Innovation in family firms: the role of different governance contexts

This item was submitted to Loughborough University’s Institutional Repository by the/ an author.


Additional Information:

- This is a conference paper.

Metadata Record: https://dspace.lboro.ac.uk/2134/32263

Version: Accepted for publication

Publisher: International Family Enterprise Research Academy (IFERA) / © The Authors

Rights: This work is made available according to the conditions of the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0) licence. Full details of this licence are available at: https://creativecommons.org/licenses/by-nc-nd/4.0/

Please cite the published version.
Abstract

We examine the influence of three different governance contexts on innovation strategy among family firms. Using survey data from a sample of 348 private UK family firms, we study the effects of family control (family involvement on the board), family management (family involvement in management) and family guardianship (trustees and family council) on the importance attached to explorative and exploitative innovation in innovation strategy. Using a decision-making theory lens, coupled with a framework of family governance, we show that explorative innovation strategy is significantly positively associated with family management (in terms of involvement in innovation by the next generation) and family guardianship (in terms of the existence of a family council), but diminishes in emphasis the more total number of generations are involved in the firm. Exploitative innovation strategy is weakly positively associated with more involvement in innovation by the next generation only. Our findings shed light on the governance contexts that can influence family firm innovation strategy, offering important implications for theory and practice and paving the way for future research at the crossroad of corporate governance and innovation in the family firm.

Introduction

A growing body of research is concerned with understanding innovation in the family firm (Duran et al., 2015), and several of these studies point to the effects that the firm’s governance context might have on innovation activity (Chrisman, Chua, De Massis, Frattini & Wright, 2015). A firm’s corporate governance context captures the system of incentives, authority
structures and accountability norms that cause it to take decisions and behave in particular ways (Carney, 2005). In other words, the family firm’s governance framework holds the potential to shape its decision-making about innovation and reshape its innovation strategies. Yet, existing research provides little theoretical or empirical guidance about the effects of different governance contexts on innovation strategy in family firms. Innovation strategy itself is not homogeneous. Explorative versus exploitative innovation represent two different innovation strategies (He and Wong, 2004; Morgan and Berthon, 2008), where an explorative innovation strategy focuses on innovation that emphasizes new products and processes (leading to radical innovation) while exploitative innovation strategy is concerned with improving what already exists (leading to incremental innovation) (Chang & Hughes, 2012; He & Wong, 2004; Lin, McDonough, Lin & Lin, 2013). Both are important to firm performance and longevity (March, 1991).

Explorative and exploitative innovation strategies are linked to decision making about entrepreneurial opportunities (Shepherd, Williams and Patzelt, 2015). Decision making can seen as planning or improvisation. Planning-based decision making requires processing of information to make rational choices whereas improvisation-based decision making is adaptive and intuitive based on incomplete information (Bakken, 2008; Wiltbank, Dew, Read, & Sarasvathy, 2006). Improvised decision making is key to explorative innovation strategies associated with new product development (Hmieleski & Corbett, 2006) whereas planned decision making can be associated with an exploitative innovation strategy.

Family influence on innovation is a double-edged sword because the long-term orientation of family firms and patient capital may favor an explorative innovation strategy, but family concerns about wealth preservation and ensuring employment security for family
members can inhibit it (De Massis, Di Minin & Frattini, 2015; Miller, Wright, Le Breton-Miller & Scholes, 2015). Accordingly, family firms’ innovation behavior may be context-dependent (e.g., Chrisman & Patel, 2012; Chrisman, Fang, Kotlar & De Massis, 2015; Wright, Chrisman, Chua & Steier, 2014; Zahra & Wright, 2011).

Since governance is a major determinant of strategic decisions of firms, and because the governance of family firms varies greatly, differences in governance contexts are likely an important driver of heterogeneity among family firms (Carney, 2005; Chrisman, Sharma, Steier, & Chua, 2013; De Massis, Kotlar, Chua & Chrisman, 2014). Corporate governance research generally distinguishes control from management (Fama & Jensen, 1983). In the family firm, family control involves the role of the family in the board of directors while family management concerns the role of the family in the management of the firm, encompassing family members in the top management team and the involvement of several generations. The family firm is distinct as it can involve an extra layer of governance, namely family guardianship, encompassing trustees and the family council. We focus on this governance heterogeneity as the contextual backdrop and examine the potential of the governance context of a family firm in terms of family control, family management, and family guardianship to affect fundamentally the type of decisions that are made and thus the innovation strategies of the family firm.

Building on Carney (2005) and Carney and Gedajlovic (2003), we take the view that the family firm’s decisions to emphasize specific types of innovation strategy reflect the firm’s system of governance. Typically, family firms are characterized by a unification of ownership and control that can lead to parsimony, personalism and particularism dominating strategic decision-making (Carney, 2005; Demsetz & Lehn, 1985). But family guardianship provided by trustees and family councils introduces an outsider perspective that may destabilize the
personalization of authority and the pursuit of particularistic family goals, thereby causing strategic decision-making among family firms to vary—and with it the circumstances for innovation strategy.

We examine how the distinctive governance contexts of a sample of UK family firms affect the explorative and exploitative innovation strategies of the family firm. We address the following research question: Are different family business governance contexts associated with different types of innovation strategy? In doing so, we contribute by addressing calls for more context-dependent research on family firms (Miller, Le Breton-Miller & Lester, 2010; Wright, Chrisman, Chua & Steier, 2014; Randerson, Bettinelli, Fayolle & Anderson, 2015). We also contribute by addressing calls for more research on the heterogeneity of family firms regarding innovation activity (Chrisman, Chua, De Massis, Frattini & Wright, 2015; De Massis, Kotlar, Frattini, Chrisman & Nordqvist, 2016). We contribute to innovation management in family firms by considering the influence that governance contexts could have on types of innovation strategy. Finally, we contribute to the governance view of family firms (Carney, 2005) by theorizing and empirically demonstrating the effects of different governance contexts on decisions made and thus on innovation strategy. We extend existing theorizing on family firm governance to innovation management by revealing how tendencies towards parsimony, personalism, and particularism are shaped by different governance contexts, how these then affect the decisions made and showing what features of these contexts increase the importance attached to (or detracted from) explorative and exploitative innovation strategy. Finally we contribute by revealing the potential for family councils to influence radical innovation in family firms, the first empirical study to do so.
Governance and Innovation Strategy in Family Firms

Innovation activity can refer to innovations in products, services or process and a firm’s innovation strategies therein can be classed as explorative or exploitative (Greve, 2007; He & Wong, 2004; Lin, McDonough, Lin & Lin, 2013; Morgan and Berthon, 2008). The basis for this distinction stems from March’s (1991) seminal work in which he theorized that firms must attach importance to both types of strategies or else risk their long-term health and survival. We use governance as a theoretical frame to develop expectations about how different governance contexts might associate with decisions regarding these different innovation strategies. We posit that governance (re)shapes the decision making of family owners and managers towards planning or improvisation, or towards situations in which they may both co-exist (Hughes et al., 2017).

The family business literature points to three main distinctive tendencies characterizing family firm governance, namely parsimony, personalism, and particularism (Carney, 2005). The tendency for parsimony is a function of family owners and managers making strategic decisions that directly involve the family’s personal wealth. This reduces the problem of opportunism (Jensen & Meckling, 1976) that comes with the separation of ownership and control because, in this instance, these two are unified. This unification affects risk tolerance (Alchian & Demsetz, 1972) making it difficult to divert resources to activities capable of challenging existing sources of value (Anderson & Reeb, 2003), with the result that parsimony indicates a tendency towards careful resource conservation and efficiency (Carney, 2005) and therefore a more planned decision-making approach associated with more cautious strategies.

Personalism means that ownership and control are concentrated so that significant decision-making authority rests with the family owner manager or a small group of family
members (Carney, 2005). This will reinforce the effects of parsimony, reinforcing resource conservation and planned decision-making. Different owners (e.g., family owners who are not directly involved in the management of the firm) may place different emphasis on exploitative versus explorative innovation strategies as they may hold different attitudes about risk, desired returns and investment horizons (Thomsen & Pedersen, 2000; Zellweger, 2007). The evidence on the relationship between family influence and R&D investments is mixed (De Massis, Frattini & Lichtenthaler, 2013; Sciascia, Norqvist, Mazzola & De Massis, 2015). Le Breton-Miller and Miller (2006), for example, argue that family-controlled firms are more likely to exhibit a long-term orientation in making strategic investments and that the nature of these investments will help these firms develop sustainable capabilities. Such a long-term orientation is more suited to explorative innovation strategy. There is also evidence from family firms that where the CEO is no longer the founder they are not as entrepreneurial as their predecessors (De Massis, Chirico, Kotlar & Naldi, 2014; Miller, Le Breton-Miller & Lester, 2010). This suggests that founding entrepreneurial CEOs, whether they are also the Chair or not, may be more likely to put emphasis on explorative innovation strategy over and above a tendency towards exploitative innovation strategy circumscribed by the tendency towards parsimony. Indeed, successful dynastic families tend to use radical and progressive innovation to diversify the business and explore new opportunities when survival is at risk (Patel & Chrisman, 2014). Shared family values, a desire to raise the family name and reputation, high level of communication among family members, and low traditional monitoring costs also lead to new product development (Cassia, De Massis, and Pizzurno, 2011).

Family involvement can generally benefit the innovation activities and outputs of the firm due to the family owners’ tendency for particularism, or their propensity to see the firm as ‘their
business’ (Carney, 2005; Demsetz & Lehn, 1985), and due to the concentration of power in family hands. These features provide family owners and managers the discretion necessary to pursue the family’s objectives (Chrisman, Steier, & Chua, 2006). Family control allows family members (especially in senior management positions) to introduce particularistic decision-making criteria that diverge from strictly rational calculative criteria. This might attenuate the features of parsimony, and the tendency towards resource conservation (Carney, 2005). It can also mean changing perfectly rational decisions to less rational ones that are more favorable for the family. In summary then, Carney (2005) suggests that the combination of parsimony, personalism and particularism leads on the one hand to a tendency to resource conservation and efficiency but on the other hand to an ability to act quickly and behave opportunistically. The form of governance, its context, vary the extent to which these conditions are present, which vary the emphasis on planned or improvised decision-making, which in turn (re)shape the importance attached to an explorative or exploitative innovation strategy.

The ability of family owners, controllers, and managers to exercise discretion may be reined in when non-family managers are employed or when family guardianship mechanisms provided through trustees and family councils are introduced (Scholes & Wilson, 2014). This may then affect the decisions made. Alternative governance contexts can steer strategic decision-making into different areas of priority for the firm, or for parties attached to the firm. Different governance contexts may not share a unified position on those priorities creating competing pressures that may affect innovation strategy. Trustees and family councils alter the exercise of discretion where trustees may distract importance away from explorative innovation strategy and towards greater stability for the firm (an exploitative innovation strategy), although councils may suggest new ways of growth that have been hitherto unexplored. Members of family councils
and trustees may bring additional knowledge but may also influence decision-making in either an explorative way or an exploitative way.

Against this backdrop, we now develop hypotheses relating to the effects of three governance contexts, namely family control (the Board), family management (the next level managers), and family guardianship (trustees and councils), on explorative and exploitative innovation strategies in the family firm.

**Family Control and Innovation Strategy**

Family control governance in the form of family involvement in the board has two functions. The first is monitoring, where it ratifies and prioritizes initiatives made by the CEO (Baysinger & Hoskisson, 1990), and the second is to provide advice and legitimize the business (Bammens, Voordeckers & van Gils, 2011). Boards of family firms play a central role in strategic decision-making (Bammens, Voordeckers & van Gils, 2008; Goel, Jusilla & Iläheimonen, 2013) and board composition is distinctive in enhancing family firm survival (Wilson, Wright & Scholes, 2013). The make-up of a family firm board can vary from no formal board at all, through to a board that consists solely of family members, to a board comprising a mix of family members and outsiders. This includes whether the CEO and Chair are family members or not. Family members tend to dominate family firm boards (Collin & Ahlberg, 2012; Corbetta & Salvato, 2004; Voordeckers et al. 2007). Boards influence family firm performance by providing guidance on the mission and goals of the organization and the family, advice on strategic direction, useful contacts and monitoring of the CEO (Bammens, Voordeckers & van Gils, 2011). However, smaller family firm boards may lack the necessary skills to guide the family business, for example with a dominant family CEO alongside a small number of immediate
family members. Furthermore, the insular nature of many smaller family firms may mean that non-family outsiders are excluded (Johannisson & Huse, 2000), thus limiting available talent to a much smaller ‘family’ pool. This can inhibit decision-making and the decision-control functions of the board (Bammens, Voordeckers & van Gils, 2008).

Family CEOs imbued with knowledge about the firm’s markets and cultures understand the need for an innovation strategy for the family firm to survive and prosper but at the same time know just how much risk they can take to ensure survival (Miller, Wright, Le Breton-Miller & Scholes, 2015). Their controlling position qualifies a family CEO to act parsimoniously in the interests of the family first; the discretion afforded by their position allows them to personalize business activity; and together these conditions enable the family CEO to deploy particularistic decision criteria in productive (and if required, in opportunistic) ways given the clear oversight of the overall strategic picture of the firm available to them. These advantages should facilitate decisive seizure of opportunities that would be difficult for non-family managers who would have to justify their actions to a wider audience. CEOs can therefore have discretion and control to make decisions in a more planned way (parsimony) or in a more improvised way (opportunistic) but can often be entrenched and thus likely to favour exploitation over exploration. Thus:

\[H1a. \text{The presence of a family CEO in a family firm is negatively associated with attaching importance to an explorative innovation strategy.}\]

\[H1b. \text{The presence of a family CEO in a family firm is positively associated with attaching importance to an exploitative innovation strategy.}\]
Debate on board chairs tends to revolve around public firms and whether the CEO is also the Chair. Negative consequences may then ensue for the functioning and independence of the board (Dey, Engel & Liu, 2011). In family firms, the CEO and Chair may also be the same person but in second generation family firms it is often the founder who has made way for an incoming CEO by becoming the Chair. The Chair can bring much-needed expertise and advice to the CEO and board as a whole. Family chairs who are former family CEOs may still have the drive and desire to innovate and can, therefore, ensure that appropriate importance is attached to innovation strategy. Allied with a longer-term orientation similar to the family CEO, they are likely to see the need to maintain explorative and exploitative innovation for the firm to survive (Miller, Wright, Le Breton-Miller & Scholes, 2015). Like the family CEO, the family Chair too understands that strategic activity is undertaken with family wealth, creating parsimony as their interests will be more closely aligned to the CEO and family (an exploitative innovation strategy); but they possess personalism of authority like the family CEO and can exercise discretion to enable the family firm to make opportunistic investments to advance its wealth (an explorative innovation strategy). They are capable of both planned and improvised decision making. Thus:

**H2. The presence of a family Chair in a family firm is positively associated with attaching importance to (a) an explorative innovation strategy and (b) an exploitative innovation strategy.**

The presence of independent directors may also influence innovation strategy in family firms. Such directors can bring much-needed human and social capital that professionalizes some
of the strategic decision-making of family firms regarding investment into areas that transcend planned decision-making and associated cautious investments (Chen & Hsu, 2009). Instead, they may encourage a more improvised decision-making approach in order to seize new opportunities, commensurate with an explorative innovation strategy. Without these independent directors, and when boards are too dominated by family members in proportional terms, innovation may be stifled as the tendencies towards parsimony, personalism, and particularism and planned decision making will inhibit their ability to accumulate intangible skills and develop the routines necessary to coordinate novel innovation activity in a timely manner (Kogut & Zander, 1992). This tendency of family dominant boards firms to be parsimonious may inhibit the desire for a more radical explorative innovation strategy, but may not affect incremental or exploitative innovation to the same degree. Decision-making on family dominated boards is, therefore, more likely to be planned as this does not disrupt parsimony. Thus:

**H3a. The proportion of family members on the board of a family firm is negatively associated with attaching importance to an explorative innovation strategy.**

**H3b. The proportion of family members on the board of a family firm is positively associated with attaching importance to an exploitative innovation strategy.**

**Family Management and Innovation Strategy**

Too many family members in the top management team (TMT) may imply the predominance of an internal focus that could limit access to external information and perspectives (De Massis, Kotlar, Campopiano & Cassia, 2015). This may result in reduced search breadth (Classen, van
Gils, Bammens & Carree, 2012). It also suggests possible nepotistic appointments (Miller et al., 2007) and costs associated with differing objectives and conflict (Young et al., 2008). Where different family members in the TMT have different objectives for the firm, family firms can suffer personal rivalries and self-control problems that create dysfunction (Schulze, Lubatkin, Dino & Buchholtz, 2001). The consequences of these disagreements on innovation strategy may range from antipathy to hostility. When too many family members comprise the TMT, it may be easier to get agreement on less risky projects so that strategic decision-making is likely to orient towards planned and parsimonious decisions leading to an inability to invest opportunistically, because of the uncertain returns attached to explorative innovation for example, and a desire to not jeopardize present ‘success’. There may also be little or no challenge to family-centered non-economic goals, which may not be in the best interest of the long-term survival of the firm (Zellweger, Nason, Nordqvist & Brush, 2013). This situation may detract importance away from an explorative innovation strategy where risks to family wealth are higher, favoring an exploitative innovation strategy instead. Thus:

*H4a. The proportion of family members in the TMT of a family firm is negatively associated with attaching importance to an explorative innovation strategy.*

*H4b. The proportion of family members in the TMT of a family firm is positively associated with attaching importance to an exploitative innovation strategy.*

Next generations of family members willing to work in the family firm sometimes acquire experience either through working elsewhere or through formal education before joining
the business. They can also be brought into the family firm as apprentices before being given roles of greater responsibility. They often end up as part of the management teams and are associated with the governance of the firm. The involvement of the next generation before succession takes place can help to pass on the tacit knowledge of the founders and can imbue them with the ethos of the founders (Miller & Le Breton-Miller, 2006). Further, the additional resource provided by the next generation could enhance the firm’s decision to innovate exploratively and exploitatively. Next generation members are beneficial because they possess their own interests and objectives compared to other members (e.g., Young et al., 2008) and have new ideas about the direction of the firm. Next generation members lie outside the TMT such that adding next generation members can disrupt the status quo. Even though these members likely exhibit a parsimony tendency, they also have sufficient family authority to personalize activity and push for particularistic decision-making and opportunistic investments of their own. We therefore hypothesize that next generation involvement in innovative initiatives can influence decision-making in both improvised and planned ways and will particularly increase the importance attached to both explorative innovation strategy and exploitative innovation strategy respectively:

**H5.** Next generation involvement in innovation initiatives of a family firm is positively associated with attaching importance to (a) an explorative innovation strategy and (b) an exploitative innovation strategy.

Our previous hypothesis considered the next generation of family members but different, older family generations can be involved in the management of the firm and this typically can
have an effect on entrepreneurship (Kellermanns & Eddleston, 2006; Sciascia, Mazzola & Chirico, 2012; Zahra, 2005). Increasing the total number of generations involved can enable the older founding generation to guide the following generations and serve as a valuable resource for strategic direction setting. However, because family firms can limit participation in decision-making roles to a restricted group of family insiders (Carney, 2005; Demsetz & Lehn, 1985), the inclusion (or retention) of a number of generations might create conflict between generations that increases resistance to radical change by the incumbent older generation (i.e., a resistance to using a more improvised approach to decision making rather than a planned one). For example, older generation may suffer temporal biases in evaluating against investments that provide benefits in the long term (Wade-Benzoni, 2002). The tendency for parsimony encourages personal dedication to the family cause and their personalized authority combined with particularism means they have the power to disrupt the new ideas brought in by youthful next generation members and in particular those ideas that are more radical in nature. They will encourage less radical innovations such as efficiency enhancements instead. These older generations are not necessarily in the TMT but can be at various levels in the business, can have line management responsibilities, and can act as mentors to the younger generation. We hypothesize, therefore, that importance attached to explorative innovation strategy in family firms will decrease when large numbers of generations are involved in family management but that the importance attached to exploitative innovation strategy with increase:

**H6a. The number of generations involved in the management of a family firm is negatively associated with attaching importance to an explorative innovation strategy.**
H6b. The number of generations involved in the management of a family firm is positively associated with attaching importance to an exploitative innovation strategy.

Family Guardianship and Innovation Strategy

In some jurisdictions, such as the UK, trustees may be employed by family business owners to allow assets (shares) to be transferred to the trustees who are usually family owners, trusted advisers or close family friends (Scholes & Wilson, 2014). Trustees are an important governance context because, as significant shareholders, they can appoint the board of directors of the family company and have a duty to ensure that the assets of the business are managed in a way that provides maximum benefits to the family as beneficiaries (Wright, De Massis, Scholes, Hughes & Kotlar, 2016). Trustees in some of the larger family firms can also be regarded as ‘quasi-directors’ as they meet with directors regularly and therefore have significant influence over the running of the business (Scholes & Wilson, 2014). Trustees can then alter the control rights of family owners to add, direct, or dispose of the firm’s assets. By way of monitoring and exercising their own decision and control rights, trustees prevent family managers and owners from acting opportunistically. This should influence innovation strategy in which efficiency improvements or small changes in markets (exploitative innovation strategy) are encouraged to enhance profitability. The relationship of trustees with family and non-family managers, as well as other employees and family beneficiaries is complex and not well understood. Their attitude towards wealth management and wealth preservation for their beneficiaries, which is their main role, will likely make them behave (and therefore advise) in a more risk-averse way (Zellweger & Kammerlander, 2015). A more planned approach to decision making and innovation strategy is likely to follow. We would expect to see trustees advise against any major capital expenditure
including R&D spending, and against any risk-taking on new ventures without sufficient evidence of success (explorative innovation strategy) as this could diminish the wealth of the firm. The trustees’ focus on wealth management, therefore, leads to planned decision making and a more cautious approach to innovation, thus:

\textit{H7a}. The presence of trustees in a family firm is negatively associated with attaching importance to an explorative innovation strategy.

\textit{H7b}. The presence of trustees in a family firm is positively associated with attaching importance to an exploitative innovation strategy.

Family councils are set up for family members to understand the family business and for them to be part of its future. Family councils can strengthen the bond between the family and the business, and its members should be representative of the family as a whole. They involve not only family members who are actively involved in the business but also those who are shareholders but take no active part.

The role of the family council is to discuss succession planning, longer-term strategy, and goalsetting (Wright, De Massis, Scholes, Hughes & Kotlar, 2016) and to determine the overall vision for the family (Kets de Vries, 1993). As such this may have a significant influence on the impetus for an explorative innovation strategy. Additional human capital resources introduced through the family council may be further beneficial for the firm. The family council increases the likelihood that new information enters the family firm’s decision-making. Family councils can introduce and prioritize a wider range of objectives and activities and can propose new and
radical directions for their firm. This does not disrupt the tendency for parsimony since it is attuned to strategic decisions being made with regard to the family’s personal wealth. Family councils also do not disrupt the personalization of authority held by the firm’s family owners. But family councils can help increase the scope of particularistic decision-making by inserting new information into the family firm’s decision-making and strategic activity, and in this way can encourage a more improvised decision making approach with a commensurate emphasis on explorative innovation strategy. We expect that family councils support any tendency of owner managers to make longer-term investments for the greater wealth of the family and so can particularly influence the importance attached to radical rather than incremental innovations. Thus:

H8a. The presence of a family council in a family firm is positively associated with attaching importance to an explorative innovation strategy.

H8b. The presence of a family council in a family firm will have no effect on attaching importance to an exploitative innovation strategy.

Method, Data, and Analysis

Population and Sample

The lack of a consistent definition of a family firm causes great difficulty in identifying family firms for analysis (De Massis, Sharma, Chua & Chrisman, 2012). Arosa, Iturralde, and Maseda (2010) suggested that such limitations can be overcome by relying on detailed analysis of the information in databases or through surveys. We chose to rely on information generated from a
survey. Currently, and to the best of the authors’ knowledge, there is no official or dedicated database of family firms in the UK. The UK was chosen as a suitable setting to address our research question because of the high level of development of corporate governance in general (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1999) and because a significant minority of UK family firms have trustees and family councils, two of our independent variables.

We identified family firms in the FAME database (Bureau van Dijk) that were a private company with a minimum of 20 employees, owned by an ultimate owner (UO) with a minimum shareholding of UO 50.01%, and had one or more named individuals or families owning between 0.01% and 100%.

This generated 7,379 companies, only some of which were family firms. The family firms were extracted by selecting only those with two or more shareholders with the same surname. Added to this were a further 230 family firm details provided by the Institute for Family Business (their members). After checking and removing duplicates the sample contained 2,855 family firms. A postal questionnaire was sent to these 2,855 family firms across the UK between February and June 2015, and 348 usable questionnaires were returned representing a response rate of 12.2% which is very respectable for this type of survey (Newby, Watson & Woodliffe, 2003). The people who completed the questionnaires are either CEO/MD/Chairman (80%), director (15.9%), or other (4.1%).

The sample was representative of the population of 2855 firms with respect to industry sector and number of employees. For example, 24.9% of the sample was in wholesale and retail trade compared to 24.1% of the population; 9.2% of the sample was in construction compared to 11.1% of the population. In terms of the number of employees 60.6% and 21.5% of firms in the sample were medium and large respectively compared to 62.4% and 17.2% in the population.
(testing population versus sample distributions using the Kolmogorov-Smirnov test indicated no significant difference between the two). The Companies House definition of medium size (50-249 employees), and large size (250 or more employees) was used.

Dependent Variables

We operationalized innovation strategy based on items developed by He and Wong (2004). We asked respondents about the importance attached to a particular innovation strategy in their family firm. The statements developed by He and Wong (2004) divide innovation strategy into explorative and exploitative forms of innovation activity measured on a Likert scale from 1 = not important to 7 = very important. The four explorative innovation strategy statements are: 1 ‘to introduce new generations of products’, 2 ‘to extend product range’, 3 ‘to open up new markets’ and 4 ‘to enter new technology fields’. The four exploitative innovation strategy statements are: 5 ‘to improve existing product quality’, 6 ‘to improve production flexibility’, 7 ‘to reduce production cost’ and 8 ‘to improve yield or reduce material consumption’. These eight items were examined using exploratory factor analysis using SPSS (principal components analysis combined with direct Oblimin rotation). Two factors emerged: the first containing items 1-4 (exploration; Cronbach Alpha = 0.758) and the second containing items 5-8 (exploitation; Cronbach Alpha = 0.876). New composite variables were created for these new factors (Exploration and Exploitation) by summing the four items in each factor.

Independent variables

Following Anderson and Reeb (2003) and Villalonga and Amit (2006), we created a number of variables to capture the three governance contexts of family firms. For family control, we include
dichotomous variables to note whether CEO is a family member $FamCEO$ and whether the Chair is a family member $FamChair$. CEO here is in ‘control’ rather than ‘management’ since CEOs have a much higher level of control than the managers who report directly to them. These variables take the value 1 if the answer is yes and 0 otherwise. $FamBoard$ is the proportion of family members on the board (%). For family management, we have the percentage of the top management team that are family members $FamManagers$ (where these are the top managers who report directly to the CEO) and the involvement in innovation of the next generation $NextGenInvolve$ on a Likert scale of 1 not involved to 7 fully involved based on the question ‘To what extent are the next generation family members actively involved in innovation?’ While next generation family members are not always ‘management’ the ones who are involved in innovation are more likely to be so. $Generations$ was measured as the total number of generations involved in the management of the firm. The profitability of a firm may determine its innovative behaviour so we checked for this by including the return on assets (ROA) in the year 2014, from the FAME database, as an additional control variable. For family guardianship, we used two dummy variables that indicate whether there are trustees ($Trustees$) and whether the family firm has a family council ($Family Council$). These variables take the value 1 if the answer is yes and 0 otherwise.

*Control variables*

We control for family firm size as this can act as a proxy-indicator for family firm resource endowments and profitability (Lee, 2006). We measured firm size as the latest $Turnover$ of the family firm from the FAME database; this was either 2013 or 2014. We also controlled for generational effects on family firm financial performance. Family firm characteristics can vary
over generations and these variations can influence family firms’ financial performance (Chrisman, Chua, Pearson & Barnett, 2012; Miller, Le Breton-Miller, Lester & Cannella, 2007). To determine whether family firm behaviors vary depending on the generation currently managing them, we created the dummy variable *FirstGen*. The variable takes the value 1 if the family firm is managed by the first generation and 0 otherwise. The equity stake held by the family may have a bearing on performance and is represented by the variable *FamOwnership*. Families own 50% or more of the equity in our sample firms. We created the variable *IndManuf* to control for whether the family firm was classified as a manufacturing firm (1 = yes) or not (0 = no). Whether the firm was a technology firm or not according to the NACE rev. 2 and Eurostat categorizations was also tested but was not significant. *FemBoard* as the proportion of females on the board (%) is also included since their presence has been associated with family firm survival (Wilson et al., 2013). Finally, a measure of age was included to test for the dependency of either type of innovation on the age of the firm (De Massis et al., 2014). *Age* is a continuous variable representing years from the date of incorporation to April 2016.

Tables 1a and 1b provide an overview of the descriptive statistics regarding our sample of 348 family firms. In all these firms, the ‘family’ is the ultimate shareholder, with ownership rates ranging from 50-100% (the mean was 96% and three-quarters of the firms were 100% owned by the family). This significant proportion of family equity ownership is not unexpected for family firms. Turnover ranges from £740,000 to £13 billion. The majority of firms are first generation (62.3%) and are manufacturing firms (75.3%). In terms of the board, 80% have a family CEO, 89% have a family member as Chair, and 61% of board members are family members. In terms of board size the majority of firms have between 2 and 8 people (92.8%) with only six firms (1.7%) without a board (i.e. they responded saying one board member). These boards are not
passive boards as 344 firms’ boards are fully involved in ‘Making decisions on long-term strategies and main goals’ and ‘Actively initiating strategy proposals’. In terms of firm management, 20% of the top management team are family members and the average response for the next generation involvement in innovation is 3.3 which is just below the average (3.5), indicating less involvement rather than more. In terms of the number of generations involved in the management of the firm, the number ranges from 1 to 4 and the mean is 1.7. When looking at the family guardianship, 9% of firms have trustees and 17% have a family council.

Results
The relationships between family firm innovation and the independent variables are examined using exploratory factor analysis combined with hierarchical linear regression. Table 2 reports the correlations among our study variables where the innovation variables are the composite variables relating to the different types of innovation strategy. The correlations among the study variables are generally low, the highest being 0.46. We also tested for multicollinearity and common method bias. The maximum VIF value between the independent variables is 1.71 and the maximum condition index is 47.2. This condition index is higher than the recommended value of 30 but is associated with only one variable with a variance proportion greater than 90% (where association with two or more variables would indicate a problem). These two results indicate, therefore, that multicollinearity is not a major problem in this sample (Hair et al., 1998). The Harman one-factor test for common method bias among the variables in the factor analysis indicates that the first factor accounts for 48.5% of the variance indicating that, as it is
less than 50%, common method bias is not a problem in this sample (Podsakoff & Organ, 1986). Hausman tests for endogeneity were run for all eight independent variables using the additional ‘instrumental’ variables in the sample and indicated that endogeneity was not a major problem (Davidson & MacKinnon, 1993). We tested eighteen instrumental variables (from our questionnaire) including the total number of top managers, whether the CEO was male, the presence of an operations board, the presence of a family office, questions related to the ability and willingness of the family, and finally the family goals. We found no omitted variable bias. Partial confirmatory factor analysis (PCFA) gives somewhat mixed results with a comparative fit index of 0.95, a normed fit index of 0.94, and a Tucker-Lewis Index of 0.9 where these indices should be 0.95 or higher (Gignac, 2009). As this partial factor analysis yields some issues, confirmatory factor analysis is not justifiable (Gignac, 2009).

Table 3 presents the regressions for the independent and control variables on the two composite dependent variables derived from factor analysis relating to explorative and exploitative innovation strategy. Control variables were entered in the first block of the hierarchical multiple regression. The second block examined the direct effects of the independent variables associated with the family decision control, family decision management, and family guardianship. Models 1 and 2 relate to explorative innovation strategy while models 3 and 4 relate to exploitative innovation strategy. Model 1 is significant (p<0.01) with an R-square of 0.09. The control variable Age (p<0.01) is negatively related to explorative innovation strategy. IndManuf (p<0.001) and FemBoard (p<0.05) are positively related to explorative
innovation strategy and these remain so in Model 2. Model 2 is significant (p<0.01) with an increased R-square to 0.194. For our hypotheses pertaining to explorative innovation strategy, the family management variable NextGenInvolve (p<0.01) is positively related giving support for H5a and there is some weak evidence that Generations (p<0.1) is negatively related, supporting H6a. The family guardianship variable Family Council (p<0.01) is positively related to explorative innovation strategy giving support to H8a. No support was found for an effect by a family CEO (H1a), a family chair (H2a), the proportion of family members on the board (H3a), the proportion of family members in the TMT (H4a) or the presence of trustees (H7a) on explorative innovation strategy.

INSERT TABLE 3 ABOUT HERE

Examining the two models for exploitative innovation strategy, Model 3 is significant (p<0.05) with an R-square of 0.069 and IndManuf (p<0.01) is positively related to exploitative innovation strategy. This remains the case in Model 4. Model 4 is significant (p<0.05) with a marginally increased R-square of 0.098. There is weak evidence that the family management variable NextGenInvolve (p<0.1) is positively related to exploitative innovation strategy, giving some support to H5b. No support was found for an effect by a family CEO (H1b), a family chair (H2b), the proportion of family members on the board (H3b), the proportion of family members in the TMT (H4b), the number of generations involved in the management of the firm (H6b), the presence of trustees (H7b) on explorative innovation strategy. Family council (H8b), as predicted, had no effect.
Discussion

We examine the effects of three key governance contexts—family control, family management and family guardianship—on explorative and exploitative innovation strategies among family firms. For explorative innovation strategy, our results indicate that family management has beneficial and deleterious effects. In particular, next generation involvement in innovation has a positive effect on the importance attached to explorative innovation strategy; and explorative innovation strategy is increased if fewer generations are involved in the management of the firm, possibly due to the otherwise increasing levels of destructive conflict likely with increasing numbers of family decision-makers (e.g., Kotlar & De Massis, 2013). With respect to family guardianship, family firms with a family council are more likely to engage in explorative innovation.

Our research suggests, therefore, that family firms prioritize explorative innovation strategy when there is a family council, when the next generation is involved in innovation, and when the generations involved in the management of the firm are limited. These findings are important since they suggest that a family firm that designs governance systems mindful of these conditions can shape strategic priorities towards explorative innovation. The more ‘traditional’ dimension of family firm governance, namely family control and the CEO, does not have a noticeable effect on the importance attached to explorative innovation strategy.

On the other hand, we find very limited evidence that governance arrangements influence exploitative innovation strategy, with only some weak evidence that next generation involvement plays a positive role. Exploration and exploitation are separate innovation strategies and different in nature, suggesting that balancing exploration and exploitation (i.e., attaining ambidexterity in innovation strategy; Hughes et al., 2010; Morgan and Berthon, 2008) can pose significant
challenges to the firm. Such issues are likely to be more prominent in family firms (Moss, Payne & Moore, 2014), especially due to the existence of multiple short-term and long-term family goals (Patel & Chrisman, 2014). We find that alternative governance contexts increases emphasis for specific innovation strategies, but as we find that family management (in the form of the involvement of next generation family members) spans both types of innovation, this appears to be an important factor that might help family firms to balance explorative and exploitative innovation strategies. We offer a contribution to the emerging literature on innovation ambidexterity in family firms to this end (Allison, McKenny & Short, 2014, Gedajlovic, Cao & Zhang, 2012) and reveal governance to be a condition in need of further examination.

The fact that only one of our governance dimensions affected the importance attached to exploitative innovation strategy might be explained by this mode of innovation being something of a default mode, generally necessary for short-to-medium term survival. Prior studies (Wright et al., 2016) report a general tendency among UK family firms to favor this innovation strategy, and a lack of subsequent variance may then explain why our findings for exploitative innovation strategy are largely non-significant or inconclusive. In many ways, this is beneficial because firms find it mostly difficult to engage in an explorative strategy (Chang and Hughes, 2012; He and Wong, 2004; March, 1991; Tushman and O’Reilly, 1996). As such, we can conclude that altering the governance context of the family firm is one way to reshape innovation strategy towards one favoring exploration. Until now, research on family firm governance has prioritized its effects on performance or general strategic decision making and our findings bring its effects on innovation strategy decision making in particular into sharp focus.

This is the first empirical study to examine several new aspects of governance and their effects on innovation strategy, in particular in relation to board heterogeneity and the governance
influence of trustees and family councils. As such, we contribute to the recent debate about the influence of trustees and family councils on family firm outcomes (Scholes & Wilson, 2014, Zellweger & Kammerlander, 2015) and offer important insights about the drivers and consequences of heterogeneity in family firms (Chua, Chrisman, Steier & Rau, 2012). We extend this important body of work by demonstrating the effects alternative governance contexts have on the importance family firms attach to particular innovation strategies. As He and Wong (2004) observe, “exploration versus exploitation should be used with reference to a firm’s ex-ante strategic objectives in pursuing innovation [rather than] used in an ex-post outcome sense” (p.485). Appreciating how the governance context of a family firm motivates or steers innovation strategy towards specific innovation activities, by influencing the way decision-making is approached, is a theoretical crucial step in understanding why some family firms innovate differently to each other.

We further contribute to the literature by helping address calls for more context-dependent research on family firms (Wright, Chrisman, Chua & Steier, 2014) by revealing the effects of different governance contexts on innovation activity. Therein, we address a second call for research on heterogeneity among family firms in relation to their innovative behavior (Chrisman & Patel, 2012). We help explain why some family firms generate different innovation outcomes to each other and locate this in their governance arrangements and how these (re)shape the improvised or planned decisions built on their tendencies around parsimony, personalism, and particularism in family firms for the importance attached to one innovation strategy over another. In doing so, we contribute to the governance view of family firms (Carney, 2005) by theorizing and empirically demonstrating the effects of family decision control, family
management and family guardianship on innovation strategy as a specific form of strategic action requiring a specific type of decision making.

Limitations and Future Research

This study has limitations that open avenues for further research. Our findings are specific to the U.K. context and may not be generalizable to other countries that do not share these contextual characteristics. The measures chosen for innovation strategy are taken from previous literature but it is possible that they have not captured all possible dimensions of explorative and exploitative innovation strategy or of service versus product innovation; this is an area that future research on family firms could address and consider whether scales unique to family firms are necessary. As our focus here was on innovation strategy we have not measured the outcomes of these strategies such as the number of patents created or R&D spend, nor have we assessed the performance effects of these strategies.

Research into the effects of the different governance contexts on successful innovation is warranted. A distinction must be drawn between the effects of specific factors in motivating innovation versus its subsequent commercialization (Kyriakopoulos, Hughes & Hughes, 2016). Even though one governance context may discourage importance from being attached to an innovation strategy, it does not mean that it cannot assist in its successful launch or commercialization. To what extent the parsimony, personalism and particularistic tendencies of family firm governance contexts affect this second phase of innovation activity is a question that needs to be answered to truly appreciate the performance consequences of the different governance contexts.
The role of women in the boardroom is rarely discussed in the family firm literature but our control variable results suggest the need for further research in this area. We know that women have an effect on firm survival (Wilson, Wright & Scholes, 2013) and from this study a surprisingly positive association with explorative innovation strategy when women board members are oftentimes considered to be more risk averse. Further research may seek to examine whether female presence on the board is also associated with innovation that is more successful or whether their contribution to explorative innovation is one reason for the reduction in bankruptcy risk indicated by Wilson, Wright & Scholes (2013). Female presence on the board can bring additional perspectives that might otherwise be missing (Brammer, Millington & Pavelin, 2009; Jehn, Northcraft & Neale, 1999). The effect of women on the board in reducing conflict (Huse, Nielsen & Hagen, 2009), for example, may create the space for explorative innovative activity as our control variable results suggest.

Although we find a positive link with innovation, the role of the family council is not well-understood. Family councils are heterogeneous, so future research could focus on understanding how they are constructed and how they affect innovation performance. In addition, since about one-fifth of family firms have family councils, it is important that this governance context is not overlooked. Family firms’ tendencies for parsimony, personalism, and particularism imply conditions that favor the preservation and careful growth of family wealth but with scope for opportunistic investments as they arise. There is an overlap here with the socioemotional wealth concept (e.g., Gomez-Mejia et al., 2007). To further understand how governance contexts affect family firm decision-making, the attachment of importance to an innovation strategy, and innovation outcomes, it would be worthwhile to explore the goals of the family firm and their socioemotional wealth considerations in relation to governance.
We do not find a relationship between trustees and innovation strategy but nevertheless their role in the operation of family businesses is not well-understood. Future research should explore the heterogeneity of trustees and therefore the impact the different types of trustees may have on family firms.

Conclusion

We answer an important research question: are different governance contexts associated with different types of innovation strategy in family firms? We address calls for more context-dependent research on family firms by considering the multi-layered governance contexts exhibited by family firms and their effects on what innovation activities emerge as important to the family firm. Our work also addresses calls for more research on the heterogeneity of family firms and how this heterogeneity may account for conflicting evidence about family firm outcomes, and in particular its innovation strategy. Given that innovation is a fundamental ingredient of short- and long-term performance, we reveal that the underlying governance contexts acting on the family firm may explain why some family firms do better than others by prioritizing different innovation strategies in their business activity. We encourage future scholars to continue probing these important issues by looking at other forms of strategic decision-making vulnerable to nuances of governance.

Acknowledgements: The authors thank the Institute for Family Business in the United Kingdom for generous sponsoring the research study underpinning this paper through its IFB Research Foundation. This project led to a comprehensive report into family business entrepreneurship available from the IFB.

References


Table 1a: Descriptive Statistics of Continuous and Categorical Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploration (4 item composite)</td>
<td>317</td>
<td>4.0</td>
<td>28.0</td>
<td>19.3</td>
<td>5.6</td>
</tr>
<tr>
<td>Exploitation (4 item composite)</td>
<td>305</td>
<td>4.0</td>
<td>28.0</td>
<td>19.9</td>
<td>6.4</td>
</tr>
<tr>
<td>Turnover/£1000</td>
<td>334</td>
<td>740.0</td>
<td>13063000.0</td>
<td>117327.2</td>
<td>765684.8</td>
</tr>
<tr>
<td>Age/Years (in May 2016)</td>
<td>348</td>
<td>2.6</td>
<td>117.0</td>
<td>36.2</td>
<td>25.8</td>
</tr>
<tr>
<td>FamOwnership/%</td>
<td>345</td>
<td>50.0</td>
<td>100.0</td>
<td>96.0</td>
<td>9.4</td>
</tr>
<tr>
<td>FemBoard/%</td>
<td>328</td>
<td>0.0</td>
<td>100.00</td>
<td>22.9</td>
<td>21.5</td>
</tr>
<tr>
<td>ROA(2014)/%</td>
<td>332</td>
<td>-26.76</td>
<td>40.32</td>
<td>7.3</td>
<td>8.2</td>
</tr>
<tr>
<td>FamBoard/%</td>
<td>342</td>
<td>0.0</td>
<td>100.0</td>
<td>60.6</td>
<td>30.4</td>
</tr>
<tr>
<td>FamManagers/%</td>
<td>338</td>
<td>0.0</td>
<td>100.0</td>
<td>20.2</td>
<td>27.0</td>
</tr>
<tr>
<td>NextGenInvolve</td>
<td>333</td>
<td>1.0</td>
<td>7.0</td>
<td>3.3</td>
<td>2.3</td>
</tr>
<tr>
<td>Generations/no.</td>
<td>340</td>
<td>0.0</td>
<td>4.0</td>
<td>1.7</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Table 1b: Frequencies of Dichotomous Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Yes number (%</th>
<th>No number (%)</th>
<th>Total number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FirstGen</td>
<td>129 (37.7)</td>
<td>213 (62.3)</td>
<td>342 (100)</td>
</tr>
<tr>
<td>IndManuf</td>
<td>86 (24.7)</td>
<td>262 (75.3)</td>
<td>348 (100)</td>
</tr>
<tr>
<td>FamCEO</td>
<td>276 (79.5)</td>
<td>71 (20.5)</td>
<td>347 (100)</td>
</tr>
<tr>
<td>FamChair</td>
<td>303 (88.9)</td>
<td>38 (11.1)</td>
<td>341 (100)</td>
</tr>
<tr>
<td>Trustees</td>
<td>29 (8.6)</td>
<td>310 (91.4)</td>
<td>339 (100)</td>
</tr>
<tr>
<td>Family Council</td>
<td>57 (16.6)</td>
<td>286 (83.4)</td>
<td>343 (100)</td>
</tr>
</tbody>
</table>
Table 2: Pearson Correlations Between all Variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Turnover</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Age</td>
<td>.113*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. FirstGen</td>
<td>-.032</td>
<td>-.253**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. FamOwnership</td>
<td>-.178**</td>
<td>-.035</td>
<td>-.100</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. IndManuf</td>
<td>-.046</td>
<td>.164**</td>
<td>-.099</td>
<td>-.075</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. FemBoard</td>
<td>.045</td>
<td>-.120*</td>
<td>-.028</td>
<td>.140*</td>
<td>.012</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. ROA(2014)</td>
<td>.011</td>
<td>-.011</td>
<td>.070</td>
<td>.051</td>
<td>.028</td>
<td>.122</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. FamCEO</td>
<td>-.153</td>
<td>-.133</td>
<td>.040</td>
<td>.209</td>
<td>.007</td>
<td>.082</td>
<td>.042</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. FamChair</td>
<td>-.156</td>
<td>-.057</td>
<td>.031</td>
<td>.188</td>
<td>.008</td>
<td>.113</td>
<td>.132</td>
<td>.212</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. FamBoard</td>
<td>-.115</td>
<td>-.060</td>
<td>-.054</td>
<td>.332</td>
<td>-.036</td>
<td>.415</td>
<td>.110</td>
<td>.382</td>
<td>.293</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. FamManagers</td>
<td>-.018</td>
<td>.092</td>
<td>-.073</td>
<td>.077</td>
<td>-.035</td>
<td>.160</td>
<td>.075</td>
<td>.144</td>
<td>.078</td>
<td>.300</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. NextGenInvolve</td>
<td>-.008</td>
<td>-.063</td>
<td>-.145</td>
<td>.057</td>
<td>-.010</td>
<td>.103</td>
<td>.046</td>
<td>.150</td>
<td>.138</td>
<td>.206</td>
<td>.305</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Generations</td>
<td>-.048</td>
<td>.034</td>
<td>-.360</td>
<td>-.175</td>
<td>.006</td>
<td>.011</td>
<td>.041</td>
<td>.175</td>
<td>.165</td>
<td>.186</td>
<td>.266</td>
<td>.408</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Trustees</td>
<td>.029</td>
<td>.030</td>
<td>-.034</td>
<td>.027</td>
<td>.022</td>
<td>-.115</td>
<td>-.043</td>
<td>-.081</td>
<td>.039</td>
<td>-.072</td>
<td>.040</td>
<td>-.009</td>
<td>.090</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Family Council</td>
<td>.033</td>
<td>.145</td>
<td>-.145</td>
<td>.116</td>
<td>.037</td>
<td>-.110</td>
<td>.042</td>
<td>-.089</td>
<td>-.073</td>
<td>-.085</td>
<td>.150</td>
<td>.036</td>
<td>.116</td>
<td>.094</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Exploration</td>
<td>.046</td>
<td>-.151</td>
<td>.076</td>
<td>-.001</td>
<td>.176</td>
<td>.144</td>
<td>.053</td>
<td>-.008</td>
<td>.097</td>
<td>.031</td>
<td>.011</td>
<td>.264</td>
<td>-.015</td>
<td>.022</td>
<td>.094</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>17. Exploitation</td>
<td>.040</td>
<td>-.048</td>
<td>-.028</td>
<td>.038</td>
<td>.222</td>
<td>.014</td>
<td>.075</td>
<td>.048</td>
<td>.051</td>
<td>.057</td>
<td>.061</td>
<td>.153</td>
<td>.123</td>
<td>.043</td>
<td>.066</td>
<td>.460</td>
<td>1</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).
Table 3: Effects of Family Control (Boards), Family Management (Family Managers) and Family Guardianship (Trustees/Councils) on Innovation

<table>
<thead>
<tr>
<th>Control Variables</th>
<th>Exploration β</th>
<th>Exploitation β</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Turnover</td>
<td>0.083</td>
<td>0.075</td>
</tr>
<tr>
<td>Age</td>
<td>-0.165**</td>
<td>-0.151**</td>
</tr>
<tr>
<td>FirstGen</td>
<td>0.056</td>
<td>0.078</td>
</tr>
<tr>
<td>FamOwnership</td>
<td>0.011</td>
<td>0.007</td>
</tr>
<tr>
<td>IndManuf</td>
<td>0.214**</td>
<td>0.208**</td>
</tr>
<tr>
<td>FemBoard</td>
<td>0.124*</td>
<td>0.134*</td>
</tr>
<tr>
<td>ROA(2014)</td>
<td>0.025</td>
<td>0.008</td>
</tr>
</tbody>
</table>

Independent Variables

<table>
<thead>
<tr>
<th>Family Control Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>FamCEO</td>
</tr>
<tr>
<td>FamChair</td>
</tr>
<tr>
<td>FamBoard</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family Management Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>FamManagers</td>
</tr>
<tr>
<td>NextGenInvolve</td>
</tr>
<tr>
<td>Generations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Family Guardianship Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trustees</td>
</tr>
<tr>
<td>Family Council</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>R Square</th>
<th>Model Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.09</td>
<td>0.000</td>
</tr>
<tr>
<td>0.194</td>
<td>0.000</td>
</tr>
<tr>
<td>0.069</td>
<td>0.005</td>
</tr>
<tr>
<td>0.098</td>
<td>0.016</td>
</tr>
</tbody>
</table>

# p<0.1 * p < .05; ** p < .01 Regression coefficients are standardized