

Audretsch, David B.; Hülsbeck, Marcel; Lehmann, Erik E.

Working Paper

The benefits of family ownership, control and management on financial performance of firms

UO Working Paper Series, No. 05-10

Provided in Cooperation with:

University of Augsburg, Chair of Management and Organization

Suggested Citation: Audretsch, David B.; Hülsbeck, Marcel; Lehmann, Erik E. (2010) : The benefits of family ownership, control and management on financial performance of firms, UO Working Paper Series, No. 05-10, University of Augsburg, Chair of Management and Organization, Augsburg, <https://doi.org/10.2139/ssrn.1690963>

This Version is available at:

<https://hdl.handle.net/10419/57887>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



**SCHOOL OF PUBLIC AND
ENVIRONMENTAL AFFAIRS**

INDIANA UNIVERSITY

Research Paper No. 2010-10-03

**The Benefits of Family Ownership, Control and
Management on Financial Performance of Firms**

David B. Audretsch

Marcel Hülsbeck

Erik E. Lehmann

2010

David B. Audretsch, Marcel Hülsbeck and Erik E. Lehmann
The Benefits of Family Ownership, Control and Management on Financial Performance of Firms

The benefits of family ownership and control of firms are at the center of the family firm debate. Previous studies have used either family ownership or management as proxies for control. Both indicators are off the mark, as they do not measure 'decision control' as intended by the theory of the firm. This is the first study investigating the direct influence of family ownership, control and management on financial firm performance, while controlling for goal heterogeneity of different stakeholders. Our results clearly show that family control is beneficial for all stakeholders, while neither family ownership nor management influences financial performance. Monitoring behavior of families is the central component and essence of family firms and can be used as a point of departure for the development of a unified theory of family firms.

Keywords: Corporate Governance, Family Business, Ownership and Control

JEL: G32, L22, L26

UO-Working-Paper Series 05-10

Version 0.95, October 12th 2010

Corresponding Author:

Dr. Marcel Hülsbeck
Chair of Management and Organization
University of Augsburg
Universitätsstr. 16
D-86159 Augsburg, Germany

Fon: +49 (0) 821 598 4162
Fax: +49 (0) 821 598 144162

marcel.huelsbeck@wiwi.uni-augsburg.de



Unternehmensführung
und
Organisation
Lehrstuhl für Betriebswirtschaftslehre
Wirtschaftswissenschaftliche Fakultät
Universität Augsburg



Universität
Augsburg
University



The Benefits of Family Ownership, Control and Management on Financial Performance of Firms

David B. Audretsch

Ameritech Chair of Economic Development
& Director Institute for Development Strategies
Indiana University
1315 East Tenth Street
Bloomington, IN 47405, United States
daudrets@indiana.edu

Marcel Hülsbeck

Senior Research Fellow
University of Augsburg
Universitätsstr. 16
D-86159 Augsburg, Germany
marcel.huelsbeck@wiwi.uni-augsburg.de
fon: +49 (0) 821 598 4162
fax: +49 (0) 821 598 144162

Erik E. Lehmann

Chair of Management and Organization
University of Augsburg
Universitätsstr. 16
D-86159 Augsburg, Germany
erik.lehmann@wiwi.uni-augsburg.de
fon: +49 (0) 821 598 4162
fax: +49 (0) 821 598 144162

Acknowledgements:

We would like to thank Marietta Leiber, Katharine Wirsching and Stephanie C. Göttche for research assistance. This paper has gratefully benefited from discussions with workshop participants at the 2010 TOFE conference (Edmonton), in particular Sanjay Goel, Jim Chrisman, Jess Chua, Lloyd Steier, Pramodita Sharma, Danny Miller, Isabelle Le Breton-Miller, Daniel Forbes, and Dev Jennings. The usual disclaimer applies.

The Benefits of Family Ownership, Control and Management on Financial Performance of Firms

*“Method is more important than strength, when you wish to control.”
(H. W. Longfellow)*

The benefits of family ownership and control of firms are at the center of the family firm debate. Previous studies have used either family ownership or management as proxies for control. Both indicators are off the mark, as they do not measure ‘decision control’ as intended by the theory of the firm. This is the first study investigating the direct influence of family ownership, control and management on financial firm performance, while controlling for goal heterogeneity of different stakeholders. Our results clearly show that family control is beneficial for all stakeholders, while neither family ownership nor management influences financial performance. Monitoring behavior of families is the central component and essence of family firms and can be used as a point of departure for the development of a unified theory of family firms.

INTRODUCTION

The theory of the firm has been concerned with the consequences of the separation of ownership and control in organizations for at least eighty years now. Agency theory predicts that diverging interests of owners and managers in combination with incomplete contracts and positive monitoring costs lead to opportunistic management behavior. This behavior produces agency costs which, in turn, lower the chances of firm survival (Jensen & Meckling, 1976). Demsetz (1983) on the other hand argues that detrimental effects of separated ownership and control have been exaggerated as the market for takeovers and the labor market inhibit dilution of ownership and discipline management. The current discussion of ownership and control in family firms reflects these viewpoints: The unification of ownership and control in family firms should lower agency costs as principals and agents share a common interest in the ‘greater good’ of the family

(Ang, Cole & Lin, 2000; Chua, Chrisman & Steier 2003). On the flipside this ownership-control concentration together with family altruism leads to lower performance because of the absence of market mechanisms, risk aversion, biased judgment and lower monitoring (Gomez-Meija, Nunez-Nickel & Gutierrez, 2001; Oswald, Muse & Rutherford, 2009; Steier, 2003). Accordingly, empirical results on the performance of family firms have been mixed. Different positions and research streams suggest that family ownership and control is good, bad or irrelevant (Peng & Jiang, 2010). Reasons for this “Family Business Theory Jungle” (Rutherford, Kuratko & Holt, 2008, p.1) lie in fuzzy concepts of ‘ownership’, ‘control’ and ‘family firm’ as well as differing methods of sample selection and performance indicators.

Our study is the first to cut a swath through this jungle by separately measuring the impact of family ownership, control and management on financial performance in a diverse sample of 386 large German non-financial firms. As measures for financial performance we employ multiple indicators reflecting heterogeneous goals and preferences of family and nonfamily investors. The mandatory two-tier board system in Germany requires a separate management board and supervisory board allowing us to distinguish between decision control and decision management. Our results suggest that family control – as opposed to ownership or management – is the only indicator for family impact on organizational performance and that this impact is beneficial not only to the family, but also to managers, shareholders and creditors of those firms. These findings imply two things:

1. Family ownership-management is an inappropriate proxy for family influence.
2. Family influence (‘familiness’ or ‘essence of family firms’) is beneficial not only for the family itself, but also for other investors.

THE FAMILY FIRM DEBATE

Central aspects of the family firm debate are the notion of family firms itself, the allocation of decision rights and the attempts to measure performance of these firms. These features are addressed in this section while the following sections provide an overview of central empirical literature, our own study and the discussion of results and implications.

Components and Essence of Family Firms

A family firm can heuristically be defined as a firm that is either owned by a family, managed by a family, monitored by a family or shows a combination of two or all three factors. While a nonfamily firm would exhibit none of these three features. But even then it would remain unclear how much ownership, control or management influence would suffice to be declared a family firm. For example, family business groups use pyramid structures to exert major control while holding relatively small minority ownership of companies in their group (Le Breton-Miller & Miller, 2006; Morck & Yeung 2003). In this way “family firms and nonfamily businesses may simply represent the extremes of a continuum” as Chua, Chrisman and Sharma (1999, p.39) conclude their endeavor to define family firms.

While some authors recognize a chronological development in the definition of family firms a closer review of definitions over the last 45 years reveals that relatively little progress has been made in this field. The same combination of components can be found in very early and quite recent definitions: Generational transfer in interdependent subsystems (Dyer, 1964; Jaffe & Lane, 2004), voting control (Barry, 1975; Barnes & Hershon, 1976; Rue & Ibrahim, 1996), family management (Alcorn, 1982; Heck & Scannell 1999), family ownership (Tagiuri & Davis, 1982; Giovannini 2010) and ownership-management (Stern 1986; Donckels & Lambrecht 1999). As one can imagine, these individual components have been combined in other studies in every

plausible way.¹ For the outside observer it seems like the relevant definition of family firm is subject to the respective authors' research interest and available dataset, rather than a matter of theoretical foundation.

A notable counter-trend to utilitarian use of definitions is lead by Chrisman, Chua and Sharma (2005). They try to further convergence in family business definitions by separating two main aspects of prior family business research. On the one hand is what they term the 'components-of-involvement approach', which defines relevant components in the way discussed above. The presence of one or more components seems to be the *necessary* condition for family business, i.e. a business without family ownership or family control or family management is a nonfamily business. The *sufficient* condition is represented by the 'essence approach', which claims that above and beyond family involvement this involvement must create and direct behavior that is distinct from nonfamily firms, e.g. lower or higher family-specific agency costs. As necessity and sufficiency connote a logical relationship between the 'involvement' and 'essence' statement, they imply at least two research questions:

1. What is the essence of 'essence'? This question is the basis of a relative recent research stream investigating family specific micro-foundation of agency and altruism at the interface of agency theory, strategic management and the resource based view (Carney 2005; Chrisman, Chua & Litz, 2004; Chua, Chrisman & Bergiel, 2009; Schulze, Lubatkin, Dino & Buchholtz, 2001; Schulze, Lubatkin, Dino, 2003a, b).
2. How much (and what kind) of 'involvement' is necessary to observe positive or negative effects of the necessary but latent 'essence'?

Regarding the second question one could easily fall prey to the logical fallacy that empirical family business research has exactly done that. But a closer look reveals that most of this

¹ For a detailed list with more than fifty definitions see Flören (2002).

research firstly defines some or all ‘components-of involvement’ as ‘essence’, i.e. choosing a more or less arbitrary family business definition, and secondly regresses this definition on performance indicators. Nevertheless an approach to rectify this has been suggested by Astrachan, Klein & Smyrnios (2002) and validated by Klein, Astrachan & Smyrnios (2005). They develop a standardized battery of instruments, termed F-PEC-Scale (Family-Power, -Experience and -Culture), to independently measure widely used components of involvement as continuous variables. This allows defining family firms along three independent continuums instead of using combinations of components (e.g. ownership *and* management), dichotomous collapsing of intervals (e.g. if family ownership exceeds 50% a binary for ‘family’ reaches unity) or other arbitrary attempts to draw a clear distinction. Nevertheless this is clearly a very operational alternative to the conceptual approach of Chrisman, Chua and Sharma (2005), but it is complementary with the “...extremes of a continuum” insight of Chua, Chrisman and Sharma (1999, p.39) and uses observations instead of assumptions to identify the ‘essence’ of family firms.²

Family Firms and Decision Rights

Fama and Jensen (1983, p.307) criticize the notions of ownership and control as “somewhat imprecise”. Owners can be easily defined as the group of agents bearing the residual risk – defined as the difference of stochastic income flows and payments to other agents – and contracting for the rights to net cash flow. The concentration of risk bearing to one small group of agents increases the probability of firm survival as it reduces monitoring costs via specialization (a small group of principals monitors a large group of agents) and eases the alignment of interests in a relatively small owner group. In this context the construct of ‘family’

² For the sake of brevity we abstain from discussing the distinction of family business and entrepreneurship - or as family business research calls it: ‘lone founder firms’. For a discussion please refer to Brockhaus (1994), Hoy and Verser (1994) and Le Breton-Miller and Miller (2008).

should further align interests within a small group of family-owners, as it couples economic firm survival with sociobiological family survival. This coupling has been addressed as family altruism (e.g. Schulze, Lubatkin & Dino, 2003b) or kinship (Stewart, 2003) in family business research and might be beneficial (i.e. the family is utilized to increase economic rents) or detrimental (i.e. private benefits are extracted from the firm to sustain the family).³ Ownership is reflected by the percentage of total residual risk borne by an owner and can e.g. be expressed as his share of stocks in public companies or his share of nominal capital in privately held companies.

Control – or as Fama and Jensen (1983) put it: decision rights – is a multidimensional concept. The right to decide can be broken down into four distinct steps (Fama and Jensen, 1983, p.303):

1. *Initiation*: generation of alternative ideas of contracting and resource appropriation.
2. *Ratification*: selection of proposed initiatives.
3. *Implementation*: accomplishment of ratified decisions.
4. *Monitoring*: supervision and incentivizing agent performance.

Within this decision system two distinct functions can be characterized. Steps two and four refer to decision control, which is normally executed by internal monitors (e.g. supervisory board) or external monitors (e.g. the stock market). Steps one and three are decision management as achieved by decision agents like a management board or CEO (Tirole, 2006).

The cost and benefit of combination or separation of ownership, control and management depends on the complexity of the firm. A noncomplex firm is a firm where all decision relevant information is concentrated in one or a few agents. In this environment the concentration of management and control in the one or few agents with specific information is a prerequisite for

³ Both possibilities are easily comprehended and are major themes in Thomas Mann's nobel prize winning novel "Buddenbrooks: Decline of a Family" (Mann, 1901 [1994]). In this novel Mann depicts the rise and fall of a German merchant family over four generations in the 19th century.

efficient decisions. However, in this case owners would have little protection against self-serving behavior of decision agents. The agency theoretic solution to this problem is to restrict ownership to the small set of informed agents (Fama & Jensen, 1983). This combination makes expensive monitoring systems redundant, but at the same time sacrifices the benefits of unrestricted risk sharing among agents (Arrow, 1964). In situations where ownership and decision making is combined it is – in general – rational for the owner-manager to be risk averse, as he is not able to diversify his risk. This leads to less risky investments (e.g. R&D) and penalizes the long term survival probability of the firm at hand. Moreover this combined system reduces the pool of possible decision agents, as they must be willing to bear risk, have good decision skills and must be wealthy enough to invest. In the case of owner run family businesses these problems are amplified as the pool of possible decision agents is additionally restricted to family members which may not have sufficient human capital and these agents must not only consider their own risk but also altruistic risk for the family which aggravates the risk aversion problem (Schulze, Lubatkin, Dino & Buchholtz, 2001).

As firms grow more complex by getting larger, more diversified or working in dynamic environments more specific knowledge is needed to make good decisions. This knowledge is in general more diffused among specialized agents and costly to transfer between agents. To ensure a firms' competitiveness it is now necessary to delegate management decision to expert-agents to reduce transaction costs and the probability of wrong decisions. To limit opportunistic behavior of diffused agents, decision management and decision control need to be separated. In the case of widely held corporations owners can reduce monitoring costs by delegating decision control to large minority stockholders or industry experts (Shleifer & Vishny, 1986). In closely held private

or public corporations (e.g. family firms) owners should exert direct decision control over their decision agents (Fama & Jensen, 1983).

To fully grasp the relevance of combined or separated ownership and control it must be augmented by the notion of management. The concentration of ownership incentivizes risk bearing owners to monitor and reduces monitoring costs. Furthermore the alignment of interests that are beneficial for the whole organization is easier in small groups of owners and is reinforced by altruistic and kinship motives if this group happens to be a family. In noncomplex businesses it can be beneficial for firm competitiveness to combine ownership, control and management within the same agents; a belief that is convergent with the strategic management view of family business (Chrisman, Chua & Sharma, 2005). At the same time more complex (larger) family businesses who omit to separate control and management suffer from their restricted human capital pool and are likely to underperform (Schulze, Lubatkin, Dino & Buchholtz, 2001). Moreover, recent studies (e.g. Miller, Le Breton-Miller, Lester & Cannella, 2007) were not able to confirm the relevance of family governance at all.

THEORETICAL CONSIDERATIONS, PREVIOUS RESULTS, AND HYPOTHESES

In the previous section we have identified major shortcomings in the ongoing debate of the influence of firm ownership, control and management through families. At the same we have stressed not to be the first to identify these issues and have outlined promising approaches to tackle the problems at hand. In this section we are going to analyze why and how the components analyzed by the literature should shape firm performance. We will abstain from collecting and repeating the whole body of research concerning the corporate governance of

family firms and firm performance.⁴ Starting with the findings of Berle and Means (1932) that diffuse ownership lowers a firms' performance, a huge amount of literature, both theoretical and empirically, emerged, pointing out that agency costs increase with dispersed ownership (Jensen & Meckling, 1976, Randøy & Goel, 2003). A large body of theoretical literature is readily applied to analyze the specific problems faced with dispersed but also concentrated ownership, in particular the general literature based on transaction costs associated with hierarchies and supervision (e.g. Williamson, 1975), issues of board collaboration and the general literature on free-riding and the teams problem (e.g. Holmstrom, 1982) and, complementary to those streams, the literature on perfect contracts, i.e. agency-theory (e.g. Jensen & Meckling, 1976), and imperfect contracts, property rights theory (Hart, 1995). However, recent research suggests that governance in firms looks very different than the contractual governance described in this literature and that is augmented by what has been referred to as relational governance, which relies on informal social controls based on mutual trust, shared vision, and commitment to the success of the enterprise. Such governance is embedded in social relationships amongst owners, management, and between owners and management. In this section, we will put the arguments on this recent research into the theoretical skeleton as mentioned above to analyze why and how components of governance should shape firm performance. In particular, we analyze how ownership (owners), management and the impact of ownership on management may influence firm performance.

Family ownership and firm performance

⁴ Recent overviews of the most influential studies (Chrisman, Kellermanns, Chan & Liano, 2010), performance related studies (Rutherford, Kuratko & Holt, 2008) and categorizations of studies along F-PEC-dimensions (Astrachan & Zellweger, 2008) are readily available.

Our first hypothesis is based on the argument that concentrated ownership shapes firm performance. Dispersed ownership is associated with prohibitive costs of gathering information and monitoring the management, costs which increases by far the benefits of such actions for the individual minority shareholder. Furthermore, this leads also to a free-riding problem and thus increases the leeway for managers to pursue their own interest instead the one of the investors. In contrast, the existence of a large shareholder can bear these costs due to economies of scale and scope in gathering information and investments in monitoring activities. The costs per equity share held by the large shareholder may be lower than the benefits per share. As a consequence, concentrated ownership may increase firm performance. Therefore firm performance should be higher in companies with concentrated ownership. However, this argument holds for every large share- or blockholder (Shleifer & Vishney, 1986). We will rely on arguments put forward by family business researchers that family owned firms are associated with a shared vision of the enterprise, a long-term view and a commitment to family wealth as to preserve shared family assets and allow them to grow, instead of harvesting those assets (Miller & LeBreton-Miller, 2005). Families, often willing to subordinate their own goals to the good of the firm are also likely to act with less social loafing or free riding, self promotion, or other selfish behavior. This governance relies on informal and social controls, mutual trust, shared visions and commitments to the success of the enterprise which exceeds a quarterly or annual short term horizon. Such relational governance mechanisms can serve as substitute for incomplete contracts between owners and managers and agency costs may be lower. This lowers both transaction and agency-costs in organizations and should lead to higher performance compared to other types of blockholders:

H₁: The share of family ownership increases the financial performance of a firm.

While broad and convincing theoretical arguments exist that concentrated ownership shapes firm performance, it remains rather unclear whether firms with large shareholders, in particular family firms, perform better or worse than a similar number of unrelated individuals or minority shareholders or other large blockholders. A negative impact should give advice to the family to sell shares and thus increase firm performance until the equilibrium is reached. However, the adjustment costs of varying equity ownership may thus be prohibitive high for changes in the ownership structure in every period. Theory also suggests that concentrated shareholding may lead to adverse effects on firm performance. First, risk adverse majority shareholders may be reluctant to invest in risky projects and thus expected returns may be lower compared to firms with dispersed shareholders. Secondly, majority shareholders can appropriate benefits at the costs of minority shareholders. While the long-term orientation of families could lead to higher performance, it could also lead to investments in less riskier projects with lower expected returns. The second argument, the appropriation of rents from minority shareholders, is put forward by Demsetz and Lehn (1985). Large shareholders usually manage firms themselves or closely monitor the management in order to maximize the firm value and consumption of the investors' household. In general the goals of firm value maximization to enable private consumption are aligned. However if a major shareholder can obtain his consumption goals easier by extracting private benefits – or amenities in the diction of Demsetz and Lehn – from the firm he is likely to do that. They ascribe the high concentration of family ownership in 'amenity industries' to a latent causality within the characteristics of families. This leads us to formulate the second hypothesis:

H₂: The share of family ownership decreases the financial performance of a firm.

The results of ownership on performance in general and the influence of family ownership in particular are mixed, inconclusive and also disappointing (see Dyer, 2006, for an up-to date survey). The theoretical explanation for these findings is that ownership structure is endogenously chosen, depending on the costs and benefits of the ownership structure (Demsetz, 1983, Demsetz & Lehn, 1985). Performance increases with ownership shares according to incentive effects, but increases with diminishing returns until the equilibrium point. Then, the costs of ownership like entrenchment effects, leads to decreasing returns and thus lower profits. While Morck, Schleifer and Vishny (1988) among others confirm the latter argument, many other studies were not able to confirm this hypothesis but rather confirmed the aforementioned Demsetz-hypothesis. Ownership is an important research domain in financial economics, but primarily in the context of agency theory, portfolio theory and transaction costs in markets, ignoring other motives and behaviors behind large ownership shares (see Sharma, 2004). This leads researchers often to use ownership structure as the dependent or proxy variable while often making references about human or group behavior not measured by the data. While other blockholders in firms, like financial institutions, or other firms are more or less monolithic shareholders, families as the ultimate owner of the firm differ significantly. Research derived from such data is often used to support complicated psychological explanations such as altruism, nonfinancial motives in the firms, or long-term commitments. While such explanations are quite plausible, they cannot be tested by relying on the equity held by families (see Uhlaner, Flören & Geerlings, 2007, Dyer, 2006, Sharma, 2004).

Family management and firm performance

One step beyond ownership concentration lays the question of how ownership is used by families. Only if family involvement is used to create and direct certain kinds of behavior it shows a specific effect. One way is the involvement of families in active managing the firm. Where ownership and management overlap, monitoring is not needed or at lower costs and the family firm can be run more efficiently.⁵ This results from the Jensen and Meckling (1976) framework, that managerial ownership – equity ownership of the owner-manager – is positively associated with firm performance. Agency costs arise due to the different interests of managers and investors and the bearing of costs for the latter to ensure that the manager acts in their interest. Agency costs in family firms may be reduced if the manager of the family firm is willing to subordinate his own goals to the good of the firm and thus is likely to act with less social loafing, free riding or selfish behavior at the firms costs. Thus, our third hypothesis is:

H₃: The share of family management increases the financial performance of a firm.

Empirical results of the studies on family members as managers are fairly mixed with about a third of the studies finding a good, bad or no influence of ownership-management. While agency costs and transaction costs might be lower in family firms with family members as members in the board of management this comes at its costs (see Randal & Goel, 2003). While agency costs from the separation of ownership and control may be lower in family firms, where social pressure by the family or mutual trust leads to a closer alignment of the managers actions to the family interests, additional costs may arise which may be higher in family firms: The selection of managers from a rather small pool of family members. As research shows, the labor market for top managers is efficient in offering high premiums for slight edges in talent because this induces tournament competition for the top job (Lazear & Rosen, 1981). Restricting the pool of family

⁵ Lehmann, Warning and Weigand (2004) put the argument forward that family firms may be more concerned using firms' resources efficiently and show superior multidimensional efficiency of these firms

members as candidates for the top management should be costly in at least two ways. First, the most talented potential top managers in the family are unlikely to be better than the most talented potential top managers in the population. Secondly, professional managers working for the family are not eligible for the tournament. Correspondingly, their effort is lessened or less aligned with the family's wealth if ambitious executives must contemplate moving to a non-family firm to further their career.

This leads to the formulation of our fourth hypotheses:

H₄: The share of family management decreases the financial performance of a firm.

Family control and firm performance

The goal structure within family firms is inherently conflicted and best described by the need to balance between a family's goals like the accumulation of personal and family wealth on the one and the well-being of family participants on the other (Steier et al. 2004). This means, that family business operate in a unique corporate governance environment where conflicting interests of family members must as well be considered as agency costs between the family as owners and the board of management or other stake- and shareholders. Pivotal to successfully balancing the different interests is that the firm is not only managed but controlled by some family members. Controlling critical assets is associated with higher incentives to invest in firm specific relationships but also with lower agency costs in the presence of incomplete contracts (see Brynjolfsson, 1994). The better part of empirical studies uses ownership as a single proxy for control (e.g. Chaganti & Demanpour, 1991; Lauterbach & Vaninsky, 1999; McConaughy, Matthews & Fialko, 2001; Yammeesri & Lodh, 2004, Lehmann & Weigand, 2000). Other studies use ownership as a proxy for family involvement and are concerned with different types of management involvement and familiness like founder- and descendant CEOs, family members

in (one-tier) board of directors and second level management, generational transfer, succession intention and self-perception as family firm (Athanassiou, Crittenden, Kelly & Marquéz, 2002; Chrisman, Chua & Litz, 2004; Chrisman, Chua & Steier, 2002; Daily & Near, 2000; Lee 2004, 2006; McConaughy, Walker, Henderson & Mishra, 1998; Zahra, 2003). While some studies fail to confirm the benefits of the separation of ownership and management (Coles, McWilliams & Sen, 2001) others like Anderson and Reeb (2003) found a positive impact. They investigate the influence of family ownership (percent of shares)⁶, family CEOs (“active control” in their terms) and even control for excess voting control by constructing a binary for family member presence on the board of directors. Their findings are replicated for Europe by Barontini and Caprio (2006). However, the existing research on family control via ownership and the active role as managers in the firm suffers from the indistinguishableness of decision control and decision management in one-tier board systems.⁷ Thus, there is only scarce empirical evidence on the impact of the structure of the Board of Directors to monitor the management. However, family members could control the firm without having an active part in the board of management. This may overcome the costs of the stupid-son phenomenon as described above. Firms with decision control exerted by a family may show higher profits:

H₅: The share of family control increases the financial performance of a firm.

Family decision control of a firm may be associated with appropriating rents from minority or non-family shareholders to the controlling family. Decision control raises the family members into position to pursue their own interests at the costs of other share- and stakeholders by distributing profits (Anderson & Reeb, 2003), workplace inefficiencies due to family nepotism

⁶ The criterion used for indicating a major blockholder is only 5% in this study.

⁷ In the 27 richest world economies investigated by La Porta, Lopez-de-Silanes and Shleifer (1999) and the 13 European countries investigated by Barontini and Caprio (2006) only Germany and the Netherlands have mandatory two-tier systems for all public and medium-to-large private companies.

(Burckhart, Panunzi & Shleifer, 2003), control of the cash within the firm (Dittmar, Mahrt-Smith & Servaes, 2003), or decisions regarding the allocation of resources (Demsetz & Lehn, 1985):

H₆: The share of family control decreases the financial performance of a firm.

EMPIRICAL ANALYSIS

To test our hypotheses we hand-collected a unique data set of 556 non-financial German private and public firms. The decision criterion to include a firm was the existence of a two-tier board with a separate management and supervisory board. Such a system is mandatory for all public firms in Germany, as well as privately held limited liability companies with more than 300 employees. Balance sheet and financial information were collected using professional business intelligence tools (e.g. Hoppenstedt), information about ownership structure were obtained through the federal financial supervisory authority (www.bafin.de). Information about family relationships was gathered individually for every company via annual reports, company websites and press releases, newspapers and other publications. These family data were manually matched with ownership, supervisory and management board and executive management information to create our variables of interest. From the initial dataset 170 companies had to be eliminated during the matching process as some relevant variables remained unverifiable. This leaves us with 386 observations for the empirical analysis. Descriptive statistics of the sample are displayed in table 1.

- insert table 1 about here -

Variables

Endogenous Variables: Financial Performance In family business research revenue, sales, sales growth and return on assets have frequently been used (e.g. Chaganti & Damanpour, 1991; Daily & Near, 2000; Galve & Salas, 1996; McConaughy et al. 1998, 2001; Anderson & Reeb,

2003; Lee 2004; Barontini & Caprio 2006). Arguments for the use of these and similar indicators are frequently the diversity, independence and unbiased reporting. Regrettably in our review of the literature we were unable to identify a theoretically substantiated choice of performance indicators. This surprises all the more as one would expect performance indicators to be chosen as to reflect the diverging interests of major and minor shareholders and decision agents (Shleifer & Vishny, 1986). Unlike previous research we were less concerned about the diversity and independence of the indicators. Instead we tried to find measures that on the one hand mirror diverging interests of different stakeholders (e.g. management, owners) and on the other hand are similar enough to be compared. To allow for size and industry variation we used returns rather than absolute values or growth rates. *Return on sales* was used to reflect the short-term maximization logic of non-family executives with incentive contracts ('hired guns') and the interests of speculative short term investors. Maximizing *Return on equity* is associated with the long term perspective of equity holders like families and possible outside investors. A balanced view that incorporates equity holder interests as well as creditors and other stakeholders (e.g. stock market analysts) is represented by the *return on investment*. As our dataset consists of a mix of private and public companies we are not able to use Tobin's Q as a market based measure, however in our robustness tests we have controlled for intangible assets.

Variables of interest: Family involvement The main point of this study is to disentangle family ownership, control and management. In analogy to the F-PEC subscale for family power (Klein, Astrachan & Smyrnios, 2005) we construct the percentages of family owned shares (*family ownership*), family members on the supervisory board (*family control*) and percentage of family members on the management board and in executive functions (*family management*). Due to the unique German board system we are able to measure these distinct variables independently

and do not need to treat them as items of a latent factor (see Rutherford, Kuratko & Holt, 2008). These independent measures also account for excess voting control created through dual class shares, cross sharing and pyramiding (Levy, 2009).

Controls When investigating the ownership structure of family firms one has to control for the possible influences of other shareholders. Thus we integrated a control for the percentage of shares of the largest *outside investor* (e.g. banks, investment funds or single investors). Moreover we created a binary for possible *control contests*; this binary reaches unity if the largest shareholder holds the majority control and at the same time another shareholder holds a blocking minority (Jara-Bertin, López-Itturiaga & López-de-Foronda, 2008). Additional controls are: *asset turnover* to control for industry-specific profitability and capital intensity, a *stock market* binary, to control whether shares of public companies are traded on the stock market, *firm age* and *number (#) of employees* to control for age and size of the companies, and finally *accounting system* if a company uses the very restrictive German accounting standards (HGB) which favor ‘mercantile caution’ over realistic reporting favored by international accounting standards (IAS).

Robustness checks In additional regressions we checked the robustness of our results by introducing eight *industry dummies*, the F-PEC *experience* subscale, *founder- and descendant-CEO* binaries, *ownership-management interaction* and number of *firm patents* (to control for intangible assets). None of these variables changed our regression results significantly and therefore are not reported in the paper. Table 2 presents a correlation matrix of the variables.

- insert table 2 about here -

Estimation Method

As we have deliberately constructed a very diverse dataset to capture the full range of variance possible when investigating family firms, we need to take into account that this eventually leads

to an asymmetric distribution with outliers. Therefore we use simultaneous quantile regression estimation (Gould, 1997) which is robust for outliers, does not assume a special distribution of the data and estimates a model in which the conditional quantiles take a linear form. In its simplest form, it fits the median to a linear function. The method of quantile regression is especially attractive for our case as the median or other quantiles are a better measure of location than is the mean. All in all the likelihood estimators are generally more efficient than OLS-regression. Moreover quantile regressions allow for potentially different solutions at distinct quantiles to be interpreted as differences in the response of the dependent variables (financial performance) to changes in the regressors at various points in the conditional distinction of the dependent variable. Thus, quantile regressions reveal asymmetries in the data (Koenker & Hallock, 2001).

Results and Discussion

We analyze three different quantiles at the 0.25, median and 0.75 levels. The 0.25 quantile divides the dataset into two parts: the 25% least performing and the 75% better performing firms. The 0.5 or median quantile divides the data at the median of the performance indicator; this regression is closest to the OLS-regression where the expected mean value would be used instead. The top performing firms are in the 75% percent quantile. Regression results are shown in table 3.

- insert table 3 about here -

The most striking result of our analysis is the fact that we do not find support for a significant influence – be it positive or negative – of family ownership, management and ownership-management. These findings reject our first two hypotheses and the widespread opinion of

benefits of ownership-management in family firms⁸. Instead we find robust support for our third hypothesis asserting the benefits of family control on financial performance. In the median and 75% quantile all performance indicators show a significantly positive influence of family control. In the quantile with the least performing firms the ROI is significantly positive and the ROE misses the 10%-level of significance only by a whisker (ROE: p=11%; ROS: p=44%). Additionally the binary for control contests is negatively significant in this quantile only, indicating the detrimental effects of such contests on financial performance, especially hampering the short term performance of firms.

Comparing the coefficients of the different performance indicators the highest impact of family control can unsurprisingly be observed on the ROE-measure, as it resembles most closely the long term orientation and motivation of family owners. The lower, but positive impact on ROS and ROI does not support the expropriation argument of other stakeholders. Instead, it can be inferred, that more family control is beneficial to all groups of investors.

Discussion

Under the impression of our results one comes to the conclusion that positive results of previous ownership-performance studies indeed measure control, while the mixed outcomes of ownership-management-performance studies can be ascribed to a tainted comprehension of the ownership variable. This view is supported by recent international studies (Anderson & Reeb, 2003; Barontini & Caprio, 2006) which at least partially control for (excess) family control.

It seems like family control is the most important ‘component of involvement’ in family firms, superseding other proxies like family ownership and management. At the same time family control expresses an active and directed monitoring behavior of families towards their assets and

⁸ We also controlled for non-linear effects as proposed by Morck, Shleifer & Vishny (1988) and also square terms. Neither the squared term nor dummies for non-linear effects entered the regression significantly.

firms, therefore it might be regarded as the 'essence' of a family firm as well. This perception can be useful to further the development of a convergent or even unified theory of the family firm as proposed by Chrisman, Chua and Sharma (2005).

Regarding future research the outcomes of our study point in two directions. Although there is a recent trend towards the micro-foundation of family firms (Carney 2005; Chrisman, Chua & Litz, 2004; Chua, Chrisman & Bergiel, 2009; Schulze, Lubatkin, Dino & Buchholtz, 2001; Schulze, Lubatkin, Dino, 2003a, b) our study cannot contribute to the discussion of how and why special forms of family agency create, maintain or destroy efficient monitoring behavior in family firms. While our research design has to treat this as a black box other researchers might use the essential component of family control as a lever to open this box.

Secondly, our study is, like all empirical studies, subject to limitations and can only be regarded as a first step in untangling the family ownership, control and management puzzle. To confirm, reject or refine our results longitudinal and comparative cross-country studies are needed. At the same time the validity of our research is restricted to mature and robust national governance systems with strong property rights. There is growing evidence from transitional economies (see Peng & Jiang, 2010) indicating family business governance to be a substitute for weak national governance.

REFERENCES

- Alcorn, P.B. (1982). *Success and survival in the family-owned firm*. New York, NY: McGraw-Hill.
- Anderson, R. & Reeb, D. (2003). Founding family ownership and firm performance: Evidence from the S&P 500. *Journal of Finance*, 58(3), 1308-1328.
- Ang, J.S., Cole, R.A. & Lin, J.W. (2000). Agency costs and ownership structure. *Journal of Finance*, 55, 81–106.
- Arrow, K.J. (1964). The role of securities in the optimal allocation of risk bearing. *Review of Economic studies*, 31(2) , 91-96.
- Astrachan, J.H., Klein, S.B. & Smyrnios, K.X. (2002). The F-PEC scale of family influence: A proposal for solving the family business definition problem 1. *Family Business Review*, 15(1), 45-58.
- Astrachan, J.H. & Zellweger, T. (2008). Performance of Family Firms: A Literature Review and Guidance for Future Research. *ZfKE – Zeitschrift für KMU und Entrepreneurship* 56(1/2), 1-22.
- Audretsch, D.B., Lehmann, E.E. & Plummer, (2009): Agency and Governance in Strategic Entrepreneurship. *Entrepreneurship, Theory & Practice*, 33(1), 149-166.
- Barnes, L. & Hershon, S. (1976). Transferring power in the family business. *Harvard Business Review*, 54(4), 105-114.
- Barontini, R. & Caprio, L. (2006). The effect of family control on firm value and performance: Evidence from Continental Europe. *European Financial Management*, 12(5), 689-723.
- Barry, B. (1975). The development of organization structure in the family firm. *Journal of General Management*, Autumn, 42-60.

- Berle, A.A. & Means, G.C. (1932). *The modern corporation and private property*. New Brunswick: Transaction.
- Brockhaus, R.H. (2004). Family business succession: Suggestions for future research. *Family Business Review*, 17(2), 165-177.
- Carney, M. (2005). Corporate governance and competitive advantage in family-controlled firms. *Entrepreneurship Theory and Practice*, 29, 249–265.
- Chaganti, R. & Damanpour, F. (1991). Institutional ownership, capital structure and firm performance. *Strategic Management Journal*, 12(7), 479-491.
- Chrisman, J.J., Chua, J.H., & Litz, R. (2004). Comparing the agency costs of family and nonfamily firms: Conceptual issues and exploratory evidence. *Entrepreneurship Theory and Practice*, 28, 335–354.
- Chrisman, J.J., Chua, J.H. & Sharma, P. (2005). Trends and directions in the development of a strategic management theory of the family firm. *Entrepreneurship Theory and Practice*, 29, 555–575.
- Chrisman, J.J., Kellermanns, F.W., Chan, K.C. & Liano, K. (2010). Intellectual foundations of current research in family business: An identification and review of 25 influential articles. *Family Business Review*, 23(1), 9-26.
- Chua, J.H., Chrisman, J.J. & Bergiel, E.B. (2009). An agency theoretic analysis of professionalized family firm. *Entrepreneurship Theory and Practice*, 33(2), 355-372.
- Chua, J.H., Chrisman, J.J. & Sharma, P. (1999). Defining the family business by behavior. *Entrepreneurship Theory and Practice*, 23(4), 19–39.
- Chua, J.H., Chrisman, J.J. & Steier, L.P. (2003). Extending the theoretical horizons of family business research. *Entrepreneurship Theory and Practice*, 27(4), 331-338.

- Daily, C.M. & Near, J.P. (2000). CEO satisfaction and firm performance in family firms: Divergence between theory and practice. *Social Indicators Research*, 51(2), 125-170.
- Demsetz, H. (1983). The Structure of Ownership and the Theory of the Firm. *Journal of Law and Economics*, 26(2), 375-390.
- Demsetz, H. & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *Journal of Political Economy*, 93, 1155-1177.
- Donckels, R. & Lambrecht, J. (1999). The re-emergence of family-based enterprises in East Central Europe: What can be learned from family business research in the Western World? *Family Business Review*, 12(2), 171-188.
- Dyer, W.G. (1964). Reactions to the father's job. In A. Shostak & W. Gomberg (Eds), *Blue-Collar World: Studies of the American worker*, 86-91. Englewood Cliffs, NJ: Prentice-Hall.
- Fama, E. & Jensen, M. (1983). Separation of ownership and control. *Journal of Law and Economics*, 26, 301-325.
- Flören, R.H. (2002). *Crown princes in the clay: An empirical study on the tackling of succession challenges in Dutch family farms*. Assen: Koninklijke Van Gorcum.
- Giovannini, R. (2010). Corporate governance, family ownership and performance. *Journal of Management & Governance*, 14(2), 145-166.
- Gomez-Mejia, L.R., Nuñez-Nickel, M. & Gutierrez, I. (2001). The role of family ties in agency contracts. *The Academy of Management Journal*, 44(1), 81-95.
- Gould, W. (1997). Interquantile and simultaneous quantile regression. *STATA Technical Bulletin*, July 1997, 14-21.
- Heck, R. K. Z. & Scannell Trent, E. (1999). The prevalence of family business from a household sample. *Family Business Review*, 12(3), 209-224.

- Hoy, F. & Verser, T.G. (1994). Emerging business, emerging field: Entrepreneurship and the family firm. *Entrepreneurship Theory and Practice*, 19(3), 9-23.
- Jaffe, D.T. & Lane, S.H. (2004). Sustaining a family dynasty: Key issues facing complex multigenerational business- and investment-owning families. *Family Business Review*, 17(1), 81-98.
- Jara-Bertin, M., López-Iturriaga, F.J. & López-de-Foronda, O. (2008). The Contest to the Control in European Family Firms: How Other Shareholders Affect Firm Value. *Corporate Governance: An International Review*, 16(3), 146-159.
- Jensen, M. & Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics*, 3, 305–360.
- Klein, S.B., Astrachan, J.H. & Smyrnios, K.X. (2005). The F-PEC scale of family influence: Construction, validation, and further implication for theory. *Entrepreneurship Theory and Practice*, 29(3), 321-339.
- Koenker, R. & Hallock, K.F. (2001). Quantile Regression. *The Journal of Economic Perspectives*, 15(4), 143-156.
- La Porta, R., Lopez-de-Silanes, F. & Shleifer, A. (1999). Corporate ownership around the world. *The Journal of Finance*, 54(2), 471-517.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R.W. (1998). Law and finance. *Journal of Political Economy*, 106(6), 1113-1155.
- Le Breton-Miller, I. & Miller, D. (2006). Why do some family businesses out-compete? Governance, long term orientations, and sustainable capability. *Entrepreneurship Theory and Practice*, 30(6), 731–746.

- Le Breton-Miller, I. & Miller, D. (2008). To grow or to harvest? Governance, strategy and performance in family and lone founder firms. *Journal of Strategy and Management*, 1(1), 41-56.
- Lee, J. (2004). The effects of family ownership and management on firm performance. *Advanced Management Journal*, 69, 46-53.
- Lehmann, E. & Weigand, J. (2000). Does the Governed Corporation Perform Better? Governance Structures and Corporate Performance in Germany. *European Finance Review*, 4, 157–195.
- Lehmann, E., Warning, S. & Weigand, J. (2004). Governance Structures, Multidimensional Efficiency and Firm Profitability. *Journal of Management and Governance*, 8(3): 279–304, 2004.
- Levy, M. (2009). Control in pyramid structures. *Corporate Governance: An International Review*, 17(1), 77-89.
- Lindenberg, E.B. & Ross, S.A. (1981). Tobin's q ratio and industrial organization. *Journal of Business*, 54(1), 1-32.
- Mann, T. (1901). *Buddenbrooks: Verfall einer Familie*. Berlin: Fischer [English edition: Mann, T. (1994). *Buddenbrooks: Decline of a Family*. New York: Random House.]
- McConaughy D.L., Walker M.C., Henderson G.V. & Mishra C.S. (1998). Founding family controlled firms: Efficiency and value. *Review of financial economics*, 7(1), 1-19.
- Mc Conaughy, D., Matthews, C. & Fialko, A., (2001). Founding family controlled firms: Performance, risk, and value. *Journal of Small Business Management*, 39(1), 31-49.
- Miller, D., Le Breton-Miller, I., Lester, R.H. & Cannella, A.A. (2007). Are family firms really superior performers? *Journal of Corporate Finance*, 13(5), 829-858.

- Morck, R., Shleifer, A. & Vishny, R. (1988). Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics*, 20(1), 293-315.
- Morck, R. & Yeung, B. (2003). Agency problems in large family business groups. *Entrepreneurship Theory and Practice*, 27(4), 367–382.
- Oswald, S.L., Muse, L.A. & Rutherford, M.W. (2009). The influence of large stake family control on performance: Is it agency or entrenchment? *Journal of Small Business Management* , 47(1), 116-135.
- Peng, M.W. & Jiang, Y. (2010). Institutions behind family ownership and control in large firms. *Journal of Management Studies*, 47(2), 253-273.
- Pregibon, D. (1980). Goodness of link tests for generalized linear models. *Applied Statistics*, 29(1), 15-24.
- Randøy, T. & Goel, S. (2003). Ownership structure, founder leadership and performance in Norwegian SME: Implications for financing entrepreneurial opportunities. *Journal of Business Venturing*, 18(5), 619-638.
- Reynolds, T. & Flores, A. (1989). *Foreign law: Current sources of basic legislation in jurisdictions of the world*. Littleton, CO: Rothman and Co.
- Rue, L.W. & Ibrahim, N.A. (1996). The status of planning in smaller family-owned business. *Family Business Review*, 9(1), 29-43.
- Rutherford, M.W., Kuratko, D.F. & Holt, D.T. (2008). Examining the link between familiness and performance: Can the F-PEC untangle the family business theory jungle? *Entrepreneurship Theory and Practice*, 32(6), 1089-1109.

- Schulze, W.S., Lubatkin, M.H., & Dino, R.N. (2003a). Exploring the Agency Consequences of Ownership Dispersion among the Directors of Private Family Firms. *The Academy of Management Journal*, 46(2), 179-194.
- Schulze, W.S., Lubatkin, M.H., & Dino, R.N. (2003b). Toward a theory of agency and altruism in family firms. *Journal of Business Venturing*, 18, 473–490.
- Schulze, W.S., Lubatkin, M.H., Dino, R.N., & Buchholtz, A.K. (2001). Agency relationships in family firms: Theory and evidence. *Organizational Science*, 12(2), 99–116.
- Shleifer, A. & Vishny, R. (1986). Large shareholders and corporate control. *Journal of Political Economy*, 94, 461-488.
- Shleifer, A. & Vishny, R. (1997). A survey of corporate governance. *The Journal of Finance*, 52(2), 737-783.
- Steier, L.P. (2003). *Unraveling the familial sub-narrative in entrepreneurship research. Frontiers of Entrepreneurship Research. 2003.* Proceedings of the Babson Kauffman Entrepreneurship Research Conference (pp. 258–272). Babson Park, MA: Babson College.
- Stern, M.H. (1986). *Inside the family-held business*. New York, NY: Harcourt Brace Jovanovich.
- Stewart, A. (2003). Help one another, use one another: Towards an anthropology of family business. *Entrepreneurship Theory & Practice*, 27(4), 383–396.
- Tirole, J. (2006). *The theory of corporate finance*. Princeton, NJ: Princeton Univ. Press.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
<i>return on sales</i>	0.02	0.11	-1.05	1.38
<i>return on equity</i>	0.09	0.50	-3.09	7.39
<i>return on investment</i>	0.03	0.10	-0.58	0.74
<i>family ownership</i>	0.30	0.41	0.00	1.00
<i>family management</i>	0.13	0.28	0.00	1.00
<i>family control</i>	0.04	0.10	0.00	0.67
<i>outside investor</i>	0.51	0.45	0.00	1.00
<i>control contest</i>	0.01	0.09	0.00	1.00
<i>asset turnover</i>	1.58	0.86	0.03	8.01
<i>stock market</i>	0.42	0.49	0.00	1.00
<i>firm age</i>	82.07	70.69	2.00	610.00
<i># of employees</i>	7306.40	36226.83	5.00	419200.00
<i>accounting system</i>	0.73	0.45	0.00	1.00
<i># patents*</i>	3307.67	22772.00	0.00	394112.00
<i>family-controls*</i>				
<i>founder-CEO</i>	0.11	0.31	0.00	1.00
<i>descendant-CEO</i>	0.20	0.40	0.00	1.00
<i>nth- generation</i>	0.91	1.65	0.00	12.00
<i>2 (3) active generations</i>	0.03	0.16	0.00	1.00
<i>industry-dummies*</i>				
<i>food</i>	0.09	0.29	0.00	1.00
<i>textile</i>	0.03	0.18	0.00	1.00
<i>paper</i>	0.06	0.24	0.00	1.00
<i>chemicals</i>	0.10	0.30	0.00	1.00
<i>rubber</i>	0.07	0.26	0.00	1.00
<i>metals</i>	0.13	0.33	0.00	1.00
<i>machinery</i>	0.19	0.40	0.00	1.00
<i>electronics</i>	0.11	0.31	0.00	1.00
<i>technology</i>	0.08	0.28	0.00	1.00
<i>automotive</i>	0.09	0.29	0.00	1.00
<i>other</i>	0.03	0.17	0.00	1.00

**these variables were used in robustness checks*

Table 2: Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	<i>return on sales</i>	1.00										
(2)	<i>return on equity</i>	0.40	1.00									
(3)	<i>return on investment</i>	<i>0.71</i>	<i>0.79</i>	1.00								
(4)	<i>family ownership</i>	0.05	0.03	0.07	1.00							
(5)	<i>family management</i>	0.01	0.08	0.07	<i>0.50</i>	1.00						
(6)	<i>family control</i>	0.06	0.01	0.06	0.29	0.04	1.00					
(7)	<i>outside investor</i>	0.00	0.01	-0.03	<i>-0.79</i>	-0.46	-0.33	1.00				
(8)	<i>asset turnover</i>	-0.01	0.17	0.12	0.04	0.07	-0.04	0.04	1.00			
(9)	<i>firm age</i>	0.00	-0.01	-0.04	0.04	-0.11	-0.11	0.02	-0.11	1.00		
(10)	<i># of employees</i>	0.02	0.00	0.01	-0.01	-0.08	0.01	-0.09	-0.13	0.08	1.00	
(11)	<i># of patents*</i>	0.03	0.01	0.02	-0.01	-0.06	0.00	-0.09	-0.10	0.10	0.80	1.00
(12)	<i>nth-generation*</i>	0.04	-0.02	0.03	<i>0.67</i>	0.37	0.33	<i>-0.57</i>	-0.04	0.25	0.10	0.14

medium correlations in italics, high correlations in bold print; binaries omitted

**these variables were used in robustness checks*

Table 3: Regression Results

<i>Endogenous variable</i>	<i>0.25-quantile</i>			<i>0.50-quantile</i>			<i>0.75-quantile</i>		
	<i>return on sales</i>	<i>return on equity</i>	<i>return on investment</i>	<i>return on sales</i>	<i>return on equity</i>	<i>return on investment</i>	<i>return on sales</i>	<i>return on equity</i>	<i>return on investment</i>
<i>family ownership</i>	0.0030 (0.016)	0.0423 (0.050)	0.0027 (0.015)	0.0064 (0.013)	0.0821 * (0.044)	0.0125 (0.015)	-0.0118 (0.016)	-0.0014 (0.065)	-0.0429 (0.030)
<i>family control</i>	0.0658 (0.084)	0.2531 (0.158)	0.1132 ** (0.055)	0.0829 * (0.042)	0.2628 ** (0.131)	0.1299 *** (0.050)	0.0794 *** (0.030)	0.2565 ** (0.114)	0.1073 *** (0.040)
<i>family management</i>	0.0091 (0.011)	0.0632 (0.042)	0.0228 ** (0.011)	0.0097 (0.011)	0.0542 (0.043)	0.0133 (0.013)	0.0005 (0.008)	0.0584 (0.060)	0.0117 (0.013)
<i>outside investor</i>	0.0023 (0.011)	0.0338 (0.041)	0.0021 (0.013)	0.0005 (0.014)	0.0405 (0.046)	-0.0004 (0.013)	-0.0195 (0.015)	0.0049 (0.066)	-0.0473 * (0.027)
<i>control contest (binary, 1=yes)</i>	-0.2809 * (0.158)	-1.8684 * (0.986)	-0.4246 * (0.244)	0.0557 (0.175)	0.0730 (0.991)	0.0904 (0.265)	0.0270 (0.154)	-0.0270 (0.905)	0.0555 (0.250)
<i>asset turnover</i>	0.0000 (0.006)	0.0001 (0.009)	--- ---	-0.0037 (0.003)	0.0324 * (0.016)	--- ---	-0.0094 ** (0.004)	0.0906 *** (0.033)	--- ---
<i>Stock market (binary, 1=yes)</i>	-0.0130 (0.014)	-0.0439 (0.039)	-0.0177 ** (0.008)	0.0001 (0.006)	-0.0170 (0.025)	0.0014 (0.008)	-0.0135 (0.008)	-0.0444 (0.031)	-0.0213 * (0.012)
<i>firm age</i>	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	-0.0001 (0.000)
<i># of employees</i>	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)
<i>accounting system (1=HGB)</i>	-0.0094 (0.025)	-0.0285 (0.042)	-0.0081 (0.012)	-0.0136 ** (0.007)	-0.0268 (0.024)	-0.0126 (0.009)	-0.0170 * (0.010)	-0.0338 (0.031)	0.0006 (0.011)
<i>constant</i>	0.0071 (0.016)	-0.0057 (0.069)	0.0060 (0.015)	0.0282 (0.016)	-0.0083 (0.048)	0.0239 * (0.014)	0.0946 *** (0.017)	0.0717 (0.077)	0.1138 *** (0.027)

N=386; Simultaneous quantile regressions with bootstrapped standard errors; *=0.1, **=0.05, ***=0.01 significance; Goodness-of-Link-tests (Pregibon, 1980) for all models show no unobserved non-linear effects. Additional models with controls for founder- and descendent CEOs generations, # of active generations, dynasties, firm innovation and industry-dummies were estimated, but – due to insignificance – not reported.