm survival. The impact of patient capital may be particularly strong in listed firms, as listed firms typically suffer from the implications of a loss of investor confidence when the firm underperforms or when it is subjected to industry or economy-wide shocks. When a firm comes under pressure, risk-averse investors with short-term horizons that may not have the resources or incentives to analyse the situation in detail may sell their shares based on short-term performance proxies. This behaviour can result in a decline in stock prices and consequently in difficulties with regards to refinancing, in negative press, or in challenges in attracting high-quality talent.

With non-financial benefits accruing to family owners as a result of staying in control, and with this translating into a higher willingness to sacrifice financial returns, family owners may be more able to sustain a firm through difficult times. It has previously been argued that deep firm-specific knowledge of family owners (Sirmon and Hitt (2003)) puts them in a better position to assess the long-term potential of the firm. In contrast, transitory non-family investors may lack the resources, incentives, and ability to analyse the long-term potential of the firm. Therefore, if a firm is endowed with patient capital, the reaction to pressure may be less immediate.

As a result, patient capital may reduce the amount of pressure on the manager to perform short-term signalling to external stakeholders during times of pressure. This is because patient capital may create a degree of stability in the ownership structure. The manager is thus more likely to be able to sustain a long-term oriented strategy and may therefore conduct fewer “fire-sales” (Zhou, Li, and Svejnar (2011), p.274) of assets. He/ she may even be able to use private funds provided by the owner’s family in order to prop up the firm and to support it through a downturn (Friedman, Johnson, and Mitton (2003)). Overall, the question as to whether family firms are more or less long-term oriented than non-family firms during times of pressure depends on whether the risk reduction effect or the patient capital predominates during times of pressure.

Hypothesis 3.6

Compared to non-family firms, family-owned firms are more long-term oriented under pressure, if the patient capital effect dominates the risk aversion effect, and vice versa.

3.3 Methodology

3.3.1 Definitions

3.3.1.1 Corporate time horizons

3.3.1.1.1 Limitations of single indicator approaches

As discussed above, studies using single indicators such as R&D or internationalisation may suffer from limitations with regards to their conclusiveness when studying corporate time horizons. In particular, the use of single indicators has a number of shortcomings.

Trade-offs/ shifts between different elements of long-term orientation: A single indicator, such as R&D, does not capture other elements of long-term orientation. While some firms may invest heavily in building their talent or into improving operations in a truly long-term way, they would be considered short-term oriented from a pure R&D perspective.

Different business models: While the majority of studies control for industry affiliation, there can be significant within-industry variation in business models. Consequently, the importance of R&D may strongly differ between an innovator firm, a me-too firm, a wholesaler, and a retailer, all active in the same industry. Measuring corporate time horizons using a single indicator may therefore reflect a view that is too narrow.

3.3.1.1.2 Index approach

Because of the above mentioned shortcomings, a more comprehensive approach is taken in the following. In particular, the methodology applied takes an aggregated view on three core areas of corporate policy. Those are investment policy, employee policy, and financing policy. This choice of categories is motivated by the three core areas of long-term orientation identified by Le Breton-Miller and Miller (2006): mission-related investments, people-related investments, and external stakeholder-related investments. These three investment categories are summarised in the following.

Mission-related investments: Mission-related investment examples mentioned by Le Breton-Miller and Miller (2006) include R&D investments, long-term brand building, and superior infrastructure creation.

People-related investments: Examples of people-related investments specified by Le Breton-Miller and Miller (2006) include investments into paying, training, and retaining employees, long-term employee benefits, seniority rewards, advancement opportunities, and job attractiveness.

External stakeholder-related investments: Le Breton-Miller and Miller (2006) mention investments in clients, suppliers, venture partners, and the community as examples of external stakeholder-related investments.

As a basis for the analysis of corporate time horizons in this chapter, three indicators are defined for each of the three categories (investment, employees, financing), and data is collected for each firm-year. The following is a description of the indicators used in each category.

Investment: This category includes three variables. These are R&D divided by sales, CapEx divided by sales, and asset maturity. Asset maturity is calculated as depreciation divided by fixed assets. R&D and CapEx are frequently used long-term investment variables (e.g., Anderson, Duru, and Reeb (2012), Fahlenbrach (2009)). They represent expenditure in an early period that typically does not pay off in the near term. Asset maturity adds an additional perspective to the overall investment behaviour by reflecting the result of past long-term investment. Figure 3.3 summarises the investment variables.

Figure 3.3: Long-term index composition - investment-related index variables

This figure provides an overview of the index variables used in the investment category. Source: Kappes and Schmid (2012).

Variable	Description	Rationale
R&D	R&D expenditure divided by sales (WC01201/ WC01001)	High scores indicate an investment policy that aims to build the firm's operations, developing new products and technologies, and achieving operating excellence (cf. Le Breton-Miller and Miller (2006)). Such behaviour is characterised by high initial expenditure, a negative effect on short-term results, and deferred and uncertain payoffs.
CapEx	Capital expenditure divided by sales (WC04601/ WC01001)	
Asset maturity	Depreciation divided by fixed assets (WC04049/ WC02501)	

Employees: This category includes three indicators, namely burden, salaries, and downsizing. Burden is calculated as change in the ratio of employees to sales between two consecutive years. It tracks the change in workload in relation to the number of employees bearing the workload. The variable *salaries* is calculated as change in salary per employee between two consecutive years. Downsizing is calculated as change in the number of employees between two consecutive years. The variable downsizing is only recorded if this change is negative. Non-negative observations are set to zero.

The rationale for including burden is that effective burden management can avoid attrition and increase tenure in the workforce. While the former increases motivation for employees to “go the extra mile,” reduction of turnover can also lead to a reduction of future recruiting and job training costs. Salaries are an indicator of investment into high-quality people, as, *ceteris paribus*, firms with higher salaries are able to attract higher quality employees. Downsizing is a measure of a firm’s horizon with regards to employee contracts. If a firm does not downsize during difficult times, this can be seen as a long-term investment in maintaining the firm’s talent pool, a cost that may pay off later when recruitment and job training costs are avoided. Figure 3.4 summarises the variables in the *employees* category.

Figure 3.4: Long-term index composition - employee-related index variables

This figure provides an overview of the index variables used in the employee category. Source: Kappes and Schmid (2012).

Variable	Description	Rationale
Burden	Percentage change in number of employees to sales between year t-1 and year t (WC07011/ WC01001)	High scores indicate an employee policy that is geared towards attracting and retaining knowledge and capital in the firm (cf. Block (2010), Le Breton-Miller and Miller (2006)). Such behaviour is characterised by higher labour costs in return for lower expected turnover, higher productivity, and higher motivation and loyalty (e.g., Allouche and Amann (1995), Guzzo and Abbott (1990), Karra, Tracey, and Phillips (2006), Sraer and Thesmar (2007)).
Salaries	Percentage change in salary per employee between year t-1 and year t	
Downsizing	Percentage change in number of employees between year t-1 and year t. Positive changes are set to zero	

Financing: This category includes three variables, namely cash, liquidity, and debt maturity. Cash is defined as the sum of cash and cash equivalents divided by total

assets. Liquidity is calculated by dividing current assets by current liabilities. Debt maturity is the ratio of long-term debt to total debt.

Cash is included as a proxy of flexibility, particularly with regards to the ability to undertake attractive long-term investment projects as they emerge. Liquidity is the ability to meet day to day obligations. If liquidity is not given, a firm is likely to find it difficult to undertake investments for the long-term. Debt maturity is an indicator of the financing horizon of a firm, as finance secured for the long-term frees a firm from short-term refinancing pressures and therefore allows it to undertake projects with long pay-off periods. Figure 3.5 summarises the variables in the financing category.

Figure 3.5: Long-term index composition - financing-related index variables

This figure provides an overview of the index variables used in the financing category. Source: Kappes and Schmid (2012).

Variable	Description	Rationale
Cash	Cash and cash equivalents divided by total assets (WC02001/ WC02999)	High scores indicate a financing policy that reflects enduring commitments to external stakeholders, in this case suppliers and finance providers. High scores also indicate an ability to meet financial obligations, independent of current cash-flow. These relationships can be decisive in sustaining a firm during times of underperformance (e.g., Dreux (1990), Le Breton-Miller and Miller (2006)).
Liquidity	Current assets divided by current liabilities (WC02201/ WC03101)	
Debt maturity	Long-term debt divided by long-term debt plus short-term debt (WC03251/ (WC03051+WC03251))	

Corporate time horizons are approximated for each firm and year using the above indicators. For this purpose, sample firms in each industry are separately ranked for each indicator and allocated into industry-specific decile ranks.³⁶ The first digit of the firm's primary SIC code is used to allocate firms into industry groups.³⁷ For each indicator and industry, firms in the top decile are assigned a value of 10, the second decile is awarded a value of 9, the third decile is assigned a value of 8, etc. The firms ranking in the lowest decile are assigned a value of 1. If the value is missing for a certain indicator, then the firm is not considered in the rank for this

³⁶ Decile ranks are assigned in reverse order for downsizing.

³⁷ In a robustness test, a more granular industry specification using 17 industries, taken from the Fama and French data library (Fama and French (2012)), is applied. Results are robust to this alternative specification (cf. Table 3.7).

indicator and is consequently not assigned any value. If less than three indicators are available for a given firm-year, the observation is dropped from the analysis.³⁸

An overall long-term index (LTI) is calculated by summing up the rank values assigned for all nine indicators per firm-year and dividing by the number of available data points for the firm-year. Dividing by ten provides an index that ranges from 0.1 to 1. This index is labelled LTI score. While an LTI score closer to zero indicates a relatively short corporate horizon, a score closer to one is indicative of a relatively long horizon. This methodology follows Anderson, Duru, and Reeb (2009) who used a similar index methodology for approximating corporate opacity. Figure 3.6 summarises the methodology used to calculate long-term index scores. It also lays out the methodology used for a stricter definition of LTI, which is labelled *LTI restricted* and requires availability of all nine indicators for a given firm-year. *LTI restricted* is used to ascertain the robustness of the basic LTI measure to stricter data requirements.

Figure 3.6: Long-term index composition - aggregate index

This figure provides an overview of the calculations of the aggregate long-term index (LTI) and an alternative index calculation methodology (LTI restricted). Source: Kappes and Schmid (2012).

Variable	Description
LTI	Long-term index. Sum of the decile ranks across all variables divided by the number of variables with non-missing values divided by 10. No decile rank is assigned to missing variables. Firm-year observations with less than three non-missing variables are dropped.
LTI restricted	Restricted long-term index. Sum of the decile ranks across all variables divided by the number of variables with non-missing values divided by 10. No decile rank is assigned to missing variables. Firm-year observations in which one or more of the index variables is missing are dropped.

By including indicators from three areas of corporate policy, the LTI score is a comprehensive measure of corporate time horizons. It represents an extension of previous work, which has focussed on single indicators, such as R&D, and therefore did not take into account the potential shifts and trade-offs between various areas of corporate policy in which time horizons can be reflected. As a consequence of its scope, the index can be applied to a wide range of industries, life cycle stages, and business models, and is thus versatile in nature. In addition, it is based on publicly available information and is therefore replicable without

³⁸ In a robustness test, a stricter definition is used that requires data availability for all categories. Results are robust to this alternative specification (cf. Table 3.7).

difficulty. Because the inputs into the index are taken from audited financial statements, the score is also based on reliable data, rather than, e.g., survey data, which is often prone to subjectivity and response bias.

In addition to the overall index, three sub-indices are calculated. For this purpose the indicator ranks for each firm and year are added within each category, i.e., investment, employees, and financing. The sum is then divided by 3. It is then divided by ten. This provides an index that ranges from 0.1 to 1. Sub-indices are only calculated if data for all three indicators for a sub-index are available. Figure 3.7 summarises the calculation methodology used for the three sub-indices, namely LTI investment, LTI employees, and LTI financing.

Figure 3.7: Long-term index composition - sub-indices

This figure provides an overview of the calculations of the three sub-indices, namely investment, employees, and financing. Source: Kappes and Schmid (2012).

Variable	Description
LTI investment	Sub-index for all investment-related variables. $(\text{Rank}(\text{R\&D}) + \text{Rank}(\text{CapEx}) + \text{Rank}(\text{Asset maturity})) / 3 / 10$. Only calculated if all three variables are available.
LTI employees	Sub-index for all employee-related variables. $(\text{Rank}(\text{Burden}) + \text{Rank}(\text{Salaries}) + \text{Rank}(\text{Downsizing})) / 3 / 10$. Only calculated if all three variables are available.
LTI financing	Sub-index for all financing-related variables. $(\text{Rank}(\text{Cash}) + \text{Rank}(\text{Liquidity}) + \text{Rank}(\text{Debt maturity})) / 3 / 10$. Only calculated if all three variables are available.

3.3.1.2 Family governance

Previous research on corporate time horizons in family firms has seen a variety of family firm definitions. Figure 3.8 and Figure 3.9 provide an overview of the definitions used in previous research.

Figure 3.8: Family firm definitions used in prior research on corporate time horizons

This figure provides an overview of family firm definitions used in prior research on corporate time horizons in family firms.

Author	Definition(s)	Source(s)
Zahra (2003)	Family ownership: a) share of the firm's equity held by the owner-family, b) share of a firm's equity held by insiders who are family members. Family management: a) founder is CEO and board chair, b) share of directors who are family members, c) number of generations who work in the firm, d) five-item index of family involvement in the firm's strategic planning process. ³⁹	Definitions based on Astrachan and Kolenko (1994), Davis, Schoorman, and Donaldson (1997), Litz (1995), Sharma, Chrisman, and Chua (1996), Ward and Handy (1988), Zahra (2003), and Zahra, Neubaum, and Huse (2000).
Chen and Hsu (2009)	Family ownership: Number of shares of all classes held by the family ⁴⁰ (directly and indirectly) divided by total shares outstanding.	Definition based on Litz (1995), Villalonga and Amit (2006), and Zahra (2003).
Fahlenbrach (2009)	Founder firm: CEO is a founder or a member of the group that founded the company.	Fahlenbrach (2009).
Munari, Oriani, and Sobrero (2010)	Family ownership: Total control stake held by all families (including individuals) invested in the firm or by unlisted firms.	Definitions based on La Porta, López-De-Silanes, and Shleifer (1999) and Faccio and Lang (2002).
Munoz-Bullon and Sanchez-Bueno (2011)	Family firm: Two or more directors are related and family members hold at least 10% of equity.	Definitions based on Gómez-Mejía, Makri, and Kintana (2010).
Anderson, Duru, and Reeb (2012)	Family firm: Family (founder or founder's descendants) holds a minimum of 5% of ownership in the firm. Lone-founder firm: Founder holds a minimum of 5% of ownership without any other family members holding shares or serving in the firm. Multi-member family firm: Multiple members of the same family are involved as owners (>5%), either contemporaneously or through time.	Family definition based on Shleifer and Vishny (1986), founder and multi-member family firm definition based on Adams, Almeida, and Ferreira (2009).
Block (2012)	Family firm: At least two members of the founding family are involved as major owners (at least 5% of common equity) or as executives. Lone founder firm: One of the firm's founders is active as an executive or major shareholder and no relatives of the founder are involved in the business as top executives or large shareholders (5% of common equity).	Definitions are based on Miller et al. (2007).

³⁹ The strategic planning process involves the setting of company goals, the setting of the company's strategic direction, the identification of target foreign markets, the selection of the firm's competitive strategy, and international expansion. Definitions are based on survey data.

⁴⁰ The authors do not specify which specific definition of family (founding or dominating) their family firm definition refers to.

Figure 3.9: Family firm definitions used in prior studies on the reaction to pressure as an indication of corporate time horizons

This figure provides an overview of family firm definitions used in prior research on corporate time horizons based on the reaction of family and non-family firms to pressure.

Author	Definition(s)	Source(s)
Friedman, Johnson, and Mitton (2003)	Family firm: Firm that is controlled through a pyramid structure.	Definition based on Claessens, Djankov, and Lang (2000).
Zellweger (2007)	Family firm: The ultimate owner is a family (including an individual) or an unlisted firm.	Definition based on Faccio and Lang (2002).
Villalonga and Amit (2010)	<p>Founder or founding family-owned firm: A founder or a member of his/ her family by either blood or marriage is an officer, a director, or a block-holder, either individually or as a group.</p> <p>Founding family-owned and -managed firm: Firms that are in their second or later generation (relative to the founder's generation) and whose CEO is the founder or a member of the founding family.</p> <p>Individual- or family-controlled firm: Firms in which an individual or family (founding or non-founding) is a block-holder with a minimum of 5% of any class of shares.</p> <p>Family-controlled and -managed firm: Second or later generation firms whose CEO is an individual block-holder or a member of a block-holding family (including non-founding families).</p>	Definitions based on Anderson and Reeb (2003a), Claessens, Djankov, and Lang (2000), Faccio and Lang (2002), La Porta, López-De-Silanes, and Shleifer (1999), Villalonga and Amit (2006), and Villalonga and Amit (2009).
Andres (2011)	Family firm: The founder and/or family members hold more than 25% of the voting shares or the founding family is represented on either the executive or the supervisory board if they own less than 25% of the voting rights.	Definition based on Anderson and Reeb (2003a), Andres (2008), Bárontini and Caprio (2006), Villalonga and Amit (2006), and Sraer and Thesmar (2007).
Zhou, Li, and Svejnar (2011)	Family firm: Among the ten largest shareholders, domestic individuals collectively own the most shares, or the firm belongs to a large business group.	Zhou, Li, and Svejnar (2011).

The overviews in Figure 3.8 and in Figure 3.9 indicate that there is no consensus definition that universally specifies what constitutes a family firm in the previous literature on corporate time horizons. In particular, previous studies differ with regards to those key aspects presented in Figure 3.10 and their respective sub-aspects.

Figure 3.10: Key family firm definition criteria used in previous research on corporate time horizons

This figure provides an overview of key aspects of family firm definitions used in research on corporate time horizons.

Aspect	Sub-aspects
Definition of the relevant family	Types of individuals, groups of individuals, and/ or organisations considered to be the relevant family Inclusion versus exclusion of founder in relevant family
Classification criteria	– Family management and/ or family ownership CEO versus complete management board Number of family members Family generation Ownership threshold Family involvement in strategic planning Organisational structure

The following is a discussion of the core definitional aspects identified in the prior literature. This discussion provides the basis for deriving the family firm definition used in the following empirical analysis, i.e. Chapter 3.4 et seq.

3.3.1.2.1 Definition of the relevant family

Types of individuals, groups of individuals, and/ or organisations considered to be the relevant family: Prior studies widely differ in their definition of individuals or organisations that constitute the relevant family. Some studies consider members of the founding family as relevant individuals for defining family firms (e.g., Anderson, Duru, and Reeb (2012), Andres (2011), Block (2012), Fahlenbrach (2009), Villalonga and Amit (2010), Zahra (2003)). Others consider all families relevant (e.g., Munari, Oriani, and Sobrero (2010), Zellweger (2007)). Again other authors refer to the owner-family in their definition (e.g., Zahra (2003)). The definition used by Zhou, Li, and Svejnar (2011) refers to domestic individuals. Some authors are not specific as to what they consider to be the relevant family (e.g., Chen and Hsu (2009)). Lastly, some studies even consider ownership by unlisted firms as family ownership (e.g., Munari, Oriani, and Sobrero (2010), Zellweger (2007)).

The literature has not reached a consensus regarding the question as to which individuals constitute the relevant family. In addition, different research questions call for different family firm definitions. Thirdly, data availability may limit the definitional degrees of freedom available to a researcher in a given empirical setting.

A particular challenge arises because corporate time horizons only adapt over a long period of time. This was argued by Lumpkin and Brigham (2011) who state that it takes time to “unlearn” a long-term corporate approach. Assuming that the reverse also holds true, i.e., that it takes time to build a long-term oriented approach, individuals, families, or organisations opting into firms would therefore require time to build such a long-term oriented approach (if such an approach had not been established by the previous owners). For this reason, a family firm definition that is rooted in the firm’s past (e.g., based on the founder and his/ her family) represents a choice that addresses this challenge.

At the same time, the choice of a family firm definition based on the founder and his/ her family partially circumvents the problem of reverse causality. Individuals, families or organisations that have opted into a firm are included in many family firm definitions that are not founder-related. The problem with such a definition is that opting-in could more frequently happen in a subset of firms that fulfil certain criteria, including criteria relating to the dependent variable in question. In this case, it is unclear whether family governance drives the dependent variable or whether the reverse is true, i.e., the dependent variable drives family ownership. Under a family firm definition based on the founder and his/ her descendants, such opting-in is not possible. However, the problem of opting-out still exists under a founder-related family firm definition. It is possible that individuals or families remain in their firms, because those firms fulfil certain criteria, including criteria relating to the dependent variable. Those firms that do not fulfil these criteria would then see these individuals or families opting out. In this case, the problem of a potential reverse causality (or simultaneity) effect may bias results.⁴¹

Inclusion versus exclusion of founder in relevant family: There is also no consensus with regards to the inclusion of founders as part of the relevant family used to define family firms. This is reflected in previous research. While the research of Block (2012), Zahra (2003), and Anderson, Duru, and Reeb (2012) separately documents the effects of lone founder and family firms, Andres (2011) and Villalonga and Amit (2010) do not differentiate into founder and non-founder family firms. Again others, including Fahlenbrach (2009), exclusively study founder firms, and therefore allocate all non-founder family firms into the control group.

⁴¹ On the issue of opting out, cf. Chapter 3.4.2.2. A matching estimator is employed to demonstrate the effect of families opting out.

The inclusion of founders as part of the relevant family has the implication that the sample of family firms includes a higher share of entrepreneurial firms. While controlling for factors such as firm age or sales growth can mitigate this problem partially, entrepreneurship research has on various occasions documented a unique founder effect (e.g., Ampenberger et al. (2012), Anderson and Reeb (2003a), Bárontini and Caprio (2006), Block (2012), Fahlenbrach (2009), McConaughy et al. (1998), Miller, Le Breton-Miller, and Lester (2010), Miller, Le Breton-Miller, and Lester (2011), Villalonga and Amit (2006)). If such a unique founder effect exists, it would be attributed to family firms if founders are included in the relevant family used to separate family firms and non-family firms. It is important to be aware of such an effect and to be able to potentially differentiate a founder effect from a family effect, especially as the two effects may influence the dependent variable in opposite directions, therefore cancelling each other out.

3.3.1.2.2 Classification criteria

Family management and/ or family ownership: Prior research is also inconclusive with regards to the type of family involvement considered to be decisive for the question as to whether a given firm is a family firm or a non-family firm. Munoz-Bullon and Sanchez-Bueno (2011) require both management and ownership by family members for a firm to be classified as a family firm. Others accept either family management or family ownership as a qualification criterion (e.g., Andres (2011), Block (2012)). However, the majority of studies use ownership as the key classification criterion for family firms (e.g., Chen and Hsu (2009), Friedman, Johnson, and Mitton (2003), Munari, Oriani, and Sobrero (2010), Zellweger (2007), Zhou, Li, and Svejnar (2011)). In contrast, Fahlenbrach (2009) uses only family management as definitional criterion. Zahra (2003) separately studies ownership and management effects, and Villalonga and Amit (2010) use various definitions relating to either management, ownership, or a combination of the two.

It is crucial that the family firm definition used is suitable for the respective research question. Whether a research question should test for management, ownership, or combined management and ownership effects of family governance needs to follow from theory. In particular, researchers must be aware that it is possible that a management effect, an ownership effect, and a potential interaction effect may affect the dependent variable. Additionally, the choice whether to use management and/ or ownership as classification criteria for family firms has significant implications for the control group in a regression. If only management

is studied, family-owned firms that are managed by an external manager become part of the control group. If a potential additional family ownership effect is not specifically controlled for, this may impact the dependent variable in the control group. Lastly, definitions classifying family firms based on either family management or family ownership may suffer from simultaneous and opposite effects. If family management and family ownership have separate effects that work in opposite directions, then these effects may cancel each other out.

CEO versus complete management board: Prior research relating to family management also varies with regards to the management roles that are considered as part of the family firm definition. The definitions by Villalonga and Amit (2010) and Fahlenbrach (2009) require the CEO to be a family member, while Andres (2011) and Block (2012) research the family association of all executive board members. Zahra (2003) requires that the same family representative holds the CEO and the Chairman position.

While the CEO is likely to be the most powerful person in a firm, another board member may be more influential in the context of specific decision-making questions. For example, for financing issues, the identity of the Chief Financial Officer (CFO) may be more relevant for decision-making outcomes, and for operational questions, the Chief Operating Officer (COO) may be more relevant than the CEO. In addition, definitions only referring to the CEO do not account for board size. In the case of a very large board, the CEO may have less influence than in the case of a small board.

Number of family members: Some authors require multiple family members to be involved in the firm in order for the firm to be classified as a family firm. For example, Block (2012) requires involvement of a minimum of two members of the founding family. Similarly, Munoz-Bullon and Sanchez-Bueno (2011) require two related family members for a firm to be classified as a family firm. In contrast, the definition by Fahlenbrach (2009) and one of the definitions by Zahra (2003) refer to the CEO only and therefore implicitly require just one family member to be active, albeit at the very top of the firm. Anderson, Duru, and Reeb (2012) require multiple members of the founding family to be involved as owners, either simultaneously or consecutively. All other definitions require just one family member to be involved in the firm or do not specify any criteria related to the number of family members that need to be involved in order for a firm to be classified as a family firm.

With regards to theories such as the *theory of familiness* or the *theory of socio-emotional wealth*, the number of family members involved in a firm represents a way to differentiate the degree of family involvement within the sample of family firms (by employing a continuous variable). On the other hand, classification criteria requiring two or more family members do not only exclude founder firms. Such definitions also eliminate those firms from the family firm sample that were passed on by an entrepreneur to his/ her only son/ daughter. In such a context, it is important that the definition is suitable in the context of the theory used to make predictions. For example, if the interaction among family members is expected to play a role in driving the independent variable, then requiring a minimum of two family members to be involved in the firm appears suitable. However, if the financing decisions of firms are investigated with respect to family ownership, a descendant of a founder may hold a large share of equity (up to 100% in an unlisted firm), either directly or through a family trust. Such a firm would not be included if the involvement of two family members is required as part of a family firm definition. Therefore, a careful choice of definition with regards to the research question at hand is important, both when adopting very inclusive definitions and in the case of strongly exclusive ones.

Family generation: Definitional variety is also observable with regards to the family firm generation(s) studied. For example, Block (2012) differentiates family firms into lone founder firms and family firms without specifically requiring family firms to be second generation family firms. In his definition, firms are classified as family firms when the founder and his/ her brother/ sister are either owners and/ or executives. The definition of Fahlenbrach (2009) considers founder firms only. Therefore, all firms included in his sample are first generation family firms. Similarly one of the definitions by Zahra (2003) requires the founder to be CEO and board chair. An alternative definition by Zahra (2003) refers to the number of generations who work in the firm. One of the definitions by Villalonga and Amit (2010) includes firms that are in their second or later generation only. All other definitions do not specify generation requirements for classifying firms into family and non-family firms.

Whether to specifically use family generation criteria when classifying firms into family and non-family firms depends on the research question at hand. In some cases, the analysis of different generations of family firms can add interesting insights to differentiate effects within the sample of family firms. However, such

an approach requires detailed data on the individual family members, which is often not readily available and may have adverse effects on sample size.

Ownership threshold: Definitions using family ownership as a criterion for classification also vary significantly with regards to the ownership thresholds used. Some authors use a 5% threshold (e.g., Anderson, Duru, and Reeb (2012), Block (2012), Villalonga and Amit (2010)). Others apply a 10% threshold, (e.g., Munoz-Bullon and Sanchez-Bueno (2011)). Again others adopt a 25% threshold (e.g., Andres (2011)). Others simply look at the largest shareholder among the ten largest shareholders (e.g., Zhou, Li, and Svejnar (2011)). And again others use a continuous ownership variable (e.g., Chen and Hsu (2009), Munari, Oriani, and Sobrero (2010), Zahra (2003)).

The choice of an ownership threshold for defining family firms is an important lever for the level of inclusiveness of a definition. In some cases, the institutional context of the study may provide an indication for a suitable threshold. Moreover, higher thresholds may be suitable in settings with more concentrated ownership, such as in the context of unlisted firms.⁴² On the other hand, a lower threshold may be suitable in less concentrated settings, for example in the context of listed firms. When conducting cross-country studies, continuous ownership variables may be more suitable if varying degrees of ownership concentration and shares of actively voting shareholders exist in the respective countries. The ownership threshold choice has important implications for the comparability of results with those obtained in other studies. In particular, high thresholds can lead firms classified as non-family firms to be included in the control group and impact results if they exhibit similar behaviour to those firms classified as family firms and if their prevalence is significant.

Family involvement in strategic planning: Some definitions also require the relevant family to be involved in the firm's strategic planning process in order for the firm to be classified as a family firm (for example, a definition by Zahra (2003)).

Such data tends to be available when conducting surveys only. As such, the data is typically less reliable than secondary information. In addition, low response rates may lead to significant reductions in sample size, therefore compromising robustness of the results obtained.

⁴² Cf. Chapter 4.3.1.

Organisational structure: Friedman, Johnson, and Mitton (2003) approximate family firms as firms which are part of a pyramidal structure.

This definition may lead to significant inaccuracy with regards to classifying firms into family and non-family firms. This is because there are both family-firms that are not organised in pyramidal structures and non-family firms structured as pyramids.

As the above shows, significant differences exist in the family firm definitions previously employed in research on the effect of family governance on corporate time horizons. The mixed results obtained from previous research may be to some extent attributable to the differences in definitions used.⁴³ The comparability of any additional research therefore crucially depends on the definition employed. In addition, any within-family variation can only be analysed when using a range of alternative definitions and sub-definitions. Also, from a theoretical point of view, the predictions regarding time horizons in family versus non-family firms depend on the type of family influence in a given firm. This has to be accounted for in empirical hypothesis testing.

Based on the above, the following definitions are used in this chapter.

Definition 3.2: Family firm (FF)

A sample firm is classified as a family firm (FF) if the founder and/ or his/ her family hold/ s at least 25% of the firm's voting rights and/ or the founder and/or a member of the founding family is/ are represented on the management board and/ or supervisory board. Voting rights can be held directly or indirectly. This variable is a dummy variable.

A 25% threshold is used because 25% of voting rights represent a blocking minority under the German Stock Companies Act and therefore a strong basis to influence corporate policy.

⁴³ For example, in their research on the impact of family governance on firm value, Villalonga and Amit (2006) show that the impact of family governance differs significantly depending on the family firm definition used.

Definition 3.3: Family ownership (FO)

Family ownership refers to the percentage ownership of the firm's voting rights held by all members of the founding family, including the founder. Voting rights can be held directly or indirectly. This variable is a continuous variable.

Definition 3.4: Family management (FM)

Family management is given if the founder and/ or a member of the founding family is/ are involved in the management board and/ or supervisory board. This variable is a dummy variable.

In a robustness test, management board and supervisory board effects are separately analysed and the effect of board size is accounted for by normalising using the number of respective board members.⁴⁴

Definition 3.5: Later generation family firm (LFF)

A firm is defined to be a later generation family firm (LFF) if one or more members of the founding family, other than the founder, hold at least 25% of the firm's voting rights and/ or a member of the founding family, other than the founder, is represented on the management board and/ or supervisory board. Voting rights can be held directly or indirectly. This variable is a dummy variable.

Definition 3.6: First generation family firm (1FF)

All family firms that are not classified as later generation family firms are considered to be first generation family firms (1FF). This variable is a dummy variable.

Appendix 3.1 provides a summary of all family firm definitions used in this chapter.

3.3.1.3 Pressure variables

When studying the behaviour that firms exhibit in reaction to pressure, an external shock is the ideal quasi-experimental situation for such a research endeavour. This

⁴⁴ Cf. Chapter 3.4.2.

is because firms cannot change their behaviour in expectation of the shock, as, by definition, a shock occurs unexpectedly. However, the difficulty with studying shocks is that suitable shocks in the form of significant and unexpected external changes in the environment occur relatively infrequently. Over the sample period covered in this chapter (1995 to 2009), two macro-economic shocks are recorded. These are the dot-com crisis and the subprime mortgage/ financial crisis.

Depending on the definition used, the dotcom crisis covers the time period between 1995 and 2000, with different industries affected at different points in time. Similarly, the subprime mortgage crisis roughly covered the years between 2007 and 2009 and relatively seamlessly fed into the global financial crisis that occurred between 2007 and 2012. These crises are therefore difficult to define. It is also questionable as to whether these crises can be classified as external shocks for all sample firms, as the business practices in various industries may have played a role in triggering the adverse developments in the markets affected.⁴⁵

In addition, for studies investigating reactions to external shocks longitudinal data covering a relatively long time-span is required in order to cover the relevant pre-crisis and post-crisis periods in addition to data recorded at the time of the shock event. Ideally, data is recorded at short intervals, for example on a daily, weekly, or monthly basis. Such data typically exists for stock prices and trading volumes for those firms for which real-time market data is publicly available. However, this significantly reduces the universe of firms available to researchers, namely to listed firms in high-transparency segments. With regards to ownership data, annual data is typically the most granular information available, even when hand-collecting data. Even accounting data tends to be available on a quarterly basis only. For many firms, it is only possible to obtain annual accounting data. The data intervals tend to depend on a firm's listing status and, for those firms that are listed, the listing segment.

For these reasons, studying reactions to external shocks in an event study format would suffer serious limitations in the context of the research question as to whether family firms are more or less long-term oriented than non-family firms. As a result, an alternative approach is required. The approach employed in this chapter defines pressure at the individual firm-level, rather than defining a time period, and applying it across the board, as would be the case when studying the reaction to an

⁴⁵ Financial firms are excluded from the sample of firms (cf. Chapter 3.3.2.). However, construction firms and building companies are included in the sample.

external shock. Specifically, three proxies are employed to capture the effect of pressure on a firm's bottom line in a given year. These proxies are loss, underperformance, and negative momentum. They are described below.

Definition 3.7: Loss

Loss is a dummy variable that takes on the value of one if a firm's profitability was negative in the prior year.

This pressure variable is defined based on research findings that show that investors apply pressure to firms that do not produce positive short-term results (e.g., Graves and Waddock (1990)). Such pressure may result in a reduction of long-term investments and a firm policy focussed on short-term profits.

Definition 3.8: Underperformance

Underperformance is a dummy variable that takes on the value of one if a firm's profitability ranks in the lowest quartile of all firms in the dataset in the prior year.

This second pressure variable is a competition-based measure that assumes that firms underperforming relative to the market would be pressured by investors to improve their profitability.

Definition 3.9: Negative momentum

Negative momentum is a dummy variable that takes on the value of one if a firm's profitability has been negative in the previous year and profitability has decreased further in the current year.

This third pressure variable is a measure that only captures firms which have had negative profitability for two consecutive years and that are experiencing a negative profit trend. Firms in this group are likely to be under significant pressure, possibly experiencing difficulties in finding investors that are willing to accept the high risk level associated with such a firm. Appendix 3.2 provides a summary of the pressure variables used in this chapter.

3.3.1.4 Control variables

In all empirical tests conducted, a number of control variables are included in the analysis.

Natural log of total assets: The natural log of total assets is included in all regressions performed as a proxy for firm size in order to account for potential differences in corporate time horizons between smaller and larger firms. Two effects could be possible that might lead to a difference in corporate time horizons between smaller and larger firms. Firstly, larger firms may have higher levels of slack and may therefore be able to afford a longer-term orientation, especially during times of pressure. Secondly, the larger a firm, the more likely that it is subject to a higher level of scrutiny by investors. This may be reinforced by analyst coverage and increased media coverage.

Market-to-book ratio: The market-to-book ratio is included in all regressions as a proxy for growth potential. Growth potential may increase a firm's propensity to apply a long-term horizon. In particular, high growth firms may find it easier to access external financing in order to finance long-term projects, while low-growth firms may incur higher pressure to engage in short-term profit improvement/retention activities.

Founding age: Founding age is included in all regressions to control for the life cycle phase of sample firms. The underlying reasoning is that younger firms are more concerned with firm growth, while older firms may be more concerned with marginal improvements to operations and, as some authors argue, may suffer from strategic inertia (e.g., Block (2012)).

Lagged profitability: Lagged profitability is included in all regressions to account for differences in income and cost structures between firms, but also within individual firms over time. Profitability may impact corporate time horizons because high levels of profitability decrease external pressure on firms to make short-term improvements to the bottom line. In contrast, weak profits may lead investors to engage in shareholder activism and apply pressure on management to focus on short-term improvements to earnings. Because profitability is only observable following publication of results, lagged profitability, rather than current year profitability, is used.

Lagged leverage: Regressions control for lagged leverage, because leverage gives an indication of the additional debt capacity of a firm. Firms with high debt

capacity are likely to be more apt at solving intertemporal problems, as it may be easier for them to raise debt capital in order to implement strategies for long-term projects. Firms that already have high leverage may find it difficult to raise additional debt capital and finance such long-term oriented strategies. In addition, high debt levels also mean tight interest and repayment obligations, which may shift managerial attention to focus on meeting these schedules and therefore place lower importance on the long-term. Because banks and other debt capital providers base their lending decisions on audited financial statements, lagged leverage, rather than current leverage, is used.

Share of tangible assets to total assets: Tangibility, the share of tangible assets to total assets, is included in regressions for two reasons. First, a high share of tangible assets increases debt capacity and decreases cost of debt, as these assets can be used as collateral in debt contracts. For the capital provider, collaterals reduce risk in the event of a default, which may be reflected in lower interest payments. Secondly, the share of tangible assets to total assets provides an indication of a firm's business model beyond their industry affiliation. For example, within the computer industry, various business models are possible, including software developers (highly intangible), hardware producers (highly tangible), and merchants (medium tangibility). The tangibility variable controls for these differences.

Industry dummies: The one digit primary SIC code is included in all regressions to control for industry differences. Industry differences may result in differences in corporate time horizons due to varying levels of industry maturity, differences in industry cycles, the structure and intensity of competition, or differences regarding the degree of regulation. Further, individual industries may suffer industry-specific shocks over the period, which would also be picked up by the industry dummy and therefore remove the impact on the coefficients of the explanatory corporate governance variables of interest.

Year dummies: Year dummies are included in all regressions to control for the overall economic situation over the sample period. The economic development may affect a range of factors, which in turn might influence corporate time horizons. For example, the economic climate may impact financing conditions for all firms in the sample which may impact access to external financing and therefore the availability of funds for long-term investments. It may also impact investor sentiment which may have an effect on the intertemporal preferences of investors. In particular, intertemporal preferences may shift towards the short-term during an

economic trough, while a boom period may cause investors to be more bullish in their expectations and therefore shift intertemporal preferences towards the future. Other factors include unemployment rates, inflation, or exchange rates, which may all impact intertemporal preferences of both investors and managers. Year dummies control for such overall economic factors that have the potential to affect all sample firms.

Dividend pay-out dummy: At the end of a financial year, a firm's earnings can be either retained in the firm or distributed to shareholders via dividends. As a result, those firms paying a dividend may have fewer funds available for investment into long-term strategies. In addition, dividend payments may trigger market price reactions and therefore have an impact on the market-to-book ratio. The dividend pay-out dummy controls for these effects.

Existence of outside block-holders: Because prior research has debated whether outside block-holders, particularly institutional shareholders, have the ability to exert pressure on managers to act according to investors' short-term oriented profit-maximising preferences (e.g., Bushee (1998), Hansen and Hill (1991), Wahal and McConnell (2000)), regressions control for the existence of outside block-holders. A block-holder is defined as a shareholder that owns at least 5% of the firm's voting rights. The variable measures the cumulative ownership of all outside block-holders. Within the sample, outside block-holders mainly comprise banks, insurance firms, pension funds, private equity investors, and other investment funds. Appendix 3.3 provides an overview of the control variables used in this chapter.

3.3.2 Dataset

3.3.2.1 Composition

The dataset initially comprises all firms included in the German Composite DAX (CDAX) over the period from 1995 to 2009. The CDAX includes all German firms listed in either the General Standard or the Prime Standard segments of the Frankfurt Stock Exchange. As such, all sample firms are listed in the regulated (rather than open) market, which means that firms fulfil a range of IPO criteria as well as strict disclosure requirements. In particular, a listing in the regulated market segment requires that firms are at least three years old, that the market value of the firm's equity at the IPO amounts to a minimum of 1.25 million Euros, that a

minimum of 10,000 shares are issued, that a minimum of 25% of shares are in free float, and that an IPO prospectus is published. Following an IPO, firms in the regulated market are required to publish an interim report and conform to ad-hoc disclosure and notification requirements according to the German Securities Trading Act (§15 and §21 WpHG).⁴⁶

The year-end composition of the CDAX is used as a criterion for inclusion. Firms leaving the CDAX during a financial year are not included in the analysis. The dataset is thus structured as an unbalanced panel.

3.3.2.2 Data sources

For all firm-years in the sample, accounting data is added from Thomson Worldscope. Founder, ownership, and board data is manually added.

Accounting data: Year-end accounting data for all firms is taken from Thomson Worldscope.

Founders: The founders of each firm are researched manually using a range of sources, including Hoovers company profiles, press clippings, company filings from LexisNexis, and company homepages. Firms for which information on founders is not available are excluded from the sample.

Ownership structure: The owners of each firm are researched per firm-year, mainly using Hoppenstedt's Aktienführer and desktop research. Ownership data is complemented with information from press clippings, company filings from LexisNexis, and company homepages.

For the purpose of the analysis regarding the effect of ownership types on corporate time horizons, ultimate rather than direct ownership is needed. In order to establish the ultimate owners of all sample firms the following process was applied. If a direct owner of a sample firm is a private individual, this owner is also the ultimate owner, and no further research is conducted. However, if a direct owner of a sample firm is not a private individual, the owner of this shareholder is therefore researched. This procedure is repeated until the ultimate owners of a sample firm are identified, sometimes across multiple layers of ownership. A cut-off point of 50% is applied at each level in the research process. This methodology

⁴⁶ Cf. Deutsche Börse (2012).

follows the procedure applied by La Porta, López-De-Silanes, and Shleifer (1999).⁴⁷

When researching the ownership structure of sample firms, voting rights (rather than cash-flow rights) are used as the classification criterion. This is because only voting rights enable a shareholder to influence corporate policy via the annual shareholder meeting, whereas cash-flow rights do not in themselves entitle a shareholder to vote. This distinction is important, as the influence of a shareholder with voting rights will be greater if non-voting (preferred) stocks exist. This is because shareholders with voting rights, although only eligible for a small share of cash-flow rights, are able to make decisions for all shareholders, including owners of preferred stock. Their power over the firm's assets therefore exceeds their cash-flow rights. Similarly, if a shareholder owns voting rights in a firm through a pyramidal structure (e.g., 51% at each level over multiple levels of ownership), this shareholder is able to exert significant voting power over the firm and its assets (in this case 51%). The same shareholder will have significantly lower cash-flow rights than voting rights (in the case of 51% voting rights over four levels of ownership, the cash-flow rights amount to 6.8%). This process was also used by Shleifer and Vishny (1997).

Board composition: Board members are also researched for each firm-year, mainly using Hoppenstedt's Aktienführer. Both management board and supervisory board members are researched. Missing ownership and board data is added using the Amadeus database which is published by Bureau van Dijk. This source and desktop research are also used to double-check ownership and board data.

Family affiliation: For all owners that are private individuals and for all board members, affiliation with the founder is investigated. Both family affiliations by blood and by marriage are researched manually. The sources mainly used are Hoovers company profiles, press clippings, company filings from LexisNexis, company homepages, and desktop research.

The final dataset includes 6,205 firm-years comprised of 701 firms.

⁴⁷ An exception to the process described is made in the case of ownership by foreign corporations. In this case, the company is considered to be widely-held due to limitations regarding data availability.

3.3.3 Descriptive statistics

Table 3.1 reports descriptive statistics on all 6,205 firm-year observations. The average LTI score across all sample firm-years is 0.56. The lowest average LTI category score is 0.53 for the financing category, while the average LTI investment score is 0.55. The average LTI employee score is highest at 0.59. The strongest deviation of mean and median is observable for the employee LTI category, where the median is significantly higher, indicating that substantially more than 50% of firm-year observations have a higher than average employee LTI score. A similar, albeit smaller, effect is observable for the investment LTI category, while the overall LTI score and the LTI financing score do not have skewed distributions. The minimum and maximum figures for the overall and sub-category LTI scores show that the LTI distribution of all firm-years in the sample covers the complete range available, from 0.1 to 1.

47% of firm-year observations relate to family firms. Approximately two thirds of family firm-year observations relate to first generation family firms. Firm-year observations relating to later generation family firms are less frequent, with approximately one third of family firm-years.

28% of the shares are held by outside block-holders across sample firm-years. However, the median of this number is substantially lower, indicating that the average figure is strongly impacted by a number of firm-year observations relating to firms with very high concentration of ownership, which is also reflected in the maximum of one (100%).

The average firm has 3.4 billion Euros worth of assets in a given year, a market-to-book ratio of 2.38, and an EBIT-margin of 1%. The debt ratio of the average sample firm is 30% in a given year, tangible assets make up 22% of total assets, a dividend is paid in 50% of firm-years, and firms are on average c.58 years old. Variation across control variables is strong, in particular with regards to total assets, where the largest firm-year observation is 2.64 million times as large as the smallest.

Table 3.1: Descriptive statistics - all firm-years

This table reports the mean, median, standard deviation (St. Dev.), minimum (Min), and maximum (Max) of all time horizon, corporate governance, and control variables. LTI denotes long-term index. FF denotes family firm. Source: Kappes and Schmid (2012).

	Variable	Mean	Median	St. Dev.	Min	Max
<i>LTI</i>	LTI	0.56	0.56	0.13	0.10	1.00
	LTI investment	0.55	0.57	0.17	0.10	1.00
	LTI employees	0.59	0.63	0.15	0.10	1.00
	LTI financing	0.53	0.53	0.20	0.10	1.00
<i>FF</i>	Family firm	0.47	0.00	0.50	0.00	1.00
	Family ownership (%)	0.18	0.00	0.25	0.00	1.00
	Family management	0.43	0.00	0.50	0.00	1.00
	1st generation FF	0.30	0.00	0.46	0.00	1.00
	Later generation FF	0.16	0.00	0.37	0.00	1.00
<i>Controls</i>	Outside block-holder	0.28	0.12	0.33	0.00	1.00
	Total assets (million Euros)	3,400	146	16,600	0.10	264,000
	Market-to-book	2.38	1.65	2.85	-3.30	18.66
	Profitability	0.01	0.05	0.20	-1.01	0.42
	Leverage	0.30	0.26	0.26	0.00	0.97
	Tangible assets	0.22	0.19	0.18	0.00	0.86
	Dividend	0.50	1.00	0.50	0.00	1.00
	Founding age (years)	57.58	30.00	56.76	0.00	440.00

Table 3.2 shows a comparison of descriptive statistics separately for family firms and non-family firms. Of all 701 sample firms, 421 firms qualify as a family firm in at least one year. This corresponds to 2,917 family firm-year observations out of a total of 6,205 firm-years. 335 firms qualify as a first generation family firm in at least one year, and 174 are classified as later generation family firms in at least one year. This corresponds to 1,849 firm-years that relate to first generation family firms and 987 firm-years that relate to later generation family firms.⁴⁸

The structure of the sample with almost half of firm-years relating to family firms shows that Germany provides a fruitful setting for studying family firms, as any inferences made can be based on a solid number of observations. The same holds true for the control group.

⁴⁸ Because a firm's family firm status and a family firm's generation are captured on an annual basis, firms may be counted in more than one of the groups over the sample period.

Table 3.2 reveals that family firms score higher on overall LTI than non-family firms, an effect that can be observed across family firm generations. The difference between family and non-family firms is highly significant. Family firms also score higher in all LTI sub-categories, the difference being strongest in the financing dimension and weakest in the investment dimension. While these results are only descriptive in nature, they do suggest that it is worth considering corporate time horizons as a multi-dimensional concept, rather than relying on a single indicator, such as R&D. Within family firms, later generation family firms score higher than first generation family firms in the investment category and somewhat lower in the financing category. No difference is observable for the employee dimension.

Family firms have an average of 37% family ownership. Notably, family ownership is lower in first generation family firms with 30% family ownership, compared to 50% family ownership in later generation family firms. Possibly, the *life cycle theory* of Franks et al. (2012) which posits that all family firms ultimately develop into widely-held firms does not apply to all family firms. Instead, it is possible that there are two sets of family firms with distinct rationales driving their listing decision-making. One set of family firms may decide to pursue a listing early on, giving up ownership in the business in return for (equity) growth capital (first generation family firms). The other set of family firms may initially grow without a listing by using family resources and potentially debt-financing. This subset may only decide to go public at a later stage and with a view to only give up ownership to a limited extent (later generation family firms). However, these statistics are only descriptive in nature, and therefore do not control for further factors. This is only possible using multivariate analysis.

92% of family firms are family-managed. Family management is more frequent in first generation family firms with 95% compared to 88% in later generation family firms.

Table 3.2: Descriptive statistics - family versus non-family firm-years

This table reports the mean values of all time horizon, corporate governance, and control variables for non-family firms (NFF), family firms (FF), first generation family firms (1FF), and later generation family firms (LFF). It also reports the t-statistics of difference of means tests between family and non-family firms (FF vs. NFF). LTI denotes long-term index. Source: Kappes and Schmid (2012).

	Variable	NFF	FF	1FF	LFF	FF vs. NFF
<i>LTI</i>	LTI	0.54	0.59	0.59	0.59	15.15
	LTI investment	0.53	0.57	0.56	0.59	5.50
	LTI employees	0.58	0.61	0.61	0.61	6.83
	LTI financing	0.50	0.57	0.57	0.56	12.39
<i>FF</i>	Family firm	0.00	1.00	1.00	1.00	-
	Family ownership (%)	0.01	0.37	0.30	0.50	-
	Family management	0.00	0.92	0.95	0.88	-
	1st generation FF	0.00	0.65	1.00	0.00	-
	Later generation FF	0.00	0.35	0.00	1.00	-
<i>Controls</i>	Outside block-holder	0.42	0.11	0.13	0.07	-43.96
	Total assets (million Euros)	5,510	1,013	836	1,354	-11.66
	Market-to-book	2.21	2.57	2.59	2.32	4.23
	Profitability	0.03	-0.02	-0.05	0.03	-7.91
	Leverage	0.33	0.26	0.23	0.32	-7.92
	Tangible assets	0.25	0.19	0.16	0.24	-11.93
	Dividend	0.57	0.42	0.31	0.60	-8.14
	Founding age	67.70	46.33	36.52	64.16	-15.24

With regards to outside block-holders, family firms have an average of 11% of outside block-holder ownership, which is significantly lower than the average of 42% block-holder ownership in non-family firms. The share in later generation family firms at 7% is also significantly lower than in first generation family firms which have an average of 13% outside block-holder ownership.

With regards to control variables, the family firms in the sample are on average smaller (in terms of total assets). They tend to have higher valuations and lower profitability. Their leverage is lower and they have a lower share of tangible to total assets. They pay a dividend less frequently and are younger on average.

Within family firms, later generation family firms are larger on average and valued lower than first generation family firms. Their profitability is higher on average, they have higher debt-ratios, and they have more tangible assets per unit of total assets. They also pay a dividend more frequently, and they are older on average. Overall, later generation family firms resemble non-family firms on most of the dimensions captured by the control variables presented in Table 3.2 from a

descriptive perspective. An exception is outside block-holder ownership which is significantly smaller in later generation family firms compared to non-family firms.

3.3.4 Econometric methods

Pooled ordinary least squares (OLS) regression is applied to the unbalanced panel described in Chapter 3.3.2. Pooling is used to account for a given firm's correlation with itself over time, a characteristic which can typically be observed in panel data. Technically, pooling adds an extra intercept for each observation unit and therefore ensures that the coefficients obtained from the regression are unbiased.

While pooling ensures that coefficient estimates are unbiased in a panel regression, Standard errors may be biased if the error terms in the regression are not uncorrelated between observations. However, in panel regressions (such as pooled OLS), an individual-specific effect may cause the error term for a firm in one period to be correlated with the same firm's error term in another period. For this reason, the calculation of the standard errors needs to be adjusted by clustering observations on the firm-level. For this purpose, the methodology by Petersen (2009) is applied. The methodology of White (1980) further adjusts standard errors if error terms are heteroskedastic. Such heteroskedasticity may exist if the variance of a sub-sample differs from the variance of another sub-sample.

Because coefficient estimates would be affected if the explanatory variables in the model were strongly correlated with each other, variance inflation factors are investigated before running regressions. The largest variance inflation factor is 1.72, indicating that multicollinearity does not affect the analysis.

R^2 is adjusted for the number of explanatory terms in the model (adjusted R^2).

3.4 Results

3.4.1 Regression results

3.4.1.1 Corporate time horizons in family firms

The core objective of this chapter is to gain insight into whether family firms have longer or shorter corporate time horizons than non-family firms. To shed light on

the relationship between family governance and corporate time horizons, the aggregate long-term index (LTI) is regressed on a range of explanatory variables. First, LTI (the calculation of LTI is shown in Figure 3.6) is regressed on the overall family firm variable (Definition 3.2). Next, LTI is regressed on the family management (Definition 3.4) and family ownership (Definition 3.3) variables. Lastly, LTI is regressed on the family generation variables, namely first generation (Definition 3.6) and later generation family firms (Definition 3.5).

Table 3.3 reports the results of these pooled OLS regressions. The results reported for Model I, which shows the effect of the overall family firm variable on LTI scores indicate that a positive and highly significant relationship exists between family governance and LTI. More specifically, the results suggest that firms with family governance tend to be more long-term oriented than non-family firms.

Model II includes more granular family firm definitions by separately estimating the effects of family management and family ownership on LTI. While the coefficient of family ownership is insignificant, the coefficient of family management is positive and highly significant.

3.4.1.1.1 Family management

Hypothesis 3.1 stated that if transgenerational effects dominate family consumption effects in family-managed firms, then family management has an overall positive effect on long-term orientation. The results reported in Table 3.3 Model II suggest that family management has the hypothesised effect on LTI in the CDAX sample studied. While this does not show that family consumption does not occur in these firms, it suggests that, with regards to time horizons, the positive effect from transgenerational considerations over-compensates a potential negative consumption effect in the family firms studied.

Because the sample only includes firms listed in the regulated segment of the Frankfurt Stock Exchange, all sample firms are subject to strict regulation and comprehensive disclosure requirements. They therefore operate in a high-transparency environment. This is compounded by the fact that many of the sample firms are additionally covered by analysts that again improve information transparency. This may limit the scope for family consumption at the expense of company resources and therefore partially explain the results in Table 3.3 Model II. For this reason, it is possible that this result is not transferable to unlisted firms, which operate in a significantly less regulated environment with lower disclosure

requirements, absence of analysts, and consequently higher opacity. As a result, the strongly positive coefficient obtained for family management from the sample of listed firms used, may be weaker, insignificant or even negative in a sample of unlisted firms. Future research may want to bridge this gap by studying the effect of transparency on corporate time horizons.

3.4.1.1.2 Family ownership

Hypothesis 3.1 posited that, if an effect of the provision of a family firm with patient capital is greater than a potential effect from risk aversion, then family ownership would have an overall positive effect on LTI scores. As mentioned above, the results reported in Table 3.3 Model II suggest that family ownership does not have a significant effect on LTI scores. This result suggests that any positive effect patient capital may have on corporate time horizons in family firms does not outweigh a simultaneous negative effect from risk aversion with regards to corporate time horizons.⁴⁹

An implication of this result is that the frequently quoted patient capital effect with regards to time horizons in family firms (e.g., Sirmon and Hitt (2003)) should be interpreted with caution, and that it is worth considering the separate effects of family management and ownership in empirical corporate governance research, as previously suggested.

3.4.1.1.3 Family generation

Table 3.3 Model III does not indicate a significant difference between first generation family firms and later generation family firms with regards to their corporate time horizons. Both the coefficient of first generation family firms and the coefficient of later generation family firms are highly significant and positive.

This result is in contrast with the theory of Lumpkin and Brigham (2011) who posit that long-term orientation is a trait of family firms that takes time to develop and intensifies across generations. Over time, family firms develop long-term orientation as a core rationale that plays an important role in their decision-making. According to the theory of Lumpkin and Brigham (2011), later generation family

⁴⁹ However, when the effect of family ownership is estimated without controlling for family management, the effect is positive and significant on a 5% significance level, as reported in Table 3.9 Model I.

firms should therefore have longer corporate time horizons than first generation family firms.

As previously noted, the sample used contains listed firms only. While the results in Table 3.3 Model III failed to establish a significant difference between first generation family firms and second generation family firms, it is possible that a significant difference exists within unlisted firms. For example, it is possible that those later generation family firms that decide to go public are less concerned with family control retention and cross-generational transfer than those family firms that decide to stay private. As such, it is possible that an IPO can be interpreted as a strong signal of lessening ties between the family and the firm, as equity is sold to external shareholders and post-IPO decision-making power is thus shared with new shareholders.

The IPO decision-making of first generation family firms may follow a different logic, for example one that is driven by capital structure considerations, as many young firms find it difficult to raise significant amounts of debt capital and external equity represents a more feasible option to facilitate growth (cf. Schmid, Volk, and Kappes (2012)). Among first generation family firms, listed firms may be particularly long-term oriented. This may be reflected in their early IPO decision, which is made in order to be able to raise the risk capital required to make long-term investments. Such investments would not be possible when staying private and relying on limited amounts of debt capital that come with protective covenants that limit the manager's decision-making freedom and therefore may curtail long-term orientation.

It is therefore possible that the sample of first generation family firms as well as the sample of later generation family firms studied herein each consist of unique groups of family firms. The results presented in Table 3.3 Model III should therefore be interpreted in the context of the sample used rather than be generalised.

Further research into the within-variation of family firms would be helpful in establishing the empirical relationship between different types of family firms and corporate time horizons. In particular, research into unlisted firms would be useful to shed additional light on the potential sample selectivity problem when studying listed firms.

3.4.1.1.4 Outside block-holders

All regressions reported in Table 3.3 control for the existence of outside block-holders. The variable measures the total combined ownership stake of all outside block-holders invested in a given firm-year (the threshold for the individual block-holder is 5%). The majority of outside block-holders are banks, insurance firms, pension funds, private equity investors, and other investment funds.

The reasons to include outside block-holders are twofold. First, it is important to control for outside block-holder ownership in order to ensure that any family firm ownership effect is not the result of an ownership concentration effect, but reflects the owner identity effect. Controlling for non-family block-holders ensures this.

Secondly, previous research has discussed the effects of certain block-holder types on corporate time horizons in great detail. This research stream has been triggered by Graves (1988) who initially documented a negative relationship between institutional investor involvement and corporate time horizons in a computer industry firm sample from 1980-1983 and later discussed the increasing influence of institutional investors on corporate behaviour. Graves (1988) and Graves and Waddock (1990) argue that institutional investors are mainly interested in short-term results and therefore impose significant pressure on managers to prioritise the short-term. This debate was further fuelled by Porter (1992), who supported the views of Graves (1988) by noting both a lack of long-term oriented owners and the existence of speculative (rather than well-informed) traders to be a key problem of the American capital investment system. According to Porter (1992), the U.S. capital investment system supports the objectives of shareholders interested in near-term capital gains, i.e., institutional shareholders, rather than long-term corporate development, leading to lower competitiveness of the U.S. economy on a global scale driven by underinvestment in long-term projects.

From an empirical point of view, the evidence regarding such an influence is weak. For a sample of 129 firms in research-intensive industries, Hansen and Hill (1991) show institutional investors to positively influence R&D spending. Similarly, Kochhar and David (1996) find that, for a sample of 135 U.S. manufacturing firms, institutional ownership does not drive short-term orientation but rather leads firms to innovate, in particular when accounting for the heterogeneity in the institutional investor universe. Bushee (1998) finds managers to reduce R&D spending in response to an earnings decline, when ownership of institutional investors with a momentum trading approach and short holding periods is high. However, overall

he finds the opposite effect. In his sample, institutional owners are actually found to reduce pressure on management, which supports Hansen's and Hill's conclusion that the heterogeneity of the institutional investor universe needs to be taken into account (Hansen and Hill (1991)). Wahal and McConnell (2000) find an overall positive relation between institutional ownership and CapEx as well as R&D in a sample of 2,500 U.S. firms over a six-year period.

The regression results in Table 3.3 show that the coefficient of outside block-holder ownership is negative in all three models and strongly significant. While the effect of outside block-holders is not the focus of this chapter, the results indicate that outside block-holders have a negative effect on corporate time horizons in the sample used. It is possible that these shareholders exert pressure on short-term results, thereby curtailing long-term projects. Based on the findings in previous research, a more detailed analysis of the different types of outside block-holders would be helpful in advancing the debate on the effect of concentrated shareholder types other than families.

3.4.1.1.5 Other effects

A range of additional control variables have significant coefficients in Table 3.3. First, the coefficient of lagged profitability is positive and significant. This supports the viewpoint that successful firms that produce strong results can "afford" to take a long-term oriented approach.

The negative and significant coefficient of leverage on the other hand suggests that a high debt ratio shifts managerial attention to the short-term. It is possible that repayment schedules that force managers to pay out significant amounts of cash on a frequent basis focus managerial attention on fulfilling their short-term payment obligations. These make it harder for the manager to focus on the long-term and to undertake long-term projects. Additionally, debt covenants may limit managerial freedom and impose reporting requirements that result in a focus on the short-term, making it difficult to focus on the long-term at the same time.

The coefficient of tangible assets is positive and significant. A high share of tangible assets is indicative of high debt capacity, as tangible assets can be used to collateralise debt finance. With regards to corporate time horizons, high debt capacity may translate into better availability of debt finance and therefore greater financial flexibility. Greater financial flexibility may improve a firm's ability to quickly react should attractive long-term investment opportunities emerge.

The coefficient of founding age is negative and significant. This suggests that older firms have lower LTI scores on average and therefore generally have shorter corporate horizons. A possible explanation is that strategic inertia may develop as firms reach later stages of their life cycle, as they place greater emphasis on maintaining their position rather than on expanding it. However, within family firms the coefficient of family influence remains positive across family generations (Table 3.3 Model III).

Table 3.3: Regression results - long-term index - family versus non-family firms

The dependent variable is LTI. All models are pooled ordinary least squares (OLS) regressions. A detailed description of the variables can be found in Appendix 3.1 and Appendix 3.3. Time and industry dummies and a constant are included. Standard errors are calculated following White (1980). t-statistics are presented in parentheses. ***, **, and * indicate significance on the 1%, 5%, and 10% level. Source: Kappes and Schmid (2012).

Model	I	II	III
Family firm (FF)	0.032***		
	(5.12)		
Family ownership		-0.012	
		(-0.78)	
Family management		0.039***	
		(5.09)	
1st generation FF			0.037***
			(5.25)
Later generation FF			0.027***
			(3.35)
Outside block-holder	-0.049***	-0.050***	-0.050***
	(-5.39)	(-5.43)	(-5.48)
Firm size	0.0022	0.0025	0.0027*
	(1.38)	(1.58)	(1.73)
Market-to-book	0.0015*	0.0015*	0.0016**
	(1.81)	(1.75)	(2.01)
Profitability (t-1)	0.11***	0.11***	0.12***
	(8.10)	(8.13)	(8.16)
Leverage (t-1)	-0.14***	-0.14***	-0.14***
	(-12.8)	(-12.8)	(-13.1)
Tangible assets	0.13***	0.13***	0.13***
	(6.55)	(6.72)	(6.80)
Dividend	0.0068	0.0077	0.0065
	(1.08)	(1.22)	(1.03)
Founding age (Ln)	-0.011***	-0.011***	-0.011***
	(-4.11)	(-4.05)	(-4.02)
<i>Observations</i> ⁵⁰	5,075	5,075	5,005
<i>Adjusted R</i> ²	0.17	0.17	0.18

⁵⁰ Family generation data is not available for 70 family firm observations.

3.4.1.2 The impact of pressure

In order to test Hypothesis 3.5 and Hypothesis 3.6 and in order to shed light on the impact of pressure on the relationship between family firms and corporate time horizons, additional regressions are performed. The key objective is to establish whether a potential mitigation or amplification effect of pressure on the relationship of family firms and corporate time horizons exists.

Table 3.4 reports the results from OLS regressions of LTI scores on family firms, separately including each of the three pressure variables defined in Chapter 3.3.1.3, namely loss (Model I), underperformance (Model II), and negative momentum (Model III). Table 3.4 shows that all three pressure variables have a strongly negative impact on LTI scores. This indicates that, if a firm experiences significant economic pressure, managers facing a trade-off between short-term and long-term goals become more inclined to focus on the short-term, compared to times where pressure is lower. While loss (negative profitability in the previous year) is significant on a 5% level, both underperformance (prior year profitability ranks in the lowest quartile of all firms in the dataset in the prior year) and negative momentum (prior year profitability was negative, and current year profitability decreased further) are significant on a 1% level. As loss is the widest definition of pressure, this result further implies that the impact on a firm's LTI score increases with the level of pressure.

Notably, the coefficient of family governance remains positive and strongly significant in all model specifications that include the pressure variables. In addition, the interaction terms of family governance and each of the pressure variables are positive and strongly significant.

Compared to non-family firms, the interaction effect indicates that pressure actually amplifies the positive family effect on corporate horizons. It is possible that non-family firms shorten their corporate horizons during times of pressure, as the urgency to improve short-term results increases during situations of pressure. Alternatively, this effect may be driven by family firms that extend their horizons under pressure, potentially due to a shift in priorities of family decision-makers.

Within family firms, the interaction effect indicates that the LTI scores of those family firms under pressure are even higher than the LTI scores of family firms not under pressure. It is possible that difficult economic situations have a wake-up call effect on decision-makers in family firms by bringing to mind the importance of firm survival (for both current and future generations) during times when firm

survival cannot be taken for granted (transgenerational effect). Alternatively, private benefits may motivate family members to hold on to their firms, even if financial returns are below expectations (patient capital effect). As such, family members may substitute non-financial returns for financial returns and are therefore able to command a lower rate of short-term return.

Table 3.4: Regression results - LTI-performance under pressure - family versus non-family firms

The dependent variable is LTI. LTI denotes long-term index. FF denotes family firm. All models are pooled ordinary least squares (OLS) regressions. A detailed description of the variables can be found in Appendix 3.1, Appendix 3.2, and Appendix 3.3. Time and industry dummies and a constant are included. Standard errors are calculated following White (1980). t-statistics are presented in parentheses. ***, **, and * indicate significance on the 1%, 5%, and 10% level. Source: Kappes and Schmid (2012).

Model	I	II	III
Family firm (FF)	0.027*** (4.07)	0.026*** (3.91)	0.028*** (4.49)
FF x Loss (t-1)	0.022** (2.17)		
Loss (t-1)	-0.025*** (-3.47)		
FF x Underperformance (t-1)		0.027*** (2.63)	
Underperformance (t-1)		-0.027*** (-3.84)	
FF x Negative momentum (t-1)			0.042*** (2.62)
Negative momentum (t-1)			-0.023** (-1.97)
Outside block-holder	-0.049*** (-5.39)	0.049*** (5.47)	-0.048*** (-5.37)
Firm size	0.0019 (1.18)	0.0018 (1.17)	0.0021 (1.36)
Market-to-book	0.0016* (1.90)	0.0016* (1.88)	0.0014 (1.62)
Profitability (t-1)	0.099*** (6.43)	0.099*** (6.52)	0.11*** (8.41)
Leverage (t-1)	-0.13*** (-12.7)	-0.13*** (-12.6)	-0.14*** (-12.7)
Tangible assets	0.13*** (6.59)	0.12*** (6.50)	0.13*** (6.62)
Dividend	0.0044 (0.69)	0.0044 (0.70)	0.0071 (1.12)
Founding age (Ln)	-0.011*** (-4.11)	-0.011*** (-4.08)	-0.011*** (-3.97)
<i>Observations</i> ⁵¹	5,075	5,075	5,033
<i>Adjusted R</i> ²	0.17	0.17	0.17

⁵¹ Momentum requires data points from two consecutive years, which is not available for 42 observations.

Table 3.5 reports the results of re-running the regressions shown in Table 3.4. In addition, Table 3.5 includes separate variables for family management and family ownership. The results clearly show that the positive family firm effect is attributable to family management, rather than ownership, as the coefficient of family management is highly significant across model specifications. In contrast, the coefficient of family ownership is insignificant in all three models. Likewise, the interaction term of family management with all three pressure variables is positive and strongly significant, while the interaction of family ownership with pressure remains insignificant across model specifications.

These results suggest that the relationship between family consumption and cross-generational objectives shifts even more towards transgenerational objectives during a crisis. It is possible that, in family firms, critical business situations bring to mind the importance of the survival of the firm, both for current and for future generations. As such, a shift away from family consumption and towards transgenerational considerations appears to take place in the hierarchy of family preferences in family-managed firms during times of pressure.

The insignificant coefficient of family ownership and the insignificant coefficient of the interactions of family ownership and the pressure variables indicate that family-owned firms do not behave significantly differently from non-family firms, whether during good times or during bad times. The underlying patient capital and risk aversion effects are, on average, either insignificant with regards to their impact on time horizons or cancel each other out, leaving no net effect on LTI scores of family-owned firms. It is often argued that patient capital can represent a competitive advantage of family firms during a crisis. This is because patient capital should provide the firm with the necessary flexibility to initiate the relevant measures in order to get back on track following a crisis. However, the results show that patient capital alone does not impact corporate time horizons in a significant manner, or that any effect is overcompensated by additional risk aversion of the concentrated owner-base.

The institutional setting of the analysis may impact the results reported in Table 3.5. The German institutional environment may provide a partial explanation for the insignificant effect of family ownership on corporate time horizons as well as for the insignificant interaction effect of family ownership and pressure.

Germany can be considered to be a bank-based economy, which means that a substantial share of finance is provided by banks in the German market. In

comparison, in countries such as the United States or the United Kingdom, which are market-based economies, the lion's share of capital is provided via stock markets. As a result, debt ratios in German firms, and companies in other bank-based economies (such as France or Japan), are typically higher, while firms in market-based economies tend to rely on a larger share of equity finance (e.g., La Porta et al. (1998)).

As a unique element of the bank-based economy, Germany has a number of state banks (Landesbanken) that are mandated by the government to provide debt capital to private sector companies and, in this way, support the economy. The widespread reliance of German firms on bank loans has also led to the formation of close relationships between firms and their banks, giving banks deep insights into the firms' operations and investments. As a result, the deep firm-specific knowledge claimed to exist in family firms with regards to the firm's markets and operations (e.g., Sirmon and Hitt (2003)) may only be marginally superior in Germany, where banks also have deep insights into firms as a result of long-standing lending relationships with their clients. Based on the government mandate and importance of relationship banking in Germany, it is possible that the capital provided by German banks, and state banks in particular, is relatively patient in itself. As a result, the impact of family capital on corporate time horizons may be rather weak in the German context, which would explain the insignificant coefficient of family ownership with regards to LTI scores.

In order to gain additional insight into whether the lack of significance of family ownership documented in Table 3.3 and Table 3.5 is actually driven by the German institutional context of the analysis or whether family ownership in general does not significantly drive corporate time horizons, additional research would be helpful. For this purpose, researchers may want to study corporate time horizons in other countries, particularly within the context of market-based financial systems such as the UK or the U.S. economies. Cross-country comparisons including both bank-based and market-based economies would be particularly helpful in shedding light on the impact of the institutional context on corporate time horizons and the effect of the institutional setting on the relationship of family governance and corporate time horizons in particular.

Further, the inclusion of unlisted firms would be useful in order to gain insight into whether transparency/ opacity may impact the relationship of family governance and corporate time horizons. Because the analysis in this chapter focusses on listed firms, it assumes a relatively homogenous transparency level across the sample of

firms. In contrast, an environment of unlisted firms is significantly more opaque given lower regulatory requirements, the lack of additional transparency requirements imposed by stock exchanges, and the absence of analysts and other intermediaries, such as rating agencies. It is possible that family capital plays a more important role in unlisted firms, and especially in those under pressure. This is because families' informational advantage may be stronger in more opaque environments, and weaker in more transparent environments.

Table 3.5: Regression results - LTI-performance under pressure by type of family influence

The dependent variable is LTI. LTI denotes long-term index. FO denotes family ownership. FM denotes family management. All models are pooled ordinary least squares (OLS) regressions. A detailed description of the variables can be found in Appendix 3.1, Appendix 3.2, and Appendix 3.3. Time and industry dummies and a constant are included. Standard errors are calculated following White (1980). t-statistics are presented in parentheses. ***, **, and * indicate significance on the 1%, 5%, and 10% level. Source: Kappes and Schmid (2012).

Model	I	II	III
Family ownership (FO)	0.0017 (0.11)	0.0020 (0.13)	-0.0047 (-0.31)
Family management (FM)	0.030*** (3.62)	0.029*** (3.45)	0.033*** (4.29)
FO x Loss (t-1)	-0.049 (-1.56)		
FM x Loss (t-1)	0.031** (2.14)		
Loss (t-1)	-0.020*** (-2.78)		
FO x Underperformance (t-1)		-0.048 (-1.56)	
FM x Underperformance (t-1)		0.038** (2.52)	
Underperformance (t-1)		-0.023*** (-3.23)	
FO x Negative momentum (t-1)			-0.055 (-1.30)
FM x Negative momentum (t-1)			0.049** (2.45)
Negative momentum (t-1)			-0.016 (-1.42)
<i>Control variables</i>	<i>not reported</i>		
<i>Observations</i> ⁵²	5,075	5,075	5,033
<i>Adjusted R²</i>	0.18	0.18	0.18

Table 3.6 reports the results of regressing LTI scores on separate family generation variables, namely first generation and second generation family firm variables, as well as on pressure indicators and the relevant interactions terms. As in Table 3.3, the coefficients of both the first generation family firm variable and the later

⁵² Momentum requires data points from two consecutive years, which is not available for 42 observations.

generation family firm variable are positive and strongly significant. Also, the coefficients of all three pressure variables are negative and significant across pressure specifications.

The interaction term of the first generation family firm variable with the underperformance variable is positive. However, its interaction with loss and its interaction with momentum are insignificant. The results suggest that the effect of first generation family firm governance on corporate time horizons is significant under competitive pressure, but insignificant otherwise. Possibly, founder firms are able to leverage their high degree of discretion (e.g., Le Breton-Miller and Miller (2006)) in decision-making in order to withstand external pressure and undertake the measures necessary for long-term improvement of the firm's position during times of high competitive pressure. However, the lack of significance of the interaction terms in Models I and III suggests that this effect may not be very robust.

In contrast, the coefficients of the interaction terms of the later generation family firm variable with the three pressure indicators are positive and significant. This result is consistent across pressure specifications. A possible explanation may be a difference in the priorities of the two types of family firms. While first generation family firms may have a higher preference for family consumption during times of pressure, later generation family firms may be more focussed on transgenerational considerations. In these later generation family firms, it is possible that a larger number of family members are involved in the firm. It is likely that these family members themselves have already benefitted from the transgenerational approach of previous generations. As a result, they may be more likely to be committed to the family, including the next generation. If the firm already has a history of transgenerational succession, then long-term orientation may also be a more integral part of corporate policy, as argued by Lumpkin and Brigham (2011). According to the authors, long-term orientation is only learnt over time, but also takes time to be "unlearnt." As such, second generation family firms may be less apt to "unlearn" their long-term orientation when they are exposed to external pressure, which may explain the stronger effect compared to first generation family firms.

Table 3.6: Regression results - LTI-performance under pressure by family generation

The dependent variable is LTI. LTI denotes long-term index. 1FF denotes first generation family firm. LFF denotes later generation family firm. All models are pooled ordinary least squares (OLS) regressions. A detailed description of the variables can be found in Appendix 3.1, Appendix 3.2, and Appendix 3.3. Time and industry dummies and a constant are included. Standard errors are calculated following White (1980). t-statistics are presented in parentheses. ***, **, and * indicate significance on the 1%, 5%, and 10% level. Source: Kappes and Schmid (2012).

Model	I	II	III
1st generation FF (1FF)	0.033*** (4.32)	0.032*** (4.12)	0.035*** (4.93)
Later generation FF (LFF)	0.022*** (2.61)	0.020** (2.43)	0.021*** (2.64)
1FF x Loss (t-1)	0.016 (1.43)		
LFF x Loss (t-1)	0.029* (1.66)		
Loss (t-1)	-0.023*** (-3.33)		
1FF x Underperformance (t-1)		0.023** (1.99)	
LFF x Underperformance (t-1)		0.037** (2.13)	
Underperformance (t-1)		-0.025*** (-3.64)	
1FF x Negative momentum (t-1)			0.026 (1.56)
LFF x Negative momentum (t-1)			0.082*** (3.04)
Negative momentum (t-1)			-0.021* (-1.84)
<i>Control variables</i>	<i>not reported</i>		
<i>Observations</i> ⁵³	5,005	5,005	4,965
<i>Adjusted R²</i>	0.18	0.18	0.18

⁵³ Momentum requires data points from two consecutive years, which is not available for 40 observations.

3.4.2 Robustness tests

A range of robustness tests are conducted in order to test the validity of the results reported in Chapter 3.4.1.1 and Chapter 3.4.1.2. The tests focus on two core areas of concern in econometrics, namely measurement error and endogeneity.

Measurement error: The robustness tests reported in this chapter address the concern of measurement error by using alterations of the specification of the LTI scores (Chapter 3.4.2.1.1) and the specification of the family governance variables used (Chapter 3.4.2.1.2).

Endogeneity: The problem of endogeneity is addressed by re-running regressions using alternative econometric models. In particular a fixed effects regression specification is applied (Chapter 3.4.2.1.3), as it partly accounts for omitted variable bias. In addition, propensity score matching is used in order to test the validity of the direction of causality assumed (Chapter 3.4.2.2).

3.4.2.1 Variable and model specification

3.4.2.1.1 Index measurement

With regards to the dependent variable, results could be biased if the variable suffers from measurement error.

Number of indicators: A feature of the LTI score described in Chapter 3.3.1.1 is that it includes firms for which only some of the index variables are available. This choice was motivated by the improvements in applicability of the index across a wide range of business models and industries. A definition that requires all nine indicators to be available would have limited the applicability of the index. This is because not all firms report all nine index items. For example, firms without an R&D capability do not report R&D spending. In addition, some data points were unavailable in the Thomson Worldscope database. In order to make the index as widely applicable as possible, an inclusive definition requiring a minimum of three

available variables was chosen. This allows the use of a sample size of more than 5,000 observations.⁵⁴

In order to add confidence that the results in Chapter 3.4.1 are robust to stricter data availability requirements, the regressions reported in Table 3.3 are repeated using a stricter index definition.

Table 3.7 Model I provides the regression results using the Restricted LTI definition (cf. Figure 3.6). This definition requires information on all nine time horizon indicators to be available. If any reporting bias or systematic omission of information existed, the results in Model I could deviate from the results in Table 3.3. The results in Table 3.7 Model I indicate that the results obtained using the main (more inclusive) LTI specification are not affected by any material reporting bias. Notably, the number of observations in Table 3.7 Model I is as low as 1,711, compared to more than 5,000 observations in Table 3.3. For this reason, and because results are robust to this stricter definition, the main model uses a more inclusive specification.

While these robustness tests indicate that the index is not sensitive to variations in its definition, it remains an auxiliary construct to approximate corporate time horizons. Although the LTI score defined in Chapter 3.3.1.1 is derived from theoretical research and based on previous work in the field, it is only an approximation. This is because time horizons cannot be measured directly, unless survey data is used (e.g., Poterba and Summers (1995)). However, survey formats suffer from other limitations, such as subjectivity of the respondents and potential response bias. The LTI construct used in this chapter does not suffer from the problems typically faced in survey-based research designs. However, as mentioned, it is only an approximation, yet one based on objective and audited data.⁵⁵

Industry classification: The LTI definition used in Table 3.3 to Table 3.6 is based on each firm's rank within its respective industry and year for a maximum of nine indicators. The industry classification is based on one-digit SIC codes. The same applies for the index reported in Table 3.7 Model I.

⁵⁴ The inclusion of firm-years with availability of less than nine indicators should not lead to a systematic reporting bias, as all sample firms are subject to the same reporting requirements a) by law and b) according to the standards set by the Frankfurt Stock Exchange.

⁵⁵ For details on limitations of the research presented in this chapter, cf. Chapter 3.5.3.

Because one-digit SIC codes may not be considered sufficiently granular to allocate firms into industry groups, an alternative industry classification is used in order to challenge the results reported in Table 3.3 to Table 3.6 and Table 3.7 Model I. For this purpose, the 17 industries suggested by Fama and French (2012) are used. Table 3.7 Model II and Table 3.7 Model III report the results of regressing LTI and LTI restricted, both based on a 17 industries classification, on the family governance variable. The family governance coefficients indicate that results are robust to the alternative industry classification. Actually, the coefficient in Table 3.7 Model III is even higher, indicating that the results reported in Table 3.3 are more likely to underestimate the impact of family governance on LTI, rather than overstate its effect.

Table 3.7: Robustness test results - LTI-performance using alternative index specifications

The dependent variable is LTI restricted in Model I and Model III, and LTI in Model II. LTI denotes long-term index. All models are pooled ordinary least squares (OLS) regressions. A detailed description of the variables can be found in Appendix 3.1, Appendix 3.2, and Appendix 3.3. Time and industry dummies and a constant are included. Standard errors are calculated following White (1980). t-statistics are presented in parentheses. ***, **, and * indicate significance on the 1%, 5%, and 10% level. Source: Kappes and Schmid (2012).

Model	I	II	III
	LTI restricted 10 industries	LTI 17 industries	LTI restricted 17 industries
Family firm (FF)	0.028*** (2.80)	0.034*** (5.37)	0.032*** (3.13)
Outside block-holder	-0.023* (-1.72)	-0.051*** (-5.39)	-0.018 (-1.31)
Firm size	0.0025 (1.03)	-0.00082 (-0.50)	-0.00025 (-0.097)
Market-to-book	0.0025 (1.40)	0.0019** (2.39)	0.0031** (2.25)
Profitability (t-1)	0.11*** (4.76)	0.12*** (8.25)	0.12*** (5.40)
Leverage (t-1)	-0.15*** (-8.65)	-0.12*** (-10.7)	-0.14*** (-7.68)
Tangible assets	0.12*** (3.78)	0.12*** (6.56)	0.099*** (2.95)
Dividend	-0.0038 (-0.36)	0.0088 (1.41)	0.0049 (0.46)
Founding age (Ln)	-0.0077* (-1.88)	-0.012*** (-4.49)	-0.0085** (-2.01)
<i>Observations</i> ⁵⁶	1,711	5,075	1,711
<i>Adjusted R</i> ²	0.17	0.19	0.18

Sub-indices: The motivation for developing an index that covers elements from three areas of corporate policy (namely investing, employees, and financing) was driven by the limited explanatory power of single indicators, such as R&D.⁵⁷ The three corporate policy dimensions have been chosen based on previous research.

In order to gain additional insight into which areas of corporate policy drive the results reported in Chapter 3.4.1.1, each LTI sub-index is regressed on the family

⁵⁶ LTI restricted is only calculated if all nine indicators are available.

⁵⁷ Cf. Chapter 3.3.1.1.

firm variable. The results of the sub-index regressions are reported in Table 3.8. As specified in Chapter 3.3.1.1, the calculation of each sub-index score requires availability of all three indicators in the category. This ensures that the sub-indices actually have higher explanatory power than individual indicators and do not enter regressions as such. The results reported in Table 3.8 show that the family firm variable has a positive and strongly significant coefficient in both the investment sub-index regression (Model I) and the financing sub-index regression (Model III). Notably, the coefficient of the family firm variable is insignificant in the *employees* sub-index regression (Model II).

Prior research on corporate time horizons and employee policy has highlighted that the strong relationships family firms are able to build with their employees are a key area in which family firms differ from non-family firms. Some authors argue that the contracts that family firms form with their employees are based on long-term commitments, reflecting longer horizons of family firms' employee policy (e.g., Block (2010), Chirico, Ireland, and Sirmon (2011), Le Breton-Miller and Miller (2006)). The results reported in Table 3.8 Model II do not support this argument, as the coefficient of family firms is insignificant.

The institutional setting of the analysis in this chapter may partially explain the lack of significance of the family firm variable in the employee sub-index regression. Labour rights in Germany have historically been strong. This is reflected in strict legislation with regards to employment contract terms, redundancy practices, employee representation in supervisory boards, minimum wages, collective wage agreements, and strong labour unions. Based on these powerful German labour rights, it is possible that the average German firm is relatively long-term oriented with regards to its employees, as they are required to behave in this way based on regulation and other institutional pressures, such as the activities of labour unions.

Therefore, if the average firm in Germany has a relatively long horizon with regards to employees, the additional effect of family governance may be small under these circumstances. This may be particularly the case in comparison to countries where employer rights are substantially stronger, such as in the U.S. or in the UK. It would be helpful to conduct further research in this area in order to establish the influence of regulatory and institutional factors on corporate time horizons and on the various sub-categories of corporate time horizons in particular.

As with the restricted LTI score, the number of observations in the sub-index regressions is lower, with 2,135 observations for the investment sub-index, 4,158 for the employees sub-index and 4,509 for the financing sub-index. This is based on the stricter definitional requirements for calculating the sub-indices, compared to the overall LTI score.

Table 3.8: Robustness test results - LTI-performance by sub-index

The dependent variable is LTI Investment in Model I, LTI Employees in Model II, and LTI Financing in Model III. LTI denotes long-term index. FF denotes family firm. All models are pooled ordinary least squares (OLS) regressions. A detailed description of the variables can be found in Appendix 3.1, Appendix 3.2, and Appendix 3.3. Time and industry dummies and a constant are included. Standard errors are calculated following White (1980). t-statistics are presented in parentheses. ***, **, and * indicate significance on the 1%, 5%, and 10% level. Source: Kappes and Schmid (2012).

Model	I	II	III
	LTI Investment sub-index	LTI Employees sub-index	LTI Financing sub-index
Family firm (FF)	0.053*** (3.72)	0.010 (1.55)	0.038*** (3.26)
Outside block-holder	-0.028 (-1.44)	-0.038*** (-4.23)	-0.060*** (-3.43)
Firm size	0.017*** (4.87)	-0.0013 (-0.79)	-0.0027 (-0.93)
Market-to-book	0.0041 (1.53)	0.0018* (1.73)	0.00048 (0.32)
Profitability (t-1)	0.024 (0.78)	0.23*** (10.7)	0.055* (1.86)
Leverage (t-1)	-0.15*** (-5.37)	-0.041*** (-3.47)	-0.24*** (-11.7)
Tangible assets	0.50*** (9.26)	-0.021 (-1.11)	-0.081** (-2.46)
Dividend	-0.011 (-0.83)	0.023*** (3.42)	0.0032 (0.28)
Founding age (Ln)	-0.0025 (-0.40)	-0.013*** (-5.09)	-0.0086* (-1.70)
<i>Observations</i> ⁵⁸	2,135	4,158	4,509
<i>Adjusted R</i> ²	0.22	0.11	0.14

⁵⁸ Sub-index scores are only calculated if data for all three variables of a given sub-index is available.

3.4.2.1.2 Family influence measurement

As is the case for the dependent variable, measurement error in the explanatory variable may also bias results.

Family management: In particular, a robustness test of the family management variable used is helpful in order to substantiate its effect on LTI scores, as family management was found to account for the family governance effect in Table 3.3 and in Table 3.5. The family management definition used in the regressions reported in Table 3.3 and Table 3.5 includes firms where members of the founding family, including the founder, are part of the management board or part of the supervisory board. However, it could be argued that the presence of a family member on the supervisory board may not have the same effect as if this person was part of the management board. For this reason, management board and supervisory board effects are assessed separately by regressing LTI scores on separate management board and supervisory board variables.

The following definitions are used for family representation on the management board and on the supervisory board.

Definition 3.10: Family management board (MB)

The number of family members on the management board divided by the total size of the management board.

Definition 3.11: Family supervisory board (SB)

The number of family members on the supervisory board divided by the total size of the supervisory board.

Both definitions account for the absolute board size, in order to reflect family influence on each board as accurately as possible, as it is more likely that the influence of a family member on a board with three directors would be higher compared to the influence of a family member on a board with seven other directors.

Table 3.9 reports the results of using these alternative and more granular family influence variables. These regressions provide more detail on the pathways through which families influence their firms as well as on the ways in which they impact

corporate time horizons. The results show that family representation on the management board has a positive and strongly significant effect on LTI scores. In contrast, family representation on the supervisory board does not have a significant effect on LTI scores.

This indicates that, with regards to corporate time horizons, family members behave more passively when controlling firms via supervisory functions, compared to those family firms who actively manage firms via representation on the firm's management board. Possibly, the active managers of a firm have more discretion to pursue family utility maximising strategies, in particular those creating cross-generational utility. In contrast, this discretion may be delegated to non-family managers in firms where family members mainly control the firm via the supervisory board.

Table 3.9: Robustness test results - LTI-performance using alternative family influence specifications

The dependent variable is LTI. LTI denotes long-term index. FO denotes family ownership. All models are pooled ordinary least squares (OLS) regressions. A detailed description of the variables can be found in Appendix 3.1 and Appendix 3.3. Time and industry dummies and a constant are included. Standard errors are calculated following White (1980). t-statistics are presented in parentheses. ***, **, and * indicate significance on the 1%, 5%, and 10% level. Source: Kappes and Schmid (2012).

Model	I	II	III	IV
Family ownership (FO)	0.031** (2.44)			0.0097 (0.71)
Family management board (%)		0.058*** (4.66)		0.055*** (4.09)
Family supervisory board (%)			0.014 (0.53)	0.010 (0.38)
Outside block-holder	-0.059*** (-6.28)	-0.058*** (-6.57)	-0.069*** (-7.92)	-0.054*** (-5.82)
Firm size	0.0015 (0.92)	0.0027* (1.70)	0.0011 (0.69)	0.0028* (1.76)
Market-to-book	0.0018** (2.11)	0.0017** (2.05)	0.0019** (2.20)	0.0017** (2.04)
Profitability (t-1)	0.11*** (7.84)	0.11*** (8.02)	0.12*** (8.03)	0.11*** (7.93)
Leverage (t-1)	-0.14*** (-12.8)	-0.13*** (-12.6)	-0.14*** (-13.0)	-0.13*** (-12.6)
Tangible assets	0.12*** (6.46)	0.13*** (6.72)	0.13*** (6.62)	0.13*** (6.72)
Dividend	0.0063 (1.00)	0.0080 (1.28)	0.0070 (1.13)	0.0078 (1.23)
Founding age (Ln)	-0.012*** (-4.40)	-0.011*** (-3.97)	-0.012*** (-4.47)	-0.011*** (-3.96)
<i>Observations</i> ⁵⁹	5,075	5,064	5,075	5,064
<i>Adjusted R</i> ²	0.16	0.17	0.16	0.17

3.4.2.1.3 Econometric models

The regressions reported in Table 3.3 to Table 3.9 are based on panel data, as described in Chapter 3.3.2. The major advantage of panel data is that it is possible to simultaneously extract cross-sectional and time-series effects from the same dataset. Cross-sectional effects relate to the differences between individuals, in this

⁵⁹ Management board data is missing for 11 observations.

case between different firms in the dataset. Time-series effects capture the effect of changes in the individuals (firms) over time. While cross-sectional effects are static, time-series effects are dynamic. Panel data allows the simultaneous analysis of cross-sectional and time-series effects.

The method of ordinary least squares (OLS) was used for all regressions reported in Table 3.3 to Table 3.9. One technical aspect of OLS is that it estimates the relationship between the dependent and explanatory variable by calculating a single intercept and the slope that describes the incremental effect of increases in the explanatory variable on the dependent variable. This is because it combines both cross-sectional and time-series effects in a single linear estimation of the relationship between the dependent and the explanatory variable. As such, the OLS estimator ignores any cross-sectional heterogeneity. Accordingly, it does not account for unobserved factors that differ between individual firms, but that might impact the dependent variable. A key assumption of OLS is that all explanatory variables are uncorrelated with the regression's error term. However, if unobserved factors that differ between firms are correlated with the explanatory variable, then the regression's coefficient estimates will be biased. This is because the model will overestimate or underestimate the coefficient estimates of the explanatory variables in the model due to the effect of the unaccounted variable on the dependent variable. As a result, the coefficient estimates will be biased.

Fixed effects models and random effects models have been developed to improve estimations by allowing for individual-specific intercepts. These models are therefore able to account for heterogeneity in individuals (firms).

Fixed effects model: The fixed effects model accounts for individual-specific heterogeneity by including a dummy variable for each individual into the regression and, in this way, allowing for separate intercepts. Technically, the average value of all observations for an individual firm across the observation period is subtracted from the value in each year. In a second step, OLS is then run using these transformed variables. By subtracting the average value of a variable over time from the observation's value in each year, the fixed effects technique removes any time-invariant variables from the estimation. This applies to both time-invariant effects accounted for in the model and to those not accounted for in the model. Only the within-variation per individual firm is reflected in the coefficient estimates. A consequence of using fixed effect is that time-invariant unobserved variables do not create bias in the coefficient estimates, as they are removed from the model. As such, the application of a fixed effects model

represents a partial remedy to the problem of omitted variable bias and related endogeneity concerns.

Table 3.10 Model I reports the results of a fixed effects regression of LTI scores on the family firm variable. In line with the results obtained using OLS regression (Chapter 3.4.1), the family firm coefficient is positive and strongly significant when using a fixed effects specification. This suggests that previously reported results are not biased by unobserved time-invariant variables. However, because fixed effects models may fail to detect relationships between an explanatory and an independent variable if the explanatory variable does not vary significantly over time (as is the case for family firm status), the main model uses an OLS specification.

Random effects model: Similar to the fixed effects model, the random effects model includes an individual specific intercept. However, this individual-specific intercept is interpreted as a random deviation from the regression's overall intercept and therefore included in the error term. The error term in a random-effects model is thus the sum of the individual-specific intercept's deviation from the regression's overall intercept and the residual error term that represents the individual observation's deviation from the regression line.

Because it does not explicitly eliminate time-invariant variables from the model by avoiding the inclusion of dummies for each individual firm, the random effects model is able to provide coefficient estimates for time-invariant variables. The ability to exploit both cross-sectional and time-series information is the major advantage of the random effects model when compared to the fixed effects model, which only produces estimates for time-variant variables. Like the fixed effects model, the random effects model controls for unobserved time-invariant factors. However, it assumes that the individual-specific intercept's deviation from the regression's overall intercept that is included in the error term is uncorrelated with the explanatory variables in the model. As such, the assumptions of the random effects model are stricter than the assumptions of the fixed effects model. If however, the individual-specific intercept's deviation from the regression's overall intercept changes with the explanatory variable, the assumptions of random effects would be violated and the coefficient estimates would therefore be biased.

Table 3.10 Model II reports the results of a random effects model, where LTI scores are regressed on the family firm variable. Again, the coefficient estimate is

positive and strongly significant, suggesting that results are robust to this alternative specification.

Between effects model: The between effects estimator runs an OLS estimation using the average of the explanatory variable values and the dependent variable values of each individual firm. It only depicts the variation between individual firms and neglects any within-firm variation that occurs over time. This is because this type of estimator only makes use of the cross-sectional differences in the dataset. In contrast, in the fixed effects model, only the within-variation per individual firm is reflected in the coefficient estimates (Table 3.10 Model I). As such, the firm-fixed effects estimator and the between firm-fixed effects estimator are complementary models. Unweighted averaging of the two models yields the same results obtained from using OLS estimation, and matrix-weighted averaging yields the random effects estimator (cf. Kennedy (2008)).

Table 3.10 Model III reports the results obtained from a between firm effects estimation. Again, the coefficient of family governance is positive and strongly significant.

Table 3.10: Robustness test results - LTI-performance using alternative econometric models

The dependent variable is LTI. Model I is a firm-fixed effects (FE) regression, Model II a random effects (RE) regression, and Model III a between-firm effects (BE) regression. A detailed description of the variables can be found in Appendix 3.1 and Appendix 3.3. Time and industry dummies (not Model I), and a constant are included. Standard errors are calculated following White (1980). t-statistics are presented in parentheses. ***, **, and * indicate significance on the 1%, 5%, and 10% level. Source: Kappes and Schmid (2012).

Model	I	II	III
	FE	RE	BE
Family firm	0.024***	0.042***	0.035***
	(2.70)	(6.83)	(3.94)
Outside block-holder	0.0048	-0.022**	-0.040***
	(0.40)	(-2.58)	(-3.00)
Firm size	0.022***	0.0037**	0.0058***
	(4.17)	(2.07)	(2.69)
Market-to-book	0.00016	0.00037	0.0020
	(0.23)	(0.53)	(1.18)
Profitability (t-1)	0.16***	0.15***	0.040
	(11.1)	(11.2)	(1.44)
Leverage (t-1)	-0.045***	-0.084***	-0.18***
	(-3.50)	(-8.04)	(-11.3)
Tangible assets	0.039	0.073***	0.16***
	(1.06)	(3.44)	(7.20)
Dividend	0.015***	0.010**	0.0073
	(2.82)	(2.04)	(0.68)
Founding age (Ln)	-0.0074	-0.015***	-0.0085***
	(-0.61)	(-4.97)	(-2.88)
<i>Observations</i>	<i>5,075</i>	<i>5,075</i>	<i>5,075</i>
<i>Adjusted R²</i>	<i>0.13</i>	<i>0.15</i>	<i>0.33</i>

3.4.2.2 Endogeneity

According to a survey by Börsch-Supan and Köke (2002), reverse causality ranks among the four most common methodological problems in corporate governance research.⁶⁰ Reverse causality may exist if the explanatory variable used is not exogenous with regards to the dependent variable. If this is the case, then the

⁶⁰ The three additional common econometric problems in empirical corporate governance studies mentioned in the study by Börsch-Supan and Köke (2002) are sample selectivity, missing variables, and measurement error in variables.

coefficient estimates obtained from regressing the dependent variable on the endogenous explanatory variable will be biased.

With regards to corporate time horizons, the regressions in Chapter 3.4.1 have shown that a correlation exists between long-term orientation and family governance, namely that family governance is associated with longer corporate time horizons. While theoretical rationales exist which support the hypothesis that family governance drives longer corporate time horizons, the direction of causality is implicitly assumed in the regression design used in this chapter rather than proven by the analysis. Therefore, it is generally possible that the effect is actually of opposite direction. In the context of this chapter, this would be the case if long-term orientation caused family involvement.

The family firm definition used in this chapter provides a partial remedy to this problem, as it does not render it possible for a firm to become a family firm in a later stage of its life cycle. Therefore, the possibility for families to opt into firms which they consider to have long corporate horizons is eliminated. This possibility is eliminated because the family firm definition used in this chapter is based on the founding family rather than another focal family or private individual. While this partly addresses reverse causality concerns, it is still possible for families to opt out of industries or firms which do not match their preferences with regards to corporate time horizons. If this is the case, then family governance cannot be considered exogenous with regards to corporate time horizons. If family governance is not exogenous, then the analysis in Chapter 3.4.1 would suffer from reverse causality, and the coefficients would be biased.

In order to gain insight into the direction of causality, propensity score matching, which was introduced by Rosenbaum and Rubin (1983), can be helpful. The propensity score matching method addresses the problem of counterfactuals. In the context of family governance and corporate time horizons, it is possible to see that family firms have longer time horizons, but it remains unknown if the same group of firms would have had shorter time horizons if they did not have family involvement. The question “what if these firms were not family firms?” is tackled using propensity score matching. To implement propensity score matching, the following steps are undertaken.

Procedure: First, those firms that change status from family firm to non-family firm at any point in the observation period are identified. The change in status is considered to be a treatment for the purpose of propensity score matching. Those

family firms that maintained their family firm status over the observation period are analogously considered untreated. In a next step, those firms switching status from family to non-family firms (treated) are compared to those firms that remained family firms throughout the observation period (untreated). Kernel matching, as suggested by Heckman, Ichimura, and Todd (1997), is used to calculate a pre-treatment propensity score. The propensity score expresses the likelihood that a firm will switch its status from family firm to non-family firm. It therefore approximates counterfactual outcomes.

The hypothesis which would support that the above results are not affected by reverse causality is that firms experience a reduction in corporate time horizons following treatment. In other words, if the average treatment effect for the treated (ATT) is negative and significant, then this represents a strong indication that reverse causality does not affect the results in Chapter 3.4. If this is the case, then the coefficients reported can be considered largely unbiased. For this purpose, LTI scores before the treatment and after the treatment are compared. A range of event windows are applied to allow for an adaptation of strategy and operations to the time horizons of new owners following a sale by the family or handing over of management responsibilities to non-family managers. The shortest window used begins one year before the treatment and ends one year after the treatment. The longest window begins two years before the treatment and ends four years after the treatment.

95 treatment events are identified for the shortest time window (one year before to one year after the treatment), and 44 treatment events are identified for the longest time window (two years before to four years after the treatment). R^2 is calculated using bootstrapping with 1,000 replications to account for potential bias resulting from the small sample size of the propensity score matching sample, which may not be fully representative of the full population of firms studied in the main regressions in Chapter 3.4. The propensity score matching results are reported in Table 3.11.

Results: The ATT coefficients reported in Table 3.11 are negative across time windows. For the smallest window (one year before and one year after the treatment), the coefficient is not significant. As longer windows are allowed in order to account for time required to adjust strategy and operations to a new owner's/ manager's time horizon following the exit of the founding family, the coefficients reach increasing levels of significance. The negative ATT coefficients suggest that a switch from family to non-family firm status results in shorter

corporate time horizons. As such, the results obtained from the propensity score matching approach add confidence that the findings in Chapter 3.4.1 are not biased by reverse causality.

Limitations: While propensity score matching helps to reduce bias, critics argue that some hidden bias may remain, as the application of propensity score matching can only cover variables that are observed and to the extent that they are measured accurately (e.g., Shadish, Cook, and Campbell (2002)). Further, the number of treatments identified in this chapter is small, and inferences made therefore have to be interpreted with caution. In addition, it cannot be used to address other endogeneity concerns, such as those resulting from omitted variables, sample selection errors, or variable measurement errors.

Table 3.11: Robustness test results - propensity score matching

The dependent variable is LTI for the stated time intervals. t-statistics are presented in parentheses. The estimation is based on kernel matching. ***, **, and * indicate significance on the 1%-, 5%-, and 10%-level according to bootstrapped standard errors calculated using 1,000 replications. Source: Kappes and Schmid (2012).

Lag before (years)	Lag after (years)	No. treated	ATT kernel	Bootstrapped
1	1	95	-0.055 (-1.17)	(-1.03)
1	2	78	-0.037* (-1.86)	(-1.74)
2	2	74	-0.055** (-2.37)	(-2.25)
2	3	53	-0.055** (-2.24)	(-2.16)
2	4	44	-0.069** (-2.14)	(-2.06)

3.5 Discussion

This chapter focusses on the question as to whether family firms fundamentally differ from non-family firms with regards to their corporate time horizons.

The motivation for this research is rooted in theories that claim family firms to be in a unique position to solve intertemporal problems (e.g., Le Breton-Miller and Miller (2006)). Such theories are based on the particular governance structures in

family firms as well as on the assumption of family-specific incentives and motives that have the potential to influence corporate decision-making.

3.5.1 Contribution

3.5.1.1 Theoretical contribution

Chapter 3 draws on an *agency* theoretical framework to explain differences in corporate time horizons between family firms and non-family firms. For this purpose, *agency theory* is complemented with insights obtained from the family firm literature. In particular, Chapter 3 focusses on four core elements of family-specific utility that have been identified in family firm literature and are relevant in the context of the discussion of corporate time horizons. These four elements are a) utility derived from family consumption, b) transgenerational utility, c) utility from control retention (expressed in the form of patient capital), and d) utility from risk reduction. As part of the hypothesis development in Chapter 3.2.2, these family-specific utility elements are incorporated into the utility functions of family principals and family agents. Thus, these elements are the basis for the discussion of differences in predictions of time horizon-related agency outcomes in family firms compared to non-family firms.

The combination of classical *agency theory* with elements from the family firm literature illustrates two aspects frequently discussed with regards to *agency theory*. On the one hand, the theoretical framework developed in Chapter 3.2.1 complements the growing stream of literature that suggests a limited generalisation of *agency theory*. This is because agency outcomes are strongly dependent on the underlying corporate governance systems and variation of governance systems within a dataset (e.g., Choi, Park, and Hong (2012)). While this is often implicitly assumed, it is explicitly accounted for in Chapter 3.2.1. On the other hand, the theoretical framework developed in Chapter 3.2.1 illustrates how *agency theory* can be flexibly adjusted to the underlying context and is therefore versatile in nature. Such adjustment has to be conducted in the context of the specific circumstances underlying a given research question and empirical setting. The theory presented in Chapter 3.2.2 represents an illustration of this versatility and adaptability of *agency theory* in the context of family firms.

3.5.1.2 Methodological contribution

The long-term index (LTI) developed as an integral part of the empirical research design underlying the analysis in Chapter 3.3 significantly extends the previous literature on corporate time horizons. In particular, the LTI concept presented covers three core areas of corporate policy by including elements from financing policy, investment policy, and employee policy. As such, it suggests a more integrated approach to analysing corporate time horizons, compared to prior approaches that have typically focussed on a single indicator of corporate time horizons. In most cases, research & development (R&D) expenditure has been used to approximate corporate time horizons in the prior literature.

By capturing elements from these three areas of corporate policy, the LTI score used is applicable to a wide range of industries, company life cycle stages, and business models. In comparison, research designs focussing on a single indicator, such as R&D, can only be used in specific (e.g., R&D-intensive) industries. In addition, single indicator approaches may incorrectly attribute a time horizon effect. For example, R&D intensity may strongly depend on the underlying business model even within a certain industry. For example, within the pharmaceuticals industry, a producer focussing on developing, patenting, and selling new drugs will be heavily involved in R&D, while a generics company in the same industry will devote significantly less capital to R&D than the innovator. In this case, researchers using a mere R&D-focussed approach may not be comparing like for like, even within a single industry.

While it is valuable and important to study specific decision-making situations such as R&D investments, inferences on corporate time horizons may only be possible to a limited extent. The more integrated measure presented in Chapter 3.3 addresses these problems. Some authors have previously extended their research designs beyond R&D. For example a study by Fahlenbrach (2009) covers R&D as well as M&A, and a paper by Anderson, Duru, and Reeb (2012) analyses both R&D and CapEx. While these works have provided a somewhat more holistic approach compared to pure R&D studies, the research presented in Chapter 3.4 is the first empirical study that applies an integrated approach which covers elements from different areas of corporate policy.

3.5.1.3 Empirical contribution

The analysis in Chapter 3 is based on a dataset covering 6,205 firm-years relating to 701 firms.⁶¹ The German institutional setting is particularly suitable for family firm research as family firms account for a high share of corporations in the German economy. This is not only the case for small and unlisted firms. It also holds in the context of listed and large firms. In the dataset of listed firms used, 47% of firm-year observations relate to family firms. This data shows that family firms play an important role in the German economy and highlights the suitability of the German institutional context when studying family firms. However, family firms also play an important role on a global scale (e.g., Faccio and Lang (2002), La Porta, López-De-Silanes, and Shleifer (1999)). As such, the results obtained in a German context have implications beyond Germany.

The results obtained from the empirical analysis presented in Chapter 3.4 support the hypothesis that family firms have longer corporate time horizons than non-family firms. The LTI scores of family firms are on average higher than those of non-family firms, after controlling for other factors such as size, capital structure, or profitability.⁶² As such, family governance appears to reduce the agency problem related to corporate time horizons that can result in underinvestment and other agency costs in firms with separated ownership and control.⁶³

The data suggests that extended horizons in family firms are not the result of patient capital endowments in these firms. This is because mere family ownership does not have a significant effect on LTI scores. In contrast, the coefficient of family management is strongly significant. The effect is robust to a range of alternative model and variable specifications. The robustness tests performed include a propensity score matching approach which suggests that results are not biased by reverse causality. The strong significance of family management in explaining LTI scores points to transgenerational considerations having a considerable effect on corporate time horizons in family firms. Even if families may have unique incentives (and the necessary discretion) to consume firm assets at the cost of other shareholders, transgenerational considerations appear to outweigh any effect of such consumption on corporate time horizons. These

⁶¹ Cf. Chapter 3.3.2.

⁶² For a detailed overview of the control variables used, cf. Chapter 3.3.1.4.

⁶³ This includes both below-optimal investment levels with regards to physical assets, employees, and also the relationships with capital providers of the firm.

findings also support the previously expressed claim that family ownership and management should be considered separately in family firm research (e.g., Block (2010), Sciascia and Mazzola (2008), Villalonga and Amit (2006)). This is because family management and family ownership may be associated with different effects on a dependent variable, possibly involving opposite signs leading to a net neutral effect.

In addition to empirically analysing differences between LTI scores of family firms and non-family firms (Chapter 3.4.1.1), Chapter 3.4.1.2 adds another perspective on the intertemporal behaviour of these firms. Specifically, regressions presented in Chapter 3.4.1.2 explicitly incorporate the state of the firms into the analysis. This is achieved by including different types of pressure variables in the regressions in order to gain insight as to whether higher LTI scores in family firms can also be observed during times of pressure, where the opportunity costs of long-term orientation may be particularly high. The results show that the differences in intertemporal choices of family firms and non-family firms are particularly pronounced during times of pressure. The data indicates that family firms under pressure are even more long-term oriented than family firms not under pressure. A possible explanation is an even higher prioritisation of future family generations when the firm is underperforming and a reduction of family consumption (or even propping) in order to support the firm during a difficult phase. Non-family firms on the other hand prioritise the short-term to an even greater extent during times of pressure, potentially in an effort to extract as much utility as they can for as long as possible.

3.5.2 Implications of results

The results obtained from the research in Chapter 3 have a range of implications for practitioners (in particular family firms and their co-investors) as well as for policy makers.

3.5.2.1 Implications for investors

Investors may find these results useful in selecting investments that match their personal time horizons. In particular, the results obtained from studying reactions to pressure indicate that the extraction of short-term profits may be more difficult to achieve in family firms than in non-family firms. This is because family firms are less likely to divert from their long-term strategy and the probability that they

will abandon long-term objectives in return for a short-term payout is lower. This is because their behaviour is strongly influenced by the impact of their actions on future generations. This concern for later generations permeates all areas of corporate policy, suggesting that the theories of authors such as James (1999), Le Breton-Miller and Miller (2006), or Lumpkin and Brigham (2011) hold in the dataset studied. Short-term oriented investors may therefore want to focus on investing in non-family firms, as they are more likely to be more short-term oriented than family firms. In this way, time horizon-related divergence of interests between majority and minority shareholders is less likely to occur.

On the other hand, participation in family firms may be attractive for long-term oriented investors. In particular, if long-term orientation results in the accumulation of resources that create long-term competitive advantage as posited by Le Breton-Miller and Miller (2006), then investors that are willing to commit capital over a longer time horizon will be able to benefit from returns to these resources. However, such investors need to be aware of potentially negative short- and medium-term implications of long-term oriented strategies that may result in a hockey stick-shaped development of the value of their investment and potentially long payback periods.

3.5.2.2 Implications for family firms

Family firms themselves may find the results in Chapter 3.4 useful in defining their optimal target shareholder structure. By focussing on shareholder categories with time horizons that match their own long-term oriented corporate policy, they may be able to avoid time horizon-related conflicts with co-investors. In particular, they are less likely to be affected by pressure from shareholders when long-term oriented activities negatively affect short-term results. They may want to explicitly promote their long-term orientation in corporate communications in order to attract shareholder types that have similar time horizons. By effectively managing expectations, they may be able to achieve optimal goal congruence between family and outside shareholders.

3.5.2.3 Implications for policy makers

The results obtained in Chapter 3.4 reinforce the importance of family firms in the German economy. If a long-term approach to business results in the building of resources that deliver a long-term competitive advantage, as argued by Le Breton-

Miller and Miller (2006) or Porter (1992), then family firms have the potential to positively affect the competitiveness of an economy. In addition, the results suggesting that family firms react to pressure in a less pronounced way than non-family firms further indicate that family firms may have the potential to reduce economic cyclicality. While controlling families are likely to pursue self-interested objectives in supporting their firms during difficult times, these strategies may benefit a variety of stakeholders. For example, employees may benefit from safer jobs, leading to more stable labour markets and a lower burden on social systems. From a fiscal perspective, more reliable and less volatile tax payments may accrue to tax collectors. Further, the higher financial independence of family firms may reduce the chances of a bailout scenario during an economic downturn.

The results should therefore encourage policy makers to shape the legal environment in a way that facilitates the formation and continuation of family firms. This may include lifting barriers to transferring family firms from generation to generation and therefore enable founding families to remain in control of their firms over time. This is particularly the case as results indicate that later generation family firms exhibit particularly high degrees of stability during times of pressure.

3.5.3 Limitations

As all empirical studies, the research presented in Chapter 3.4 has a range of limitations.

3.5.3.1 Variable measurement

An advantage of the index approach taken is that it draws a more balanced and more comprehensive picture of corporate time horizons than single indicator approaches. In particular, single indicator approaches may suffer from significant measurement error as they only depict a single decision-making situation related to intertemporal choice, so that inferences made on overall time horizons may be somewhat precarious.

In contrast, the index used as overall corporate time horizon measure in this chapter covers indicators from different areas of corporate policy. It includes elements from financing policy, investment policy, and employee policy. As such, the index is able to account for any potential shifts and trade-offs between different areas of corporate policy that a firm may encounter. Because of the broad scope of the index, it is applicable to a wider range of industries and does not discriminate

certain business models over others to the same extent as single indicator studies do.

Although the index therefore addresses some of the core problems of single indicator studies, it still only provides an indicative approximation of corporate time horizons. However, because time horizons and intertemporal choices cannot be observed or measured directly, researchers in this area have no choice but to rely on indicators in order to quantitatively approximate such variables. Further, as Bebchuk and Stole (1993) note, underinvestment in a firm's future is especially likely for investment categories that are not observable. The LTI score used in this chapter is unable to measure such unobservable factors.

3.5.3.2 Scope of research

The LTI score is not a measure of success. It is a descriptive measure of the degree of long-term orientation of a firm based on indicators from financing policy, investment policy, and employee policy. However, it does not quantify the impact of the time horizon on any measure of success, such as productivity, growth, or firm value. As such, it does not address the question of optimal time horizons.

This limitation is similar to the one expressed by Fahlenbrach and Stulz (2009), who analysed the time horizons of founder firms as reflected in the investment behaviour of these firms. The author explicitly states in his research that more investment does not necessarily translate into higher performance, as investments can have negative NPVs. In addition, overinvestment may occur, especially in firms with entrenched founder-CEOs and a lack of effective monitoring. Further, the specific circumstances of a firm may have an impact on the success of a particular long-term oriented initiative. As Lumpkin and Brigham (2011) point out, some investments may be value creating in some situations, but less helpful in others, depending on a range of internal and external factors. For example, Lavery (1996) specifically states that situations may occur in which short-term firm survival needs to be prioritised over long-term capacity building.

As previously mentioned, the index used in Chapter 3 does not address the question of optimality of time horizons. Likewise, the research presented does not address the question as to whether the time horizon chosen by a specific firm in a specific context can be considered appropriate or not.

3.5.3.3 Institutional context

The research presented was conducted in a specific institutional context, namely Germany. Germany has a range of advantages, in particular a high share of family firms as part of the overall economy. However, some of the regulatory conditions in Germany are specific to this institutional context, thus generalisation beyond Germany may in some cases suffer from limitations.

In particular, Germany is a bank-based rather than a market-based economy that is characterised by strong creditor and comparably weak shareholder rights. It may be argued that this context to some extent discourages risk-taking from the perspective of shareholders, which may amplify the uniqueness of family capital. In addition, labour rights are strong in comparison to other countries that have a stronger focus on employer rights. Because of strong labour rights, the impact of family governance on the employee dimension of time horizons may be limited in Germany and might be stronger in employer-centred markets. The results obtained with regards to employee policy point in this direction.

3.5.3.4 Sample selection

The empirical research in this chapter is based on listed firms only. The advantage of studying listed firms is the better availability of data. However, in the overall economy the majority of firms are unlisted -not only in Germany, but also on a global basis. However, the dynamics around unlisted firms are likely to differ significantly from those relevant for listed firms. This is because different legal and stakeholder pressures apply depending on whether a firm is listed or not.

As such, the results obtained may not be generalisable beyond the group of listed firms, as differences between listed and unlisted firms may be attributable to other factors than corporate time horizons. For example, the financing behaviour of listed and unlisted firms may differ significantly (cf. Brav (2009)), driven mainly by factors such as tradability of stocks and bonds and differences in information asymmetries. Also, the impact of family ownership on corporate time horizons may differ significantly in unlisted firms. For example, the scope for family consumption may be greater if transparency is lower, and the lack of access to public capital may amplify the impact of family capital on the strategic choices of firms.

3.5.4 Suggestions for future research

Notwithstanding the above mentioned limitations, the results presented in Chapter 3.4 yield interesting insights into the intertemporal choices of family firms and non-family firms. In addition, the research presented points to a range of interesting areas for future research.

3.5.4.1 Analysis of within-family firm variation

One avenue for future research comprises the within-variation of family firms. The research presented in Chapter 3 separates family firms into family-managed firms and family-owned firms as well as into first generation family firms and later generation family firms. However, the universe of family firms can also be segmented along a range of alternative dimensions. The discussion of different family firm definitions in Chapter 3.3.1.2 reflects the complexity and definitional variation in the literature on family firms.

The research presented in Chapter 3 focusses on family firm definitions that could be implemented using reliable secondary data sources. It therefore prioritised reliability and traceability over granularity. Other authors may want to take a different approach. For example, the F-PEC scale of family firms suggested by Astrachan, Klein, and Smyrnios (2002) provides a continuous measure of family influence that has been much discussed in the family firm literature. It includes measures of power, experience, and culture. As such it is a comprehensive measure that is helpful in differentiating the group of family firms in a more granular way. However, it requires data beyond the data available for the dataset used in this chapter. Such data tends to be available using survey designs only, which makes its applicability in large datasets challenging, particularly in panel settings.

3.5.4.2 Analysis of additional drivers of time horizons

Future research may also want to analyse the impact of factors other than ownership structures on corporate time horizons. Such factors may include firm characteristics such as listing status, regional footprint, or degree of diversification, which may be relevant in explaining corporate time horizons. Again other factors may include board characteristics (one-tier versus two-tier, bank representation, etc.), capital structure, debt covenants, or pyramidal ownership structures, all of

which may have an effect on intertemporal choice. Some of these factors may moderate the effect of family governance on corporate time horizons.

3.5.4.3 Event study designs analysing external shocks

The study of external shocks may also yield interesting insights and may be used to additionally address endogeneity concerns. Such research designs tend to require a dataset covering a long time period to allow for suitable pre- and post-event observation periods. However, such external shocks may shed light onto the specific circumstances under which family governance has an impact on corporate time horizons. In the dataset used, no external shocks could be identified.

3.5.4.4 Research into additional geographies

Research in other geographies and in the context of different institutional settings may be helpful in understanding to what extent the findings in this chapter are attributable to the underlying German institutional context. As the much cited papers of La Porta et al. (1998) and La Porta, López-De-Silanes, and Shleifer (1999) show, the institutional context and legal framework of a country may, to some extent, explain corporate ownership structures. As such, these factors may moderate the effect of family governance on corporate time horizons.

In particular, studying corporate time horizons in market-based economies may be helpful in complementing the research presented in Chapter 3 that was conducted in the context of a bank-based financial system.

3.5.4.5 Analysis of the impact of corporate time horizons

As discussed above, the research presented in this chapter does not study any implications of shorter or longer corporate time horizons. That is, it does not link the level of long-term orientation to any measures of success, such as stock market performance, firm growth, relations with stakeholders, firm survival, or profitability. Additional insights may be generated from conducting additional research into the implications of corporate time horizons on such measures of performance, whether on the firm or overall economy level. Such research may yield interesting implications for investors, policy makers, and family firms themselves. The quality of such research depends on the choice of methods and the degree to which endogeneity concerns can be addressed, as long-term orientation has often been argued to be the result of success. This is because only successful

firms may have the financial and organisational slack to be able to afford a long-term view and to make the relevant investments, even if those do not pay off in the near term.

4 Mergers & acquisitions in family firms

This chapter is based on Kappes, Schmid, and Volk (2012).

4.1 Literature review

4.1.1 Prior evidence of M&A in family firms

A number of studies have analysed the impact of ownership structures on corporate M&A-behaviour. These can broadly be grouped into four categories, namely studies focussing on acquisition probabilities, research into the types of deals conducted, documentation of financing decisions in M&A deals, and analysis of abnormal returns following deal announcements. The following is a summary of the previous research on M&A-behaviour in family firms.

4.1.1.1 Acquisition probability

A range of studies investigate whether the acquisition behaviour of family firms differs with regards to acquisition probability. These studies analyse the number of acquisitions conducted by family firms compared to non-family firms. For instance, in a set of 898 listed U.S. firms, Miller, Le Breton-Miller, and Lester (2010) analyse the acquisition volumes of family and non-family firms over the 1996 to 2000 period. In this study, the authors document lower acquisition volumes in family firms compared to non-family firms. They argue that controlling families buy fewer firms because they place a high importance on the non-financial aspects of the business, including its legacy, robustness, culture, and relationships. Given that acquired firms need to be integrated into the acquiring business following an M&A transaction, these non-financial aspects of the business may be impacted by

an M&A deal. As a result, family firms have a lower preference for M&A than non-family firms, according to the authors.

Shim and Okamuro (2011) perform a similar study in a dataset of 1,202 listed Japanese firms over the 1955 to 1973 period. Their results are in line with the findings of Miller, Le Breton-Miller, and Lester (2010) and show that family firms are less likely to become buyers. The interpretation of Shim and Okamuro (2011) is that family firms are concerned about losing control of their firms following an M&A deal. The authors add to this finding by documenting that the M&A probability of family firms becomes equal to the probability of an average non-family firm, as soon as family ownership reaches 90%, at which point a control loss is unlikely. Similarly, the work of Caprio, Croci, and Del Giudice (2011) documents that the higher the share of family ownership in a firm, the lower the probability of an M&A transaction. Their study covers a set of 777 listed large Continental European firms over the period from 1998 to 2008. The family effect documented by the authors is observed after controlling for ownership concentration, indicating that family governance has a strong effect on acquisition behaviour that cannot be explained by ownership concentration alone. Similar to Shim and Okamuro (2011), they argue that the driver of lower acquisition probabilities in family firms is the families' fear of diluting their controlling position. The authors further split out the family firms in their sample and show that when families hold the majority of shares, the family ownership coefficient becomes insignificant. They argue that families with a majority stake are less concerned about losing control due to their strong pre-deal position in the firm. In contrast, families' aversion to M&A is particularly strong at low levels of ownership where their control position is already vulnerable.

Miller, Le Breton-Miller, and Lester (2010) also study the size of the deals conducted by the firms in their dataset. They find family firms to conduct smaller deals compared to non-family firms. The authors suggest the avoidance of large deals by family firms to be driven by a desire to protect the returns of the existing business. Given that the value at risk increases with deal size, large transactions are therefore avoided by family firms.

These studies on acquisition probabilities and deal sizes unanimously confirm a different M&A-behaviour of family firms, when compared to non-family firms. The majority of authors argue that a higher degree of risk aversion, as well as control loss concerns, are the key drivers of this different behaviour.

4.1.1.2 Types of M&A transactions

If risk aversion and control loss concerns drive lower M&A probabilities in family firms, then the question remains as to why family firms do not refrain from M&A altogether. A range of scholars have analysed the question as to whether family firms may be more amenable to certain types of deals than others.

Miller, Le Breton-Miller, and Lester (2010) argue that risk aversion can also drive positive decisions to pursue M&A activities in family firms. Their reasoning is that, because family owners concentrate a significant share of their wealth in their firm, they are personally strongly exposed to their firm's development. This frequent family firm owner strategy of putting all of one's egg into a single basket may lead to a need to diversify at the firm-level, because diversification on the personal level is not possible for a family firm owner whose wealth is tied up in the business (cf. also Heaney and Holmen (2008)). One way to achieve diversification is via M&A into other industries or other regions, the objective being to provide the firm with an in-house hedge of revenues against movements in underlying markets. In line with this view, Miller, Le Breton-Miller, and Lester (2010) demonstrate that the propensity to make acquisitions in non-core industries is positively associated with family ownership. The authors argue that, in this way, family owners reduce risk on the firm-level with the objective to protect their personal wealth. A range of other studies have also touched on the aspect of diversification via M&A in family firms. However, neither the study by Anderson and Reeb (2003b), nor evidence by Bauguess and Stegemoller (2008), nor the work of Caprio, Croci, and Del Giudice (2011) have succeeded in providing any indication that family firms have a higher propensity to make diversifying acquisitions. Overall, while studies on diversification motivations for M&A transactions in family governed firms are theoretically convincing, the evidence of risk-reducing M&A strategies is, at best, weak.

4.1.1.3 Financing of M&A transactions

Another related literature stream focusses on financing decisions in M&A deals. This literature stream shows how the financial structure of an M&A deal can have an impact on controlling shareholders. It may therefore affect their decision-making behaviour and provide insights into their personal preferences.

One of these studies is conducted by Faccio and Masulis (2005) who analyse 1,349 listed European bidders over the period from 1997 to 2000. Their research focusses

on how ownership concentration may affect buyers' payment choices in M&A. While the authors do not explicitly focus on family ownership, the results are nonetheless relevant in the context of family firms. This is because family ownership constitutes a special form of concentrated ownership. Therefore, both the reasoning and the results of Faccio and Masulis (2005) are helpful in understanding M&A-behaviour of family firms. The authors argue that cash payment (rather than stock payment) in an M&A transaction is indicative of strong control preferences of the buyer. This is because stock payment would require the buyer to issue additional shares, leading to a dilution of pre-deal owners' shares (cf. also Franks et al. (2012)). It is worth noting that even if a firm holds significant amounts of treasury shares, using those shares to pay for an acquisition would dilute pre-deal owners' voting power. This is because voting rights of treasury shares are suspended for the time the shares are held in treasury. Once these shares change hands, the voting rights are re-activated, which has the same dilution effect on pre-deal owners as a new share issue. For this reason, stock payments may lead to a control loss for pre-deal owners even if no additional shares are issued.

The empirical results presented by Faccio and Masulis (2005) show that cash payments are more frequent for buyers that have concentrated ownership. The authors show that cash payments are especially frequent if controlling shareholders of the bidding firm have an intermediate level of voting power (in the range of 20% to 60%). According to the authors, shareholdings in the 20% to 60% range indicate a particularly vulnerable situation for owners, as in this range control loss has a particularly strong impact. For example, a 55% shareholder losing 10% of voting power will lose the majority vote and, while still in a strong position after the deal, this owner will have to cooperate with other shareholders in order to influence decision-making. In addition, Faccio and Masulis (2005) show that the propensity to pay with cash also increases as the ownership structure of the target becomes more concentrated. According to the authors, this is because in a share deal, concentrated owners of the target may become block-holders in the post-deal firm. If this is the case, then these new block-owners may be able to significantly influence corporate policy and thus reduce the decision-making power of the pre-deal owners of the buyer.

Similarly, Caprio, Croci, and Del Giudice (2011) find that family firms are less likely to finance M&A deals using stock. The authors document this family effect after controlling for ownership concentration, indicating that ownership concentration alone does not drive financing decisions in M&A. For their sample

of 777 listed large Continental European firms observed over the period from 1998 to 2008, the authors show that even family firms with ownership greater than 50% are less likely to use stock as a means of payment in M&A deals. A study by Basu, Dimitrova, and Paeglis (2009) confirms this result for bidders with varying levels of family ownership. Their work covers 103 mergers in newly listed U.S. firms over the 1993 to 2000 period. While both low and high levels of family ownership coincide with high stock payment probabilities, intermediate family ownership is associated with a significantly lower stock payment probability.

Overall, the evidence from payment choices in M&A deals is supportive of a particular decision-making pattern of acquirers that have concentrated owners. This decision-making pattern appears to be geared towards maximising personal control, or at least towards minimising control loss. Control loss aversion seems to be particularly strong in family firms, as the studies of Caprio, Croci, and Del Giudice (2011) and Basu, Dimitrova, and Paeglis (2009) suggest.

4.1.1.4 M&A announcement returns

In addition to acquisition probabilities, the choice of deal types (with regards to both deal size and diversification effect), and financing decisions in M&A transactions, a fourth area of research investigates market reactions to M&A deals. The studies that are part of this stream of research document the existence and direction of abnormal returns following the announcement of an M&A transaction. As such, these studies reflect the aggregated views of shareholders and indicate whether, in sum, they believe that a deal will create or destroy value.

Ben-Amar and Andre (2006) find abnormal returns following deal announcements to be greater when the buyer is a family firm compared to deals in which the acquirer is a non-family firm. The author argues that market participants do not expect family owners to use M&A to obtain private benefits at the cost of non-family shareholders. In contrast, Bauguess and Stegemoller (2008) find that, for a sample of 1,411 acquisitions by 498 S&P500 firms, M&A announcement returns are lower if the buyer is a family firm, when compared to non-family bidders. The interpretation offered by the authors is that the market assumes family owners to be entrenched and to choose deals based on the return to the family, rather than the return to all shareholders. Returns to the family may include various forms of private benefits which represent a cost, rather than a return, for co-investors. Feito-Ruiz and Menendez-Requejo (2009) find for 124 deals undertaken by European listed buyers that family ownership positively influences acquiring shareholder

valuations following the announcement of an M&A transaction. The authors argue that family firms are characterised by lower agency conflicts due to a longer-term orientation and the continuity of the people involved over time. Based on lower agency conflicts, M&A decisions made in family firms are thus perceived to be more efficient by the market, as the results obtained suggest.

The market reactions to merger announcements of family firms documented by Basu, Dimitrova, and Paeglis (2009) indicate a strong contingency of investor reactions on the level of ownership of the controlling family as well as on the type of payment used. Specifically, in cash-financed deals, a positive market reaction is documented for bidders in which family ownership is high. In contrast, market participants react negatively if the acquirer has a low level of family ownership. The interpretation provided by the authors is based on control considerations that may drive M&A decisions in family firms. The authors argue that the negative market reaction to announcements of deals by acquiring firms with low levels of family ownership is likely to be driven by an expectation amongst market participants that family owners will protect their control. This is because family owners are vulnerable to control loss at low levels of ownership. As a result, the market expects families to entrench themselves, possibly at the cost of non-family owners. In contrast, controlling families are less vulnerable to control loss at high levels of family ownership, making protective actions unnecessary. Hence the positive market reaction to announcements of deals by bidders with high levels of ownership. In cases of high levels of family ownership, Basu, Dimitrova, and Paeglis (2009) argue that the interests of family owners are more aligned with the interests of non-family owners.

In stock-financed acquisitions, the market positively perceives loss of family control if family ownership is low. This may be because the influence of potentially already entrenched family owners decreases or because, by giving up some degree of control, these owners credibly signal that they will not expropriate non-family shareholders. In contrast, the market considers the effect of a loss of family control in firms with high family ownership to have a negative impact on the firm. This is because the interests of these family owners are more likely to be aligned before the deal, but their loss of control resulting from the deal makes the use of entrenchment mechanisms more likely. For these stock-financed acquisitions, the authors document that the market reaction to deals announced by acquirers with high levels of family ownership is positive. At the same time they show that there is a simultaneous negative effect from the dilution that makes the

use of control-defence mechanisms (which may have negative implications for other shareholders) more likely. The opposite effect is documented for deals of buyers with low levels of family ownership. The negative market reaction due to low family ownership is offset by a positively perceived dilution effect in stock-financed deals. In addition, Basu, Dimitrova, and Paeglis (2009) report that non-family block-holders and insider owners do not influence M&A performance, indicating that the behaviour of family firms cannot be explained merely with their concentrated ownership position.

The study by Feito-Ruiz and Menendez-Requejo (2009)⁶⁴ also shows that ownership levels are crucial when determining the effect of family ownership on acquisition announcement returns. The authors show that an ownership level of more than 32% leads to a negative effect on acquirer valuations following the announcement of an M&A deal. They argue that entrenchment concerns drive this negative reaction as high levels of family ownership favour opportunistic M&A deals that mainly benefit controlling shareholders rather than all shareholders. In contrast, for their set of Continental European firms mentioned above,⁶⁵ Caprio, Croci, and Del Giudice (2011) fail to document any effect of family ownership on announcement returns.

Overall, evidence from M&A announcement returns is mixed and suggests that in addition to owner identity, the level of ownership might play a significant role for the evaluation of deal announcements by the market. While studies documenting positive reactions interpret family firms to be characterised by better alignment of interests or lower agency costs, researchers finding a negative reaction argue that control considerations and concerns about the use of entrenchment devices drive lower abnormal returns. Figure 4.1 provides a summary of previous studies on the M&A-behaviour of family and non-family firms and the key insights generated.

⁶⁴ Cf. p.172.

⁶⁵ Cf. p.168.

Figure 4.1: Previous research on M&A decision in family firms

Study	Sample	Key findings
Faccio and Masulis (2005)	3,667 deal announcements by 1,349 listed bidders in 13 European countries over the 1997-2000 period	Concentrated owners with medium voting power (20-60%) prefer cash deals
Ben-Amar and Andre (2006)	327 transactions by Canadian listed firms over the 1998-2002 period	Abnormal deal announcement returns are greater for family firms
Holmén, Knopf, and Peterson (2007)	65 deals by 157 listed Swedish firms over the 1988-1991 period	Firms controlled by less diversified shareholders are less likely to be taken over
Bauguess and Stegemoller (2008)	1,411 acquisitions by 498 S&P500 firms over the 1994-2005 period	Family firms are 52% less likely to be acquired relative to non-family firms Acquisitions of family firms are associated with lower shareholder value
Basu, Dimitrova, and Paeglis (2009)	103 mergers in newly listed U.S. firms over the 1993-2000 period	Deal announcement returns are positive (negative) at high (low) levels of family ownership in the acquirer Low (high) family ownership leads to a high (low) preference for cash payment in an acquisition The market positively (negatively) perceives a loss of family control if family ownership in the firm is low (high)
Feito-Ruiz and Menendez-Requejo (2009)	124 deals by European listed buyers over the 2002-2004 period	Family involvement positively influences acquiring shareholder valuations in M&A announcements Family ownership above 32% has a negative effect on acquiring shareholder valuations in M&A announcements
Miller, Le Breton-Miller, and Lester (2010)	3,144 acquisitions by 898 Fortune 1,000 firms over the 1996-2000 period	Family firms have lower acquisition volumes Family firms have lower acquisition values The level of family ownership is negatively associated with the share of acquisitions made in the core industry
Caprio, Croci, and Del Giudice (2011)	2,275 deals by 777 listed large Continental European firms over the 1998-2008 period	Family control decreases the probability of making an acquisition (especially at low levels of ownership) Family control makes the acceptance of an acquisition proposal less likely There is no effect of family control on acquisition performance (announcement returns)
Shim and Okamuro (2011)	253 deals by 1,202 listed Japanese firms over the 1955-1973 period	Family firms conduct fewer deals Family firms underperform with regards to operating performance improvement around the merger date

Previous studies focus on listed buyers and only some include unlisted targets (Caprio, Croci, and Del Giudice (2011), Faccio and Masulis (2005)). However, it is possible that the behaviour of unlisted firms differs significantly from the behaviour of listed firms, as the option to go public may only be attractive for a subset of firms with specific characteristics. This may lead to a systematic sample selection effect in the studies described in this chapter. In particular, the additional scrutiny of a listed firm's affairs may be a motivation for firms to stay private (e.g., Minichilli, Corbetta, and MacMillan (2010)). As such, it may not be possible to generalise the results obtained from previous research, particularly with regards to unlisted buyers. In reality, however, unlisted firms make up the majority of companies on a global basis. Family firms, in particular, are less common among listed firms, yet they are the dominant form of organisation on a global basis. This may be indicative of a lack of representativeness of family firm studies that focus exclusively on listed firms.

For this reason, the research presented in the following does not exclusively focus on listed firms, but builds on a large dataset covering all medium-sized and large German firms over the 2005 to 2010 period. As such, this chapter presents the first study that provides insight into the M&A-behaviour of unlisted firms. It also gives the first comprehensive overview of the detailed ownership structures of German corporations beyond the subset of listed companies. In addition, the family firm literature suggests that there exists significant within-variation in family firms with regards to their M&A-behaviour. For this reason, the following hypotheses incorporate differences between family-managed and family-owned firms, and data is also separately presented for first generation family firms and second generation family firms.

4.1.2 Prior research on the effects of listing on M&A

Direct evidence of the impact of a stock market listing on M&A activities is scarce. The paper by Maksimovic, Phillips, and Yang (2012) is the only study that provides a direct comparison of M&A activities of listed and unlisted firms. The study analyses 48,915 U.S. manufacturing plant deals over the period from 1972 to 2004. The authors find that listed firms conduct a higher number of plant purchases compared to unlisted firms. According to the authors, this is facilitated by improved access to public capital. In addition, the authors find that debt ratings are also associated with a higher number of plant acquisitions, suggesting that access to debt capital increases with a rating, equivalent to improvements in access to

equity that results from an equity listing. Further, the study shows that the purchasing behaviour of listed firms tends to be more cyclical and thus correlated to a greater extent with industry merger waves and economy-wide merger waves. Maksimovic, Phillips, and Yang (2012) argue that the willingness to acquire drives the decision to pursue an IPO, as this represents an option to obtain public finance more easily and at lower cost when investment opportunities emerge. Higher efficiency gains realised by listed firms following acquisitions of plants are subsequently interpreted as a self-selection of firms into the group of listed firms that is based on growth opportunities and quality.

However, because the authors use plant-level data, it is difficult to compare the findings of Maksimovic, Phillips, and Yang (2012) to deals relating to whole companies, as many of the factors in deals relating to whole companies, in particular with regards to risk, do not apply in the case of plant deals. For example, integrating a plant does not involve nearly the same cultural or people component, and post-acquisition integration is significantly less complex from an organisational perspective. While deals relating to whole companies often involve a complex restructuring process of the combined organisation and affects various business functions, the integration of a plant is unlikely to materially affect too many areas outside of production. By restricting the sample to U.S. plants, the study by Maksimovic, Phillips, and Yang (2012) does not cover international deals. It is also likely to primarily cover deals between firms in the same industry (non-diversifying deals). As such, valuation and synergy risks are also likely to be significantly lower in these deals compared to transactions that involve whole companies. Nevertheless, and in particular in the absence of other research into M&A-behaviour of listed and unlisted firms, the study provides useful insights, some of which may also apply to deals involving whole firms. The study by Maksimovic, Phillips, and Yang (2012) is summarised in Figure 4.2.

Figure 4.2: Previous research on the effect of listing on M&A - direct evidence

Study	Sample	Key findings
Maksimovic and Phillips (2001)	48,915 U.S. manufacturing plant acquisitions over the period 1972-2004	<p>Listed firms participate more often in plant acquisitions than unlisted firms</p> <p>Listed firms are almost twice as likely to buy assets in a plant merger wave year than in a non-wave year</p> <p>Transactions of listed firms are larger</p> <p>Listed firms with better credit rating and more liquid stocks are more likely to buy-out additional plants</p> <p>Listed firms make better acquisitions which is reflected in higher efficiency gains following the deal</p>

In contrast, indirect evidence in the form of studies that analyse the M&A-behaviour of firms in their post-IPO period is more abundant.

The first study in this area was published by Pagano, Panetta, and Zingales (1998) and covered 69 IPOs of Italian firms that occurred between 1982 and 1992. The authors derive their hypotheses for explaining why firms go public from a range of research streams that take into account both costs and benefits of going public. As such, the approach of the study is primarily exploratory in nature. On the cost side, adverse selection/ moral hazard, fixed costs of a stock market listing, and loss of confidentiality (for example for companies with proprietary technologies) are considered as potential drivers of the decision to avoid an IPO. On the positive side, financial constraints, diversification, liquidity, stock market monitoring, access to investors, improved bargaining power vis-à-vis investors, control transfer, and the opportunity to exploit stock market mispricing are considered. While the research by Pagano, Panetta, and Zingales (1998) does not separately consider M&A as a dependent variable, the authors do analyse how IPOs affect investment behaviour, in particular with regards to the *financial constraints*, *stock market monitoring*, and *stock mispricing* hypotheses. Notably, they find that investment decreases following an IPO. Moreover, firms in the dataset tend to go public following periods of strong investment. It is possible that these firms conduct the IPO in order to re-balance the firm's capital structure following periods of high borrowing. In addition, the results support the hypotheses that IPO firms time the market in order to exploit high valuation of their shares. However, due to the Italian institutional context and the small sample size, the findings of Pagano, Panetta, and Zingales (1998) may be difficult to generalise.

Kim and Weisbach (2008) analyse a large sample of 17,226 IPOs conducted by firms from 38 countries between 1990 and 2003. They present findings that differ significantly from those of Pagano, Panetta, and Zingales (1998). The authors demonstrate that capital raised in IPOs is used to subsequently fund investments, indicating that future investments represent a central motivation for going public. Notably, the authors also analyse different types of investments and reveal that R&D is the key expense area that is funded from IPO proceeds. In contrast, acquisition expenses and debt repayments tend to be covered by internally generated funds. Kim and Weisbach (2008) also divide their sample into firms with high valuations and those with low valuations. They find a higher probability that firms with low valuations will use proceeds from a seasoned equity offering (SEO) to pursue M&A activities. As such, their results suggest a rejection of the hypothesis that firms go public to exploit high valuations in order to fund M&A activities. However, they provide general support for a positive relationship between M&A and listing.

In addition, three studies explicitly analyse the relationship between IPOs and M&A for different samples of U.S. firms. Two of those studies were published in 2010, including a study by Celikyurt, Sevilir, and Shivdasani (2010) named “Going public to acquire?” and a paper by Hovakimian and Hutton (2010) titled “Merger-motivated IPOs.” In the subsequent year, Hsieh, Lyandres, and Zhdanov (2011) followed with a paper named “A theory of merger-driven IPOs.”

Celikyurt, Sevilir, and Shivdasani (2010) find M&A activity to increase following IPOs. In the same year, Hovakimian and Hutton (2010) confirm this result. Celikyurt, Sevilir, and Shivdasani (2010) also show that IPOs occur more frequently in industries that are particularly active with regards to M&A, again suggesting that IPOs may be motivated by M&A considerations. Hovakimian and Hutton (2010) further demonstrate that the post-IPO probability increases with the level of IPO proceeds as well as with the level of liquidity of the stock and that the probability of a deal decreases with the time elapsed since the IPO. Moreover, Celikyurt, Sevilir, and Shivdasani (2010) document that capital issues after the IPO are also closely linked to M&A transactions. The findings of these two studies support the hypothesis that access to public equity increases a firm’s M&A probability. This is not only due to the initial infusion of cash received following an IPO. The continuous option to raise additional equity as M&A opportunities emerge also positively affects a firm’s M&A probability, according to those studies. Notably, Hovakimian and Hutton (2010) further find that this also applies

with regards to public debt, as debt ratings also increase the chances of M&A transactions in their sample. This indicates that M&A considerations may also motivate firms to issue public debt, again supporting the hypothesis that access to capital represents a major factor in determining a firm's M&A probability. Celikyurt, Sevilir, and Shivdasani (2010) also show that IPO firms with high stock valuations are more likely to use stock as a currency in acquisitions, for which Hovakimian and Hutton (2010) also find some evidence. Likewise, the study by Hsieh, Lyandres, and Zhdanov (2011) documents an effect of stock valuations on M&A, suggesting that firms go public to use their listed stock as an acquisition currency and time investments to exploit potential mispricing of their stock.

Overall, previous research on the effect of IPOs on M&A activities suggests a positive relationship, whereby firms go public in order to facilitate M&A via improved access to capital and the creation of an additional currency (i.e., listed shares). Figure 4.3 summarises previous research on the effect of going public on M&A activity.

Figure 4.3: Previous research on the effect of listing on M&A - evidence from IPOs

Study	Sample	Key findings
Pagano, Panetta, and Zingales (1998)	69 Italian IPOs over the period 1982-1992	Investment levels decrease following an IPO IPOs are conducted following periods of strong growth and strong investment
Kim and Weisbach (2008)	17,226 IPOs by firms from 38 countries over the period 1990-2003	IPOs are conducted following periods of strong growth and investment Capital from IPOs is likely to be used for R&D Internally generated funds are likely to be used for M&A and debt repayments Firms with low valuations are more likely to use SEO proceeds to fund M&A
Celikyurt, Sevilir, and Shivdasani (2010)	1,295 U.S. IPOs over the period 1985-2004	Capital raised in IPOs is used to fund investments IPOs cluster in M&A-intensive industries IPO-firms with over-valued stock conduct more stock-financed acquisitions Post-IPO capital issues are closely linked to M&A activity
Hovakimian and Hutton (2010)	5,771 U.S. IPOs over the period 1980-2006	Capital from IPOs is likely to be used for R&D, while internally generated funds are more likely to be used for acquisitions and debt down-payments Large IPO proceeds increase the probability of a deal The likelihood of deals declines with the time elapsed since an IPO Debt rating and debt proceeds increase the chances of a deal Liquidity increases the chances of deals
Hsieh, Lyandres, and Zhdanov (2011)	6,552 U.S. IPOs over the period 1981-2007	Firms with low valuations are more likely to use SEO proceeds to fund acquisitions than high-valuation firms The time between an IPO and a merger decreases with the valuation surprise, it increases with valuation uncertainty before the IPO, and it decreases with the cost of the IPO The likelihood of a post-IPO merger decreases with the firm's valuation and increases with the IPO cost

A third research area has collected insights from interviewing Chief Financial Officers (CFOs) with regards to their listing decisions.

Brau and Fawcett (2006) have conducted a survey among 336 U.S. CFOs. Their evidence shows that, according to the participating CFOs, the facilitation of M&A is at the core of the decision to go public. This is mainly due to the creation of stock as a currency that can be used to fund acquisitions and the establishment of a

market price of the value of the firm that helps managers to optimise their M&A strategy. The findings of Bancel and Mittoo (2009), who focus their survey on Europe, confirm these results. Brau and Fawcett (2006) further provide empirical insights into the M&A-behaviour of IPO firms. The authors find that IPO firms have a higher probability of becoming buyers, when compared to non-IPO firms. Notably, they also provide evidence of the reasons why firms decide to stay private and find that maintaining decision-making control and ownership are key drivers of the decision not to pursue a listing. Bancel and Mittoo (2009) further add that IPO goals depend strongly on a firm's type of owners. According to their study, family firms are more likely to go public to improve bargaining power vis-à-vis their debt providers. In contrast, their decision is less driven by M&A objectives which play a stronger role in non-family firms.

Of course, survey results may be to some extent biased due to a potential degree of subjectivity in the responses. They also tend to reflect beliefs rather than actions or outcomes. In addition, response rates are typically low, raising concerns about potential patterns of self-selection. Figure 4.4 summarises these surveys that analyse the impact of listing on M&A.

Figure 4.4: Previous research on the effect of listing on M&A - evidence from surveys

Study	Sample	Key findings
Brau and Fawcett (2006)	Survey covering 336 U.S. CFOs of firms that went public over the period 2000-2002	The main reason for an IPO is the facilitation of acquisitions due to the creation of a stock currency and the visibility of a market price IPO firms become acquirers more often than non-IPO firms The primary reason to remain private is maintaining decision-making control and ownership
Bancel and Mittoo (2009)	Survey covering 78 CFOs of firms that went public in 12 European countries over the period 1994-2004	More than 50% of CFOs consider the facilitation of M&A deals to be important in their listing decision The majority of CFOs state that their IPO has been helpful in determining their market value More than 50% of CFOs note that the use of their firms' own stock in future acquisitions has been a decision-making criterion for the IPO Family firms are less interested in M&A, and more interested in strengthening bargaining power with creditors when going public

While the existing evidence supports the hypothesis that IPO decisions are driven by M&A objectives, a systematic comparison of the M&A-behaviour of unlisted and listed firms does not exist to date. Most importantly, IPO firms only represent a subset of listed firms and, while the initial decision to list may be driven by M&A considerations, the long-term effects of a listing on the M&A-behaviour of (mature) listed companies compared to unlisted firms may be different. In addition, these studies do not provide much insight into the M&A-behaviour of unlisted firms. Lastly, the interplay of family governance with listing and their effect on M&A-behaviour has been virtually ignored in the literature to date. Further research into these effects may be helpful in better understanding whether the family effects observed in previous M&A studies are the result of a selection problem that is based on studying listed firms only, or whether these results are robust to a study setting that includes the spectrum of unlisted firms.

The following chapter presents hypotheses on the M&A-behaviour of family firms and non-family firms and pays specific attention to the potential differences between listed and unlisted firms.

4.2 Hypotheses exploring the effect of family governance on M&A

As described above, previous authors have documented a significantly different M&A-behaviour in family firms compared to non-family firms.⁶⁶ Based on this previous research, hypotheses regarding the M&A-behaviour of family firms, compared to non-family firms, are developed in the following. Specific attention is dedicated to the effects of a stock market listing of the firm's equity on M&A activities, given that a stock market listing has an impact on a range of factors that in turn might affect M&A decisions. These factors may include a firm's access to finance, its capital structure, the firm's disclosure requirements, fiduciary responsibilities, and its shareholder structure (e.g., Brav (2009), Minichilli, Corbetta, and MacMillan (2010)).

⁶⁶ Cf. Chapter 4.1.1.

4.2.1 The effect of family ownership on M&A

4.2.1.1 Control considerations in family firms

Previous research has indicated that family firms have a particularly strong preference for control maximisation, or control maintenance, and that their M&A activities may be aligned to meet their preferences with regards to corporate control. From a theoretical point of view, two key family firm characteristics can be argued to cause stronger control preferences in family firms compare to non-family firms. These are identity congruence between the firm and the family and a transgenerational approach to business.

Identity congruence: A range of authors argue that family firms differ from non-family firms with regards to a significant overlap of family identity and firm identity. This overlap may result in mutual spill-over effects. This means that family firm identity may impact the firm's identity, and vice versa (Zellweger et al. (2011)). While identity is mainly a concept that relates to one's personal perception of oneself, similar perceived spill-over effects of the firm's reputation to the reputation of family members and vice versa are also likely to occur externally. This is particularly likely to be the case if the family and the firm carry the same name. If the firm and the business are strongly intertwined, which is often the case in family firms, then family members have an incentive to be in control of the firm that impacts their own identity as well as their personal external reputation (Astrachan and Jaskiewicz (2008), Burkart, Panunzi, and Shleifer (2003), Gómez-Mejía et al. (2007), Zellweger and Astrachan (2008)). It is only if they have significant power to shape the firm's decision-making outcomes that adverse events to their personal reputation can be avoided and that reputation-enhancing activities can be actively fostered (e.g., Block (2010), Dyer and Whetten (2006)).

Transgenerational approach: Family firms also differ with regards to their approach to corporate time horizons. This comprises both a backward looking component and a forward looking component.

If the firm has been founded by previous generations of the family, this can lead to a strong sense of loyalty vis-à-vis these ancestors, and a commitment to preserving the legacy and to perpetuating the firm's development within the family. *Socio-*

emotional wealth (SEW) theory describes this phenomenon in detail.⁶⁷ This is only possible if the family remains in control of the firm, and a loss of control is therefore more severe for members of the founding family than for other owners that are not characterised by these strong personal ties to the firm.

The future-oriented component of the transgenerational approach in family firms can be derived from an expectation or a desire of family members to transfer the family firm to the next generation.⁶⁸ This argument assumes an element of intra-family altruism, reflected in a caring feeling for future generations that may lead to family firms adopting extended time horizons. Transgenerational transfer intentions can only be realised if the family remains in control of the firm (James (1999), Lumpkin and Brigham (2011), Mishra and McConaughy (1999)). However, it could be argued that future generations would be indifferent between inheriting cash, i.e., the proceeds from selling the firm, and inheriting the firm. Yet, the family firm literature shows that the family firm does not only represent a financial family asset, but also a basis for providing family members with jobs and other non-financial benefits. These non-financial benefits can only be extracted if the family is in control of the firm (e.g., Anderson and Reeb (2003a), Bertrand and Schoar (2006), Claessens et al. (2002), Miller, Le Breton-Miller, and Lester (2010), Stulz (1988)), they cannot be obtained from a large sum of cash.

4.2.1.2 The impact of M&A on the distribution of control in the acquiring firm

Previous research has documented that the impact of M&A activities on a family's level of control depends on the financial structure of the deal. The immediate and potentially future impact depends on whether a deal is stock-financed or cash-financed (Faccio and Masulis (2005), Caprio, Croci, and Del Giudice (2011), Basu, Dimitrova, and Paeglis (2009)).⁶⁹

Stock-financed deals: If a buyer wants to finance an M&A transaction using stock, the firm can a) issue new shares, b) use treasury shares, or c) buy shares back.

a) If new shares are issued, the equity of the pre-issue owners is diluted in the process. The pre-issue share of the owner is calculated as *number of shares of*

⁶⁷ Cf. Chapter 3.

⁶⁸ Cf. Chapter 3.2.2.1.

⁶⁹ Cf. Chapter 4.1.1.3.

owner i / number of shares outstanding pre-issue, while the owner's share post-issue is calculated as *number of shares of owner i / number of shares outstanding post-issue*, and *post-issue shares outstanding > pre-issue shares outstanding*.

b) If treasury shares are used to pay for a deal, the same effect occurs, because treasury shares are non-voting as the voting rights are suspended while the shares are in treasury. However, as soon as those shares change hands, their voting rights are re-activated leading to a dilution of voting rights of the pre-deal shareholders, as the total number of shares outstanding increases once treasury shares are transferred to a new owner. The pre-deal voting rights of a given shareholder are calculated as *number of shares of owner i / number of shares outstanding pre-deal*, while post-deal voting rights are calculated as *number of shares of owner i / shares outstanding post-deal*, and *post-deal shares outstanding > pre-deal shares outstanding*.

c) If stock-financing of an M&A deal is preceded by a share buy-back programme, then the net effect on control in terms of equity will be neutral. This assumes that the same number of shares is bought back that is then given out to pay for the deal, and that prices of these shares remain unchanged during both the buyback and the transfer to the new owners. However, cash is required to pay for the buyback programme, in which case a deal of this kind has the same net effect as a cash-financed deal.

Depending on the size of the deal and the ownership structure of the target, stock-payment can also create new block-holders in the buyer. This is the case if the target has a concentrated ownership structure and the deal is of significant size.

Cash-financed deals: If a buyer wants to pay for an M&A deal using cash, then two options are available. The buyer can either use a) surplus cash accrued in the firm (treasury cash), or b) equity can be issued or c) debt can be issued in order to raise the relevant amount of cash.

a) When surplus cash is used, this has no impact on the pre-deal owners' control position.

b) When equity is used to raise cash, the same dilution effect as under a stock-financed deal of the scenario a) type occurs. However, in contrast to a stock-financed deal, the chances of creating a new block-owner are smaller when the firm is listed, as the new shares can be sold to a wide range of investors. In unlisted firms, it is more difficult to sell to a larger base of shareholders. However, selling

to an outsider may still be preferable from a control perspective, compared to paying the owners of the target. This is because the target's owners may be more involved and knowledgeable with regards to firm-specifics due to their history with the target firm.

c) If debt is issued in order to raise cash to pay for a deal, the voting rights of the pre-deal owners are not directly affected, as no change in the number of shares outstanding occurs, and no shares change hands. However, debt covenants may restrict the degrees of freedom in managerial decision-making, particularly if bank debt is used. Because the buyer structure is typically more fragmented if corporate bonds are issued and less is at stake for each individual bond holder, the use of restrictive covenants tends to be less frequent in comparison to bank debt. Even if no covenants are levied onto the firm when issuing debt, the pre-deal owners' control position may be impacted if tight interest and repayment schedules reduce managerial flexibility with regards to corporate policy. Lastly, default risk rises with increasing leverage of the firm. In the event of a default, control tends to be lost completely, as the firm will either cease to exist or ownership will be transferred to debtholders. This is because the firm's assets are, in many cases, used as collateral for the debt, and debt is treated senior to equity in the event of a default.

4.2.1.3 Hypothesis on the effect of family ownership on M&A

Overall, with the exception of paying for a deal using treasury cash, the control position of pre-deal owners can be affected due to the financing requirements of an M&A transaction. This impact on control rises with increasing deal size relative to the buyer's size. Therefore, if control considerations drive decision-making in family firms, then family firms have an incentive to pursue fewer acquisitions than non-family firms.

Hypothesis 4.1

Family owners have a lower preference for M&A than non-family owners.

4.2.2 The impact of listing on M&A

4.2.2.1 Differences between listed and unlisted firms from the perspective of investors

As described above, M&A tends to require substantial amounts of financing. Hence, the majority of deals are financed using external debt or external equity capital. Access to capital and the cost thereof depend on a number of factors specific to the firm, including the firm's listing status. In particular, a capital market listing can improve access to and decrease the cost of external capital. According to the literature, information asymmetries, the existence of a secondary market, and competition between investors are the core drivers of superior access to and lower cost of capital for listed firms.

Information asymmetries: When comparing listed and unlisted firms from an investor's point of view, a key differentiator between the two sets of firms is the inequality with regards to information asymmetries. Listed firms are subject to significantly stricter reporting and disclosure rules, both with respect to the scope and depth of the information required and with respect to the frequency and timeliness of the publication of information (e.g., Kooli, Kortas, and L'Her (2003), Pagano and Roell (1998)). In addition, listed firms are often covered by analysts that provide investors with additional insights into the development of the firm. In comparison, unlisted firms are subject to less stringent reporting requirements, and due to the lack of a paying audience, analysts tend not to cover unlisted firms.

High transparency with regards to an investment reduces an investor's uncertainty. In contrast, low transparency is associated with a high degree of uncertainty. From an investor's perspective, the additional uncertainty related to investing in unlisted firms leads to more demanding requirements with regards to monetary compensation in order to account for this risk. From the perspective of a company raising finance, this translates into higher cost of capital. In addition, given higher reporting and disclosure requirements for listed firms and the resulting higher transparency, capital providers may be able to meet ad-hoc capital requirements more quickly. This is because the information required by investors to supply capital on short notice is likely to already exist in listed firms (Brau, Francis, and Kohers (2003)). This ad-hoc availability of information allows listed firms to raise finance more quickly should an attractive deal opportunity emerge.

Tradability of shares: Unlisted and listed shares also differ with regards to their fungibility. While a secondary market exists for listed shares, this is not the case for shares in unlisted firms. For investors, the availability of a secondary market provides significant advantages, as it allows them to exit the investment at any point in time. As a result, capital providers price the existence of a secondary market for their investments as a discount to the required rate of return. This is because the exit option implicit in listed securities is valuable to them.

Competition between investors: From the perspective of a firm raising external capital, a stock market listing has another major advantage. A large number of investors compete for listed corporate investments. This large pool of investors is constantly searching for investment opportunities. As a result, more efficient outcomes for those providing investment opportunities result. While unlisted firms are often faced with a “take it or leave it” choice or potentially a few investors to choose from, a large number of investors compete for listed securities. This is reflected in lower cost of capital in listed firms (Brau, Francis, and Kohers (2003)).

The higher cost of capital in unlisted firms is documented by Saunders and Steffen (2011), by Schoubben and van Hulle (2011), by Faulkender and Petersen (2006) with regards to debt and by Brav (2009) with regards to equity capital.

4.2.2.2 Hypothesis on the effect of listing on M&A

If listed firms enjoy advantages with regards to access to capital, both in volume and timing terms, and lower financing costs, then listing may be an enabling factor for M&A deals. Listed firms are able to source the relevant capital in a shorter period of time. Due to their lower cost of capital, a larger number of deals will be profitable for them.

Hypothesis 4.2

Listing positively influences a firm’s propensity to engage in mergers & acquisitions.

4.2.3 The impact of listing on the relationship between family ownership and M&A

Because the goal of this chapter is to study the effect of family ownership on M&A-behaviour in a large sample of German listed and unlisted firms, a potential listing effect that would affect the relationship between family firms and M&A needs to be accounted for in the analysis.

From a theoretical point of view, control considerations in family firm should play a role in both listed and unlisted firms. If this is the case, then it could be argued that a firm's listing status provides an indication of the type of control preferences of that family firm. Specifically, listed firms that have made the conscious decision to share control with other shareholders in the past by going public are likely to have a preference for sharing control with diversified free-float shareholders. At the same time, they avoid having to share control with strong block-holders. They also avoid becoming too dependent on bank loans and having to comply with strict covenants or potentially bank representation on their supervisory boards (cf. also Schmid, Volk, and Kappes (2012)). In contrast, family firms that have stayed private are likely to have a preference for sharing control with influential debt providers, particularly banks. As a result, they avoid control loss that results from dilution through equity issues and from decreased flexibility in corporate policy due to increased transparency (cf. also Schmid, Volk, and Kappes (2012)).

While the specific types of control preferences and the approach to maintaining control may therefore differ in listed and unlisted family firms, the motivations for maximising or remaining in control (i.e., identity congruence and transgenerational objectives) are likely to play a similar role in both subsets of family firm. The theories explaining family firm behaviour to date do not differentiate into listed and unlisted firms. Rather, they unanimously focus on the differences between family firms and non-family firms.⁷⁰

Hypothesis 4.3

The influence of family firm ownership on M&A propensity is independent of the firm's listing status.

⁷⁰ Cf. Chapter 2.

4.2.4 The effect of ownership concentration

As the study by Faccio and Masulis (2005) shows, ownership concentration can affect M&A-behaviour. It is therefore important to distinguish between a mere ownership concentration effect and a specific family firm effect. This was shown, for example, by Caprio, Croci, and Del Giudice (2011), who document a family effect after controlling for ownership concentration. For this reason, it is helpful to explicitly account for other owners with controlling positions, rather than to include them in the control group, where their specific effect may be offset by other effects.

4.2.4.1 Differences between family and other concentrated owners

The hypotheses formulated in Chapter 4.2.1 are based on distinct characteristics of family firms, namely identity congruence of family and firm as well as their transgenerational approach to business. Based on these factors, unique control considerations may exist in family firms. However, these arguments are unlikely to apply to non-family block-holders. In particular, they are unlikely to apply to outside block-holders.⁷¹ The group of outside block-holders may comprise investor categories such as institutional investors (e.g., insurance groups, pension funds, banks, or hedge funds), corporate investors, private individuals, government investors, and venture capital & private equity providers. Investors in these categories will be highly exposed to the success of the business, just like family shareholders, when they are holding large blocks of shares. However, in contrast to family firms, identity congruence of the investor and the firm is unlikely to play a role for investors in these categories. This is because the majority of these investors hold diversified investment portfolios. This reduces their dependence on a specific asset. While identity and reputational spill-over effects are generally possible for these types of investors, their impact is likely to be limited, again given these investors' diversified investment portfolios that result in parallel effects from many investments on reputation and identity. For this reason, the impact of an individual asset on the average outside block-holder is limited. In addition, the transgenerational approach to business that is a key characteristic of family firms should not play a role for these investors. This is because their personal history is

⁷¹ A similar line of reasoning is presented by Andres (2008). Pindado, Requejo, and La Torre (2011) also use a similar argumentation.

unlikely to be rooted in the firm's past, and a transfer of the firm to the next generation of the investor's family is not likely to drive business decisions. Rather, the majority of these investors act on behalf of other individuals or institutions. For these reasons, control considerations should play a lesser role for outside block-holders than for family firms.

Rather, the majority of these investors are likely to be mainly interested in the financial return of their investment, and their investment choices will therefore be based on their personal (their investors'/ limited partners') preference for risk-taking (Markowitz (1952)). If outside investors invest according to their individual risk preferences, and if the risk of an investment changes materially, then this would imply that they would replace this investment with one which better matches their personal risk-taking preferences. An exception to this rule may occur if transaction costs are high or if non-financial benefits are associated with remaining in control such as in the case of family firms.

4.2.4.2 Hypotheses on the effect of outside block-holders on M&A

M&A transactions have the potential to substantially change the risk profile of a firm. If the deal is debt-financed, then the firm's default risk increases, as described above.⁷² In addition, many deals are characterised by significant valuation risk and post-merger integration risk. Valuation risk occurs both with regards to the value of the assets of the target firm and with regards to any synergies that are expected from the combined post-deal firm. Post-merger integration risk may occur if the integration of the acquired firm turns out to be more costly than expected. As a result, if M&A leads to an increase in a firm's risk profile beyond the block-holder's risk tolerance, the investor will sell his/ her shares and invest in a more appropriate firm and according to his/ her personal risk preferences.

While such "voting by selling" is possible in firms which are listed on a stock exchange, large blocks of shares in unlisted firms tend to be more difficult to sell. This is because the market for unlisted securities is a) less transparent and b) less liquid. As a result, shareholders in privately held firms may not be able to freely choose to sell at any given point in time. Rather, their only option for maintaining a risk level in line with their risk preferences is to make use of their voting rights and

⁷² Cf. Chapter 4.1.1.3.

avert transactions which they expect to result in undesired changes in the firm's risk profile. As a result, the presence of outside block-holders in unlisted firms may result in a lower M&A propensity, while they are less likely to have an effect on M&A propensity in listed firms.

Hypothesis 4.4

Outside block-holders in listed firms do not influence the firm's acquisition propensity.

Hypothesis 4.5

Outside block-holders in unlisted firms negatively influence the firm's acquisition propensity.

4.3 Methodology

4.3.1 Definitions

4.3.1.1 Family ownership

4.3.1.1.1 Definitional features of previous research of family firms on M&A

Because this study focusses on the influence of different ownership types on M&A-behaviour, a family ownership definition is required. Figure 4.5 provides an overview of the definitions used in previous research on the influence of family governance on M&A.

Figure 4.5: Overview of family firm definitions used in previous research on M&A in family firms

Study	Definition	Ultimate owner concept	Founding family concept	Family separate from founder	Ownership separate from management
Ben-Amar and Andre (2006)	Family firm: Dummy that takes on the value of one if ultimate voting block is held by a family or individual	yes	no	no	yes
Holmén, Knopf, and Peterson (2007)	Individually controlled firm: An individual or family directly or indirectly ultimately controls the largest voting block of shares	yes	no	no	yes
Bauguess and Stegemoller (2008)	Family firm: Dummy that takes on the value of one if founding family owns more than 5%	no	yes	no	yes
Basu, Dimitrova, and Paeglis (2009)	Family firm: Dummy that takes on the value of one if founder or founder-descendant(s) hold(s) 5% of shares or is/ are actively involved in the management (or governance) of the firm	no	yes	no	no
Feito-Ruiz and Menendez-Requejo (2009)	Family firm: Dummy that takes on the value of one if the major shareholder is a family group or an individual	no	no	no	yes
Miller, Le Breton-Miller, and Lester (2010)	Family ownership: Shares of family with the most votes (focal family)	no	no	yes	yes
Caprio, Croci, and Del Giudice (2011)	Family control: Dummy that takes on the value of one if a family or an individual is the largest ultimate owner at the 10% threshold	yes	no	no	yes
Shim and Okamuro (2011)	Family firm: Dummy that takes on the value of one if the founder(s) or his/ her family members is/ are among the ten largest shareholders or in the top management	no	yes	no	no

Previous studies have used a range of family firm definitions. The definitions used differ with regards to four key factors, namely

- Direct versus ultimate ownership concept
- Founding versus current family concept
- Separation of family and founder effects
- Separation of ownership and management effects

The following is a discussion of these four definitional aspects.

Direct versus ultimate ownership concept: The advantage of using direct ownership is that it is less difficult to collect, as disclosure requirements are typically linked to direct ownership. For example, §21 of the German Securities Trading Act (WpHG) requires shareholders to notify both the issuer and the German Federal Financial Supervisory Authority (BaFin) if their shareholdings in a firm pass certain thresholds.⁷³

The majority of prior studies on M&A in family firms uses a direct ownership concept (Basu, Dimitrova, and Paeglis (2009), Bauguess and Stegemoller (2008), Feito-Ruiz and Menendez-Requejo (2009), Miller, Le Breton-Miller, and Lester (2010), Shim and Okamuro (2011)). However, a major concern related to using direct ownership is that it may lead to both overestimation and/ or underestimation of ownership positions. The ownership position of an organisation may be overestimated if this organisation is dominated by another entity, as this will influence the dominated organisation's decision-making. On the other hand, ownership positions of individuals may be underestimated if they hold shares through various channels, for example through a family trust in addition to direct ownership (e.g., Almeida et al. (2011), Faccio, Lang, and Young (2009)). Therefore, the use of a direct ownership concept can lead to a systematic bias and impact results. To address these concerns, an ultimate owner definition is used in the following.

⁷³ The thresholds are 3%, 5%, 10%, 15%, 20%, 25%, 30%, 50%, and 75% of shares outstanding. Shareholders are obliged to notify the issuer and the German Federal Financial Supervisory Authority both if the acquired shares lead to them owning above one of these thresholds or if their selling of shares leads to them owning below one of these thresholds.

Founding versus current family concept: The majority of prior studies use family firm definitions based on any family or any individual holding shares in the firm (Ben-Amar and Andre (2006), Caprio, Croci, and Del Giudice (2011), Feito-Ruiz and Menendez-Requejo (2009)) or on the family with the most votes (Miller, Le Breton-Miller, and Lester (2010)).

While there is no consensus definition on what constitutes the focal family, several advantages of definitions based on founding families exist. First, a large body of the family firm literature acknowledges an element of family tradition, family values, and family legacy. Numerous articles also stress the importance of the perpetuation of family heritage, a concern for different family generations, a strong bond between the family and the firm, and reputational spill-over effects of the family to the firm and vice versa (e.g., Block (2010), Dyer and Whetten (2006), James (1999), Miller and Le Breton-Miller (2003), Schulze, Lubatkin, and Dino (2003b)). Family firm definitions based on a currently dominating family will include those firms which have been bought by wealthy individuals or families at some point in the firm's history. However, such ownership positions may be purely financial investments, without any historical or intended future connection between family and firm. For example, such a definition would include all firms bought by Nicolas Berggruen, a German-American billionaire and active financial investor who became well-known when he bought out the German retailer Karstadt in 2010. In such a case, family tradition and family values of this type of investor are not tied to the firm and are unlikely to play a material role in his/ her governance approach. In contrast, a definition based on the founding family does not lead to the inclusion of such investors in the group of family firms. As Villalonga and Amit (2010) note, this differentiation has significant implications, in particular on those co-investing in family firms alongside the families controlling these firms. The authors show that the existence of founding families provides their firms with a competitive advantage, whereas non-founding families act exclusively to their own advantage by expropriating private benefits of control.

Secondly, family firm definitions based on founding families circumvent a frequent problem in corporate governance research -the problem of direction of causality. As the Berggruen example indicates, a family firm definition not based on the founding family allows non-founders and their descendants to opt into firms that fulfil certain criteria. When studying the linkage between family ownership and some dependent variable, the question then arises as to whether family ownership causes variations in the dependent variable, or whether the direction of the

relationship is actually of opposite direction. In this case, the supposedly dependent variable may cause families to opt into firms with certain characteristics such as performance. In such a case, performance may cause family ownership rather than family ownership driving performance. Opting in is not a problem researchers face when basing their definitions on founding families. In the following, a definition based on founding family ownership is used.⁷⁴

Separation of family and founder effects: The evolution of the family firm literature shows that there is a connection between the family firm literature and the entrepreneurship literature. However, a large body of family firm literature is also based on other areas of research, including the social sciences (family firms in the context of society) and behavioural sciences (human behaviour in family firms). This is reflected in family firm definitions and research designs. Some family firm scholars therefore include founder firms in their definition of family firms. This is the case for all studies on family firms and M&A except for the study by Miller, Le Breton-Miller, and Lester (2010).

However, various previous studies have documented that founder firms are characterised by significantly different behaviour to family firms, as founder firms tend to be entrepreneurial, high-growth firms in which corporate decision-making is significantly shaped by the founder, his/ her personality, and his/ her risk-taking attitude. These founder effects are reflected in corporate policy and performance (e.g., Ampenberger et al. (2012), Anderson and Reeb (2003a), Bárontini and Caprio (2006), Block (2012), Fahlenbrach (2009), McConaughy et al. (1998), Miller, Le Breton-Miller, and Lester (2010), Miller, Le Breton-Miller, and Lester (2011), Villalonga and Amit (2006)). For this reason, effects of founder firms and family firms are separately studied in the following.

Separation of ownership and management effects: Strong evidence exists for the different implications of family management and family ownership on corporate policy (e.g., Block (2010) Caprio, Croci, and Del Giudice (2011)). This is reflected in most study designs used in the research of family firm influence on M&A, the only exception being the study by Shim and Okamuro (2011). The authors use a combined family firm definition whereby a firm is classified as a family firm either by fulfilling certain ownership criteria or based on family representation on the firm's management board. In this chapter, ownership implications are at the core of

⁷⁴ Self-selection in terms of opting out is still possible. Cf. Chapter 4.4.2.2 for a discussion on the robustness of results with regards to endogeneity concerns.

the research question, not least because this allows comparison with other types of concentrated owners. For this reason, only ownership enters the family firm definition that is used in the following.⁷⁵

4.3.1.1.2 Additional definitional aspects relevant in the analysis of listed and unlisted firms

All previous studies analysing the effect of family governance on M&A have focussed on the behaviour of listed buyers. Some have included unlisted targets. However, the research in this chapter is the first contribution to establishing the effect of listing on M&A-behaviour in family and non-family firms. This has important implications on the comparability of firms in the two sub-samples (listed and unlisted firms), in particular with regards to two aspects, namely:

- the use of voting versus cash-flow rights, and
- suitable ownership thresholds for defining a family firm in each of the sub-samples.

The following is a discussion of these additional definitional aspects.

Voting versus cash-flow rights: In this chapter, all analysis conducted is based on cash-flow rights. This is because unlisted firms are free to deviate from the *one share one vote* principle if this is laid out in their articles of association. However, unlike listed firms, unlisted firms do not have to report such deviations, and it is therefore not possible to systematically distinguish between cash-flow and voting rights for the whole sample. For the purpose of comparability, cash-flow rights are therefore used for all (listed and unlisted) firms in the sample.

Ownership thresholds: Studies on listed German firms frequently employ a 25% threshold as a cut-off point for family control, as it represents a blocking minority for important corporate decisions according to the German Stock Corporation Act (§179 II AktG). This blocking majority represents a powerful veto right in these firms. In particular, in order to achieve any amendments to a firm's articles of association a 75% majority vote is required. Previous studies on listed German firms using the 25% threshold for defining family ownership include Ampenberger et al. (2012), Andres (2011), and Franks et al. (2012).

⁷⁵ However, in a robustness test, the implications of family management are also tested (cf. Chapter 4.4.2.1.3).

However, unlisted firms often have a small number of shareholders only and tend not to have any shares in free-float (e.g. Brav (2009)). In comparison to listed firms, the share of voting rights exercised thus tends to be higher. Therefore, the voting impact of say a 25% block of shares is lower in an unlisted firm than in a listed firm. For this reason, previous studies on unlisted firms tend to use higher ownership thresholds for classifying a firm as family-controlled firms than studies focussing on listed firms. Previous studies on unlisted firms have regularly used a threshold of 50% for classifying firms as family-controlled (e.g., Ang, Cole, and Lin (2000), Astrachan and Kolenko (1994), Bárontini and Caprio (2006)).

These structural differences between listed and unlisted firms call for a definition that accommodates the listing status. Such a definition was proposed by an expert commission of the European Commission that has published a report named “Family-business-relevant issues: Research, networks, policy measures and existing studies” in 2009 (European Commission (2009)). The report suggests a family business to be defined according to the following criteria:

- the majority (more than 50%) of votes is directly or indirectly family-owned in an unlisted firm, or
- 25% of votes are directly or indirectly family-owned in a listed firm.

This definition accommodates the structural differences between listed and unlisted firms. Similarly, Astrachan and Kolenko (1994) suggest that a family has to own more than 50% of the business in an unlisted firm or more than 10% of a listed company to qualify as a family business.

4.3.1.1.3 Definition used in empirical analysis

Based on the above reasoning and following previous literature, the following definitions are used in this chapter.

Definition 4.1: Family firm EU (FF EU)

A firm is family-owned if members of the founding family with the exception of the founder directly and/ or indirectly control(s) a minimum of 25% (50%) of cash-flow rights if the firm is listed (unlisted).

Definition 4.2: Outside block-holder EU

A firm has an outside block-holder if any individual or any other organisation unrelated to the firm's founding family directly and/ or indirectly controls 12.5% (25%) of cash-flow rights if the firm is listed (unlisted).

4.3.1.2 Equity listing

Because the listing effect is of central importance to the research question, data is collected on the listing status of all sample firms in each year they are part of the sample. For this purpose, a listing on any German stock exchanges is considered. This includes listing on regional stock exchanges in addition to Frankfurt which is the main stock exchange and financial capital of the country. Listings on foreign capital markets are not included due to data restrictions. Bond listings are also not included in the listing variable. Listings of subsidiaries are also not included, as transparency requirements and liquidity effects will only apply to the subsidiary and not to the top-level entity which is the organisational level of interest for empirical research purposes.

Definition 4.3: Listing

A firm is considered listed if its shares are listed in either an open or regulated market segment of any German stock exchange (Frankfurt and regional exchanges).

4.3.1.3 Control variables

The question of interest is whether family ownership drives the probability of a firm engaging in M&A activities. Therefore, in order to isolate the family ownership effect, a range of control variables are included in the regressions. The variables chosen as controls are similar to those used in previous studies on M&A in family firms. In particular, the choice draws on the studies by Caprio, Croci, and Del Giudice (2011) and Miller, Le Breton-Miller, and Lester (2010). The following section provides details on the control variables used in the following.

Size: Larger firms typically buy smaller firms, and the opposite is rarely the case (e.g., Maksimovic, Phillips, and Yang (2012)), because significant amounts of capital are required for an M&A transaction and, ceteris paribus, larger firms tend to produce larger absolute amounts of cash and have higher debt capacity. In

addition, previous research (e.g., Moeller, Schlingemann, and Stulz (2004)) has shown that smaller firms make deals more selectively. Thus, a size proxy is included in all regressions. Specifically, the natural logarithm of total assets (the sum of a firm's long-term assets and short-term assets) is included in all regressions to approximate size.

Leverage: The higher the proportion of debt as part of total assets, the lower the possibility that additional debt can be sourced by that firm. This is because lenders are only willing to provide certain amounts of debt to a firm, which is reflected in increasing costs of debt associated with higher leverage ratios. Given the high share of cash payments in European M&A transactions (e.g., Faccio and Masulis (2005)), leverage is therefore a significant factor when it comes to determining the additional capital capacity of buyers. Leverage is the ratio of financial debt to total assets and describes a firm's capital structure.

Cash holdings: High free cash-flow has the potential to create incentives to undertake investments, even if no attractive investment opportunities are available. This is because investments made with internally held cash are not subject to the same level of scrutiny as those for which cash needs to be specifically raised externally. As a result, the manager of a firm with large cash reserves has a higher degree of discretion. In order to avoid pressure by shareholders to distribute excess cash via dividends or via share buy backs, managers may be incentivised to undertake additional M&A activities (Jensen (1986)). Because the data used in this chapter does not include any data from cash-flow statements, free cash-flow (which would be the variable of choice to approximate for this additional M&A effect) is not available. As a second choice proxy, cash holdings are therefore used to approximate the amount of internally available cash. The variable is measured as cash and short-term securities divided by total assets.

Tangibility: For the same reasons mentioned in Chapter 3.3.1.4, tangibility is also included in M&A regressions. First, a high tangibility ratio has a positive effect on debt capacity, as tangible assets can be used to collateralise debt agreements. As such, tangible assets have a positive impact on the debtholder's situation should the firm default, as the proceeds from selling these collaterals can be used to settle debt outstanding, if only partly. Because of this, debt providers are willing to provide finance at a lower cost to firms with a high share of tangible assets. As a result, firms with a higher ratio of tangible to total assets may have a financing advantage, which may positively influence M&A propensity. In addition, the share of tangible to total assets is a useful business model proxy that goes beyond mere industry

classifications. To recite the example from Chapter 3.3.1.4, a range of different business models are possible within the computer industry that would all be classified as having the same 1-digit SIC code. This would include software developers (highly intangible), hardware producers (highly tangible), and merchants (medium tangibility). The tangibility variable controls for these business model and value chain positioning differences. Tangibility is calculated as the sum of intangible assets divided by total assets.

Revenue growth: Most M&A studies include Tobin's Q or some other measure that compares a market value to a book value of assets (e.g., Faccio and Masulis (2005)) in order to approximate the expected growth opportunities of the firm. Because growth opportunities can include both organic and inorganic options, firms with positive growth expectations may be more likely to become a buyer. Because the dataset used in this analysis covers both listed and unlisted firms, market data is not available for the subset of unlisted firms. As a second best option, one year historical revenue growth is used to approximate growth.

International sales ratio: Because M&A can be used to grow internationally, the degree of pre-deal regional diversification may play a role in determining the propensity of a firm to acquire firms in other countries (e.g., Miller, Le Breton-Miller, and Lester (2010)). For this reason, the ratio of international sales to total sales is included in regressions.

Industry coverage: M&A may also be used in order to expand into different industries (e.g., Miller, Le Breton-Miller, and Lester (2010)). For this reason, pre-deal industry diversification may be relevant in predicting M&A activity, as a firm that is already diversified may be less inclined to integrate additional units to its business. However, there may be incentives for an undiversified firm to tap into additional industries, potentially via M&A. The key incentive may be a desire to hedge revenues generated in one industry with revenues from a different industry that follows different industry cycles. To proxy for pre-deal industry diversification, the number of unique primary and secondary industries the firm is active in before the deal is included in all regressions.

Subsidiaries: The number of subsidiaries a firm has prior to a deal is used as a control variable to account for the complexity of the organisational structure of a firm. This is because a high degree of complexity in organisational structures complicates the post-merger integration of a target, as it may require significant re-

organisation efforts. As such, organisational complexity may impact the ability to integrate acquired firms, which may therefore affect M&A propensity.

ROA: Lastly, return on assets is included as a control variable to approximate profitability. Profitability may affect M&A activity as profitability ultimately generates cash, which in turn may be used to finance acquisitions (cf. Caprio, Croci, and Del Giudice (2011), Maksimovic, Phillips, and Yang (2012)). ROA is calculated as the ratio of EBIT to total assets.

All control variables are lagged and winsorised at the 1% level. Winsorising, rather than trimming, is used to correct for outliers. This is because no observations are lost when winsorising, while trimming reduces the number of observations in the sample by eliminating (rather than adjusting the values of) outlier observations. Appendix 4.4 summarises the control variables defined above.

4.3.2 Dataset

4.3.2.1 The Hoppenstedt database

The analysis in Chapter 4 is based on data provided by Hoppenstedt. The Hoppenstedt database draws financial and non-financial information from the German Electronic Business Register.

The submission of financial statements to the German Electronic Business Register is required by law. According to the Electronic Business Register, Commercial Register, and Cooperatives Register Act (EHUG), the following firms are required to submit their financial statements within 12 months of completion of the financial year:

- limited liability companies,
- firms with hybrid legal forms, in particular limited partnerships with a limited liability company as general partner (especially GmbH & Co. KG),
- firms required to disclosure under the Public Disclosure Act (§1 PublG), including sole proprietorships, if they fulfil two out of the three following criteria in three consecutive years: total assets greater than 65 million Euros, revenues greater than 130 million Euros, more than 5.000 employees, and
- registered cooperatives.

It therefore includes both listed and unlisted firms as criteria are linked to legal form rather than listing status or listing segment affiliation and size criteria. Submissions of financial statements must include a management report, a report of the supervisory board, and information on profit distribution. The information submitted must be audited. Electronic submission is obligatory since 2002.

Hoppenstedt complements data from the German electronic business register with non-financial information from other official sources, mainly from press clippings. The database includes information on more than one million firms registered in Germany. The Hoppenstedt database is split into various modules. Figure 4.6 provides an overview of the modules contained in the Hoppenstedt database, including an indication of the coverage and a description of the content of the various modules.

Figure 4.6: Overview of information contained in the Hoppenstedt database

Module	Coverage	Content
1 Company profiles	More than 300.000 company profiles	Includes firm name, location, industry, revenues, number of employees, legal form, subsidiaries, and branches
2 Manager profiles	More than 900.000 managers	Includes information on name, company affiliation, location, gender, management level, function, position, industry, year of birth, title, and academic background
3 Business group structures	460.000 firms and 330.000 individuals and public (government) corporations	Includes ownership structure and shareholdings in subsidiaries, affiliated companies, and associated firms
4 Financial statements	More than 1.000.000 firms including industry, service providers, and financial firms More than 3.5 million financial statements	Detailed financial statements according to German GAAP, IAS/ IFRS, and U.S.-GAAP Information dates back to 1987
5 Financial information	1.300 listed stock corporations, including those listed in the EuroSTOXX 50, the STOXX 50, and the Dow Jones Industrials indices	Information on market capitalisation, share price, dividends, ISIN/ WKN, index affiliation, listing segment, capital structure, and financial ratios
6 IT profiles	More than 10.000 companies	Includes information on IT-infrastructure, hardware, software systems, software applications, databases, operating systems, SAP modules, SAP components, SAP release status, and IT managers

4.3.2.2 Sample identification

The initial sample consists of all listed and unlisted German firms that are included in the Hoppenstedt database in at least one year over the period 2005-2010. A number of firms are then eliminated based on the following criteria.

Consolidated financial statements: Sample firms are required to have consolidated financial statements. Balance sheets and profit and loss accounts must be available. Firm-years for which this information is not available are excluded.

Foreign currencies: Firm-years relating to financial statements disclosed in foreign currencies are excluded, as foreign currency disclosure indicates that a firm is likely to be based outside of Germany.

Firm size: Firm-years in which firms do not qualify as medium-sized or large under the German Commercial Code (§267 II HGB) are excluded. The criteria for medium-sized companies according to the German Commercial Code are a minimum of 4.84 million Euros total assets and minimum revenues of 9.68 million Euros.

Non-profit organisations: Non-profit firms are excluded as comparison with for-profit firms is difficult, and the focus of the analysis is on for-profit firms.

Financial firms: In line with standard practice, financial firms are excluded as their balance sheets and P&Ls differ materially from those of non-financial firms, due to different reporting standards.

Financial firms are excluded based on their SIC code. Firms with a SIC code between 6,000 and 6,999 are eliminated with one exception. If a firm has the SIC code 6719 (the SIC code used for holding companies), then the SIC code of the underlying operating business is researched. Only those firms where the underlying operating business itself has a SIC code between 6,000 and 6,999 are excluded.

In a range of corporate governance studies, utilities are also excluded from the sample. Authors excluding utilities argue that these firms are active in highly regulated industries and sometimes operate in monopolistic structures, as they are often newly privatised or potentially state-owned firms. Utilities are not removed from this sample, because these arguments do not hold in the context of this study. While utilities are highly regulated, so are pharmaceutical companies, healthcare providers, alcohol and tobacco companies, firms in the defence industry, and companies in many other industries. Instead, industry dummies are used to capture these effects. In addition, quasi-monopolistic structures exist in many industries, such as transport and telecommunications. This is because network effects exist in these industries, where the cost of the infrastructure required to operate in the industry has been installed by one player that then capitalises on these costs. Where the installation of a second network is not profitable, the number of players remains limited, unless network leasing occurs.

Independence: All firms that are dominated by another legal entity are excluded from the sample. An exception is made if the dominating entity does not have a non-financial operating business, such as a private equity firm, an investment firm of an individual, an investment fund, or a government entity. Dominating (operating) entities can be domestic or foreign. This elimination criterion is

required to avoid duplication in the sample and to ensure that only entities that independently make decisions are included.

Many previous studies have not undertaken this elimination step. Instead, the criterion of consolidated financial statements is used by many authors (e.g., Brav (2009)). However, corporate groups produce consolidated financial statements at various levels within their group architecture. However, if the criterion of consolidated financial statements is the only inclusion criterion used, then both the holding and one or more subsidiaries of such groups remain in the dataset, leading to duplication. In addition, the consolidated data in these consolidated financial statements at lower levels in the business group architecture is only partly consolidated. This is because while a subsidiary may produce consolidated statements that cover its own subsidiaries (lower levels in the business group) and eliminate inter-group flows of capital, goods, and services between its subsidiaries and with itself, its activities with other group entities at the same or at a higher group level will only be consolidated at a higher level. Therefore, such financial statements do not comply with the single entity principle of consolidation (this is often the case for national subsidiaries of multinational corporations), and may therefore bias results. In addition, these firms do not make decisions independently, because an entity at a higher level may influence the group's corporate policy. For example, with regards to financing, firms at an intermediate group level have access to both internal and external capital markets, while this is not the case for holding entities. As such, including financial statements at intermediate group levels impairs comparability. Peek, Cuijpers, and Buijink (2010) follow a similar approach.

Liquidation: Firms in liquidation are excluded in the year they enter liquidation and for all subsequent years.

Availability of financial statements: Firm-years, for which financial statements are not available, are excluded. Both a balance sheet and an income statement are required per firm-year for sample inclusion.

Availability of founder information: Information on founders is hand-collected and added to the database. Firms, for which founders cannot be identified, are excluded.

Availability of founding year: While the Hoppenstedt database includes an item labelled founding year, closer investigation reveals that the founding year contained in the database relates to the year of incorporation of the current legal

entity. However, many firms have undergone changes in legal form over the course of their lifetime. Therefore the founding year included in the Hoppenstedt database systematically underestimates the founding year of those firms that have changed legal form over their lifetime. For this reason, the founding year of each sample firm is hand-collected and added to the database. Firms that have emerged from a merger of equals are allocated the founding year of the older one of the two merger firms. In the case of an acquisition of one firm by another in a firm's history, the founding year of the acquiring firm is used. Firms, for which the founding-year cannot be identified, are excluded from the sample.

Management board information: Firm-years, in which management board information is not available, are excluded if the information cannot be added through desktop research.

Figure 4.7 provides an overview of the sample elimination steps and the impact of each elimination stage on the sample size. A total of 8,941 firm-year observations remain in the database following these elimination steps.

Figure 4.7: Overview of sample elimination criteria and effect on final sample composition

Item	Number eliminated	Number remaining
Annual reports	-	92,000
Consolidated accounts	73,602	18,398
Foreign currency	7	18,391
Firm size (assets)	116	18,275
Firm size (revenues)	379	17,896
Non-profit firm	385	17,511
Financial firms	735	16,776
Financial holding	57	16,719
Ultimate owner domestic business group	778	15,941
Ultimate owner foreign business group	1,541	14,400
Liquidation	5	14,395
Ownership information not available	4,282	10,113
Financial statements not available	112	10,001
Founder data not available	556	9,445
Founding date not available	0	9,445
Management data not available	504	8,941
Final sample	83,059	8,941

In a next step, the database is extended by adding the following information.

Ultimate owners: If a sample firm has shareholders that are not private individuals in any given year, the shareholders of that entity are researched. The Hoppenstedt database, annual reports, company homepages, and press clippings available from LexisNexis are used for this purpose. If any shareholder directly or indirectly holds more than 50% of shares, that shareholder is considered to be the ultimate owner if this shareholder is a private individual. If a shareholder directly or indirectly holds more than 50% of shares and is not a private individual, the shareholders of this entity are researched until an ultimate owner is identified.

Ownership type classification: All owners of a firm are classified into one of the following categories: private individuals, institutional investors, banks, insurance firms, and others (associations, church-owned entities, cooperatives, foundations, and others). If a sample firm has shareholders that are not private individuals in any given year, the shareholders of that entity are researched according to the process described above. Private individuals are then categorised in more detail. Employees are categorised separately if this information is available in the Hoppenstedt database. The process for classifying shareholders into insider owners and family owners is described below. Direct and indirect ownership of the same owner are summed up.

Insider ownership: If a shareholder that is a private individual is also a manager or a member of the supervisory board, this shareholder is classified as an insider owner if he/ she is not related to the founding family. Both direct and indirect ownership are considered.

Family ownership: For each private individual identified, affiliation with the founding family is investigated. For this purpose, press clippings are screened and a search on creditreform⁷⁶ is performed. If a person is found to be a relative of the founder by kinship or marriage, this owner is classified as a family owner. Both direct and indirect ownership are considered.

Family management: For each member of the management or supervisory board, affiliation with the founding family is investigated. For this purpose, press clippings are screened and a search on creditreform is performed. If a person is found to be a relative of the founder by kinship or marriage, this management/

⁷⁶ Creditreform is a business information service and debt collection organisation.

supervisory board member is classified as a family manager. Both direct and indirect ownership are considered.

Mergers & acquisitions: All acquirers recorded in the Thomson Reuters SDC Platinum database are matched with all firms in the sample. In order to be able to match acquirers and sample firms, the ultimate owner of each acquirer is identified according to the process described above. For this purpose, the Hoppenstedt database and LexisNexis are used. Deals that are not completed over the observation period are excluded.

Listing status: DGAP ad-hoc releases and press clippings are used to manually add information on each firm's listing status in each sample year. Both regulated market and open market listings on all German stock exchanges qualify as listing (Frankfurt and regional exchanges). If a firm has a listed subsidiary, the ultimate entity does not qualify as listed (cf. Definition 4.3).

Figure 4.8 provides an overview of the information contained in the final database as well as on the sources used.

Figure 4.8: Summary of final sample items and sources information used

Module	Information contained	Sources used
Ownership data	Names of all direct and ultimate owners Ownership share per ultimate owner Detailed ownership classification Founding family ownership classification	Hoppenstedt database Manual research of ultimate owners Manual research of missing ownership data Manual research of founders Manual research of affiliation of owners with founders (including extended family and deviating names)
Board data	Names of all supervisory board members Names of all management board members Insider ownership classification Detailed family management classification	Hoppenstedt database Manual research of missing board members Manual research of affiliation of management/ supervisory board members with founders (including extended family and deviating names) Manual match with owners
Financial information	Balance sheets Income statements	Hoppenstedt database Manual reconciliation of balance sheets prepared according to different accounting standards into a common format Manual reconciliation of income statements prepared according to different accounting standards into a common format
Listing data	Regulated and open market equity listings (market segment, exchanges, IPO year) Listed and unlisted bonds (number, volume, exchanges)	Hoppenstedt stock data Datastream bond data DGAP ad-hoc releases Manual research of listing status of preferred and voting shares for each firm-year Manual research of market segment, exchanges, and IPO year for each listed firm and year Manual match of Datastream bond data with sample companies
M&A data	Deals performed per annum SIC code of target Region of target Deal duration	Thomson Reuters SDC Platinum database Manual research of ultimate owners of acquirers Manual match with ultimate entities in Hoppenstedt database
General information	Names of all founders Founding year Industry	Hoppenstedt database Manual research of founding years Manual correction of SIC code if primary SIC code is 6719 (holding company)

4.3.3 Descriptive statistics

Table 4.1 to Table 4.9 report a range of descriptive statistics on the dataset described in Chapter 4.3.2. In particular, this section provides details on sample firm statistics (Chapter 4.3.3.1) and mergers & acquisitions (M&A) statistics (Chapter 4.3.3.2).

The following sample firm statistics are presented in Chapter 4.3.3.1:

- Equity listings of sample firm-years by market segment
- Industry distribution of sample firm-years
- Age distribution of sample firm-years
- Ownership concentration of sample firm-years
- Mean ownership of key shareholders
- Number of observations per block-holder category
- Number of observations per outside block-holder category
- Descriptive statistics - all firms
- Descriptive statistics - listed and unlisted firms

The following M&A statistics are presented in Chapter 4.3.3.2:

- M&A activity evolution of sample firms by listing status and ownership category
- Frequency distribution of M&A activity
- M&A activity of sample firms by degree of diversification

4.3.3.1 Sample firm statistics

4.3.3.1.1 Equity listings of sample firm-years by market segment

Table 4.1 provides details on the listing status of sample firm-years and the distribution across the various categories of stock market segments.

All firms: As can be seen from Table 4.1 Column I, only 25.13% out of 8,941 firm-years relate to listed firms. The remaining 6,694 firm-years relate to unlisted firms. These statistics confirm the view that only a small share of firms in the German

economy is listed.⁷⁷ Among the firm-years relating to listed firms, the great majority of listings, namely 90.48%, relate to listings in the regulated segment of the market. These firms are subject to strict transparency and disclosure requirements both by law and based on standards defined by the relevant stock exchange.⁷⁸ Out of all firm-years relating to firms listed in the regulated segment of the market, the lion's share is listed in Frankfurt, with only 5.8% of firm-years relating to firms listed on a regional stock exchange. Regional stock exchanges include Berlin, Düsseldorf, Hamburg, Hannover, Munich, and Stuttgart. Table 4.1 Column I underlines the importance of the Frankfurt stock exchange (which also operates the electronic trading platform XETRA), which is by far the most commonly used exchange. These statistics confirm the importance and explain the international recognition of Frankfurt as the financial capital of the country. Among the firm-years relating to firms listed in Frankfurt, the larger share of firm-years (76.19%) relates to firms listed as part of the Prime Standard, while General Standard listings only account for 456 firm-years (23.81%).

Overall, the data from Table 4.1 Column I indicates an “all or nothing” approach of most firms in the sample. If a firm decides to pursue a stock market listing, it is very likely (the probability⁷⁹ is 64.93%) that it decides for the highest possible transparency, visibility, liquidity, international investor exposure, and disclosure. That is, most firms that decide to list pursue a Prime Standard listing.

Family versus non-family firms: Some notable differences exist with regards to the listing behaviour of family firms compared to non-family firms, as can be seen from Table 4.1 columns II and III. While 33.29% of non-family sample firm-years relate to listed firms, only 9.84% of family firm-years relate to listed firms. These descriptive statistics suggest that the family firms in the sample pursue a stock-market listing less often than non-family firms. Among firm-years relating to listed firms, the preference for a listing in the regulated segment of the market is similar in family firms and non-family firms. The same holds true for the decision to list in

⁷⁷ The sample comprises the highest entity of business groups only. These business groups have an average of 18.6 subsidiaries (cf. Table 4.8), of which the majority is unlisted. In addition, size criteria are applied in the sample selection process to only include firms that have a minimum of 4.84 million Euros worth of total assets and minimum revenues of 9.68 million Euros (cf. Chapter 4.3.2). As such, the share of unlisted firms among all firms is likely to be even higher.

⁷⁸ Cf. Chapter 4.3.1.2.

⁷⁹ The probability is calculated based on firm-years rather than individual firms.

Frankfurt versus on a regional stock exchange and the choice of a Prime Standard listing versus a General standard listing.

The statistics in Table 4.1 columns II and III therefore indicate that family firms differ from non-family firms in their decision to list or not to list. However, once the decision to list has been made, the preferences of family firms with regards to the details of the listing are similar to those of non-family firms. This may be an indication that studies focussing on the comparison of listed family firms versus listed non-family firms may understate the differences between family firms and non-family firms as they may be comparing the two subsets that are most alike.

Table 4.1: Descriptive statistics - equity listings of sample firm-years by market segment

This table provides an overview of the listing status of sample firm-years, separate for family and non-family firms. It also provides detail on the market segments.

	I All	II Non-family	III Family
Listing status			
Listed	2,247	1,941	306
<i>Share of total</i>	<i>(25.13%)</i>	<i>(33.29%)</i>	<i>(9.84%)</i>
Unlisted	6,694	3,890	2,804
<i>Share of total</i>	<i>(74.87%)</i>	<i>(66.71%)</i>	<i>(90.16%)</i>
Total	8,941	5,831	3,110
Listed firms by regulation segment			
Regulated market	2,033	1,749	284
<i>Share of total</i>	<i>(90.48%)</i>	<i>(90.11%)</i>	<i>(92.81%)</i>
Open market	214	192	22
<i>Share of total</i>	<i>(9.52%)</i>	<i>(9.89%)</i>	<i>(7.19%)</i>
Total	2,247	1,941	306
Regulated market by stock market			
Frankfurt	1,915	1,638	277
<i>Share of total</i>	<i>(94.2%)</i>	<i>(93.65%)</i>	<i>(97.54%)</i>
Regional	118	111	7
<i>Share of total</i>	<i>(5.8%)</i>	<i>(6.35%)</i>	<i>(2.46%)</i>
Total	2,033	1,749	284
Frankfurt listings by transparency standard			
Prime Standard	1,459	1,248	211
<i>Share of total</i>	<i>(76.19%)</i>	<i>(76.19%)</i>	<i>(76.17%)</i>
General Standard	456	390	66
<i>Share of total</i>	<i>(23.81%)</i>	<i>(23.81%)</i>	<i>(23.83%)</i>
Total	1,915	1,638	277

4.3.3.1.2 Industry distribution of sample firm-years

Table 4.2 shows the distribution of sample firms across the 17 industries defined by Fama and French (2012). The largest number of firms is active in the machinery & business equipment industry, constituting 15.97% of all firm-years, followed by utilities constituting 10.14% of total firm-years, and construction & construction materials with 9.31% of total firm-years. The distribution of listed and unlisted firms across industries is relatively balanced. The same is observable for the distribution of family and non-family firms with regards to industry coverage. Listed firms are over-represented in the food, construction, and utilities sectors. In contrast, their presence is significantly lower in the machinery business in comparison to unlisted firms. Family firms are to some degree over-represented in the food, machinery, and construction sectors, while they are non-existent in the utility sector.

Table 4.2: Descriptive statistics - industry distribution of sample firm-years

This table provides an overview of the industry distribution of sample firm-years. The data is presented separately for unlisted, listed, non-family, and family firms by number of firm-years. Their respective percentage shares of total firm-years are shown in parentheses and are calculated per column. The Fama and French 17 industry classification is used.

Industry	I	II	III	IV	V
	All	Unlisted	Listed	NFF	FF
Food	541	477	64	268	273
<i>Share of total</i>	(6.05%)	(7.13%)	(2.85%)	(4.6%)	(8.78%)
Mining & minerals	100	89	11	47	53
<i>Share of total</i>	(1.12%)	(1.33%)	(0.49%)	(0.81%)	(1.7%)
Oil & petroleum products	49	44	5	27	22
<i>Share of total</i>	(0.55%)	(0.66%)	(0.22%)	(0.46%)	(0.71%)
Textiles, apparel & footwear	213	166	47	92	121
<i>Share of total</i>	(2.38%)	(2.48%)	(2.09%)	(1.58%)	(3.89%)
Consumer durables	444	336	108	261	183
<i>Share of total</i>	(4.97%)	(5.02%)	(4.81%)	(4.48%)	(5.88%)
Chemicals	270	172	98	164	106
<i>Share of total</i>	(3.02%)	(2.57%)	(4.36%)	(2.81%)	(3.41%)
Drugs, soap, perfumes, tobacco	187	135	52	107	80
<i>Share of total</i>	(2.09%)	(2.02%)	(2.31%)	(1.84%)	(2.57%)
Construction & construction materials	832	703	129	385	447
<i>Share of total</i>	(9.31%)	(10.5%)	(5.74%)	(6.6%)	(14.37%)
Steel work & other	173	137	36	104	69
<i>Share of total</i>	(1.93%)	(2.05%)	(1.6%)	(1.78%)	(2.22%)
Fabricated products	168	157	11	76	92
<i>Share of total</i>	(1.88%)	(2.35%)	(0.49%)	(1.3%)	(2.96%)
Machinery & business equipment	1,428	916	512	821	607
<i>Share of total</i>	(15.97%)	(13.68%)	(22.79%)	(14.08%)	(19.52%)
Automobiles	424	352	72	197	227
<i>Share of total</i>	(4.74%)	(5.26%)	(3.2%)	(3.38%)	(7.3%)
Transportation	474	393	81	366	108
<i>Share of total</i>	(5.3%)	(5.87%)	(3.6%)	(6.28%)	(3.47%)
Utilities	907	865	42	907	-
<i>Share of total</i>	(10.14%)	(12.92%)	(1.87%)	(15.55%)	(0%)
Retail stores	207	160	47	135	72
<i>Share of total</i>	(2.32%)	(2.39%)	(2.09%)	(2.32%)	(2.32%)
Banks, insurance firms & other financials ⁸⁰	-	-	-	-	-
<i>Share of total</i>	(0%)	(0%)	(0%)	(0%)	(0%)
Other	2,524	1,592	932	1,874	650
<i>Share of total</i>	(28.23%)	(23.78%)	(41.48%)	(32.14%)	(20.9%)
Total	8,941	6,694	2,247	5,831	3,110

⁸⁰ Financial firms have been excluded from the sample, cf. Chapter 4.3.2.2.

4.3.3.1.3 Age distribution of sample firm-years

Table 4.3 reports the age distribution of sample firm-years. The average firm-year relates to a firm that has existed for 81.5 years since founding. Listed firms in the sample are younger at an average of 56.6 years across firm-years, while the average of firm-years relating to unlisted firms is 89.9 years. Similarly, family firms are on average older than non-family firms, with the average family firm-year relating to a 91.7 year old firm and the average non-family firm-year relating to a 76.1 year old firm. In particular, listed firms have a strong presence among the below 50 year old firms, potentially driven by some issuers in the Neuer Markt⁸¹ segment that went public around the change of the century. In contrast, unlisted firms are strongly represented in the 50 to 125 year old age bracket. Family firms are strongly under-represented in the youngest tranches of the age distribution, and particularly in the below 25 year old bracket. Their presence is strongest in the 50 to 100 year old part of the age distribution.

⁸¹ Neuer Markt (Nemax) used to be a technology market segment of the Frankfurt Stock Exchange that existed from 1997 to 2003 as part of the emerging “New Economy.” It was superseded by the TecDAX segment, which is now part of the Prime Standard.

Table 4.3: Descriptive statistics - age distribution of sample firm-years

This table provides an overview of the age distribution of sample firm-years separate for unlisted, listed, non-family, and family firm-years. Values in parentheses provide the percentage distribution per column.

Age range	I	II	III	IV	V
	All	Unlisted	Listed	Non-family	Family
≥ 0 & < 25	1,757	770	987	1,647	110
<i>Share of total</i>	<i>(19.65%)</i>	<i>(11.5%)</i>	<i>(43.93%)</i>	<i>(28.25%)</i>	<i>(3.54%)</i>
≥ 25 & < 50	1,362	913	449	962	400
<i>Share of total</i>	<i>(15.23%)</i>	<i>(13.64%)</i>	<i>(19.98%)</i>	<i>(16.5%)</i>	<i>(12.86%)</i>
≥ 50 & < 75	1,319	1,194	125	536	783
<i>Share of total</i>	<i>(14.75%)</i>	<i>(17.84%)</i>	<i>(5.56%)</i>	<i>(9.19%)</i>	<i>(25.18%)</i>
≥ 75 & < 100	1,488	1,280	208	756	732
<i>Share of total</i>	<i>(16.64%)</i>	<i>(19.12%)</i>	<i>(9.26%)</i>	<i>(12.97%)</i>	<i>(23.54%)</i>
≥ 100 & < 125	1,194	1,065	129	717	477
<i>Share of total</i>	<i>(13.35%)</i>	<i>(15.91%)</i>	<i>(5.74%)</i>	<i>(12.3%)</i>	<i>(15.34%)</i>
≥ 125 & < 150	854	673	181	559	295
<i>Share of total</i>	<i>(9.55%)</i>	<i>(10.05%)</i>	<i>(8.06%)</i>	<i>(9.59%)</i>	<i>(9.49%)</i>
≥ 150 & < 175	554	465	89	414	140
<i>Share of total</i>	<i>(6.2%)</i>	<i>(6.95%)</i>	<i>(3.96%)</i>	<i>(7.1%)</i>	<i>(4.5%)</i>
≥ 175 & < 200	163	117	46	103	60
<i>Share of total</i>	<i>(1.82%)</i>	<i>(1.75%)</i>	<i>(2.05%)</i>	<i>(1.77%)</i>	<i>(1.93%)</i>
≥ 200 & < 225	77	66	11	43	34
<i>Share of total</i>	<i>(0.86%)</i>	<i>(0.99%)</i>	<i>(0.49%)</i>	<i>(0.74%)</i>	<i>(1.09%)</i>
≥ 225 & < 1000	173	151	22	94	79
<i>Share of total</i>	<i>(1.93%)</i>	<i>(2.26%)</i>	<i>(0.98%)</i>	<i>(1.61%)</i>	<i>(2.54%)</i>
Total	8,941	6,694	2,247	5,831	3,110
<i>Average age</i>	<i>81.5</i>	<i>89.9</i>	<i>56.6</i>	<i>76.1</i>	<i>91.7</i>

4.3.3.1.4 Ownership concentration of sample firm-years

Table 4.4 presents information on the ownership concentration of sample firm-years. On average, shareholders hold 61.8% of shares with the largest shareholder holding 72.0% of shares in an average sample firm.

The ownership concentration as measured by the Herfindahl index⁸² is 0.657 for all firms. Free float shares are not included in the Herfindahl index due to lack of detailed data.

Listed versus unlisted firms: In a listed firm, a shareholder holds an average of 24.0% of shares. In contrast, the average shareholder in an unlisted firm holds 74.5% of the firm's shares. The high overall ownership concentration in the dataset is therefore strongly driven by high ownership concentration in unlisted firms. In unlisted firms, the largest shareholder holds an average of 83.5%, compared to only 37.9% in listed firms. The Herfindahl index for unlisted firms is 0.802 on average, and only 0.224 for listed firms. Even when taking into account that the shareholders of shares in free float are not taken into account, the differences are still remarkable.⁸³

Family versus non-family firms: The family firm-year observations in the sample mirror the common perception that family owners are a category of control seeking firm owners. Column V of Table 4.4 supports this perception. The average shareholder in a family firm holds almost twice as many shares as the average shareholder in a non-family firm (84.7% versus 49.6%). The largest shareholder of an average family firm holds as much as 91.3% of shares, compared to 61.8% in non-family firms. The Herfindahl index draws a similar picture. It is as high as 0.879 in family firms, compared to 0.539 in non-family firms. These statistics are calculated across listed and unlisted firms, with family firms being listed less frequently, as shown in Table 4.1.

The key message from the data in Table 4.4 is that ownership concentration is significantly higher in unlisted firms compared to listed firms. Family firms in the sample have particularly concentrated ownership structures. Both findings are in line with the previous literature (e.g., Brav (2009)).

⁸² The Herfindahl index is calculated by summing the squares of each shareholder's share of the firm. The higher the Herfindahl index, the higher the ownership concentration. For example, in a firm with three shareholders with shareholdings of 50%, 40% and 10%, respectively, the Herfindahl index is calculated as $0.5^2 + 0.4^2 + 0.1^2 = 0.42$. This firm has a higher ownership concentration than a firm with five shareholders who hold 20% each, which has a Herfindahl index of $0.2^2 + 0.2^2 + 0.2^2 + 0.2^2 + 0.2^2 = 0.2$. A firm's shareholders of shares in free float are not included in the Herfindahl index calculation due to a lack of precise data.

⁸³ The results should not differ significantly, as free float shareholdings not reported should relate to very small shares. This is because of the reporting requirements of the German Federal Financial Supervisory Authority (BaFin), according to which shareholdings have to be reported once the 3% ownership threshold is reached.

Table 4.4: Descriptive statistics - ownership concentration of sample firm-years

This table provides an overview of the ownership concentration of sample firms separate for listed, unlisted, family (FF), and non-family firms (NFF). Calculations are based on firm-years (rather than firms).

Industry	I	II	III	V	IV
	All	Listed	Unlisted	FF	NFF
Average share per shareholder	0.618	0.240	0.847	0.847	0.496
Share of largest shareholder	0.720	0.379	0.913	0.913	0.618
Herfindahl index	0.657	0.224	0.879	0.879	0.539

4.3.3.1.5 Mean ownership of key shareholders

Table 4.5 reports the mean ownership stakes for relevant shareholder categories. Two shareholder categories, family shareholders and outsider shareholders, hold particularly large shares in their firms. Both hold more than 30% on average (32.6% for family owners, and 34.3% for outsider shareholders). Founders hold significantly smaller amounts on average with only 5.6%. Notably, families account for significantly lower shares of their firm's equity in listed firms, with only 8.1% on average. In contrast, their average share accounts for 40.8% in unlisted firms. In founder firms, the opposite effect is observable. In listed founder firms, the average share of the founder is higher than in unlisted firms (10.1% compared to 4.1%). In contrast, the high average share of outsider ownership in all sample firms is driven by outsiders invested in unlisted firms. In unlisted firms, outsiders account for an average of 39.8% of shares, compared to only 17.9% in listed firms.

Some of the shareholders driving this effect are public sector investors, including the federal government, the governments of the federal states, municipalities, and state-owned investment funds. In some cases, these public sector investors hold large ownership stakes because the firms they own are formerly state-owned and are only partly privatised to date. In other firms, public sector owners have invested at a later stage, typically in order to support certain industries based on political considerations. For example, the German coal production industry has had negative returns over the last decades, making it unattractive for private investors. However, the state's interest in preserving jobs has motivated large government investments in firms active in this industry. In return, these public sector investors typically demand a large share of voting rights, which is reflected in data shown in Table 4.5.

The average shareholdings of insider owners are relatively similar in listed (10.5%) and unlisted firms (11.4%).

Table 4.5: Descriptive statistics - mean ownership stakes of key shareholder types

This table shows the mean ownership values of different ownership types across all firm-years in the sample. Definitions of ownership types are given in Appendix 4.1. Source: Kappes, Schmid, and Volk (2012).

	I	II	III
	All	Listed	Unlisted
	Mean	Mean	Mean
<i>Ownership types</i>			
Family	0.326	0.081	0.408
Founder	0.056	0.101	0.041
Outsider	0.343	0.179	0.398
Insider	0.112	0.105	0.114

4.3.3.1.6 Number of observations per block-holder category

Table 4.6 shows the occurrence of block-holders per type of block-owner. The data is presented separately for family, founder, outsider, and insider block-holders. Block-holders are defined according to Definition 4.2. The counts are dummies for the occurrence of a certain block-holder type in a given firm-year. For example, a firm-year with two founder block-holders is counted only once in the founder row. The shares in parentheses describe the share of sample firm-years with a minimum of one particular block-holder type compared to all firm-years per column.

In 43.42% of firm-years, a minimum of one outside block-holder is recorded. In 34.78% of firms-years, at least one family block-holder is recorded. Founder block-holders and insider block-holders are less frequent, with only 7.84% and 13.21% of firm-years recording a minimum of one founder and insider block-holder, respectively.

Differences between listed and unlisted firms are remarkable with regards to family and founder block-holders. While only 13.62% of listed firms have at least one family block-holder, 41.89% of unlisted firms have a family block-holder. This relationship is reversed for founder block-holders, where 17.71% of listed firms have a minimum of one founder block-holder, while this is only the case in 4.53%

of unlisted firms. An insider block-holder is present in 16.56% of listed and 12.09% of unlisted firms.

Table 4.6: Descriptive statistics - number of observations per block-holder category

This table presents the number of firm-years per block-holder category and the share of firms-years where a minimum of one particular block-holder is recorded. Definitions of block-holder types are given in Appendix 4.1. Source: Kappes, Schmid, and Volk (2012).

	I	II	III
	All	Listed	Unlisted
<i>Block-holder types</i> ⁸⁴			
Family	3,110	306	2,804
<i>Share of firm-years</i>	<i>(34.78%)</i>	<i>(13.62%)</i>	<i>(41.89%)</i>
Founder	701	398	303
<i>Share of firm-years</i>	<i>(7.84%)</i>	<i>(17.71%)</i>	<i>(4.53%)</i>
Outsider	3,882	981	2,901
<i>Share of firm-years</i>	<i>(43.42%)</i>	<i>(43.66%)</i>	<i>(43.34%)</i>
Insider	1,181	372	809
<i>Share of firm-years</i>	<i>(13.21%)</i>	<i>(16.56%)</i>	<i>(12.09%)</i>
Total	8,941	2,247	6,694

4.3.3.1.7 Number of observations per outside block-holder category

Table 4.7 focusses on the various outside block-holder categories. As in Table 4.6, the counts in Table 4.7 are dummies for the occurrence of a certain block-holder type in a given firm-year. The shares in parentheses describe the number of sample firm-years with a minimum of one particular block-holder type per column total.

Table 4.7 shows that the type of block-holder that is most frequent is the government block-holder category. Government block-holders are present in 16.08% of firm-years, followed by private individual block-owners who are present in 10.77% of firm-years. Corporates, venture capital & private equity investors, and institutional investors are less frequent with a presence in 5.53%, 5.3% and 4.47% of firm-years, respectively. In 6.27% of firm-years, other block-holders are present. These include block-holder types such as associations, cooperatives, church affiliates, and non-profit foundations.

⁸⁴ Firms can have more than one block-holder.

Some striking differences are notable when comparing listed and unlisted firms. Institutional block-holders are present in a significantly larger share of listed firms with a presence in 11.57% of firm-years relating to listed firms and only 2.09% of firm-years relating to unlisted firms. The fungibility of listed shares is likely to play a significant role in explaining these numbers. Corporate block-holders also exist in a smaller share of firm-years relating to unlisted firms with a presence in only 4.94% of unlisted firms, compared to 7.25% of listed firms. Notably, the same holds true for private individuals. 15.89% of firm-years relating to listed firms have a private individual as block-holder, compared to only 9.05% of firm-years relating to unlisted firms). Strikingly, the same is observable for venture capital & private equity (VC/ PE) investors. 10.55% of firm-years relating to listed firms have a VC/ PE investor, compared to only 3.54% of firm-years relating to unlisted firms.

Government block-holders represent the exception with a presence in 20.53% of firm-years relating to unlisted firms, and only 2.85% of firm-years relating to listed firms. Upon further inspection, a large number of firm-years with government block-holders are communal infrastructure companies that have never been fully privatised. Yet, these firms are organised as private sector companies and subject to private law.⁸⁵

⁸⁵ Cf. Chapter 4.3.2.2 on the exclusion of utility companies.

Table 4.7: Descriptive statistics - number of observations per outside block-holder category

This table shows the number of firm-years per outside block-holder category and the share of firms-years where a minimum of one particular outside block-holder is recorded. Definitions of outside block-holder categories are given in Appendix 4.1. Source: Kappes, Schmid, and Volk (2012).

	I	II	III
	All	Listed	Unlisted
<i>Outside block-holder category</i> ⁸⁶			
Institutional	400	260	140
<i>Share of total</i>	<i>(4.47%)</i>	<i>(11.57%)</i>	<i>(2.09%)</i>
Corporate	494	163	331
<i>Share of total</i>	<i>(5.53%)</i>	<i>(7.25%)</i>	<i>(4.94%)</i>
Private individual	963	357	606
<i>Share of total</i>	<i>(10.77%)</i>	<i>(15.89%)</i>	<i>(9.05%)</i>
Government	1,438	64	1,374
<i>Share of total</i>	<i>(16.08%)</i>	<i>(2.85%)</i>	<i>(20.53%)</i>
VC/ PE	474	237	237
<i>Share of total</i>	<i>(5.3%)</i>	<i>(10.55%)</i>	<i>(3.54%)</i>
Others	561	78	483
<i>Share of total</i>	<i>(6.27%)</i>	<i>(3.47%)</i>	<i>(7.22%)</i>
Total	8,941	2,247	6,694

4.3.3.1.8 Descriptive statistics - all firms

Table 4.8 present the means of key control variables used in the multivariate analysis presented in Chapter 4.4. The means are calculated across listed and unlisted firms and are presented separately for family firms and non-family firms.

Cash holdings: Sample firms have an average proportion of 12.7% cash holdings of total assets, with only somewhat higher cash ratios recorded for non-family firms (12.9% for non-family firms compared to 12.4% for family firms).

Leverage: The leverage ratio is calculated as total financial debt to total assets and averages 62% across the sample. On average, family firms have higher leverage

⁸⁶ The total number is higher compared to the outside block-holder count in Table 4.6, because the counts in Table 4.7 refer to firms that have a specific type of block-holder. Having block-holders is measured using a binary variable (0/1). Therefore, if a firm has three outside block-holders, an institutional investor and two private individuals, it would be counted as having an outside block-holder in Table 4.6 (count = 1), and it would also be counted as having an institutional investor (count = 1) and as having a private individual block-holder (count = 1) in Table 4.7.

ratios with 64.4% compared to 60.8% in non-family firms (a difference of 3.6 percentage points).

Total assets: Sample firms have an average of 1,471.1 million Euros worth of assets. Non-family firms are significantly larger on average with assets worth 1,928.3 million Euros, while the average family firm owns assets valued at 613.9 million Euros.

Tangibility: The share of tangible to total assets is 34.4% across sample firms, with a somewhat higher average in non-family firms compared to family firms (35.7% compared to 32%).

Revenue growth: One-year revenue growth is 7.4% for all firms and higher in non-family firms at an average of 8.4% compared to 5.3% in family firms.

International sales ratio: The pre-deal ratio of international sales to total sales of all firms is 27.9%. Family firms tend to be more internationally-oriented with a share of 31.3% compared 26.2% in non-family firms.

Number of industries: Sample firms are on average active in 3.7 industries. Family firms are somewhat more diversified with 3.8 industries compared to 3.7 industries in non-family firms.

Number of subsidiaries: Firms in the sample have an average of 18.6 subsidiaries. Family firms have somewhat less complex organisational structures with 15.8 subsidiaries, compared to 20.1 subsidiaries in non-family firms.

Return on assets: The return on assets of sample firms averages at 7.4%. Family firms have a higher profitability on average with 9%, compared to 6.5% in non-family firms.

Age: The average sample firm's age is 81.5 years since the firm was founded. Family firms tend to be older with an average age of 91.7 years, while non-family firms are on average 76.1 years old.

Table 4.8: Descriptive statistics - control variables of all firms

This table presents the key descriptive statistics of sample companies across the observation period separately for family firms (FF) and non-family firms (NFF). Definitions of all variables are given in Appendix 4.1. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	I	II	III	IV
	All	FF	NFF	Difference of means
	Mean	Mean	Mean	t-statistic
Cash holdings (%)	0.127	0.124	0.129	1.72*
Leverage (%)	0.620	0.644	0.608	-8.36***
Total assets (m€)	1,471.1	613.9	1,928.3	5.79***
Tangibility (%)	0.344	0.320	0.357	7.37***
Revenue growth (%)	0.074	0.053	0.084	5.72***
International sales ratio (%)	0.279	0.313	0.262	-6.67***
Number of industries	3.7	3.8	3.7	-2.69***
Number of subsidiaries	18.6	15.8	20.1	2.59***
ROA (%)	0.074	0.090	0.065	-12.04***
Age (years)	81.5	91.7	76.1	-10.66***

4.3.3.1.9 Descriptive statistics - listed and unlisted firms

Table 4.9 presents a repetition of Table 4.8, separately for firm-years relating to listed firms and firm-years relating to unlisted firms. A range of notable differences can be observed between listed and unlisted firms with regards to the control variables used in the multivariate analysis in Chapter 4.4.

Cash holdings: Compared to the sample average ratio of 12.7% of cash holdings to total assets, listed firm generally have higher cash ratios with 16.0%, compared to 11.6% of total assets in unlisted firms.

Leverage: The financial leverage of 62.0% in the whole sample is composed of 54.5% in listed firms and 64.6% in unlisted firms.

Total assets: Among all sample firms, the average firm has total assets worth 1,471.1 million Euros. Unlisted firms are significantly smaller with only 551.6 million Euros worth of assets, compared to listed firms with average total assets of 4,201.4 million Euros.

Tangibility: Compared to the tangibility ratio in the total sample of 34.4%, listed firms have a significantly lower share of tangible assets with only 21.9%, compared to 38.6% in unlisted firms.

Revenue growth: The average sample firm has annual revenue growth of 7.4%. Unlisted firms grow somewhat slower at 5.9%, while listed firms grow at an average rate of 11.4% per year.

International sales ratio: The pre-deal ratio of international sales to total sales of all firms is 27.9%. It is 21.4% in unlisted firms, while listed firms have a share of 45% of international sales.

Number of industries: The average sample firm is active in 3.7 industries. Unlisted firms are more diversified with 3.8 industries, while listed firms are active in an average of 3.6 industries only.

Number of subsidiaries: The 18.6 subsidiary average in the total sample consists of 44.8 subsidiaries in listed firms, compared to only 9.8 subsidiaries in unlisted firms.

Return on assets: The average ROA of 7.4% in all sample firms is lower than the 7.8% ROA in unlisted firms. Yet, ROA in unlisted firms is higher than the 6.4% in listed firms.

Age: The average unlisted firm is 89.9 years old which is older than the average sample firm's age of 81.5 years. Listed firms are younger on average with 56.6 years since founding.

Table 4.9: Descriptive statistics - control variables of listed versus unlisted firms

This table presents the key descriptive statistics of sample companies across the observation period separately for family firms (FF) and non-family firms (NFF) as well as by listing status. Definitions of all variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	I	II	III	IV
	All	FF	NFF	Difference of means
	Mean	Mean	Mean	t-statistic
<i>Listed firms</i>				
Cash holdings (%)	0.160	0.152	0.161	0.9
Leverage (%)	0.545	0.531	0.547	1.21
Total assets (m€)	4,210.4	2,525.0	4,476.1	1.6
Tangibility (%)	0.219	0.260	0.212	-4.04***
Revenue growth (%)	0.114	0.086	0.119	1.82*
International sales ratio (%)	0.450	0.509	0.441	-3.32***
Number of industries	3.6	3.4	3.7	2.74***
Number of subsidiaries	44.8	63.9	41.6	-2.62***
ROA (%)	0.064	0.105	0.057	-6.36***
Age (years)	56.6	74.0	53.8	-5.62***
<i>Unlisted firms</i>				
Cash holdings (%)	0.116	0.121	0.113	-2.56**
Leverage (%)	0.646	0.656	0.638	-3.98***
Total assets (m€)	551.6	405.4	657.0	4.28***
Tangibility (%)	0.386	0.326	0.430	18.82***
Revenue growth (%)	0.059	0.049	0.065	3.06***
International sales ratio (%)	0.214	0.288	0.162	-16.4***
Number of industries	3.8	3.9	3.7	-2.87***
Number of subsidiaries	9.8	10.3	9.3	-2.17**
ROA (%)	0.078	0.089	0.070	-9.58***
Age (years)	89.9	93.6	87.2	-3.91***

4.3.3.2 M&A statistics

4.3.3.2.1 M&A activity evolution of sample firms by listing status and ownership category

Table 4.10 shows the evolution of M&A activity over the observation period from 2005 to 2010. A total 2,286 deals was completed by the sample firms over this period.

Column I of Table 4.10 shows that deal activity increased until the year 2007, where deal volumes peaked with 504 deals that were completed throughout the year. Following 2007, annual deal volume decreased until the end of the observation period to 254 deals. This data reflects the financial crisis which had a significant impact on M&A activity in Germany.

Family versus non-family firms: The share of deals conducted by family firms is relatively constant, ranging from 19.8% of deals in 2009 to 27.8% in 2007, and averaging 23.7% of deals across the whole observation period. With family firms accounting for 34.78% of firm-years, descriptive statistics therefore point to below-average M&A activity in family firms. However, being only descriptive in nature, this finding does not control for other factors, such as firm size or profitability, which are also likely to impact results. For example, if family firms are systematically smaller, and size drives M&A activity, then the analysis would suffer from omitted variable bias. For this purpose, multivariate analysis is required.

Notably, the share of M&A deals in listed family firms is 9.4% only, compared to 43.9% of deals accounted for by family firms among deals conducted by unlisted firms. However, while family firms account for only 13.62% of listed firms, they account for 41.89% of unlisted firms, which may explain the difference to some extent, however, multivariate analysis controlling for other factors, such as size and profitability, is required to shed light on the drivers of M&A decision-making.

Listed versus unlisted firms: A higher number of deals is completed by listed firms (1,339 compared to 947 in unlisted firms). Across the observation period, listed firms account for 58.6% of deals, potentially pointing to advantages with regards to access to capital.

Table 4.10: Descriptive statistics - M&A activity evolution of sample firms by listing status and ownership category

This table presents the number of M&A deals completed by sample companies per year, separately for family firms (FF) and non-family firms (NFF) as well as by listing status. In addition, the t-statistics of difference of means tests between listed and unlisted firms are shown. Definitions of all variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

		I	II	III
		All	FF	NFF
		N	N	N
Number of deals				
<i>All</i>				
	2005	335	85	250
	2006	402	87	315
	2007	504	140	364
	2008	463	106	357
	2009	328	65	263
	2010	254	59	195
	<i>Total</i>	<i>2,286</i>	<i>542</i>	<i>1,744</i>
<i>Listed</i>				
	2005	194	17	177
	2006	263	20	243
	2007	289	35	254
	2008	268	17	251
	2009	189	20	169
	2010	136	17	119
	<i>Total</i>	<i>1,339</i>	<i>126</i>	<i>1,213</i>
<i>Unlisted</i>				
	2005	141	68	73
	2006	139	67	72
	2007	215	105	110
	2008	195	89	106
	2009	139	45	94
	2010	118	42	76
	<i>Total</i>	<i>947</i>	<i>416</i>	<i>531</i>
Difference of means				
<i>t-statistics</i>				
	Listed vs. unlisted	-21.45***	-5.72***	-19.13***

4.3.3.2.2 Frequency distribution of M&A activity

Table 4.11 shows the frequency distribution of M&A activity. It reveals that no deal is recorded in the dataset for 7,712 firm-year observations. This means that for

86.25% of firm-year observations no deal is recorded. One deal is recorded for 763 firm-year observations (8.53% of firm-years), two deals for 238 firm-year observations (2.66% of firm-years), and a maximum of 17 deals is recorded for a single firm-year. The 17 deals were conducted by Siemens AG (Prime Standard, 39 deals over the full period) in 2006. Siemens is followed by Robert Bosch GmbH (unlisted, 39 deals over the full period) with 16 deals in 2008, and the three media firms Axel Springer (Prime Standard, 31 deals over the full period) in 2007, Verlagsgruppe Holtzbrinck (unlisted, 29 deals over the full period) in 2008, and Bertelsmann AG (unlisted, 44 deals over the full period) in 2005, who conducted 13 deals each in their most acquisitive years.

The data in Table 4.11 shows that the majority of deals are conducted by only a small group of firms. However, the examples of the top buyers in the dataset indicate that this small group of buyers includes listed and unlisted buyers alike.

Table 4.11: Descriptive statistics - frequency distribution of M&A activity

This table presents the number of deals completed by sample firms over the observation period. Source: Kappes, Schmid, and Volk (2012).

	I	II	III	IV
	Firm-years	Per cent	Number of deals	Per cent
<i>Deal frequency</i>				
0	7,712	86.25	0	0.00
1	763	8.53	763	33.38
2	238	2.66	476	20.82
3	94	1.05	282	12.34
4	56	0.63	224	9.80
5	24	0.27	120	5.25
6	21	0.23	126	5.51
7	13	0.15	91	3.98
8	9	0.1	72	3.15
9	2	0.02	18	0.79
10	2	0.02	20	0.87
11	2	0.02	22	0.96
13	3	0.03	39	1.71
16	1	0.01	16	0.70
17	1	0.01	17	0.74
<i>Total</i>	<i>8,941</i>	<i>100.00</i>	<i>2,286</i>	<i>100.00</i>

4.3.3.2.3 M&A activity of sample firms by degree of diversification

Table 4.12 shows details of the deals completed by the firms in the sample by level and type of diversification for those deals where information is available with regard to the target's industry and the target's region.⁸⁷

The table shows that, overall, 30.41% of deals are non-diversifying deals. In these deals, the target is active in the same industry and the same region as the buyer. Non-diversifying deals represent the majority of deals in the sample. 22.68% of deals lead to regional diversification of the combined post-deal firm. In these deals, the target is located in a different region. Regions are measured on the continent level, including Europe, Asia-Pacific, the Americas, and Africa. As all buyers are located in Germany, regional diversification occurs if the target is active in Asia-Pacific, the Americas, or Africa. In the deals recorded as regionally diversifying, the target is active in the same industry as the buyer. Industry-diversifying deals account for a somewhat higher share with 26.99% of deals. In these deals, the target is active in a different industry as the buyer, but it is located in the same region. The smallest, yet a significant, proportion of M&A deals has both a regional and an industry diversification effect on the combined post-deal company. In these deals, the target is active in a different industry and it is located in a different region than the buyer.

The types of deals completed provide information on the motivations driving M&A activities. Deal types also provide some insight into the risk-taking preferences of buyers with regards to both valuation risk and post-merger integration risk.

No diversification: Deals which do not lead to diversification on a regional or industry basis tend to target an increase in market share in core markets. Because the target is active in the same industry and same region, the acquiring firm is likely to already have knowledge of both the target's industry (products) and the target's markets (customers). This is because both the target's industry and its markets are likely to overlap with the buyer's industry and markets. In addition, the buyer is likely to have some knowledge of the target based on the buyer's expertise in the industry. In such deals, accounting, institutional, legal, and cultural factors tend to be similar for buyer and target, leading to relatively low uncertainty and

⁸⁷ Information on region and industry is only available for 2,249 deals. Detailed information is missing for 37 deals.

consequently relatively low valuation and post-merger integration risk. As such, deals without diversification effect tend to be of relatively low risk, compared to other deal types.

Regional diversification: Deals that lead to a regional diversification of the combined post-deal firm tend to be motivated by growth objectives beyond the buyer's core market. Such deals may be particularly attractive if growth in domestic markets has already been exploited (no additional attractive investment opportunities) or if demand trends for the firm's products in foreign regions are more attractive or provide a revenue or currency hedge. Because the target is active in the same industry, the acquiring firm is likely to have knowledge of both the target's industry (products) and the target's markets (customers), as those are likely to overlap with the buyer's industry and markets. It is less likely, however, that the buyer has deep knowledge about the target if it is located in another region, leading to somewhat higher valuation risk compared to a target in the buyer's region. In addition, accounting, institutional, legal, and cultural factors are typically different in other regions, increasing uncertainty and therefore valuation and post-merger integration risk.

Industry diversification: Deals leading to industry diversification of the combined post-merger firm tend to be motivated either by a lack of attractive investment opportunities in the core industry, because of synergies at some point in the value chain, by product complementarities, or by a desire to create an in-house industry hedge, for example if the firm operates in a cyclical industry. Because the target is active in a different industry as the buyer, the acquiring firm is unlikely to be knowledgeable with regards to the target's industry (products) or markets (customers). However, in deals diversifying purely on an industry basis, the accounting, institutional, legal, and cultural factors are likely to be similar. Overall, industry diversification deals are characterised by higher valuation and post-merger integration risk, compared to a non-diversifying deal.

Full diversification: Deals that lead to a simultaneous diversification with regards to both region and industry can be motivated by any of the factors mentioned above. These may include growth beyond core markets, lack of attractive investment opportunities in core markets or in the core industry, currency or revenue hedging considerations, synergies, or merely empire building. In such deals, the buyer does not benefit from industry knowledge with regards to the target's industry (products) or markets (customers). Additionally, the accounting, institutional, legal, and cultural factors are not likely to be similar to those of the

buyer. Full diversification deals are therefore characterised by a maximum amount of uncertainty and therefore valuation and post-merger integration risk. They therefore reveal a high willingness to take risk by the buyer.

Notably, Table 4.12 indicates a number of differences with regards to the types of deals completed by family and non-family firms as well as by listed and unlisted firms.

Family versus non-family buyers: The share of deals completed by family firms where the target is active in the same industry and same region (Column I of Table 4.12) is similar to that of non-family firms. However, family firms undertake fewer deals to diversify regionally (18.39% of acquisitions by family firms versus 24.01% of acquisitions by non-family firms, Column II of Table 4.12). Instead, they seem to be significantly more willing to diversify into other industries with 35.27% of acquisitions by family firms versus 24.42% of acquisitions by non-family firms falling into the industry diversification deal category (Column II of Table 4.12). Possibly, family firms are more averse to risk with regards to accounting, legal, institutional, and cultural factors and more open to risk associated with valuation, while the preferences are reversed in non-family firms. For example, Miller, Le Breton-Miller, and Lester (2010) argue that family firms prefer to acquire similar firms in order to preserve their own legacy, robustness, culture, and network of relationships of the business. With regards to full diversification deals (Column IV of Table 4.12), family firms appear less keen to undertake deals that lead to simultaneous diversification on a regional and industry basis. The share of deals of family buyers that fall into the full diversification category is 16.14%, compared to 21.1% in the case of non-family firms.

Listed versus unlisted buyers: The descriptive statistics in Table 4.12 further indicate that listed firms have a higher willingness to diversify than unlisted firms. Listed firms undertake only 25.8% of non-diversifying acquisitions, compared to 36.9% in unlisted firms. Notably, the difference between family and non-family firms is similar to the difference observable between listed and unlisted firms. Family firms and unlisted firms appear to behave more alike and listed and non-family firms also exhibit similar behaviour.

Listed firms pursue more regional diversification than unlisted firms with 27.93% of listed firms' acquisitions leading to regional diversification compared to 15.29% of acquisitions in unlisted firms, (Column II of Table 4.12). In contrast, unlisted firms have a higher preference for industry diversification with 31.87% of unlisted

firms' acquisitions leading to industry diversification compared to 23.52% of listed firms' acquisitions falling into this category (Column III in Table 4.12). Listed firms also conduct a higher share of fully diversifying acquisitions with 22.75% of their deals compared to 15.94% in unlisted firms being fully diversifying types of transactions.

Table 4.12: Descriptive statistics - M&A activity of sample firms by degree of diversification

This table presents the number of M&A deals completed by sample companies (buyers) in a given year separately for family and non-family firms as well as by listing status. Column I presents only those acquisitions of targets active in the same industry and same region as the acquiring firm. Column II shows acquisitions of targets in different regions. Column III shows acquisitions of targets in different industries. Column IV shows acquisition of targets in both a different region and a different industry. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. In addition, the t-statistics of difference of means tests between family and non-family firms and listed versus unlisted firms are presented. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	I	II	III	IV
	No	Regional	Industry	Full
	diversification	diversification	diversification	diversification
Number of deals⁸⁸				
<i>All</i>				
All	684	510	607	448
<i>Share of all</i>	(30.41%)	(22.68%)	(26.99%)	(19.92%)
Family	161	98	188	86
<i>Share of family</i>	(30.21%)	(18.39%)	(35.27%)	(16.14%)
Non-Family	523	412	419	362
<i>Share of non-family</i>	(30.48%)	(24.01%)	(24.42%)	(21.1%)
<i>Listed</i>				
All	339	367	309	299
<i>Share of all listed</i>	(25.8%)	(27.93%)	(23.52%)	(22.75%)
Family	23	31	36	33
<i>Share of all family listed</i>	(18.7%)	(25.2%)	(29.27%)	(26.83%)
Non-Family	316	336	273	266
<i>Share of non-family listed</i>	(26.53%)	(28.21%)	(22.92%)	(22.33%)
<i>Unlisted</i>				
All	345	143	298	149
<i>Share of all unlisted</i>	(36.9%)	(15.29%)	(31.87%)	(15.94%)
Family	138	67	152	53
<i>Share of family unlisted</i>	(33.66%)	(16.34%)	(37.07%)	(12.93%)
Non-Family	207	76	146	96
<i>Share of family unlisted</i>	(39.43%)	(14.48%)	(27.81%)	(18.29%)
Difference of means tests				
<i>t-statistics</i>				
Family vs. non-family firms	0.78	2.47**	-2.87***	2.08**
Listed vs. unlisted firms	2.27**	-6.89***	1.28	-4.04***

⁸⁸ Information on region and industry is only available for 2,249 deals. Detailed information is missing for 37 deals.

4.3.3.2.4 Summary of descriptive statistics

The descriptive statistics in Chapter 4.3.3 point to some notable differences between family firms and non-family firms as well as between listed and unlisted firms. In particular, the following differences stand out:

Family firms are listed less frequently.

Unlisted firms tend to be older, and so do family firms.

Ownership concentration is significantly higher in unlisted firms.

Ownership concentration is significantly higher in family firms.

Outside block-holders often hold large blocks of shares in unlisted firms.

Outside block-holders are more frequently invested in listed firms, with the exception of government block-holders which have a stronger presence in unlisted firms.

Family firms account for a smaller number of M&A deals.

Listed firms conduct a larger number of deals.

M&A activity of family firms more often leads to industry diversification, while non-family firms more often conduct deals that lead to geographic diversification.

M&A activity of unlisted buyers more often leads to industry diversification, while listed firms more often conduct deals that lead to geographic diversification.

However, descriptive statistics can be misleading, as their calculation does not control for other factors which may, however, be relevant in explaining results. Such factors may include firm size, profitability, and a host of other factors that have been found to affect M&A activity in previous research (e.g., Caprio, Croci, and Del Giudice (2011)). Controlling for these factors is important in order to avoid omitted variable bias and false attribution. For this reason, multivariate analysis is required. The multivariate methods used are described in Chapter 4.3.4. Results are subsequently presented in Chapter 4.4, followed by a range of robustness test in Chapter 4.4.2, and a discussion in Chapter 4.5.

4.3.4 Econometric methods

The key dependent variable in this analysis is M&A propensity.

Definition 4.4: M&A propensity

M&A propensity is a dummy variable that takes on the value of one if the firm makes one or more acquisition(s) in a given year, and zero otherwise.

Because of the dichotomous nature of the dependent variable, ordinary least squares regression cannot be used. This is because the assumption of homoscedasticity of the regression's error terms is violated, and so is the assumption of normally distributed error terms (Kennedy (2008)). For this reason, logit regressions are used. Logit regression is the method of choice for dichotomous dependent variables, as it ensures that estimated values are no lower than zero and also do not exceed a value of one. This is possible under the assumption that the error term is distributed following a logistic function.⁸⁹ As such, logit models estimate the probability of the dependent variable to be one (Kennedy (2008)). In this case the model estimates the probability of at least one M&A transaction occurring for a given firm in a given year.

4.3.4.1 Calculation of standard errors

Standard errors may be biased if the error terms in the regression are not uncorrelated between observations. Because the sample data is structured as a panel, a firm's error terms in one year is likely to be correlated with the same firm's error term in the following year (autocorrelation or time-series correlation). For this reason, data is clustered at the firm-level in all regressions. Accordingly, standard errors are adjusted by applying cluster-robust variance component estimation based on the methodology by Petersen (2009). Using the method of White (1980), standard errors are also adjusted for heteroskedastic error terms, which may occur if the error term of certain subjects differs from the error term of other subjects.

4.3.4.2 Estimation of model fit

The coefficient of determination, R^2 , as calculated in an OLS regression, cannot be analogously determined in a logistic regression. This is because the model does not

⁸⁹ Probit models provide an alternative technique for dealing with dichotomous dependent variables. Probit models assume that the error term is distributed following a cumulative normal function. A robustness test in Chapter 4.4.2.1 applies a probit specification and shows that the results are robust to this alternative econometric model.

minimise variance, but instead uses maximum likelihood estimates obtained through an iterative process. Because the model does not minimise variance, the goodness of fit rationale underlying the calculation of R^2 in OLS regressions does not apply in the context of a logit regression (Kennedy (2008)). For this reason, Pseudo R^2 is calculated instead. In particular, McFadden's R^2 is used, which is the most frequently used Pseudo R^2 in logit regressions. It is calculated as the log-likelihood improvement obtained from the full model over an empty model without predictors (Veall and Zimmermann (1996)).

4.3.4.2.1 Analysis of multicollinearity

Because coefficient estimates will be biased if the explanatory variables in the model are strongly correlated with each other (multicollinearity), variance inflation factors (VIFs) are checked before regressions are run. The largest variance inflation factor (excluding industry and year dummies) is 1.85. This provides confidence that multicollinearity does not affect the analysis.

4.4 Results

4.4.1 Regression results

4.4.1.1 M&A propensity

Table 4.13 presents the results of a logit regression, where M&A propensity is regressed on family ownership as well as a range of control variables. According to Definition 4.4, M&A propensity is defined as a dummy variable that takes on the value of one if the firm makes a minimum of one acquisition in a given year, and zero otherwise. Family ownership is specified according to Definition 4.1. Accordingly, a firm is considered family-owned if members of the founding family, with the exception of the founder, directly and/ or indirectly control a minimum of 25% of voting rights if the firm is listed or a minimum of 50% of voting rights if the firm is unlisted. The control variables included are the ones listed and defined in Appendix 4.4.

Table 4.13 reports regression results separately for listed firms (Table 4.13 Model I) and unlisted firm (Table 4.13 Model II). In addition, two aggregate models that simultaneously include both listed and unlisted firms are presented. The first one

(Table 4.13 Model III) additionally includes a listing variable, the second one (Table 4.13 Model IV) also includes interaction terms of the key explanatory variables with the listing dummy. Listing is defined according to Definition 4.3. It refers to equity listings of the buying company (listing of a subsidiary is not considered) in both open market and regulated market segments.

The results presented in Table 4.13 are summarised in the following.

Family ownership: The coefficient of family ownership is negative and strongly significant in explaining M&A propensity in Model I (listed firms), in Model II (unlisted firms), and in Model III (all firms). These results suggest the validity of Hypothesis 4.1 which posits that family ownership is associated with lower M&A propensity. Statistical significance is somewhat stronger in listed firms, yet the 5% significance level is reached in all three models (the 1% level is reached only in Model I, that is only in the subset of listed firms).

Founder ownership: Notably, founder ownership only has an impact on M&A propensity in unlisted firms. The sign of the coefficient is positive, and the effect significant on a 1% level (Table 4.13 Model II). No impact of founder ownership on M&A propensity can be observed in listed firms (Table 4.13 Model I), and the effect across all firms is also insignificant (Table 4.13 Model III). These results indicate that with regards to M&A founders behave differently from family firms, and definitions not discriminating between the two (e.g., Basu, Dimitrova, and Paeglis (2009), Bauguess et al. (2009), Ben-Amar and Andre (2006), Caprio, Croci, and Del Giudice (2011), Feito-Ruiz and Menendez-Requejo (2009), Holmén and Knopf (2004), Shim and Okamuro (2011)) may produce results that can be misleading. In particular, if control considerations drive the lower M&A propensity in family firms, then founders appear to have a systematically different perspective on control considerations compared to family firms. Alternatively, it is possible that founders, especially in unlisted firms, choose means other than M&A in order to maximise control. It has been previously shown that growth is a major objective of founder firms (e.g. Barringer, Jones, and Neubaum (2005)). Because of this it may be possible that founders do not want to pass up M&A opportunities that support the firm's growth strategy. Families, in contrast, have been argued to be to some extent willing to compromise financial goals if they are able to benefit from non-financial goals (e.g., Gómez-Mejía, Núñez-Nickel, and Gutierrez (2001)). Such non-financial goals may include control benefits as well as secondary benefits of being in control (such as being able to offer employment opportunities to other family members).

Outside block-holders: The behaviour of outside block-holders also differs significantly from the behaviour of family-owned firms, as indicated by the results presented in Table 4.13. While the coefficient of outside block-holders in Table 4.13 Model I (listed firms) is insignificant, outside block-ownership has a negative and significant coefficient in Table 4.13 Model II (unlisted firms). The negative effect in unlisted firms drives the overall negative effect of outside block-ownership in the regression covering all (listed and unlisted) sample firms (Table 4.13 Model III). These results support Hypothesis 4.4 and Hypothesis 4.5 that posit that outside block-holders in listed firms do not influence the firm's acquisition propensity, while outside block-holders in unlisted firms negatively influence the firm's acquisition propensity. These results show that the behaviour of outside block-holders is contingent on the listing status of their investments.

In particular, it is possible that outside block-holders fulfil a monitoring function in unlisted firms, where their incentives to monitor the manager's actions may be particularly strong. This may be driven by lower overall transparency levels and the lack of liquidity of their investment. The lack of liquidity in particular means that it may be difficult to exit the investment and therefore results in a particular importance of this investment's performance for the investor. Their strong ownership positions may put these outside block-owners into a role where they can put sufficient pressure on management to obtain information on a proposed deal that allows them to evaluate the transaction. The lower level of M&A in unlisted firms with outside block-ownership may therefore be the result of effective monitoring where outside block-holders prevent deals they suspect to be based on self-serving motives on behalf of management. Such self-serving deals that mainly benefit managers (or the specific owners that have power over management) rather than (all) owners (including outside block-owners) may be prevented by outside block-holders.

In contrast, incentives for costly monitoring are likely to be weaker in listed firms where transparency standards are higher. Additionally, outside block-owners in listed firms have the option to sell. They can exercise this option in the case of a proposed deal they do not consider to be beneficial given their personal risk-taking preferences or if they expect the deal to be driven by self-serving interests of managers. This is because the availability of a secondary market for listed equity allows them to exit the investment at any time. Therefore, outside block-holders in listed firms can, on the one hand, sell their shares in the firm in the case of a proposed acquisition they do not consider beneficial given their personal risk

preferences. The expectation regarding risks of expropriation through managers may also influence the hold/ sell decision. On the other hand, block-holders in unlisted firms with knowledge about a proposed deal can get involved in the decision-making about such a deal and use their voting rights to prevent transactions that primarily benefit managers. Unfortunately, whether outside block-owners only (or mainly) avert those deals that destroy value cannot be tested with the available data.

The results obtained with regards to outside block-holders also support the theory that family firms do behave differently from other block-owners and that a unique family ownership effect is observable in M&A-behaviour that is not merely an ownership concentration effect. This is because if ownership concentration were the only (or main) driver, than effects should be the same for family-owned firms, founder-owned firms, and firms with outside block-holders. This is not the case in the results shown in Table 4.13. Rather, the results provide a strong indication that owner identity plays a significant role in explaining M&A-behaviour and potentially other events that have the potential to significantly change the distribution of control within a firm.

The differing results with regards to the listing status of family firms are also supported by the listing variable and the interaction of the explanatory variables with the listing variable.

Listing: The coefficient of listing in Table 4.13 Model III is positive and strongly significant, indicating that listed firms have a significantly higher M&A propensity. This result supports Hypothesis 4.2, which posited that listing positively influences a firm's propensity to engage in M&A. This result highlights that the results obtained from studies focussing exclusively on listed firms (e.g., all the studies quoted in Chapter 4.1.1) may not be generalizable beyond the group of listed firms.

Interactions: Table 4.13 Model IV presents the results of regressions that include a range of interaction terms. These include interactions of the listing dummy variable and the main explanatory variables, namely family ownership, founder ownership, and outside block-ownership. The results mirror those obtained from running separate regressions on the sub-samples of listed firms (Table 4.13 Model I) and unlisted firms (Table 4.13 Model II).

The interaction term of family ownership with listing is insignificant in Table 4.13 Model IV, which mirrors the similarity of results in the sub-sample regressions, where the coefficient of family ownership was negative and strongly significant in

both samples. Therefore, the interaction effect, which can be interpreted as the difference between listed family firms and unlisted family firms, is of insignificant magnitude. Again, this result supports Hypothesis 4.3 which states that the influence of family firm ownership is not contingent on the firm's listing status. Rather, the effect is attributable to the specific characteristics of family ownership.

The interaction effect of outside block-ownership with listing is positive, again reflecting the same message that is also implicit in the results obtained from the regressions on the sub-samples of listed firms (Table 4.13 Model I) and unlisted firms (Table 4.13 Model II). In the sub-sample regressions, the coefficient of outside block-ownership was insignificant in listed firms (Table 4.13 Model I), but negative and strongly significant in unlisted firms (Table 4.13 Model II). The interaction effect can be interpreted as the differential effect between listed firms and unlisted firms with block-holders. Because the difference is significant, as already observable in the sub-sample regressions, the coefficient of this interaction term is positive and significant (on a 5% level). Again, this indicates that the behaviour of outside block-holders with regards to M&A is contingent on the firm's listing status.

Similarly, the interaction of founder ownership with listing mirrors the results obtained from regressions on the sub-sets of listed firms (Table 4.13 Model I) and unlisted firms (Table 4.13 Model II). While the effect in the subset of listed firms was insignificant, it was strongly positive in the subset of unlisted firms. Accordingly, the interaction effect of founder ownership and listing that captures the difference between listed and unlisted firms with founder block-holders is negative and significant.

The advantage of using interaction terms, rather than sub-samples, is that observations are not lost, and so the explanatory power of the model increases. While McFadden's R^2 is 0.18 for the subset of listed firms with 1,670 observations from 419 unique firms (Table 4.13 Model I), it increases to 0.24 in the combined model, which includes 5,473 observations from 1,505 unique firms.

Control variables: Table 4.13 reveals a number of notable insights with regards to the control variables included in the model.

Cash holdings do not appear to have a significant effect on M&A propensity, as the coefficient is insignificant in all models. Similarly, in the results by Caprio, Croci, and Del Giudice (2011) and in those by Miller, Le Breton-Miller, and Lester (2010) the cash holdings variable is also insignificant in their model explaining

(active) M&A propensity. Fahlenbrach (2009) controls for cash-flow rather than for cash holdings. Again, this variable does not have a significant effect in explaining the number of M&A deals.

Notably, the effect of leverage is contingent on the listing status of the firms studied. While high leverage reduces M&A propensity in listed firms (strongly negative coefficient in Table 4.13 Model I), it increases M&A propensity in unlisted firms (strongly positive coefficient in Table 4.13 Model II). The overall effect of leverage is insignificant in the combined models, reflecting that the opposite effects in the two sub-samples cancel each other out in the combined model (Table 4.13 Model III and Table 4.13 Model IV). It is possible that a different choice of payment methods in each subset drives this effect. However, due to lack of data on payment methods for the great majority of firms, it is difficult to examine this question in more detail. Additional research into deal financing may be insightful. In contrast, Caprio, Croci, and Del Giudice (2011) do not find leverage to have a significant effect on M&A. Their study covers listed firms from a range of European countries. It is possible that country effects may be able to explain this difference.

Firm size, as approximated by the natural logarithm of total assets, is strongly positive across model specifications. This is the case both in the sub-samples and in the combined models, indicating that larger firms are more likely to become buyers than smaller firms. This is in line with previous research such as the studies by Caprio, Croci, and Del Giudice (2011) and by Miller, Le Breton-Miller, and Lester (2010). In addition, Fahlenbrach (2009) controls for market capitalisation. He finds a positive effect for this alternative size proxy.

Tangibility has a strongly negative effect across specifications. Possibly, this is because the business models of firms with low tangibility ratios have a preference for growth via acquisitions. On the other hand, highly tangible firms may simply acquire more assets, such as machinery, plants, and equipment. These firms will integrate the additional assets into their operations rather than buying whole companies. Other authors find the same effect. For example, Caprio, Croci, and Del Giudice (2011) find that tangible assets have a strongly negative coefficient.

The coefficient of sales growth is positive and significant in the full sample, an effect driven by listed firms. This is likely to be because strong past sales growth generates cash that can be used in future acquisitions. The same result is found by Caprio, Croci, and Del Giudice (2011). Miller, Le Breton-Miller, and Lester (2010)

and Fahlenbrach (2009) instead control for Tobin's Q and also find a positive coefficient. In unlisted firms, the coefficient is statistically insignificant. Possibly, unlisted firms are under less pressure to spend excess cash and are therefore able to buy more selectively and more independently of internally available cash.

The effect of international sales is negative overall (Table 4.13 Model III and Table 4.13 Model IV). This effect is strongly driven by a significantly negative effect in listed firms, while the effect in unlisted firms is insignificant. The result for listed firms indicates that firms with a high share of international sales tend to acquire less. Possibly, M&A is seen to be a key tool for internationalisation, as it allows firms to tap into markets that are otherwise inaccessible to them. Moreover, it is possible that firms pursue an equity listing in order to raise the funds required for implementing internationalisation plans. Notably, the average unlisted firm has a higher ratio of international to total sales with 45.0%, compared to 21.4% in listed firms (Table 4.9). Possibly unlisted firms pursue niche strategies more often and focus on growing internationally, while listed firms pursue industry diversification before internationalising.

The number of pre-deal industries a firm is active in does not have a significant effect on M&A propensity. However, the number of pre-deal subsidiaries positively drives M&A propensity in unlisted firms. This may indicate that unlisted firms are split into two categories. On the one hand, there may be firms with complex organisational structures (possibly due to past growth via acquisitions). These firms are likely to have a track record of integrating other firms and therefore are therefore likely to be experienced regarding post-merger integration, which may positively affect their decision-making when considering acquisitions. On the other hand, there may be firms with less complex organisational structures that are less willing to deal with the additional complexity of integrating external operations into the organisation.

Both return on assets and age only have a marginal effect on M&A activity. While the coefficient of ROA is positive and weakly significant for unlisted firms (which is also found for the listed firms studied by Caprio, Croci, and Del Giudice (2011)), the coefficient of age is positive and weakly significant for listed firms.

Table 4.13: Regression results - M&A propensity of families and outside block-holders

This table presents the results of logit regressions where the dependent variable is M&A propensity, a dummy variable that takes on the value of one if the firm makes one or more acquisition(s) in a given year, and zero otherwise. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	Listed I	Unlisted II	All III	All IV
<i>Ownership & listing</i>				
Listing (0/1)			0.87*** (6.48)	0.71*** (3.14)
Family ownership EU (0/1)	-0.61*** (-2.66)	-0.43** (-1.98)	-0.35** (-2.30)	-0.34 (-1.63)
<i>Listing x family ownership</i>				-0.32 <i>(-1.03)</i>
Outside block-holder EU (0/1)	-0.026 (-0.17)	-0.70*** (-3.03)	-0.27** (-2.00)	-0.62*** (-2.87)
<i>Listing x outside block-holder</i>				0.64** <i>(2.41)</i>
Founder ownership EU (0/1)	-0.0092 (-0.040)	1.02*** (3.17)	0.32 (1.57)	0.88*** (2.79)
<i>Listing x founder ownership</i>				-0.71* <i>(-1.86)</i>
<i>Controls</i>				
Cash holdings (%)	0.19 (0.35)	0.036 (0.048)	0.11 (0.25)	0.19 (0.44)
Leverage (%)	-1.00** (-2.14)	0.84** (2.07)	-0.29 (-0.97)	-0.39 (-1.32)
Total assets (ln)	0.62*** (10.8)	0.71*** (10.9)	0.69*** (15.9)	0.70*** (16.2)
Tangibility (%)	-2.79*** (-5.42)	-1.49*** (-3.45)	-2.31*** (-7.28)	-2.19*** (-7.01)
Revenue growth (%)	0.43* (1.87)	0.076 (0.26)	0.40** (2.18)	0.41** (2.22)
International sales ratio (%)	-0.90*** (-3.28)	0.17 (0.61)	-0.41** (-2.07)	-0.40** (-2.07)
Number of industries	0.059 (1.23)	0.012 (0.27)	0.024 (0.73)	0.026 (0.81)
Number of subsidiaries	0.00060 (0.89)	0.022*** (5.74)	0.00052 (0.50)	0.00059 (0.59)
ROA (%)	0.50 (0.81)	2.02* (1.89)	0.81 (1.44)	0.79 (1.41)
Age (ln)	0.16* (1.80)	0.16 (1.50)	0.070 (1.05)	0.090 (1.35)
<i>Observations</i>	<i>1,670</i>	<i>3,803</i>	<i>5,473</i>	<i>5,473</i>
<i>Pseudo R²</i>	<i>0.18</i>	<i>0.23</i>	<i>0.23</i>	<i>0.24</i>
<i>Clusters</i>	<i>419</i>	<i>1,098</i>	<i>1,505</i>	<i>1,505</i>

Table 4.14 provides additional insight into the within-variation of family-owned firms. The table presents the results of regressing M&A propensity on different brackets of family ownership, namely the 0% to below 33% ownership bracket, the 33% to below 66% ownership bracket, and the 66% to 100% ownership bracket.

The motivation for running these additional regressions is rooted in previous research that shows that the impact of family ownership on M&A-behaviour may vary according to the level of ownership.⁹⁰ In particular, previous research has revealed that family owners are especially vulnerable with regards to control loss at intermediate levels of ownership, which therefore drives their M&A activities and preferences (e.g., Basu, Dimitrova, and Paeglis (2009), Caprio, Croci, and Del Giudice (2011), Faccio and Masulis (2005)).

Overall, results (Table 4.14 Model III) suggest that at 33% to below 66% of ownership, the aversion to pursue M&A activities is strongest. A look at the separate regressions for listed and unlisted firms reveals that this effect is also observable in the subset of listed firms, which drives the overall effect. In addition, the 66% to 100% bracket in unlisted firms has a negative coefficient that is significant on a 10% level. Higher ownership concentration and potentially stronger non-family firm owner involvement in unlisted firms are likely to drive this effect. A significant share of owners in listed firms does not exercise their voting rights. This is because their investments may be transitory and potentially indirect via intermediaries such as professional investment fund managers. In contrast, in unlisted firms, a lower share of intermediaries exists and ownership is more concentrated, leading to a greater incentive for owners to exercise control rights (e.g., Shleifer and Vishny (1986)). In addition, the higher importance equity investors in unlisted firms place on control rights and voting rights (Brav (2009)) requires a larger share of ownership for the family to be able to shape corporate decision-making. The thresholds that indicate the ownership level where family owners become vulnerable to control loss that were derived in previous research (e.g., Basu, Dimitrova, and Paeglis (2009), Caprio, Croci, and Del Giudice (2011)) should therefore be interpreted with caution in the context of unlisted firms. This is because these studies focussed exclusively on listed firms. However, the results in Table 4.14 indicate that thresholds in listed family firms may differ significantly from thresholds in unlisted family firms.

⁹⁰ Cf. Chapter 4.2.1.

Table 4.14: Regression results - M&A propensity of families and outside block-holders - by ownership category

This table presents the results of logit regressions where the dependent variable is M&A propensity, a dummy variable that takes on the value of one if the firm makes one or more acquisition(s) in a given year, and zero otherwise. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	Listed I	Unlisted II	All III	All IV
<i>Ownership & listing</i>				
Listing (0/1)			0.96***	0.72***
			(6.89)	(3.07)
Family ownership 0% to < 33% (0/1)	0.092	-0.42	0.039	-0.24
	(0.45)	(-1.05)	(0.21)	(-0.57)
<i>Listing x family ownership</i>				0.30
				(0.65)
Family ownership 33% to < 66% (0/1)	-0.96***	-0.53	-0.94***	-0.48
	(-2.94)	(-1.02)	(-2.97)	(-0.98)
<i>Listing x family ownership</i>				-0.56
				(-0.93)
Family ownership 66% to 100% (0/1)	-0.35	-0.44*	-0.17	-0.32
	(-0.97)	(-1.89)	(-0.99)	(-1.47)
<i>Listing x family ownership</i>				-0.17
				(-0.43)
Outside block-holder EU (0/1)	-0.041	-0.69***	-0.23	-0.60***
	(-0.26)	(-2.88)	(-1.63)	(-2.66)
<i>Listing x outside block-holder</i>				0.60**
				(2.22)
Founder ownership EU (0/1)	-0.016	1.12***	0.33*	0.95***
	(-0.069)	(3.54)	(1.66)	(2.99)
<i>Listing x founder ownership</i>				-0.80**
				(-2.07)
<i>Controls</i>				
	-- not reported --			
<i>Observations</i>	1,670	3,803	5,473	5,473
<i>Pseudo R²</i>	0.19	0.23	0.23	0.24
<i>Clusters</i>	419	1,098	1,505	1,505

4.4.1.2 Diversifying M&A

Table 4.15 reports the results of OLS regressions where the dependent variable is the percentage of acquisitions made in an industry different from the buyer's core industry. Industries are measured according to 2-digit SIC codes.

Table 4.16 summarises the results of OLS regressions where the dependent variable is the percentage of acquisitions made in another region. The goal of these regressions is to provide some indication of the motivations behind M&A activities, as previous research indicates that firm-level diversification may drive M&A activities in family firms. This is because owners of family firms may be personally under-diversified (e.g., Miller, Le Breton-Miller, and Lester (2010)).

Industry diversification: Table 4.15 indicates that industry diversification is not a statistically significant driver of M&A activities in family firms. The coefficient of family ownership is insignificant in explaining the share of acquisitions made in industries other than the buyer's core industry. In addition, outside block-ownership and founder ownership do not significantly contribute to explaining the share of M&A activities devoted to other industries. Both variables have insignificant coefficients. This is observable across model specifications. The three diversification control variables, namely the ratio of international sales to total sales, the number of pre-deal industries, and the number of subsidiaries, have some explanatory power with regards to explaining the share of deals in other industries. The ratio of international sales to total sales and the number of pre-deal industries are only significant in the subset of unlisted firms, while the number of subsidiaries is significant in both listed and unlisted firms. Notably, listing does not have a significant effect on the share of deals with an industry diversification effect.

Regional diversification:

Table 4.16 shows that in the case of regionally diversifying M&A, family ownership does not have a significant influence either. This is independent of the sample composition. The coefficient is insignificant in listed firms, unlisted firms, and also in the total sample.

Notably, the coefficient of outside block-holders is negative and significant on a 5% level in the sub-sample of unlisted firms. In contrast, outside block-holders do not contribute significantly to explaining the share of industry diversifying deals. Possibly, outside block-holders particularly fear post-merger integration risks that result from different accounting, institutional, legal, and cultural factors (negative

coefficient in regional diversification regression). On the other hand, they may be less concerned with valuation and post-merger integration risk that might arise due to uncertainties about the operating business and the synergies with the pre-deal firm (insignificant coefficient in industry diversification regression). Also, different types of outside block-holders in listed and unlisted firms may drive the differing impact of outside block-holders on the share of industry diversifying deals in listed and unlisted firms.

Listing has a positive effect on the share of regionally diversifying deals. The coefficient is positive on a 5% level. A possible explanation is that listed firms are under higher pressure to grow in order to achieve economies of scale. With finite opportunities in core markets, international growth may be the only way to achieve the required growth and scale effects.

Overall, the findings in Table 4.15 and

Table 4.16 are in line with Anderson and Reeb (2003b), Bauguess and Stegemoller (2008), and Caprio, Croci, and Del Giudice (2011). These studies had failed to provide evidence that family owners use M&A to diversify more often than non-family owners. It appears that limited personal diversification does not motivate family owners to diversify on the firm-level. As such, the results contrast with the findings of Miller, Le Breton-Miller, and Lester (2010) who show that family governance drives diversifying acquisitions to reduce risk for personally undiversified family owners that have a high share of their wealth invested in the family firm.

The regressions in Table 4.15 and

Table 4.16 exclude firm-year observations that relate to firm-years in which no deal is made. Therefore, the number of observations is lower compared to the number of observations in Table 4.13 and Table 4.14.

Table 4.15: Regression results - diversifying M&A by families and outside block-holders - share of acquisitions in other industry (2-digit SIC code)

This table presents the results of OLS regressions. The dependent variable is the percentage of acquisitions made in another industry. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	Listed I	Unlisted II	All III	All IV
<i>Ownership & listing</i>				
Listing (0/1)			-0.029 (-0.62)	0.0013 (0.015)
Family ownership EU (0/1)	0.028 (0.31)	-0.011 (-0.15)	0.014 (0.28)	0.019 (0.24)
<i>Listing x family ownership</i>				0.036 (0.30)
Outside block-holder EU (0/1)	0.0060 (0.13)	0.049 (0.55)	0.042 (1.04)	0.078 (0.93)
<i>Listing x outside block-holder</i>				-0.055 (-0.58)
Founder ownership EU (0/1)	-0.037 (-0.50)	0.071 (0.49)	0.044 (0.65)	0.17 (1.15)
<i>Listing x founder ownership</i>				-0.17 (-1.05)
<i>Controls</i>				
	<i>not reported</i>			
<i>Observations</i>	478	359	837	837
<i>Adjusted R²</i>	0.10	0.11	0.077	0.077
<i>Clusters</i>	230	217	445	445

Table 4.16: Regression results - diversifying M&A by families and outside block-holders - share of acquisitions in other country

This table presents the results of OLS regressions where the dependent variable is the percentage of acquisitions made in another region. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	Listed I	Unlisted II	All III	All IV
<i>Ownership & listing</i>				
Listing (0/1)			0.094***	0.024
			(2.11)	(0.30)
Family ownership EU (0/1)	-0.0014	-0.12	-0.043	-0.10
	(-0.020)	(-1.44)	(-0.93)	(-1.36)
<i>Listing x family ownership</i>				0.092
				(0.93)
Outside block-holder EU (0/1)	-0.025	-0.16**	-0.033	-0.11
	(-0.52)	(-2.08)	(-0.89)	(-1.54)
<i>Listing x outside block-holder</i>				0.10
				(1.19)
Founder ownership EU (0/1)	-0.078	-0.081	-0.051	-0.025
	(-1.22)	(-0.69)	(-0.91)	(-0.25)
<i>Listing x founder ownership</i>				-0.039
				(-0.32)
<i>Controls</i>				
			<i>not reported</i>	
<i>Observations</i>	478	359	837	837
<i>Adjusted R²</i>	0.14	0.13	0.16	0.16
<i>Clusters</i>	230	217	445	445

4.4.2 Robustness tests

4.4.2.1 Variable and model specifications

4.4.2.1.1 Types of outside block-holders

Hypothesis 4.4 and Hypothesis 4.5 posit the effect of outside block-ownership on M&A-behaviour to be contingent on the firm's listing status. The underlying reasoning is that the liquidity of an investment in a listed firm increases the

decision-making options of outside block-holders. This is due to the availability of a secondary market for the shares of listed firms and a lack thereof in the case of unlisted firms. The exit option implicit in the availability of a secondary market for listed shares leads to this increased decision-making flexibility of owners of listed shares over those invested in unlisted equity.

Table 4.13 provides support for Hypothesis 4.4 and Hypothesis 4.5. It shows a differentiated effect of outside block-ownership on M&A propensity. While no impact is observable for listed firms (Table 4.13 Model I), outside block-ownership discourages M&A in those sample firms that are unlisted (Table 4.13 Model II). The positive and significant interaction term that consists of listing and outside block-ownership points to the same conclusion (Table 4.13 Model IV). Overall, these results indicate that while outside block-holders are not by default opposed to M&A, the listing status of the firm has a strong impact on their behaviour.

Table 4.7 shows that outside block-holders comprise a variety of ownership types, including institutional investors, corporates, private individuals, government investors, VC/ PE investors, and others. The table also indicates that their distribution across listed and unlisted firms reveals some differences between these two sub-samples. In particular, institutional block-owners, corporates block-holders, private individuals, and VC/ PE investors are more frequently present in listed firms than in unlisted firms. On the contrary, government block-holders are more frequently invested in unlisted firms than in listed firms. A concern with the results regarding the behaviour of outside block-holders may arise, if the variation in block-holder types was systematically different between listed and unlisted firms. In this case, block-holder types may be driving the different results in listed and unlisted firms.

For this reason, additional regressions are run, including separate block-holder types as explanatory variables rather than including the overall outside block-holder variable used in the regressions reported in Table 4.13. Table 4.17 shows the results of regressions that separately include the following block-holder types: institutional investors, corporates, private individuals, government investors, VC/ PE investors, and others. It shows that the effect that can be observed for the overall outside block-holder variable (Table 4.13) is also observable on a more granular level. All five outside block-owner sub-categories have a negative coefficient. Further, the interaction term of all of these variables with listing is positive. This supports the finding that outside block-owners are more averse to M&A in unlisted firms than in listed firms. Although the levels of significance vary

across block-holder types, the same direction of the effect is observable across categories. The only exception is the category including other block-holder types. This category mainly includes associations, church-owned entities, cooperatives, and non-profit foundations. However, it is not surprising that the behaviour of this category is different from that of institutional investors, corporates, private individuals, government investors, and VC/ PE investors. This is particularly the case, as many of the owners in these categories pursue non-financial goals.

Overall, the results in Table 4.17 are supportive of Hypothesis 4.4 and Hypothesis 4.5 and indicate that the findings presented in Table 4.13 are not driven by a systematically different distribution of outside block-holder types between listed and unlisted firms. Rather, these findings add confidence that the effects documented in Table 4.13 are driven by the conditions investors face when investing into listed versus unlisted firms. These conditions include different disclosure standards, different transparency levels, and different degrees of liquidity.⁹¹

⁹¹ Cf. Chapter 4.2.2.

Table 4.17: Robustness test results - M&A propensity of families and other key block-holders by type

This table presents the results of logit regressions where the dependent variable is M&A propensity, a dummy variable that takes on the value of one if the firm makes one or more acquisition(s) in a given year, and zero otherwise. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

<i>Ownership & listing</i>	
Listing (0/1)	0.69*** (3.15)
Family ownership EU (0/1)	-0.36* (-1.79)
<i>Listing x family ownership</i>	-0.31 (-1.01)
Founder ownership EU (0/1)	0.86*** (2.76)
<i>Listing x founder ownership</i>	-0.70* (-1.86)
Outside block-holder - institutional - EU (0/1)	-1.03* (-1.68)
<i>Listing x outside block-holder - institutional</i>	1.22* (1.83)
Outside block-holder - corporate - EU (0/1)	-0.40 (-1.29)
<i>Listing x outside block-holder - corporate</i>	0.64 (1.64)
Outside block-holder - private - EU (0/1)	-0.77** (-2.21)
<i>Listing x outside block-holder - private</i>	0.85** (2.14)
Outside block-holder - government - EU (0/1)	-1.02*** (-3.25)
<i>Listing x outside block-holder - government</i>	0.74 (1.59)
Outside block-holder - VC/ PE - EU (0/1)	-0.52 (-1.18)
<i>Listing x outside block-holder - VC/ PE</i>	0.46 (0.92)
Outside block-holder - other - EU (0/1)	-0.26 (-0.95)
<i>Listing x outside block-holder - other</i>	-0.40 (-0.85)
<i>Controls</i>	-- not reported --
<i>Observations</i>	5,473
<i>Pseudo R²</i>	0.24
<i>Clusters</i>	1,505

4.4.2.1.2 Definition thresholds

Because measurement errors may impact the validity of results, an alternative definition of family and outside block-holders is applied as a robustness test. In particular, if the different ownership thresholds applied for family owners and outside block-holders in listed and unlisted settings would lead to systematically different effects, then the results reported in Table 4.13 might be biased.

Table 4.18 reports the results of regressing M&A propensity on family ownership and outside block-ownership using uniform thresholds for both listed and unlisted firms. Two specifications are tested: a first one using a 25% threshold for family ownership and a 12.5% for outside block-holders (Table 4.18 Model I) and a second one using 50% for family ownership and 25% for outside block-ownership (Table 4.18 Model II). For both specifications, the model is run without interactions (Table 4.18 Model I and Table 4.18 Model II), and again including the relevant interaction terms (Table 4.18 Model III and Table 4.18 Model IV). The results obtained are very similar to those obtained in Table 4.13, indicating that the use of separate ownership thresholds for listed and unlisted firms is unlikely to bias the analysis.

Table 4.18: Robustness test results - M&A propensity of families and outside block-holders using uniform thresholds for listed and unlisted firms

This table presents the results of logit regressions where the dependent variable is M&A propensity, a dummy variable that takes on the value of one if the firm makes one or more acquisition(s) in a given year, and zero otherwise. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	I	II	III	IV
<i>Ownership & listing</i>				
Listing (0/1)	0.86*** (6.42)	0.78*** (5.53)	0.78*** (3.45)	0.77*** (3.67)
Family ownership 25%+ (0/1)	-0.34** (-2.25)		-0.27 (-1.40)	
Family ownership 50%+ (0/1)		-0.39** (-2.42)		-0.33 (-1.59)
<i>Listing x family ownership</i>			-0.39 (-1.29)	-0.45 (-1.18)
Outside block-holder 12.5%+ (0/1)	-0.21 (-1.60)		-0.45** (-2.25)	
Outside block-holder 25%+ (0/1)		-0.44*** (-3.08)		-0.63*** (-2.90)
<i>Listing x outside block-holder</i>			0.47* (1.87)	0.43 (1.59)
Founder ownership 25%+ (0/1)	0.31 (1.57)		0.78*** (2.62)	
Founder ownership 50%+ (0/1)		0.26 (1.11)		0.87*** (2.75)
<i>Listing x founder ownership</i>			-0.62* (-1.69)	-0.98** (-2.27)
<i>Controls</i>	- not reported -			
<i>Observations</i>	5,473	5,473	5,473	5,473
<i>Pseudo R²</i>	0.23	0.23	0.23	0.24
<i>Clusters</i>	1,505	1,505	1,505	1,505

4.4.2.1.3 Types of family effects

The regressions in Table 4.13 to Table 4.18 specifically focus on family ownership. The motivation of focussing on family ownership is twofold. First, theoretical work in the field indicates that ownership, rather than family management, drives M&A

activities in family firms. Accordingly, previous empirical studies focus on family ownership (cf. Figure 4.1). All authors except Basu, Dimitrova, and Paeglis (2009) use a family firm definition that is based on ownership rather than management (cf. Figure 4.5). Thus, focussing on family ownership allows the comparison of the results obtained with previous research findings. In addition, comparability with other shareholder categories is facilitated when focussing on ownership.

However, because previous research has shown that family management can be an important driver in corporate policy, one that leads to significantly different outcomes than family ownership (e.g., Villalonga and Amit (2006)), the effect of family management on M&A is also tested in order to ascertain as to whether the effect observed in Table 4.13 is attributable to family ownership (rather than to management). This is particularly relevant because family management and family ownership are often strongly correlated, so testing for the effect of family management is required in order to test whether the effect reported may actually be attributed to family ownership.

Table 4.19 reports the results of using family management rather than family ownership as explanatory variables, using Definition 4.5.

Definition 4.5: Family management

Family management is a dummy variable that takes on the value of one if one or more member(s) of the founding family except the founder is/ are present on the management board or supervisory board, and zero otherwise.

The results show that family management is insignificant in explaining M&A activity. The coefficient across model specifications is insignificant. The fact that the interaction terms of family management and listing are also insignificant across model specifications indicates that the lack of significance of the family management variable is not attributable to opposing signs in listed and unlisted firms that would cancel each other out and lead to a net insignificant effect. This finding suggests that the effects observed in Table 4.13 are indeed attributable to family ownership, while family management does not have a significant effect on the M&A activity of the sample firms.

Table 4.19: Robustness test results - M&A propensity of family-managed firms

This table presents the results of logit regressions where the dependent variable is M&A propensity, a dummy variable that takes on the value of one if the firm makes one or more acquisition(s) in a given year, and zero otherwise. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	I	II	III	IV	V	VI
<i>Ownership & listing</i>						
Listing (0/1)	0.90*** (6.60)	0.86*** (6.18)	0.91*** (6.63)	0.62*** (3.12)	0.66*** (3.53)	0.57*** (2.91)
Family management (0/1)	-0.13 (-0.80)	-0.20 (-1.23)	-0.15 (-0.93)	-0.25 (-1.34)	-0.30 (-1.61)	-0.30 (-1.62)
<i>Listing x family management</i>				0.12 (0.30)	0.12 (0.30)	0.18 (0.44)
Outside block-holder 12.5%+ (0/1)	-0.12 (-1.00)			-0.42** (-2.30)		
Outside block-holder 25%+ (0/1)		-0.33** (-2.46)			-0.57*** (-3.02)	
Outside block-holder EU (0/1)			-0.18 (-1.46)			-0.56*** (-2.98)
<i>Listing x outside block-holder</i>				0.55** (2.35)	0.49* (1.95)	0.68*** (2.89)
Founder management (0/1)	0.29* (1.65)	0.26 (1.49)	0.28 (1.58)	0.28 (0.88)	0.25 (0.79)	0.25 (0.78)
<i>Listing x founder management</i>				0.044 (0.12)	0.035 (0.096)	0.074 (0.20)
<i>Controls</i>	- not reported -					
<i>Observations</i>	5,473	5,473	5,473	5,473	5,473	5,473
<i>Pseudo R²</i>	0.23	0.23	0.23	0.23	0.23	0.23
<i>Clusters</i>	1,505	1,505	1,505	1,505	1,505	1,505

4.4.2.1.4 Insider ownership

Another factor that might lead to incorrect attribution could be if family ownership approximated for insider ownership, of which family ownership can be a special case if ownership and management overlap. If this is the case, then the model might suffer from omitted variable bias and the coefficient estimates may thus be biased. For this reason, it may be necessary to control for insider ownership in

regressions where family ownership is the explanatory variable, in order not to incorrectly attribute the effect of insider ownership to family ownership. Table 4.20 reports the results obtained by including a range of alternative (non-family) insider owner definitions as explanatory variables in the regression.

In the main definition, insider ownership is a dummy variable that takes on the value of one if a single inside block-holder owns a minimum of 12.5% (25%) of shares in a listed (unlisted) firm. Two alternative definitions are used. In the second definition, insider ownership is a dummy variable that takes on the value of one if a single inside block-holder owns a minimum of 12.5%, independent of the firm's listing status. In the third definition, insider ownership is a dummy variable that takes on the value of one if a single inside block-holder owns a minimum of 25%, independent of the firm's listing status.

The results show that insider ownership does not have a significant influence on M&A activities. Both the coefficient of insider ownership and its interaction with listing are insignificant across specifications. The insignificant interaction effect suggests that the lack of significance of insider ownership is not attributable to opposing signs in listed and unlisted firms that would cancel each other out and lead to a net insignificant effect. Hence, these results further substantiate the finding that the behaviour documented for family firms in this chapter is indeed specific to family ownership.

Table 4.20: Robustness test results - M&A propensity of families, outside block-holders, and insider owners

This table presents the results of logit regressions where the dependent variable is M&A propensity, a dummy variable that takes on the value of one if the firm makes one or more acquisition(s) in a given year, and zero otherwise. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	I	II	III	IV	V	VI
<i>Ownership & listing</i>						
Listing (0/1)	0.86***	0.87***	0.87***	0.79**	0.92**	0.97***
	(6.45)	(6.49)	(6.47)	(2.27)	(2.45)	(2.58)
Family ownership EU (0/1)	-0.40**	-0.33*	-0.37**	-0.35	-0.18	-0.18
	(-2.33)	(-1.86)	(-2.14)	(-1.06)	(-0.49)	(-0.49)
<i>Listing x family ownership</i>				-0.37	-0.52	-0.54
				(-0.94)	(-1.21)	(-1.28)
Outside block-holder EU (0/1)	-0.31**	-0.25*	-0.28*	-0.62*	-0.47	-0.47
	(-2.06)	(-1.67)	(-1.90)	(-1.93)	(-1.35)	(-1.35)
<i>Listing x outside block-holder</i>				0.59*	0.46	0.44
				(1.65)	(1.22)	(1.15)
Insider ownership 25%+ (0/1)	-0.12			-0.012		
	(-0.62)			(-0.032)		
Insider ownership 50%+ (0/1)		0.071			0.25	
		(0.31)			(0.64)	
Insider ownership EU (0/1)			-0.045			0.25
			(-0.23)			(0.63)
<i>Listing x insider ownership</i>				-0.26	-0.48	-0.52
				(-0.62)	(-0.93)	(-1.15)
Founder ownership EU (0/1)	0.28	0.33	0.30	0.87**	1.02***	1.01***
	(1.33)	(1.60)	(1.43)	(2.34)	(2.62)	(2.62)
<i>Listing x founder ownership</i>				-0.77*	-0.87*	-0.91**
				(-1.76)	(-1.95)	(-2.03)
<i>Controls</i>						
				-- not reported --		
<i>Observations</i>	5,473	5,473	5,473	5,473	5,473	5,473
<i>Pseudo R²</i>	0.23	0.23	0.23	0.24	0.24	0.24
<i>Clusters</i>	1,505	1,505	1,505	1,505	1,505	1,505

4.4.2.1.5 Industry classification

Measurement error may lead to biased coefficient estimates. The SIC code based industry classification used in Table 4.13 may suffer from measurement error. For

this reason, it is common practice to re-run regressions using the alternative industry classification scheme suggested by Fama and French (2012). This classification divides sample firms into 17 industries. Table 4.21 shows that the results of regressions using the industry classification by Fama and French (2012) are in line with the results in Table 4.13.

Table 4.21: Robustness test results - M&A propensity of families and outside block-holders using alternative industry classification

This table presents the results of logit regressions. The dependent variable is M&A propensity (cf. Definition 4.4). All models control for the Fama/ French 17 industries. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	Listed I	Unlisted II	All III	All IV
<i>Ownership & listing</i>				
Listing (0/1)			0.86*** (6.45)	0.79*** (3.49)
Family ownership EU (0/1)	-0.74*** (-3.16)	-0.42** (-1.98)	-0.40*** (-2.69)	-0.34* (-1.67)
<i>Listing x family ownership</i>				-0.39 (-1.24)
Outside block-holder EU (0/1)	-0.071 (-0.45)	-0.74*** (-3.22)	-0.33** (-2.48)	-0.62*** (-2.84)
<i>Listing x outside block-holder</i>				0.54** (2.01)
Founder ownership EU (0/1)	-0.095 (-0.40)	1.08*** (3.14)	0.23 (1.10)	0.89*** (2.71)
<i>Listing x founder ownership</i>				-0.84** (-2.10)
<i>Controls</i>	<i>not reported</i>			
<i>Observations</i>	1,666	3,810	5,480	5,480
<i>Pseudo R²</i>	0.19	0.23	0.23	0.24
<i>Clusters</i>	418	1,100	1,507	1,507

4.4.2.1.6 Econometric model

In addition to the logit models presented in Chapter 4.4.1, a probit model is also run. In the context of a dichotomous dependent variable, the choice of a logit

model versus a probit model depends on the assumptions made with regards to the distribution of the error term. In a logit model, it is assumed that the error term is distributed following a logistic function. In contrast, in probit models it is assumed that the error term follows a cumulative normal function (Kennedy (2008)). Because the distribution of the error terms cannot be observed directly, it is worth testing as to whether results are sensitive to the model choice. The results reported in Table 4.22 indicate that the outcomes of regressing the M&A dummy on family ownership are not sensitive to the choice of econometric model, *ceteris paribus*. The coefficients obtained from the probit model are in line with those obtained from the logit regression reported in Table 4.13.

Table 4.22: Robustness test results - probit model - M&A propensity of families and outside block-holders

This table presents the results of probit regressions where the dependent variable is M&A propensity, a dummy variable that takes on the value of one if the firm makes one or more acquisition(s) in a given year, and zero otherwise. Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level.

	Listed I	Unlisted II	All III	All IV
<i>Ownership & listing</i>				
Listing (0/1)			0.50*** (6.84)	0.40*** (3.28)
Family ownership EU (0/1)	-0.33*** (-2.60)	-0.25** (-2.30)	-0.21** (-2.57)	-0.22** (-2.03)
<i>Listing x family ownership</i>				-0.15 (-0.89)
Outside block-holder EU (0/1)	-0.0065 (-0.072)	-0.37*** (-3.19)	-0.16** (-2.26)	-0.35*** (-3.17)
<i>Listing x outside block-holder</i>				0.36*** (2.58)
Founder ownership EU (0/1)	0.0072 (0.056)	0.52*** (2.94)	0.18 (1.62)	0.47*** (2.68)
<i>Listing x founder ownership</i>				-0.38* (-1.78)
<i>Controls</i>				
	- not reported -			
<i>Observations</i>	1,670	3,803	5,473	5,473
<i>Adjusted R²</i>	0.18	0.24	0.23	0.24
<i>Clusters</i>	419	1,098	1,505	1,505

4.4.2.2 Endogeneity

A concern with the above results may arise if an explanatory variable is not exogenous with regards to the independent variable. Reverse causality may lead to such an endogeneity problem. Reverse causality exists if the dependent variable drives the explanatory variable. If this is the case, then the error term and the explanatory variable may be correlated. As a result, the coefficient estimates

obtained from a regression including such an endogenous explanatory variable may be biased (Kennedy (2008)).

In the context of the above regressions, it could be argued that the decision to go public is driven by M&A considerations (as also argued by Maksimovic, Phillips, and Yang (2012)). For example, a firm with an M&A-heavy strategy may decide to go public in order to be able to more easily raise the relevant finance in order to be able to fund future deals. If this is systematically the case in the sample studied, then listing is endogenous in explaining M&A activities, and the coefficient estimates obtained may be biased. One way of partially mitigating this problem is to use lagged explanatory variables. This ensures that the analysis includes past listing decisions rather than simultaneous listing and M&A decisions. However, because M&A decisions, particularly M&A programmes, as well as a decision to go public may be relatively long-term projects/ strategies, this may not fully solve the problem. Another popular way of addressing this endogeneity concern is to use an instrumental variable (IV) approach.

An instrumental variable must fulfil two criteria: it must be correlated with the endogenous variable, but it may not be correlated with the error term. An IV model then calculates the common variation of the endogenous variable and the instrument. Based on this common variation, the slope estimates are then estimated. In this way, the problem of correlation with the error term is circumvented (e.g., Kennedy (2008)). However, because of these requirements, finding suitable instruments is challenging. Based on the regulatory setting in Germany, the reporting standard used can be used as an instrument for listing. It fulfils both IV criteria, i.e., it is correlated with the potentially endogenous variable and it is uncorrelated with the model's error term.

Correlation with potentially endogenous variable: Traditionally, German firms have reported according to national GAAP, also called HGB standards. These reporting standards differ significantly in many regards from international reporting standards, such as IFRS and U.S.-GAAP. This is because the standards were developed in a system where protection of creditor rights was considered the most important objective of standard setters. This creditor focus has developed because Germany is a bank-based economy which differs from market economies such as those of the UK or the U.S., where transparency for equity investors historically motivated reporting standards.

Because of the fundamentally different accounting practices in EU member states and resulting difficulties in interpretation for investors, the European Union gradually harmonises reporting standards in Europe. A major milestone of these harmonisation efforts, the European Regulation (EC) No 1606/2002 of the European Parliament and of the Council, was passed on 19 July 2002 and was subsequently endorsed in all member states, including Germany. Based on this regulation, capital market oriented firms based in the EU are obliged to report based on International Financial Reporting Standards (IFRS). The regulation is applicable for those firms listed in the regulated part of the market. In contrast, it is not obligatory to apply IFRS for those firms listed in the open segment of the market. All firms for which reporting according to IFRS is not obligatory are entitled to choose between reporting according to IFRS and reporting according to German GAAP (HGB standards).

Table 4.23 shows the distribution of sample firm-years according to their listing status and accounting standard used. The table shows that the majority of firms reports according to German GAAP (HGB) with 6,190 or 69.23% of observations falling into this category, and the remaining 2,751 or 30.77% of observations relating to firms that report according to IFRS. Among listed firms, only 120 observations or 5.34% relate to reports according to HGB, compared to 2,127 or 94.66% that relate to reports according to IFRS. The situation is reversed in unlisted firms. Here 90.68% of firm-years relate to firm-years reported in an HGB reporting framework (6,070 observations), while only 9.32% or 624 observations relate to IFRS reporting. These descriptive statistics indicate that that listing and reporting standard are significantly correlated. The exact correlation (Bravais-Pearson correlation coefficient) between the potentially endogenous listing variable and the accounting standard used is 0.8053. A correlation coefficient of one would indicate a perfect correlation. However, 0.8053 can be considered sufficiently close to one and therefore highly, albeit not perfectly, correlated with listing.

Table 4.23: Descriptive statistics - sample firm-years by listing status and reporting standard used

This table shows the number of firm-years according to listing status and reporting standard used. HGB stands for German generally accepted accounting principles. IFRS stands for International Financial Reporting Standards. The numbers in parentheses are percentages calculated per row total.

	I	II	III
	HGB	IFRS	All
<i>Listing status</i>			
Unlisted	6,070 (90.68%)	624 (9.32%)	6,694
Listed	120 (5.34%)	2,127 (94.66%)	2,247
Total	6,190 (69.23%)	2,751 (30.77%)	8,941

No correlation with error term: Because only one instrument is used for the one potentially endogenous variable, the model using reporting standard as an instrument for listing is identified, however, it is not over-identified. If it were over-identified, then the Sargan test could be used to indirectly test whether the instrument would be uncorrelated with the error term. However, because the model is identified only, it is necessary to rely on economic reasoning to assess the validity of the choice of the instrument (Kennedy (2008)).

Because a potential reverse causality effect between M&A activities and listing was at the centre of endogeneity concerns to start with, any economic reasons for a connection between M&A activities and the reporting standards used would falsify the use of the accounting standard variable as an instrument for M&A. However, no such connection could be identified, even after conducting extensive research. In addition, no omitted variables that would be correlated with the instrument could be identified. If the instrument were correlated with an omitted variable, this omitted variable would be included in the error term, and therefore the instrument would be correlated with the error term (Kennedy (2008)). However, because of a lack of a contraindication, the accounting standard used can be considered exogenous in the original equation. Because the accounting standard used is further correlated with the endogenous variable without being correlated with the error term, it represents a suitable instrument for approximating listing status.

A two-stage instrumental variable regression approach is used. In the first stage, accounting standard is used to predict listing status. In the second stage, M&A propensity is regressed on the predicted listing variable. Table 4.24 shows the

results of this two-stage approach. In the first stage, accounting standard is strongly significant, once more indicating its correlation with listing status. In the second stage, the IV-predicted listing status variable is strongly positive and significant. Both the sign and its significance are consistent with the coefficient of the listing status observed in the main regressions reported in Table 4.13. The same is true for all three ownership variables that were also used in Table 4.13. Family ownership has a negative and significant coefficient. Outside block-ownership has a negative and significant coefficient, and the coefficient of founder ownership is insignificant. These results indicate that the coefficients reported in the main regression model (Table 4.13) are unlikely to be biased due to reverse causality between listing and M&A activities.

Table 4.24: Robustness test results - instrumental variable regression accounting for listing-related endogeneity concerns

This table reports the results of a two-stage instrumental variable regression. In the first stage, accounting standard (exogenous) is used to predict listing (potentially endogenous) using a probit regression model (Model I). Model II is a probit regression where the dependent variable is M&A propensity (Definition 4.4). Definitions of all other variables are given in Appendix 4.1, Appendix 4.2, Appendix 4.3, and Appendix 4.4. All control variables are lagged. Time and industry dummies and a constant are included. Standard errors are clustered at the firm-level. Robust z-statistics are presented in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% level. Source: Kappes, Schmid, and Volk (2012).

	1st stage I	2nd stage II
<i>Ownership & listing</i>		
Accounting standard (0/1)	0.668*** (26.92)	
Listing IV-predicted (0/1)		0.778*** (7.58)
Family ownership EU (0/1)	-0.068*** (-3.53)	-0.15* (-1.84)
Outside block-holder EU (0/1)	-0.03 (-1.59)	-0.155** (-2.17)
Founder ownership EU (0/1)	0.075*** (2.84)	0.142 (1.25)
<i>Controls</i>		
Cash holdings (%)	-0.135** (-2.5)	0.182 (0.78)
Leverage (%)	-0.225*** (-5.94)	-0.013 (-0.08)
Total assets (ln)	-0.03*** (-4.79)	0.378*** (16.15)
Tangibility (%)	-0.163*** (-4.56)	-1.112*** (-6.32)
Revenue growth (%)	0.044** (2.18)	0.184* (1.83)
International sales ratio (%)	0.098*** (3.54)	-0.289*** (-2.67)
Number of industries	-0.002 (-0.39)	0.014 (0.82)
Number of subsidiaries	0.001*** (5.3)	0.000 (0.15)
ROA (%)	-0.258*** (-3.95)	0.572* (1.89)
Age (ln)	-0.03*** (-3.28)	0.072** (1.96)
<i>Observations</i>	5,473	5,473
<i>Clusters</i>	1,505	1,505

Firm-fixed effects: Firm-fixed effects regressions are not used to test robustness of result to omitted time-invariant explanatory variables. This is because fixed effects regression only captures the time variation in explanatory variables, while it omits cross-sectional effects. Because the explanatory variable of interest, family ownership, is relatively stable over time, fixed effects regression is not appropriate, as it is unable to capture the relationship between family ownership and M&A, even if it may exist.

4.5 Discussion

4.5.1 Contribution

4.5.1.1 Theoretical contribution

Chapter 4 focusses on the question as to whether family firms fundamentally differ from non-family firms with regards to their M&A-behaviour and whether M&A-behaviour is influenced by the listing status of these firms.

Family vs. non-family firms: Chapter 4 draws on the concept of control considerations to derive hypotheses regarding the M&A-behaviour of family and non-family firms. M&A transactions have the potential to significantly alter the distribution of control in a firm, because large capital issues are typically required and new block-holders may emerge as the result of an M&A deal. As such, both capital issues and the emergence of new block-holders may shift decision-making powers in a firm.

A range of insights obtained from the family firm literature are used to develop hypotheses regarding the M&A-behaviour of family firms and non-family firms. In particular, identity considerations and transgenerational objectives, which are frequently discussed characteristics of family firms (e.g., Le Breton-Miller and Miller (2006), Lumpkin and Brigham (2011)), represent major building blocks for the hypothesis that the M&A-behaviour of family firms may differ from the behaviour of non-family firms (Hypothesis 4.1).

Listed vs. unlisted firms: The hypothesis development in Chapter 4 specifically accounts for the potential impact of listing on corporate M&A-behaviour. Chapter 4 presents the first research that explicitly accounts for the implications of listing in

the context of corporate M&A. In particular, differences in information asymmetries and differences regarding the tradability of shares as well as regarding competition among investors are accounted for in the hypothesis development. These factors are used to explain differences in M&A-behaviour of listed and unlisted firms (Hypothesis 4.2).

Family influence vs. ownership concentration: Lastly, other types of concentrated owners are specifically accounted for. This is in order to establish whether any effects detected can be attributed to family ownership or whether it is ownership concentration that is driving results. For this purpose, concentrated owner types without high probability of control considerations, due to lower probability of identity congruence and transgenerational objectives, are analysed alongside family firms.

4.5.1.2 Empirical contribution

Novel dataset: The analysis in Chapter 4 is based on a large novel dataset that covers almost 9,000 firm-year observations. The dataset is based on the Hoppenstedt Database, a provider of information on German listed and unlisted firms. The main data items from Hoppenstedt are financial accounts (balance sheets and P&L accounts), direct ownership information, board data, and industry classification. This information is complemented with manually researched data of ultimate owners, founders, family affiliations of shareholders and board members, listing status, and M&A data from Thomson Reuters SDC Platinum.

As hypothesised, the data shows that listing has a positive effect on M&A propensity, which can be explained by improved and timelier access to finance and a lower cost of capital. Specifically, listed firms benefit from the ability to carry out additional share issues if required. They also enjoy a higher debt capacity that results from the equity listing. In addition, their listed shares represent an additional acquisition currency. As such, the results confirm the survey findings of Bancel and Mittoo (2009). The advantage of the German institutional context is that a high number of large and successful firms are among the group of unlisted firms. Comparability between listed and unlisted firms is therefore possible without statistical problems. An instrumental variable regression shows that listing does not appear to be endogenous in explaining M&A, so that concerns about reverse causality are mitigated.

The analysis also shows that the M&A-behaviour of family firms differs significantly from the M&A-behaviour of non-family firms. The regressions performed show that family firms pursue significantly fewer M&A deals than their non-family counterparts, after controlling for a host of other factors. As such, the findings add to the family firm literature by providing evidence of the importance of control considerations for corporate decision-making in family firms. M&A is a fruitful area for studying corporate decision-making as it is an optional part of corporate policy given the alternative of organic means to achieve growth.

Precise data: Based on the detailed nature of the dataset, it is possible to draw an accurate picture of the ownership structures of acquiring firms. Specifically, it is possible to precisely measure family ownership and therefore work with a continuous measure of ownership rather than with binary variables that may result in significant measurement error. Many previous studies rely on significantly less accurate proxies such as the ownership type of the largest shareholder in order to classify firms into family and non-family firms. The granular nature of the dataset used in Chapter 4 allows the drawing of an exact picture of the influence of family shareholders as well as of other ownership categories. This is an important step forward in the increasingly differentiated academic debate regarding family firms.

Listed and unlisted firms: A major contribution of this research is that it demonstrates that the M&A-behaviour of family firms is independent of the listing status of the firm. This is the first study that documents the behaviour of unlisted family and non-family firms. As such, it contributes to the literature that has previously focussed on listed firms only. Both listed and unlisted family firms conduct significantly fewer M&A deals than their respective control groups. This result is particularly notable, because previous authors have argued the decision to go public to be a signal of the conscious decision to give up control (Franks et al. (2012)). The results, however, suggest that in the case of discretionary activities, such as M&A, the willingness to sacrifice control is lower in family firms compared to non-family firms, even after controlling for listing.

Ownership concentration: The data also shows that ownership concentration, which has previously been used as a proxy for family ownership (e.g., Faccio and Masulis (2005)), cannot explain the effect family ownership has on M&A-behaviour. This is because the behaviour of outside block-holders differs significantly from the behaviour of family firms with regards to M&A. Notably, the difference in behaviour between family firms and outside block-holders becomes particularly evident when differentiating into listed and unlisted firms.

The data shows the behaviour of outside block-holders to be contingent on the firm's listing status. Specifically, outside block-holders do not affect M&A-behaviour in listed firms. In comparison, their effect is negative and significant in the case of unlisted firms. In comparison, the behaviour of family firms is independent of the firm's listing status. The effect of family ownership on M&A is negative and significant in both sub-sets.

Investment liquidity: The results show that the implicit liquidity assumption made in previous studies on M&A-behaviour in listed firms is unlikely to hold in unlisted firms. This liquidity assumption assumes that shareholders that do not derive private benefits from being in control of a specific firm “vote with their feet” (e.g., Parrino, Sias, and Starks (2003)) by selling their shares in that firm and replacing the investment with an alternative investment that represents a better match with the investor's risk-taking preferences. However, because shares in unlisted firms are not liquid, investors in unlisted firms do not enjoy this option to sell and instead promote their interests by involving themselves in corporate policy. Because M&A transactions may have material consequences on outside block-holders in unlisted firms, it is likely that they will scrutinise managerial decision-making when it comes to M&A. As such, outside block-holders may fulfil an important monitoring function in unlisted firms.

4.5.2 Implications of results

The results presented in Chapter 4 have important implications for minority investors, for family firms, for unlisted firms, and for policy makers.

Minority investors: On the one hand, the threat of being negatively affected by value-destroying M&A deals may be lower for investors in family-firms given the lower number of M&A deals undertaken by family firms. This assumes a comparable quality of deals pursued by family and non-family firms. Based on data limitations, a differentiation into value-creating and value-destroying deals cannot be made for the sample of M&A transactions used in Chapter 4. However, given stronger control considerations in family firms, deals conducted for the sole purpose of empire building are less likely to take place given the likely negative implications of M&A on family control. On the other hand, it is possible that control considerations by family members may lead to positive NPV transactions being passed up if these have negative implications on family control. While such strategies may be beneficial for family owners, non-family investors in these firms

may be negatively affected as they may miss out on potential value creation. The only data available on corporate M&A relates to deals undertaken, while data on passed up deals is not recorded. Therefore, it is difficult to evaluate to what extent such passive M&A strategies may impact co-investors.

A longer time series and a quality measure for M&A deals undertaken would be necessary to shed further light on the question as to whether M&A strategies in family firms lead to net advantages or net disadvantages for the family's co-investors. In addition, co-investors in family firms are well advised to evaluate a family firm's overall growth strategy, as a passive M&A strategy may be (over-)compensated by organic means of growth, such as capital expenditure, R&D, greenfield investments, or (as a semi-organic method) joint ventures.

Family firms: For family firms, the results obtained may be helpful as they highlight that transparency and communication with regards to their M&A strategies are likely to be important for co-investors. If family firms undertake fewer deals based on their long-term orientation and lower "propensity to gamble" then this may help them to attract co-investors with matching risk preferences and a similar long-term approach. If lower M&A propensity also means that those deals undertaken are value-creating, then active communication about these deals may be a helpful signal for co-investors. In this way, family firms may signal that they prioritise value creation over family control intentions, or at least that control intentions do not conflict with value creation in the firm.

Family firms may also want to consider communicating their growth strategies in a holistic way and signal to co-investors that other pillars in their growth strategy make up for, or complement, their M&A strategy to yield growth rates in line with or above those of competitors.

Unlisted firms: The results presented may be helpful for unlisted firms in devising an M&A strategy that is compatible with the type and amount of finance accessible to them. In case control considerations play a significant role, these firms are likely to prefer debt issues rather than equity issues. Because securing debt financing at short notice may be difficult, these firms may benefit from relationship banking. The advantage of relationship banking for unlisted firms is that the relationship between the firm and the bank reduces the information asymmetries between the two parties. As a result, the uncertainty of contracting with the firm is reduced from the perspective of the bank, which reduces the perceived risk in the case a debt contract is closed between them. This can positively impact the likelihood that the

bank will provide the firm with a loan and potentially translate into lower cost of debt and more timely supply of finance. As part of this strategy, the firm may want to proactively update the bank on a continuous basis to minimise the additional due diligence required should an M&A opportunity emerge. This may save valuable time and increase the flexibility of the firm by enabling quick debt issues in case an M&A opportunity emerges.

Moreover, it may be worth trying to build a relationship with more than one bank, in order to be able to reduce capital costs, as the banks are more likely to compete for business with the firm. Further, if the firm has relationships with multiple banks, this may facilitate the issue of a syndicated loan if the firm requires a larger sum of debt capital. In this way, unlisted firms may be able to react more quickly in the case an M&A opportunity emerges and compete for a larger number and larger sizes of M&A deals. As such, the firm may have a competitive advantage over other unlisted bidders and it may also be able to compete more effectively with listed bidders.

Policy makers: Policy makers may find the results presented in Chapter 4 useful, as they highlight limitations regarding access to capital for unlisted firms, which are likely to cause lower M&A propensity. If policy makers want to maximise the chances of domestic firms competing successfully on an international basis, then access to capital may be a crucial facilitating condition for these firms. In particular, if policy makers facilitate access to capital for unlisted firms, it may be easier for these firms to grow via acquisitions. Constrained firms, on the other hand, are more likely to become acquisition targets. In order to strengthen domestic business activity and survival, access to capital may therefore be a vital factor.

As such, policy makers may want to consider reducing regulatory burdens on capital providers that might limit their ability or willingness to provide corporate finance. In addition, reducing taxation may be useful in increasing the flow of capital into firms from both domestic and international capital providers. Moreover, it may be worthwhile revisiting regulation regarding disclosure of corporate information in order to achieve that the information relevant for investors is at the core of corporate disclosure while keeping overall reporting requirements within reason. In this way, the information monopoly of relationship lenders may be somewhat reduced, which may ultimately boost competition among capital providers active in supplying unlisted firms.

4.5.3 Limitations

As all empirical studies, the research in this chapter is subject to a range of limitations.

Data limitations: An important advantage of the dataset is that it allows the simultaneous analysis of both listed and unlisted firms. It is therefore possible to isolate the effect that an equity listing has on M&A-behaviour. While it is thus feasible to test previously unexplored hypotheses, some data limitations apply as a result. For instance, it is not possible to work with market data, such as share prices, because such data is unavailable for unlisted firms. In addition, reporting quality in listed firms may differ from reporting quality in unlisted firms, which may somewhat impact results.

Sample: Only medium-sized and large firms are included in the sample. While this makes listed and unlisted firms comparable, inferences about small firms may not be possible from the data analysed. Because reporting requirements are less stringent for smaller firms, the data corresponding to small firms may not be comparable to the data corresponding to larger firms, and statistical challenges may result. However, among the firms in the sample, selection bias should not affect results given that reporting requirements are defined by law, and non-compliance is unlikely to occur given that extremely high fines up to 25,000 Euros apply (Bundesjustizamt (2012)).

Institutional context: The research in this chapter was conducted in the institutional context of Germany, which has a range of unique characteristics relevant for the interpretation of the results obtained. First, because Germany is not a market-based economy, the share of listed firms in the German economy is small, and even large and very successful firms frequently choose to remain private. While this facilitates the analysis from a statistical point of view, the results obtained may not be transferable to a market-based context, where growth beyond a certain point may require firms to go public. In the context in which the results were obtained, access to capital and a lower cost of capital are likely to drive higher M&A propensity in listed German firms. These differences may be significantly more pronounced in market-based economies because the German institutional context provides a viable alternative to going public that may to some extent alleviate issues regarding access to capital. This is less likely to be the case in economies such as the U.S. or the UK.

Another limitation of the research presented in Chapter 4 is that it is impossible to differentiate into value-creating and value-destroying deals. This is because a longer time series of data would be required and/ or market data that reflects the reactions of market participants would be needed. However, Hoppenstedt data is not available for longer time periods than the period covered in Chapter 4. In addition, market data is not available for unlisted firms, making inferences about the quality of deals challenging.

4.5.4 Suggestions for future research

Notwithstanding the above mentioned limitations, the research presented in this chapter provides some novel insights into the M&A-behaviour of family and non-family firms as well as on the impact of listing on M&A choices. In addition, a range of adjacent avenues for future research can be identified on the basis of the research conducted in Chapter 4.

Quality of deals: First, it would be interesting to differentiate M&A transactions into value-destroying and value-creating deals. Such research may look into the synergy potential of deals or use revenue, profit, or growth parameters to analyse as to whether the M&A deals undertaken have a positive or negative effect on any of these performance measures. Such research may be helpful in deriving conclusions whether the M&A strategies of certain shareholder types, such as family firms or outside block-holders, have a net positive impact or a net negative effect on other stakeholders of the firm.

Other means of growth: In addition, it may be interesting to study growth strategies of firms in a more holistic way, as M&A only represents one option in a range of alternative ways for firms to grow. Other growth investments include CapEx, internationalisation, R&D, or joint ventures. Such analysis may be insightful because it is possible that family firms simply choose different means of growth than non-family firms, so that the conclusiveness of an analysis of M&A alone may be limited.

Outside block-holders: In addition, future research might want to study the effect of outside block-holders on other elements of corporate policy in listed and unlisted firms. For example, this may include R&D investments or the use of financial instruments. Such additional research would be valuable in developing a more holistic understanding of how outside block-holders influence managerial decision-making.

Small firms: Further, researchers may want to look into the M&A-behaviour of small firms, as this group of firms has been omitted from the analysis in this chapter for reasons of data availability and statistical challenges. However, the regressions performed in Chapter 4 have shown that firm size has a significant and positive effect on M&A propensity (cf. Table 4.13). Therefore, a closer look at smaller firms may reveal additional interesting insights.

Institutional context: Lastly, conducting similar studies in a different institutional context may be helpful in understanding the impact of the institutional setting on M&A decision-making. Ideally, future research would undertake a similar study across a range of countries, including bank-based and market-based economies in order to shed light on the effect of these alternative systems on M&A-behaviour.

5 Conclusion

The goal of this dissertation was to provide insight into the behaviour of family firms with regard to two major research gaps, namely corporate time horizons and M&A activities.

5.1 Corporate time horizons in family firms

Chapter 3 presents analysis on a dataset comprised of 701 German firms (6,205 firm-years) observed over the period from 1995 to 2009. The research in Chapter 3 extends the primarily theoretical discussion which has occurred to date with robust empirical evidence, using a novel measure of time horizons (LTI) that draws a more comprehensive picture of corporate time horizons than previous single indicator studies. The results obtained show that family firms have significantly higher long-term index scores than non-family firms, an effect mainly driven by family management rather than family ownership. It further shows that family firms are more apt to maintain a long-term oriented approach to business even if pressure on short-term results is high. As such, the findings support the hypothesis that family firms are driven by transgenerational considerations that help to alleviate time horizon related agency problems. Overall, the results are in line with the frequent claim that family firms are more long-term oriented than non-family firms (e.g., James (1999), Le Breton-Miller and Miller (2006), Lumpkin and Brigham (2011)).

5.2 Mergers & acquisitions in family firms

Chapter 4 is based on a novel dataset covering 8,941 firm-years relating to 2,106 German listed and unlisted firms. These firms conduct 2,286 deals over the observation period that covers the years between 2005 and 2010. As such, Chapter 4 presents the first study that covers the M&A-behaviour of unlisted firms, a

research area previously focussed exclusively on listed firms. The data shows that access to public capital increases the chances of a firm participating on the buy-side of M&A deals. Family ownership has a negative impact on M&A, an effect observable in both listed and unlisted settings. In contrast, outside block-holders do not influence corporate M&A-behaviour in listed firms, but do inhibit M&A in unlisted firms. The results lend some support to the hypothesis that the outside block-holders in unlisted firms fulfil an effective monitoring role which is driven by the lack of a secondary market for their (unlisted) investments. In contrast, outside block-holders in listed firms have lower monitoring incentives given their ability to sell their shares at any point in time. In comparison to outside block-holders, the results suggest that the behaviour of families is driven by private benefits that they derive from controlling their firms. These private benefits lead controlling families to enforce their M&A preferences independent of the firm's listing status. This is in line with the hypothesis that control considerations strongly impact corporate decision-making in family firms.

Appendices

Chapter 3

Appendix 3.1: Definition of variables - governance.....	281
Appendix 3.2: Definition of variables - pressure.....	282
Appendix 3.3: Definition of variables - controls	282

Chapter 4

Appendix 4.1: Definition of variables - governance.....	283
Appendix 4.2: Definition of variables - listing.....	284
Appendix 4.3: Definition of variables - deals.....	285
Appendix 4.4: Definition of variables - controls	285

Appendix

Appendix 3.1: Definition of variables - governance

This table provides a description of the governance variables used in Chapter 3. Source: Kappes and Schmid (2012).

Variable	Description
Family firm (FF)	Dummy variable that takes on the value of one if the founder and/ or his/ her family hold/s at least 25% of the firm's voting rights and/ or the founder and/or a member of the founding family is/ are represented in the management board and/ or supervisory board, and zero otherwise. Voting rights can be held directly or indirectly (cf. Definition 3.2).
Family ownership (FO)	Percentage ownership of the firm's voting rights held by all members of the founding family, including the founder. Voting rights can be held directly or indirectly (cf. Definition 3.3).
Family management (FM)	Dummy variable that takes on the value of one if the founder and/ or a member of the founding family is/ are involved in the management board and/ or supervisory board, and zero otherwise (cf. Definition 3.4).
Family management board (%) (MB)	The number of family members on the management board divided by the total size of the management board (cf. Definition 3.10).
Family supervisory board (%) (SB)	The number of family members on the supervisory board divided by the total size of the supervisory board (cf. Definition 3.11).
Later generation family firm (LFF)	Dummy variable that takes on the value of one if one or more member/s of the founding family, other than the founder, hold/s at least 25% of the firm's voting rights and/ or a member of the founding family, other than the founder, is represented in the management board and/ or supervisory board, and zero otherwise. Voting rights can be held directly or indirectly (cf. Definition 3.5).
1st generation family firm (1FF)	All family firms that are not classified as later generation family firms are considered to be first generation family firms (cf. Definition 3.6).

Appendix

Appendix 3.2: Definition of variables - pressure

This table provides a description of the pressure variables used in Chapter 3. Source: Kappes and Schmid (2012).

Variable	Description
Loss	Dummy variable that takes on the value of one if a firm's profitability was negative in the prior year, and zero otherwise (cf. Definition 3.7).
Underperformance	Dummy variable that takes on the value of one if a firm's profitability ranks in the lowest quartile of all firms in the dataset in the prior year, and zero otherwise (cf. Definition 3.8).
Negative momentum	Dummy variable that takes on the value of one if a firm's profitability has been negative in the previous year and profitability has decreased further in the current year, and zero otherwise (cf. Definition 3.9).

Appendix 3.3: Definition of variables - controls

This table provides a description of the control variables used in Chapter 3. Source: Kappes and Schmid (2012).

Variable	Description
Outside block-holder (%)	Cumulative ownership of outside block-holders (e.g., banks, insurance firms, or private individuals) that are not related to the founding family or part of the firm's management board or supervisory board. A block-holder is defined as a shareholder that owns at least 5% of the firm's voting rights.
Firm size (ln)	Natural logarithm of the firm's total assets (WC02999).
Market-to-book (%)	Market value of the firm's equity divided by book value of the firm's equity (WC08001/ WC03501).
Profitability (%)	EBIT divided by total assets (WC18191/ WC02999).
Leverage (%)	Total debt divided by total assets (WC03251/ WC02999).
Tangible assets (%)	Tangible assets divided by total assets (WC02501/ WC02999).
Dividend	Dummy variable that takes on the value of one if the firm pays a dividend to common equity in a given year, and zero otherwise (WC05376).
Founding age (years)	Years since the firm's incorporation.

Appendix

Appendix 4.1: Definition of variables - governance

This table provides a description of the governance variables used in Chapter 4. Source: Kappes, Schmid, and Volk (2012).

Variable	Description
<i>Continuous ownership variables</i>	
Family ownership	Percentage of cash-flow rights directly and/ or indirectly held by all members of the founding family except the founder (source: Hoppenstedt).
Insider ownership	Percentage of cash-flow rights directly and/ or indirectly held by members of the management and supervisory boards who are not part of the founding family (source: Hoppenstedt).
Founder ownership	Percentage of cash-flow rights directly and/ or indirectly held by all founders of the firm (source: Hoppenstedt).
Outsider ownership	Percentage of cash-flow rights not directly and/ or indirectly held by the founder, members of the founding family, or insiders (source: Hoppenstedt).
<i>Block-holder dummy variables</i>	
Family firm EU	Dummy variable that takes on the value of one if one or more member/s of the founding family (with the exception of the founder) directly and/ or indirectly control/s a minimum of 25% (50%) of cash-flow rights if the firm is listed (unlisted), and zero otherwise (cf. Definition 4.1) (source: Hoppenstedt).
Family firm 25%+	Alternative family firm definition (dummy variable) that uses a threshold of 25% for both listed and unlisted firms (source: Hoppenstedt).
Family firm 50%+	Alternative family firm definition (dummy variable) that uses a threshold of 50% for both listed and unlisted firms (source: Hoppenstedt).
Founder firm EU	Dummy variable that takes on the value of one if the founder/s directly and/ or indirectly control/s a minimum of 25% (50%) of cash-flow rights if the firm is listed (unlisted), and zero otherwise (cf. Definition 4.1) (source: Hoppenstedt).
Founder firm 25%+	Alternative founder firm definition (dummy variable) that uses a threshold of 25% for both listed and unlisted firms (source: Hoppenstedt).
Founder firm 50%+	Alternative founder firm definition (dummy variable) that uses a threshold of 50% for both listed and unlisted firms (source: Hoppenstedt).
Inside block-holder EU	Dummy variable that takes on the value of one if a single non-family inside block-holder directly and/ or indirectly controls 12.5% (25%) of cash-flow rights if the firm is listed (unlisted), and zero otherwise (cf. Definition 4.2) (source: Hoppenstedt).
Inside block-holder 12.5%+	Alternative inside block-holder definition (dummy variable) that uses a threshold of 12.5% for both listed and unlisted firms (source: Hoppenstedt).
Inside block-holder 25%+	Alternative inside block-holder definition (dummy variable) that uses a threshold of 25% for both listed and unlisted firms (source: Hoppenstedt).

Appendix 4.1: Definition of variables - governance (continued)

Variable	Description
<i>Block-holder dummy variables (continued)</i>	
Outside block-holder EU	Dummy variable that takes on the value of one if any individual unrelated to the firm's founding family or an institution directly and/ or indirectly controls 12.5% (25%) of cash-flow rights if the firm is listed (unlisted), and zero otherwise (cf. Definition 4.2) (Source: Hoppenstedt).
Outside block-holder 12.5%+	Alternative outside block-holder definition (dummy variable) that uses a threshold of 12.5% for both listed and unlisted firms (source: Hoppenstedt).
Outside block-holder 25%+	Alternative outside block-holder definition (dummy variable) that uses a threshold of 25% for both listed and unlisted firms (source: Hoppenstedt).
Outside block-holder - institutional	Outside block-holder EU that is an institutional investor, such as an insurance group, bank, or hedge fund (source: Hoppenstedt).
Outside block-holder - corporate	Outside block-holder EU that is a corporate investor (source: Hoppenstedt).
Outside block-holder - private	Outside block-holder EU that is a private individual that is not a family member, founder, or insider (source: Hoppenstedt).
block-holder - government	Outside block-holder EU that is part of the government, such as the federal government, a federal state, a municipality, or a state investment vehicle (source: Hoppenstedt).
Outside block-holder - VC/ PE	Outside block-holder EU that is a venture capital or private equity provider (source: Hoppenstedt).
Outside block-holder - other	Outside block-holder EU that is not an institutional, corporate, private, government, or VC/ PE block-holder. Other outside block-holders may comprise organisations such as associations, cooperatives, or church-owned institutions (source: Hoppenstedt).
<i>Management variables</i>	
Family management	Dummy variable that takes on the value of one if one or more members of the founding family except the founder/s is/ are represented on the management or supervisory board, and zero otherwise (source: Hoppenstedt).

Appendix 4.2: Definition of variables - listing

This table provides a description of the listing variables used in Chapter 4. Source: Kappes, Schmid, and Volk (2012).

Variable	Description
Listed firm	A firm is considered listed if its shares are listed in either an open or regulated market segment of any German stock exchange (Frankfurt and regional exchanges) (cf. Definition 4.3) (Source: Hoppenstedt, Datastream, DGAP).

Appendix

Appendix 4.3: Definition of variables - deals

This table provides a description of the deal variables used in Chapter 4. Source: Kappes, Schmid, and Volk (2012).

Variable	Description
M&A propensity	M&A propensity is a dummy variable that takes on the value of one if the firm makes one or more acquisition/s in a given year, and zero otherwise (cf. Definition 4.4) (source: SDC Platinum).
No diversification	M&A deal with target in the same region and the same industry as the buyer (cf. p.231) (source: SDC Platinum).
Regional diversification	M&A deal with target in a different region and the same industry as the buyer (cf. p.232) (source: SDC Platinum).
Industry diversification	M&A deal with target in the same region and a different industry than the buyer (cf. p.232) (source: SDC Platinum).
Full diversification	M&A deal with target in a different region and a different industry than the buyer (cf. p.232) (source: SDC Platinum).

Appendix 4.4: Definition of variables - controls

This table provides a description of the control variables used in Chapter 4. Source: Kappes, Schmid, and Volk (2012).

Variable	Description
Cash holdings (%)	Cash and short-term securities divided by total assets (source: Hoppenstedt).
Leverage (%)	Financial debt divided by total assets (source: Hoppenstedt).
Total assets (ln)	Natural logarithm of sum of long-term assets and short-term assets (source: Hoppenstedt).
Tangibility (%)	Sum of intangible assets divided by total assets (source: Hoppenstedt).
Revenue growth (%)	One-year revenue growth (source: Hoppenstedt).
International sales ratio (%)	International sales divided by total sales (source: Hoppenstedt).
Number of industries	Number of unique primary and secondary industries the firm is active in (source: Hoppenstedt, Amadeus).
Number of subsidiaries	Number of subsidiaries reported (source: Amadeus).
ROA (%)	EBIT divided by total assets (source: Hoppenstedt).
Age (ln)	Number of years since founding (hand-collected).

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