
2.2. CORPORATE GOVERNANCE, FAMILY FIRMS AND INNOVATION

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Abstract

We provide a comprehensive study of how corporate governance influences innovation at family firms. We find that family firms do indeed generate more productive innovation than non-family firms, perhaps because they are able to have a longer-term perspective. We then show how different corporate governance mechanisms influence this relationship. Board ownership and CEO ownership are associated with more productive innovation at all firms. Importantly, we find that managerial entrenchment leads to more productive innovation in general, but not at family firms, suggesting that it's the ownership relationship, not managerial entrenchment, that drives innovation. We also find that independent boards are associated with greater innovation at family firms but not at non-family firms. Our primary contributions are identifying how firms with different ownership structures focus on creating productive innovation and analyzing how the ownership structure interacts with different corporate governance mechanisms to allow the firm to make longer-term investments in innovation.

1. INTRODUCTION

Recent academic research has uncovered quite a puzzle with respect to the relationship between corporate governance, corporate innovation, and value creation. For years, we have assumed that entrenched corporate governance structures restricted value creation (Gompers, Ishii & Metrick, 2003; Bebchuk, Cohen, & Ferrell, 2009). More recently,

significant work by Chemmanur and Tian (2018) and Sapra, Subramanian, A., and Subramanian, K. V. (2014) suggest that entrenched corporate governance structures lead to more corporate innovation. We have long believed that corporate innovation is a key driver of firm value, but then what are we to make of these seemingly contradictory effects of different corporate governance structures?

In this paper, we focus on this puzzle using the unique context of family firms. We argue that the key to firms producing value-enhancing innovation is not entrenched management, but rather committed and devoted ownership. We find that the effect of committed, relational ownership dominates the management effect and that family firms generate more productive innovation than non-family firms, perhaps as a result of the long-term perspective developed through the relationship between the family, management and the board of directors. When we focus on how different corporate governance mechanisms influence this dynamic, we see that more independent boards are associated with greater productive innovation at family firms but have no impact on non-family firms. We find that board ownership is associated with greater productive innovation at all firms. Importantly, we find that managerial entrenchment at family firms is associated with less productive innovation, suggesting that the ownership structure dominates the management structure. And, finally, we find that having a dual-class share structure is harmful to generating productive innovation for all firms. Thus, this study contributes to unraveling the puzzle of why managerial entrenchment can be bad for firm value but good for innovation, suggesting that the key factor is how entrenched the ownership is and not merely how entrenched management is.

2. MOTIVATION AND HYPOTHESIS DEVELOPMENT

We specifically study whether different corporate governance and ownership structures have an impact on the innovation produced by a firm. With respect to the relationship between ownership and innovation, there is some evidence that it matters. When institutional ownership is high, managers are less likely to cut R&D expenditures (Bushee, 1998). And Aghion, Van Reenen, and Zingales (2013) further this notion, by developing a theoretical model which shows that greater institutional ownership is associated with more innovation output.

Knott (2008) studied this specific dynamic, with respect to all firms, not specific to family firms. She suggests that the productivity of a firm's R&D investments is what is most important. It doesn't matter if a firm is investing a lot in R&D, and it may not matter if a firm is generating a lot of patents; what ultimately matters is the productivity of those R&D investments. A firm's ability to convert R&D investments into productive innovation leads it to invest more in R&D, not the reverse. To measure this, she created Research Quotient (RQ) as a measure of R&D investment productivity. She showed this result using a large sample of

U.S. firms; to the best of our knowledge, we are the first to apply this idea to family firms.

Duran, Kammerlander, van Essen, and Zellweger (2015) point out their findings concerning family firms and innovation depend on the ownership and leadership characteristics of each firm and country-level factors. A firm's corporate governance structure is likely to be a significant moderating or determining factor in how productive a firm's R&D investments are. Manso (2011) shows that the managerial incentives necessary for innovation must be long-term. Chemmanur and Tian (2018) and Sapra, Subramanian, A., and Subramanian K. V. (2014) show that entrenched managers and directors are most likely to invest in innovation. Wang and Zhao (2015) find that firm ownership matters for innovation, as hedge fund ownership increases both the quantity and quality of patents and increases firm value through this innovation effect.

Based on this brief literature review, and our expected relationships between innovation, governance and family ownership, we have two primary hypotheses for our study:

Hypothesis 1 (H1): Family firms generate more productive innovation than non-family firms.

Hypothesis 2 (H2): Family firms with stronger corporate governance structures generate more productive innovation than non-family firms.

3. DATA

We study innovation and corporate governance at family firms in the U.S.A. from 2001 to 2010. Anderson, Duru, and Reeb (2009) characterized "family firms" as firms in which the founding family currently holds a five-percent equity stake in the company (based on cash flow rights). We use Compustat for financial statement data, CRSP for stock price data, Execucomp for compensation data, and ISS for corporate governance data. Our primary measure of innovation is Research Quotient or the percentage increase in revenues from a 1% increase in R&D expenditures; thus, RQ is estimated from financial data available from Compustat.

Approximately 34% of the sample firms are family firms and 10% have dual-class share structures; 26% of all family firms have dual-class share structures and 87% of dual-class firms are family firms, showing that family firms are more likely to use dual-class share structures. Seventy-one percent of directors are independent and the average director owns \$2.09 million of stock. Fifty-eight percent of CEOs also serve as board chair; average board tenure is 10.58 years, while 21% of directors have served on the board for more than 15 years and 20% of directors have served for fewer than 5 years. Nine percent of the directors serve on more than three other boards, with the average director serving on just less than 1 other board. In terms of innovation statistics, the average Research Quotient is 0.11%, meaning that the

average firm increases revenues by 0.11% for each 1% increase in R&D investment; the data also show how skewed this measure is, suggesting that there is a wide disparity in the impact of investing in innovation.

4. RESULTS AND DISCUSSION

We study whether family firms are more productive with their investments in innovation than non-family firms are and how a firm's corporate governance structure may affect this relationship using the following simple model:

$$\text{Innovation}_{i,t+1} = \alpha + \beta_1 \text{Family Firm}_{i,t} + \beta_2 \text{Governance}_{i,t} + \theta \text{Controls}_{i,t} + \varepsilon \quad (1)$$

We initially use OLS estimation. We use a one-year lag between the time of the explanatory variables and the measurement of the firm's innovation to allow for the time it may take for an ownership or governance structure to impact a firm's innovation productivity. We use firm, industry and year fixed-effects to capture unobservable, time-invariant firm and industry dynamics outside of our primary governance-innovation relationships.

The results from our analysis on the impact of family firm ownership on innovation are in Table 1 (see Appendix). We see a positive and significant coefficient on the *Family Firm* variable, indicating that firms with greater than 5% ownership by the family are better at creating innovation that leads to increased revenue. When we include the *Dual-Class* dummy variable and a *Family Firm x Dual-Class* interactive term, dual-class firms, by themselves, produce less productive innovation than firms with a single class of stock; the interactive term is negative and significant, suggesting that the productive innovation that family firms generate comes from those family firms that do not employ a multiple class share structure. Thus, we conclude that *H1* holds that family firms generate more productive innovation than non-family firms.

The results in Table 2 (see Appendix) show how the relationship between family firms and innovation can be augmented or moderated by different corporate governance mechanisms. In these regressions, we keep the same structure as in *Family Firm-Innovation* models in Table 1, continuing to include the dual-class share variable, and add on different corporate governance mechanisms and interact them with *Family Firm*. In all Table 2 models, the measure of Innovation is *Research Quotient (RQ)*. For conciseness, we only show the primary *Family Firm* and *Governance* variables and exclude the results for the control variables.

In model 1, the governance variable is *Board Independence*. More independent boards produce slightly more productive innovation than boards with fewer independent directors, but only in family firms, where

the impact of independent, outside directors perhaps serves to balance the inside and traditional perspective of the founding and owning family.

In model 2, the governance variable is *Director Ownership* or the median dollar value of common stock owned by the individual members of the board of directors (Bhagat & Bolton, 2008). Boards that own more stock are associated with higher *RQ*, both in family firms and in non-family firms.

In model 3, the governance variable is *CEO-Chair Duality*, a dummy equal to 1 if the CEO is also the board chair. These show that *CEO-Chair Duality* is negatively related to innovation at all firms; however, based on the *CEO-Chair Duality x Family Firm* variable, the negative relationship is most profound at family firms. Thus, the improved level of *RQ* at family firms is a result of the family influence and not a result of entrenched management.

In model 4, the governance variable is the Gompers, Ishii, and Metrick (2003) *G-Index* of managerial entrenchment. For all firms, we see a positive relationship between *G-Index* and *RQ*. This suggests that entrenchment may insulate firms from short-term pressures, allowing the company to focus on longer-term investments, such as innovation. However, when we include the *G-Index x Family Firm* variable, we find a negative relationship between *G-Index* and *RQ*. This suggests the innovation benefits from overall entrenchment are a function of the ownership dynamic and not of entrenched management. This result, along with the results in model 3, may shed some light on why entrenchment appears to be beneficial for innovation, even though we know it destroys firm value. The relationship between managers and owners is what matters.

Overall, these results show that a firm's corporate governance structure can have a substantial effect on whether a firm is able to generate productive innovation, but this depends on what aspect of the governance structure we are looking at. In most cases, there is not a significant difference between how the governance structure impact innovation in family and non-family firms. Importantly, when we include proxies for entrenchment as our governance variables, we see that entrenchment is beneficial for innovation at all firms, but not at family firms, suggesting that it is the relational benefits of the family ownership and/or leadership that creates productive innovation. Thus, we see mixed evidence with respect to *H2*, as we do see different dynamics from certain corporate governance variables between family firms and non-family firms. Summarizing these results, we highlight several key findings:

- *Research Quotient* is different from other measures of innovation, such as patents and citations; that is, the different proxies are indeed measuring different dynamics.

- *Family Firms* do generate more productive innovation than non-family firms do.

- *Dual-Class* share structures are associated with lower levels of productive innovation.

- Corporate governance structures do influence innovation, both at family firms and non-family firms. *Board Independence* and *Director Ownership* are associated with more innovation, while *CEO-Chair Duality* is associated with less innovation.

- *Board Independence* has a disproportionately greater impact on productive innovation at family firms relative to the influence it has at non-family firms; this is perhaps due to the different perspectives that independent, outside directors bring to a family firm.

- And, managerial entrenchment, which has been associated with lower firm value, leads to greater productive innovation, but not at family firms. This suggests that the long-term ownership relationship that family firms provide is what leads to productive innovation.

These findings are important because they shed light on the structural and institutional trade-offs that firms need to make in order to achieve long-term success. We have long known that there is no "one-size-fits-all" corporate governance structure, but we can identify best practices that will make a difference at the margin for many firms. Our findings in this study should provide some guidance for owners, directors, and leaders at family firms as to what they need to do to generate the most productive innovation and what corporate governance mechanisms they need to choose as they pursue long-term success.

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APPENDIX

Table 1. Regressions of innovation on family firm ownership

	<i>Research Quotient (RQ)</i>	<i>Research Quotient (RQ)</i>	<i>Research Quotient (RQ)</i>
Family Firm	1.837*** (2.86)	1.902*** (2.93)	2.137*** (2.69)
Dual-class Shares	- (-)	-0.638* (-1.76)	-0.706* (-1.66)
Family Firm x Dual-class Shares	- (-)	- (-)	-0.422** (-2.13)
Ln (Assets)	0.062* (1.77)	0.058* (1.78)	0.059* (1.70)
R&D/Assets	-0.327 (-0.83)	-0.341 (-0.89)	-0.338 (-0.82)
CapEx/Assets	0.243* (1.71)	0.268* (1.70)	0.257 (1.62)
Tobin's Q	0.101 (0.98)	0.108 (0.92)	0.107 (0.95)
Debt/Assets	-0.037 (0.89)	-0.044 (0.82)	-0.046 (0.80)
Cash/Assets	0.236* (1.83)	0.240* (1.81)	0.241* (1.86)
Institutional Ownership	0.074 (1.34)	0.071 (1.31)	0.072 (1.30)
Equity/Total Pay	0.143** (2.13)	0.142** (2.19)	0.148** (2.24)
Firm Age	0.487*** (3.24)	0.475*** (3.08)	0.472*** (3.01)
Constant	-1.371*** (-2.73)	-1.682*** (-2.79)	-1.736*** (-2.82)
Observations	5,836	5,836	5,836
R-squared	0.257	0.263	0.268
Firm, Industry and Year FE	Yes	Yes	Yes

*Note: This table presents regression results of innovation on various measures of family firm ownership and structure. Research Quotient (RQ) is the measure of innovation. Family Firm and Dual-class Shares are the explanatory variables of interest. All regressions contain firm and year fixed effects. T-statistics are reported in parentheses. Standard errors are clustered by firm. *** indicates significance at the 1% level, ** 5% and * 10%.*

Table 2. Regressions of innovation on family firm ownership and corporate governance structures

	<i>Research Quotient (RQ) as measure of innovation</i>			
	<i>Board Independence 1</i>	<i>Director Ownership 2</i>	<i>CEO-Duality 3</i>	<i>GIM G-Index 4</i>
Family Firm	1.708*** (3.04)	1.601** (2.47)	1.708*** (2.92)	1.843*** (2.74)
Dual-class Shares	-0.598* (-1.67)	-0.608 (-1.37)	-0.566* (-1.74)	-0.637* (-1.74)
Family Firm x	-0.389**	-0.328**	-0.386**	-0.431*
Dual-class Shares	(-2.08)	(-2.15)	(-2.21)	(-1.92)
Corporate Governance	0.059	0.006**	0.834	0.010*
Variable	(1.07)	(1.98)	(1.21)	(1.71)
Family Firm x	0.528***	0.318*	-0.663**	-0.037***
Corporate Governance	(2.66)	(1.70)	(2.32)	(2.75)
Observations	5,769	5,769	5,769	5,351
R-squared	0.307	0.315	0.307	0.279
Firm, Industry and Year FE	Yes	Yes	Yes	Yes

*Note: This table presents regression results of innovation on various measures of family firm ownership and structure and various measures of corporate governance. Research Quotient (RQ) is the measure of innovation in all analyses. Control variables are omitted for brevity. Each column considers a different corporate governance mechanism. All regressions contain firm and year fixed effects. T-statistics are reported in parentheses. Standard errors are clustered by firm. *** indicates significance at the 1% level, ** 5% and * 10%.*

CONFERENCE FORUM DISCUSSION

Alex Kostyuk: Hi Brian, I am glad to see you contributing and participating in our conference forum. It was very interesting to see one of the statements by you in your paper: "Managerial entrenchment leads to more productive innovation in general – but not at family firms, suggesting that the family ownership dynamic is what drives innovation, rather than managerial entrenchment". Does it mean that the type of the owner (in this case it is a family owner) allow us outlining a new model of corporate governance matched to the type of the owner (including revising the well-known terms like "managerial entrenchment")?

Juliet Wakaisuka: Hello Brian and Jung, I was of the view that ANOVA should be included among the methods so that you test the difference between their means and therefore connect them properly to the issue of family firms generating production innovations than the non-family firms.

Brian Bolton: Hi Alex – we keep getting close to actually meeting in person, but, alas, the world has other ideas. First, thank you very much for organizing this conference and getting it to be a beneficial experience; despite what the virus wants (Olha and Kate have done a phenomenal job, too). Now, to your question – yes, that's the key finding. We are working on other studies to study this more and see how robust it is. But we think it's very interesting and promising. For the past 15-20 years, we've thought that "entrenchment" in governance is bad for firm performance or value (with the studies of anti-takeover provisions in the 2000s). Maybe we even started thinking that in the 1990s with studies on CEO-chair duality. We kind of accepted that as general or universal. Then in the past 5 years, a lot of work has focused on specific aspects of governance. And two really good papers on innovation and governance (Sapra, Subramanian & Subramanian, 2014; Chemmanur & Tian, 2017) showed that entrenchment is good for innovation. This is confusing – that entrenchment is good for innovation but bad for value creation. Perhaps it's the time frame; perhaps we're capturing short-term value creation whereas innovation is a long-term process. Or, perhaps there's something in ownership structure that can moderate or manage the entrenchment. My co-author Jung has done a lot of work with family firms, and I remembered decent literature from the 1990s on "relational investing," or the idea that owners are long-term partners in the firm. Well, obviously family firms are the highest form of relational investors, so we chose to focus on that dynamic. And that's what we find – managerial entrenchment leads to greater innovation, in general, as the other papers found, but not in family firms.

Brian Bolton: So, yes, I think this means we should be looking at different models of governance, considering other mediators or dimensions that drive differences. We all generally agree that "one size" governance does NOT work or does not fit all. And that's because relationships and people drive governance. We generally agree on best practices in governance (ownership, board independence...), but even that

will be influenced by the contextual background. In our case, we look at family ownership. But legal framework, country factors, industry, and other factors are also very important. And I do believe that this creates many opportunities for us to dig a little deeper into the best practices to explore the governance factors that ultimately drive certain firm behaviors. To me, this is very exciting as we get to look at relationships and tell stories that are more interesting than just looking at overall firm value or performance – but, it also means that we have to be prepared for one dynamic to 'work' in one situation but not in another, and we have to be able to figure out those differences. That is both a responsibility and an opportunity.

Brian Bolton: Hi Juliet – thank you for the comment. I know we performed an ANOVA earlier in the research process, and that encouraged us to continue the study and explore the relationships a little deeper. We did not include it in the paper as we focused on the multivariate regressions. But, we can certainly re-create it and add it to the paper as additional support.

Alex Kostyuk: Hi Brian, I am sure that someday we will meet in person and discuss this very interesting much promising issues related to "managerial entrenchment". I come with one more idea in this way. I remember that two decades ago, Saul Estrin, who was director of one of Centers for emerging market research at London Business School, gave me an advise what to do with absolutely entrenched directors (CEOs) of Ukrainian, just privatized companies. "You should rotate them more often", that was a suggestion. I remember that Saul supported this suggestion with his research results. Probably, now this is the case too? Do not you think? CEO tenure becomes longer and longer. It is more than 8 years now (<https://www.chieflearningofficer.com/2016/11/30/long-ceos-tenure/>). It is almost one year more than 15 years ago. This could be empirically tested without a problem.

Brian Bolton: I love this line of thinking – lots of opportunities. There was a time during the late 2000s when firms were moving away from entrenched directors, bringing in more new and younger directors (in part to comply with new independence rules). That movement has slowed, and I do think we're seeing longer tenures with both CEOs and directors. We can (and should) dig into these trends and see what the implications are.

Hadfi Bilel: The subject of governance and especially that which takes into account. The rooting behavior of the leaders always remains a subject of current events that relates to a behavior of expropriation of the wealth of the company generally. The author has tried to investigate the relationship between entrenchment and innovation. It is a good idea for research. I have a proposal for the author if it is possible Brian and Jung in the behavior of entrenchment of the leaders one can find three phases of the strategy of entrenchment leaders: phase 1: valorization (neutral); phase 2: limitation of control (offensive); phase 3: consumption (defensive); if it's possible to estimate the relationship between different phases and the innovation.

Mireille Chidiac El Hajj: Hello Brian and Jung, the research is very interesting. It opens doors to a new line of thinking. However, I would like to point to some elements. 1) The slides need some editing. 2) I am not sure if you discussed the ownership of family business in the paper, but it is not obvious in the slides. Therefore, I would suggest that you go back to some authors such as Andres (2008) who argued that the founder should hold 25% of the voting shares; or to Goel (2011) who reduced it to 20%; and then to Block (2012) who argued that it would be sufficient that the founder or the descendant maintains at least 5% of own stake. 3) You compared family to non-family businesses; but you didn't mention in the context: In which country the research took place? In which period of time? Are the firms small, medium or big? Are they listed or not? 4) The results are good, but they are more concerned about the family firms. I didn't see any calculations concerning the non-family firms. Which can have an impact on Hypothesis 1 in slide 9? I nevertheless repeat that the research is very interesting.

Brian Bolton: Hello Mireille – thank you for these comments. Many of these issues should be clear in the paper: large listed U.S. firms, 2000-2010. We indeed use the 5% threshold as the definition of a family firm – this has been the standard with U.S. firms since Shleifer and Vishny (1986), at least. A more generous definition of "family firm" is necessary for U.S. studies since we do not have as many truly family firms as many European and Asian countries – a company like Facebook isn't necessarily what we think of as a family firm, but it meets the requirement. And, to (4), the tests we perform focus on family firms simply because that's where we think the interesting story is. In the multivariate regressions, we code firms with a 1 if they are family firms and with a 0 if they are not family firms. We could have just as easily applied the opposite coding and focused on non-family firms. The interactive terms in the regressions capture this distinction, looking at whether a particular factor has a greater impact (or significance) at family firms relative to non-family firms. That is, the default or baseline comparison is to non-family firms...because, by definition, in our study if a firm is not a family firm it is a non-family firm. Thus, if we find that a factor within a family firm is significantly different, we could just as easily say that that factor is significant at non-family firms, just in the opposite direction. The perspective we chose was simply to better address our specific research questions.

Brian Bolton: Hi Hadfi – thanks for the suggestion. We have not included this perspective on leadership entrenchment as neither of us is particularly familiar with it. But you're right – it might be interesting to see if the entrenchment issues we find are driven by phases of the leader as opposed to the ownership structure of the firm. We used a definition of "entrenchment" that has been popular in the finance and strategy literature over the past 20 years – but of course, there's more that we could have done. We will look into these phases of a strategy of entrenchment perspective to see if there's anything we can do with it.