CEOS' SUBJECTIVE FACTORS AND FIRM BEHAVIORS

A DISSERTATION
SUBMITTED TO THE GRADUATE SCHOOL OF COMMERCE
OF THE WASEDA UNIVERSITY
BY

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IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

Hajime Katayama, Adviser

April, 2019

Acknowledgement

First, I am deeply indebted to my adviser, Dr. Hajime Katayama, for his untiring support and guidance over the years. It would be an understatement to say that I could not have completed graduate school nor written the dissertation without his support. He treated me with fairness and kindness and always demonstrated concern for my well-being, and that of my family. Moreover, he provided timely guidance and advice whenever I faced challenges with my research, while eating cheesecake at Good Morning Café. His humility, friendliness, thoughtfulness, and humor made working with him a truly enjoyable experience. It is quite certain that he is one of the most important guideposts for my future academic career.

I also would like to thank my co-adviser, Dr. Junichi Yamanoi, for giving me constructive feedback and suggestions for my dissertation. From him, I learned to be ambitious, and pursue big ideas. He demonstrated his confidence in me by letting me write, work with data, and be his coauthor on research projects. Studies 3 and 4 in this dissertation would not have been in their current form without his valuable suggestions in the earlier stages of the project.

I would also like to thank my committee members, Professor Shinichi Ukai and Dr. Jin-ichiro Yamada. Shinichi reminded me to stay informed about important real-world topics. I benefited greatly from Jin-ichiro's comments, which were full of important academic insights. I would like to express my deep and sincere gratitude to Dr. Toshi, H. Arimura, who encouraged me to pursue this degree. He took me under his wing early on, and gave me my first RA job, allowing me to cut my teeth on academic work. I credit him with introducing me to a career in academics.

I extend my thanks to the entire faculty of the Graduate School of Commerce, Waseda University and especially the support of the Research Institute of Business Administration. I would

like to express my warm thanks to Dr. Koichi Takase and Dr. Hiroo Sasaki who supported me, and without whom it would have been impossible to accomplish the data collection process. The entire staff of the Graduate School of Commerce and fellow Ph.D. students have also been extremely supportive of me in this journey. A huge thanks to them for their support and encouragement throughout these enjoyable years of being a doctoral student.

Finally, I cannot express enough gratitude to my family for their unconditional love, support, and sacrifices. Without them, this dissertation would never have been written. My wife, Atsuko, who is a pillar of strength for our family, has been my greatest supporter, always encouraging and helping me when I felt defeated and anxious. I appreciate you more than you imagine. Thank you, also, to my daughter, Mio. She always cheers me up with her pure heart, laughter, and contagious smile. Thank you!

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Chapter 1: Introduction

Because CEOs can affect the behaviors and performance of firms (Finkelstein, Hambrick, & Cannella, 2009; Hambrick, 2007), a great deal of research in the field of management has documented the relationship between CEOs' psychological status and organizational behavior (e.g., Chatterjee & Hambrick, 2007; Hayward & Hambrick, 1997; Ou, Waldman, & Peterson, 2014). However, knowledge accumulated in other fields of social science has, by no means, been fully utilized in understanding the influence of CEOs on firm behavior. For example, in economics and sociology, subjective factors such as individual expectations and values are regarded as important factors in explaining individual behaviors. To the extent that firms' strategic decision-making and performance can be predicted by the characteristics of their CEOs (Hambrick & Mason, 1984), subjective factors of the CEO may have significant effects on firm behavior. However, in traditional management literature, these factors are either measured by secondary data that can easily be observed or are totally omitted from the analysis. In this dissertation, we directly observed subjective CEO expectations or values that had not been observed in previous studies, by using approaches to explain individual behaviors that have been used in other fields of social science. Utilizing the data on these expectations or values, we attempted to understand more accurately, the factors that have been regarded as important in management literature and grasp the influence of the factors that have not been accounted for in previous studies.

Till date, in other fields of social science, research has examined individual expectations and values as factors explaining their behavior. For example, in economics, since the 1990's, researchers have pointed out the importance of measuring the individual's probabilistic expectations to explain their choice behavior (Manski, 2004). In particular, when individuals make decisions under uncertainty, it has been revealed that individuals' expectations have high

explanatory power with regards to their choice behavior (Gan, Gong, Hurd, & McFadden, 2015; Hurd, Smith, & Zissimopoulos, 2004; Spaenjer & Spira, 2015). Moreover, when lifespan and health conditions matter to the individual's decision, subjective expectations are regarded as having a particularly important influence on individuals' decision (Dominitz & Manski, 1996; Giustinelli & Manski, 2018; Manski, 2004). In sociology, existing research shows that personal values, especially religious values, have a considerable influence on individual ethics-related behavior such as marriage, divorce, or crime (Bainbridge, 1989; Cochran & Akers, 1989; Evans, Cullen, Dunaway, & Burton, 1995; Heaton & Pratt, 1990; Lehrer & Chiswick, 1993).

In this dissertation, we have three research questions. The first question is "Why and how do CEOs' subjective career horizon affect long-term investment behavior?" CEOs' career horizons can be referred to as their expectations of career security over career termination (i.e., retirement). Extant studies reveal that when a CEO's career horizon is short, he/she tends to avoid long-term investment that will benefit the firm, and to instead make short-term investments that will benefit him- or herself (Conyon & Florou, 2006; Matta & Beamish, 2008). These studies assume that all CEOs uniformly retire at a given age and measure the career horizon using the difference between the uniform retirement age and the CEO's age. Therefore, these studies have a limitation, in that they do not deal with heterogeneity in career horizons amongst CEOs who are of the same age. Furthermore, measuring career horizons in this way causes a more serious challenge, in that it is impossible to distinguish between the effects of CEOs' career horizon, and that of their age. Study 1 resolves these issues by simultaneously introducing to the model, CEO subjective career horizon, and CEO age.

The second research question is "Why and how do the expectations of managerial succession by family-owned firm CEOs influence their investment time horizons?" This research

question is of particular importance in the context of family businesses. In family business research, the transgenerational succession, especially within the family, is considered to be one of the most important issues (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007). Accordingly, numerous publications on the family businesses concentrate on the characteristics of the successor, the succession process, and the influence of the successor's selection on the firm's strategic decision-making and performance (Herrmann & Datta, 2002; Shen & Cannella Jr, 2002). However, extant research has not sufficiently taken into consideration the possibility that the existence of a successor influences the decision-making of the incumbent CEO. Moreover, even when there is no agreed-upon successor, the CEO's expectation that his/her successors will be found, may affect their firm behaviors. Taking this perspective, Study 2 investigates the ways in which CEOs' expectations of managerial succession affect decision-making related to long-term investments, by directly measuring the subjective probability that a successor will be found.

The third research question is "How does a CEO's religiosity influence his/her firm's environmental proactivity?" Although previous studies find antecedents of corporate environmental proactivity from diverse theoretical perspectives, their explanations are restricted mainly to firm or institutional characteristics. Little research sheds light on the micro-foundations of environmental proactivity (Aguinis & Glavas 2012). Study 3 regards CEOs' religiosity as a possible factor in corporate environmental proactivity, given that individual religiosity evokes individual morality. Many previous studies that have dealt with the relationship between religion and individual behavior have used religious affiliation as an independent variable. However, there may be differences in religious views, even amongst members of the same religion. In the field of environmental economics, a recent study indicates that even after controlling for their religious affiliations, an individual's religiosity affects his/her environmental behaviors (Owen & Videras,

2007). This study measures CEOs' religiosity in the same way as Owen and Videras (2007), and thereby clarifies the influence of CEOs' religiosity on environmental proactivity.

In this dissertation, we analyze small and medium-sized enterprises (SMEs) to answer these research questions. Because SMEs face a variety of restrictions such as inadequate resources, a limited ability to raise funds, and a shortage of human resources (Welsh & White, 1981), the CEO plays a significant role in strategic decision-making (Lubatkin et al., 2006). Therefore, SMEs provide a suitable context to examine the influence of CEOs' subjective factors on firm behavior. Furthermore, by targeting SMEs, it is easier to obtain a response to questionnaires directly from CEOs. In the case of large companies, even when designating the CEO as a respondent, it is difficult to actually obtain a response from the CEO, him- or herself. Hence, with regards to this point, targeting SMEs is a clear advantage for this dissertation.

Each study of this dissertation has theoretical and methodological contributions. Study 1 addresses the methodological challenge by directly measuring the CEO's subjective career horizon through a survey. Then, it is possible to distinguish the effects of the CEO's age, and that of his/her career horizon on long-term investments, suggesting that previous studies have underestimated the effects of the career horizon. Put differently, the impact of the opportunistic behavior of CEOs approaching retirement, on long-term investment behavior, may be even greater than what is indicated in existing studies. Regarding theoretical implications, Study 2 contributes to family firm succession literature. Although organizational researchers have indicated that the beliefs of top managers are predictors of corporate behavior, few studies have theoretically and empirically identified the beliefs that have an impact, and the ways in which they affect corporate behavior. To bridge this gap in the literature, Study 2 successfully applies the concept of socioemotional wealth to explain the ways in which a family firm's CEO's expectations of managerial succession

determine the choice of investment time horizons, by varying the periods over which firms evaluate investments. Study 3 is the first attempt to verify the relationship between CEOs' personal perspective on religion, and the environmental behavior of the firm. In this regard, this study contributes significantly to the development of existing CSR research. Moreover, while CEOs' personal perspective on religion may encourage environmentally conscious behavior, by demonstrating that this effect will vary depending on the degree of discretion of the CEO in decision-making, we provide a new theoretical perspective.

Chapter 2: Succession in Family Businesses: A Review of the Research

Introduction

A majority of businesses around the world are family-owned or controlled (Chang & Shim, 2015; La Porta, Lopez-de-Silanes, & Shleifer, 1999; Waldkirch, Nordqvist, & Melin, 2018). For example, according to the Japanese National Tax Agency's "Outline of Results of Statistical Survey for FY2016", 96.5% of firms in Japan are family-owned, and the smaller a firm's capital, the more it tends to be family-owned. In particular, more than 90% of firms with less than 100 million yen in capital are family-owned. The same trend is seen in Western countries as well (Amit, Krivoy, Mansbach-Kleinfeld, & Zalsman, 2014). Accordingly, research on family firms has expanded greatly over the past 30 years. For example, 868 articles on family firms were published over the 25-year period between 1971 and 1995 (Sharma, Chrisman, & Chua, 1996), but almost the same number, 734, were published in 47 journals over the 15-year period from 1996 to 2010 (De Massis, Frattini, & Lichtenthaler, 2012).

Studies on family firms have traditionally focused on the differences between the performance of family firms and that of non-family firms. In many of these studies, family firms were assumed to be homogeneous (Chua, Chrisman, Steier, & Rau, 2012). However, more recent studies have focused on the factors that lead to differences among family firms, rather than the differences between the two types of firms. Although extant research indicates many factors causing heterogeneity among family firms, the issue of succession has attracted significant interest from family business researchers.

Transgenerational value creation through succession within a founder family is a critical matter for family firms (Gersick, Gersick, Davis, Hampton, & Lansberg, 1997). Because of the limited number of candidates for succession within a family, familial relationships between the

incumbent CEO and potential successors, and the emotional factors involved, succession in family firms is more complex than CEO succession at non-family firms. This is why some have noted that succession and its impact have greater import for family firms (Le Breton-Miller, Miller, & Steier, 2004).

This study presents an overview of the research on succession issues in family firms, so as to shed light on the research trends in recent years. In the first step, we identified the international journals on management and economics. We chose 50 publications with the highest impact factor (IF), which is a metric that shows the frequency of citation and a journal's degree of influence. In addition to these, we also included two other journals—Entrepreneurship Theory and Practice, and the Journal of Business Venturing—which were included in the Financial Times 50 list but were not in the IF top 50. Next, from the Web of Science, we extracted articles with "family firm" in their title, abstract, or keywords, and from this group, we extracted those articles containing the word "succession". Finally, we also added key articles that were included in the reference lists of recent review articles on succession in family firms (Daspit, Holt, Chrisman, & Long, 2016; Nelson & Constantinidis, 2017; Nordqvist, Wennberg, & Hellerstedt, 2013), which are not published in the above journals.

Research questions in family business studies dealing with succession issues can be classified into three areas: the factors that affect successor selection, the condition of successful succession, and the impact of succession on subsequent firm performance. Below, we first review the definitions of family firm and the theoretical perspective in family business studies. Then, we review extant research on succession in family firms, in line with the three research questions stated above.

The Definition of Family Firm

Family business scholars have been engaged in a definitional debate. The definition most commonly used in research is a combination of share ownership, and involvement by family members. In these studies, family firms are considered to be those in which family members own a majority stake, and control management (e.g., Graves & Thomas, 2006; Kontinen & Ojala, 2011). At the same time, some research focuses on the involvement of multiple generations of family (Sharma, Chrisman, & Chua, 1997; Tan & Fock, 2001), while others focus on the perception of the CEO on whether a firm is a family firm (Davis & Harveston, 2000; Gallo & Garcia-Pont, 1996). The existence of many definitions of a family firm (Astrachan, Klein, & Smyrnios, 2002; Chua, Chrisman, & Sharma, 1999; Klein, Astrachan, & Smyrnios, 2005) makes it difficult to compare research findings. For example, Villalonga and Amit (2006) compare nine definitions of family firms and note that the relationship between family businesses and their performance varies depending on the definition.

Chrisman, Chua, and Sharma (2005) propose two basic elements which comprise the definition of a family firm. The first, named "*the components of involvement*," is based on the idea that family involvement is a sufficient condition to classify a firm as a family business. This involvement by family members is often measured by (1) the percentage of stock held by family members, (2) the number of family members involved in the management, and (3) the number of generations involved in management or ownership (Chrisman, Chua, Pearson, & Barnett, 2012). Moreover, Klein, et al. (2005) present three objective measures of family involvement: (1) the percentage of stock held by family members, (2) the percentage of family members on the board of directors, and (3) the percentage of family members on the management team.

Table 1: F-PEC Scale (Klein et al. 2005)

Power	
Percentage of family share ownership	
Percentage of family on the management team	
Percentage of family on the Board	
Experience	
What generation owns the company?	
What generation(s) manages(s) the company?	
What generation is active on the governance board?	
How many family members participate actively in the business?	
How many family members do not participate actively in the business but are interested?	
How many family members are not (yet) interested at all?	
Culture	
Family members agree with the family business goals, plans and policies.	
Family members feel loyalty to the family business.	
Your family and business share similar values	
Family members support the family business in discussions with friends, employees, and other family.	
Family members really care about the fate of the family business.	
I understand and support my family's decisions regarding the future of the family business.	
Family members are proud to tell others that we are part of the family business.	
Family members are willing to put in a great deal of effort beyond that normally expected in order to help the family business be successful.	.764
Your family has influence on your business.	
Deciding to be involved with the family business has a positive influence on my life.	
There is so much to be gained by participating with the family business on a long-term basis.	
Your family members share similar values.	

Note: Adopted from Klein et al. (2005). The cultural subscale uses a 5-point Likert format (5LF), anchored by 5 (strongly agree) and 1 (strongly disagree).

The second, named "*essence"*, is based on the idea that, while involvement by family members is necessary, this alone is not sufficient to classify a firm as a family firm, and whether a company can be regarded as a family firm depends on the desire of family members to maintain the firm as a distinct entity (Chrisman et al., 2005). Representative of this type of approach is the Family Influence on Power, Experience, and Culture (F-PEC) scale proposed by Astrachan et al. (2002). On this scale, whether a company is a family firm depends on the extent to which the family's goals and values are consistent with those of the company, and the level of family members' emotional commitment to the company (see Table 1).

Theoretical Perspectives in Research on Family Firms

The theoretical models typically used in research on family firms include agency theory, resource-based theory, and institutional theory (Chrisman, Chua, & Litz, 2003; Chrisman et al., 2005; Schulze, Lubatkin, & Dino, 2001; Sirmon & Hitt, 2003). Furthermore, in recent years, the concept of socioemotional wealth has been incorporated into these theories as a way of grasping the peculiarities of family firms. In this section, we first introduce the concept of socioemotional wealth, and then focus on the ways in which it is used in research on succession in conjunction with agency theory, resource-based theory, and institutional theory.

Socioemotional wealth

Early studies on family firms often used existing theories from other fields, but these theories did not necessarily provide a better understanding of the peculiarities of family firms. In recent years, a new theoretical framework, named "socioemotional wealth", has been proposed by a research group led by L. Gómez-Mejía to explain the peculiarities of family firms. Socioemotional wealth refers to the non-financial aspects of a firm, that satisfy the family's emotional needs (Gómez-Mejía, Haynes, Núñez-Nickel, Jacobson, & Moyano-Fuentes, 2007), and consist of several dimensions. For example, Cennamo, Berrone, Cruz, and Gómez-Mejía (2012), and Berrone, Cruz, and Gómez-Mejía (2012) specified that socioemotional wealth consists of five dimensions: (1) desire to maintain control and influence over the family firm; (2) a sense of dynasty, that implies a long-term orientation; (3) identification with the firm and a concern for its reputation; (4) emotional attachment to the firm; and (5) binding social ties.

In the socioemotional wealth perspective, the peculiarities of family firms come from the fact that socioemotional wealth is an important reference point in decision-making. Because members of a family pursue their family's non-economic goals as well as economic ones, they

sometimes make decisions that are not economically rational. For example, using the sample of olive farmers in southern Spain, Gómez-Mejía et al. (2007) conclude that when family firms are faced with the decision to join local cooperatives, they are less likely to join than non-family firms, even though joining cooperatives would stabilize operations and reduce business risk. They suggest that behind this decision, there is an intent to avoid loss of the family's socioemotional wealth through the reduction of management autonomy. Similarly, Berrone et al. (2012) show that family-owned firms engage in pollution reduction to build family identity and reputation, regardless of the high costs of such actions. Using socioemotional wealth as a reference point for strategic decision-making does not necessarily mean that family businesses are not concerned about economic performance. Rather, a family's desire to maintain control within family creates tradeoffs between behavior that protects socioemotional wealth at the expense of economic performance, and behavior that creates economic gains despite the loss of socioemotional wealth.

While socioemotional wealth is an overarching framework, it indicates a new direction in research on family business and is steadily gaining acceptance as the dominant theoretical model in this field of research. In fact, during the ten years since the socioemotional model was first proposed, 421 papers published in international peer-reviewed journals have applied this framework (Jiang, Kellermanns, Munyon, & Morris, 2018). In addition, corporate reputations (Deephouse & Jaskiewicz, 2013), charitable donations (Dou, Zhang, & Su, 2014), patent citations (Block, Miller, Jaskiewicz, & Spiegel, 2013), and many other family firm behaviors are now being researched using the socioemotional wealth model. Moreover, in recent years, researchers have started to focus on boundary conditions and measuring method of socioemotional wealth (Pearson, Holt, & Carr, 2014).

Agency theory

Studies on family firms, to date, have used agency theory, focusing on the structure of ownership and control of these firms (Chua, Chrisman, & Steier, 2003). However, some family firms may be characterized by intra-familial altruism and mutual trust (Chrisman et al., 2003). Therefore, some assumptions that underlie agency theory do not hold in the context of family firms. In fact, studies on the performance of family firms, which use agency theory, have produced conflicting results (Chrisman et al., 2003; Gómez-Mejia, Nunez-Nickel, & Gutierrez, 2001; Schulze, Lubatkin, & Dino, 2003).

For example, studies that explain the superior performance of family firms using agency theory focus on the non-separation between ownership and control. This characteristic of family firms enables opportunistic investment based on the CEO's judgment and intuition (Gedajlovic, Carney, Chrisman, & Kellermanns, 2012), and may promote long-term investment, which leads to a strategic advantage over other firms (Habbershon, Williams, & MacMillan, 2003; Habbershon & Williams, 1999). Many empirical studies have actually confirmed that stock ownership by family members has a positive impact on performance (e.g., Anderson & Reeb, 2003; McConaughy, Matthews, & Fialko, 2001; Morck, Shleifer, & Vishny, 1988; Schulze et al., 2001).

However, the presence of family members in family firms may actually increase potential agency issues rather than reduce them. For example, although we can expect that family members would decide to maximize profit, the unique relationships among family members may create incentives for opportunistic behavior, such as free-riding and shirking of responsibility. For example, extant research indicates the possibility that family members would seek out additional compensation in non-monetary forms, such as special allowances, spinning of information, or bribe-taking (Lubatkin, Schulze, Ling, & Dino, 2005). Minichilli, Corbetta, and MacMillan (2010)

found that the more the percentage of family members in top management teams, the more family firms were likely to have irregularities. In addition, agency problems can occur between family members and non-members. Information asymmetry and conflicts of interest between these two parties (Fama & Jensen, 1983) create tensions between family and business objectives (Bennedsen, Nielsen, Perez-Gonzalez, & Wolfenzon, 2007), and family members will turn their attention toward strengthening and protecting their own positions and looking for their family's power (Claessens, Djankov, & Lang, 2000). These types of agency problems have also been associated with lower performance by family firms (Morck, Wolfenzon, & Yeung, 2005).

Some studies have used another variation of agency theory, named behavioral agency model (BAM), which is synthesis of agency and prospect theory. Although traditional agency theory assumes a fixed risk preference for agents, Wiseman and Gómez-Mejía (1998) relax this assumption by incorporating prospect theory (Kahneman & Tversky, 1973) to explain dynamic decision-making in family firms. BAM incorporates the concept of loss aversion, in which self-interested individuals prefer to minimize their current losses at the expense of maximizing future gains. Thus, agents can be loss averse, even if they take greater risks.

Family business studies using BAM have shown that aversion to the loss of socioemotional wealth is a driving force in the strategic behavior of family firms (e.g., Berrone, Cruz, Gómez-Mejía, & Larraza-Kintana, 2010; Gómez-Mejía et al., 2007; Gómez-Mejía, Makri, & Kintana, 2010). From the standpoint of BAM, when family firms encounter tradeoffs between future economic gains and socioemotional wealth preservation, they will become loss averse with respect to their socioemotional wealth (Gómez-Mejia et al., 2010). Because of this, family firms will embrace high-risk decisions to preserve their socioemotional wealth, even when doing so could be detrimental to their long-term economic wealth. However, they will also avoid high-risk

decisions that will harm their socioemotional wealth, even if doing so would increase long-term economic wealth (Chrisman & Patel, 2012). For example, despite the long-term economic benefits of investment in R&D, studies have shown that family firms tend to invest less in R&D than non-family firms for reasons of protecting their socioemotional wealth (e.g., Chen & Hsu, 2009; Czarnitzki & Kraft, 2009; Munari, Oriani, & Sobrero, 2010).

While BAM provides a more accurate explanation for why family owners and managements make certain strategic decisions, it does not explain when or how decisions based on socioemotional wealth generate profits for family firms (Shukla, Carney, & Gedajlovic, 2014). As is the case with other theories derived from agency theory, BAM should be used in conjunction with other theories, such as institutional theory.

Resource-based view

Resource-based view is one the most dominant paradigms in strategic management, which states that firms can gain a sustained competitive advantage by accumulating resources that are valuable, rare, inimitable, and non-substitutable (VRIN) (Barney, 1991). The resource-based view has been used to explain the superior performance of family firms (Chrisman et al., 2005). In addition, using this paradigm, many studies have discussed a broad range of topics, including entrepreneurship (Aldrich & Cliff, 2003; Alvarez & Barney, 2004), corporate governance (Carney, 2005), internationalization (Graves & Thomas, 2008; Westhead, Cowling, & Howorth, 2001), and organizational culture (Zahra, Hayton, & Salvato, 2004).

A fundamental question in studies on family firms that employ a resource-based view, is whether family involvement makes family firms different from non-family firms. That is to say, these studies make the assumption that family members themselves are seen as a resource that are VRIN, and the inherent nature of family involvement gives rise to unique resources that lead to

competitive advantage.

Habbershon and Williams (1999), the seminal article on family firms from the resource-based view of the firm, introduce the concept of "familiness." This concept refers to the bundle of resources obtained as a result of family involvement, that are distinctive to a firm (Habbershon et al., 2003). They state that familiness influences capability, which, in turn, becomes a source of competitive advantage for family firms. However, familiness itself do not always generate profits. Families can benefit by accumulating and using these resources, but these resources can also pose problems. For example, family firms blessed with stable and frequent interaction among family members can easily develop mutual trust and a shared vision, but at the same time familiness can also take the form of nepotism or a lack of professionalism. Empirical studies that deal specifically with familiness are scarce, and it is unclear whether the findings of these studies would introduce a specific theory regarding family firms. Furthermore, there is still no consensus that this concept can explain the superiority of family firms (Rau, 2014).

Succession in family firms can severely damage the resources built up over time to gain a competitive advantage. For example, in order to preserve the tangible and intangible wealth accumulated over many years, a family sometimes nurtures a potential successor within the family to offer a key management position to this heir, even when that person is not the best one for that role (Handler, 1994). However, this kind of nepotism can harm the family's economic and socioemotional wealth. Nepotism that implies a lack of good talent, or self-protection by managers within a firm (Cruz, Gómez-Mejia, & Becerra, 2010; Gómez-Mejia et al., 2001), creates internal discord within the firm, and is detrimental to its performance. Moreover, nepotism is generally considered to be immoral, and if rumors of nepotistic practices spread, the family's image is damaged, which can then damage the family's socioemotional wealth. In addition, nepotism can

sometimes cause conflicts among siblings (Schulze et al., 2001), conflicts of interest within the family (Zellweger & Astrachan, 2008), or even conflicts of interest between the family and outside stakeholders (Berrone, Cruz, & Gomez-Mejia, 2014; Fan, Wong, & Zhang, 2012). These types of antagonistic relationships have a negative impact on a company's image and reputation, and they can harm its socioemotional wealth.

However, designating a successor within the family fulfills the desire for survival across generations, which is one dimension of socioemotional wealth (Morgan & Gomez-Mejia, 2014; Zellweger, Kellermanns, Chrisman, & Chua, 2012). Nepotism therefore holds importance for family firm CEOs who place emphasis on their socioemotional wealth. Accordingly, from the standpoint of socioemotional wealth, nepotistic behavior is not irrational for family firm CEOs. Nepotism can be seen as a way to contribute to maintaining the family's control and influence over the firm, and the family dynasty.

Institutional theory

Agency theory and resource-based theory have traditionally been the dominant paradigms employed in research on family firms. Studies using these theories have primarily focused on issues within family firms that can impact governance structures and performance and have not paid attention to external factors (Jaskiewicz, Heinrichs, Rau, & Reay, 2016). That is why recent studies of family firms have increasingly used institutional theory and analyzed the firm's relationships with social institutions. For example, Melin and Nordqvist (2007) and Parada, Nordqvist, and Gimeno (2010) use institutional theory as a framework for explaining changes in governance structures within family firms. Similarly, Reay (2009) examines how institutional pressure affects the identities of family firms. While several studies have thus employed institutional theory in their analyses, it is still unclear whether family- and non-family firms differ

in their responses to institutional pressure, and if so, the reasons for which these differences exist (Berrone et al., 2014).

In recent years, the concept of institutional logic has been used to characterize the diverse organizational fields in institutional theory, and to analyze the competition between the cognitive frameworks of the actors involved in those fields (Haveman & Rao, 1997; Scott, Ruef, Mendel, & Caronna, 2000; Thornton & Ocasio, 1999). Institutional logic means the fundamental logic of the institutional order of modern society, such as capitalism, democracy, nation-states, and families. Institutional logic regulates proper behavior by providing a means to understand the norms, values, and goals that give meaning and legitimacy to individuals and organizations (Thornton, Ocasio, & Lounsbury, 2012). According to institutional theory, organizations are constantly exposed to multiple institutional logics (Friedland & Alford, 1991). Competing forms of institutional logic provide organizations with choices on how to behave, and organizations will adhere to the logic of the institutions to whom they are closest (Kraatz & Block, 2008; Lounsbury, 2007; Pache & Santos, 2010). However, recent studies have noted that organizations become worried, and do not know how to proceed when they are confronted with the conflicting logic of multiple institutions that they equally rely upon, and this hurts performance, legitimacy, and continuity (Raaijmakers, Vermeulen, Meeus, & Zietsma, 2015; Thornton et al., 2012).

Research on family firms that employs the concept of institutional logic has demonstrated that family logic and commercial logic coexist in decision-making in family firms (Greenwood, Raynard, Kodeih, Micelotta, & Lounsbury, 2011; Melin & Nordqvist, 2007). These types of logic are particularly meaningful when family firms make difficult decisions regarding succession. Although extant studies have asserted that family firms operate with two forms of logic- family logic and commercial logic (Chrisman & Patel, 2012), there is no consensus as to whether the two

are competing or complementary (Chrisman et al., 2012; Chua et al., 1999).

While not using the term "institutional logic" directly, many studies on family firms suggest that the behavioral norms of families are in conflict with that of firms. For example, some studies have argued that an institutional overlap between a family and a business causes conflict between family and firm (Lansberg, 1983), leading to a decline in profitability. Other studies have similarly noted the possibility that attention to family logic may lead to a sacrifice of firm profits. These studies suggest the possibility that a firm's strategic decision-making in favor family profit may impair the firm's ability to achieve its financial goals. In line with these arguments, several studies have noted the tendency for family firms to fail or decline, unless the family's goals, norms, and values are discarded (Martinez & Aldrich, 2014).

At the same time, the view that family logic and business logic are complementary also exists. Extant research explains this complementary relationship using the aforementioned concept of familiness. Familiness varies by firm, and has the potential to be a unique and useful resource. Familiness that aligns with family logic is useful for creating resources that are VRIN. For example, the goal of passing on a family firm to future generations may encourage the accumulation of resources that generate profit for a longer time period. Furthermore, family members' ongoing commitment to the firm can create knowledge that is proprietary to the family and increase the value of social capital. This results in better usability of resources based on the family, and a synergistic relationship between family logic and commercial logic.

Family business researchers that employ institutional theory have noted the importance of family- and business logic as factors that regulate family firm behavior (Leaptrott, 2005; Miller, Le Breton-Miller, & Lester, 2011). However, they have not paid much attention to other types of institutional logic. As stated in Besharov and Smith (2014), focusing on more than two types of

logic can vastly improve understanding of the behaviors that organizations engage in to gain legitimacy. For example, in addition to family and business logic, community logic is another type of institutional logic that can impact family firms. Reay, Jaskiewicz, and Hinings (2015) show that close relations with stakeholders in a local industrial community can result in profits for family firms. However, even though family business research on institutional theory recognizes the importance of focusing on community logic, few studies have systematically considered the impact of community, family, and business logic on family firms. Filling this gap requires clarification of how these various types of logic are interrelated, and how different types of family- and non-family firms behave in order to gain legitimacy and achieve sustainability.

Succession in Family Firms

One of the most important issues in the lifecycle of a family firm is whether the firm will be successfully passed on to the next generation. In family firms, the transfer of ownership and management from one generation to the next is a period of extreme instability, and many family firms face challenging issues as they attempt to survive into the next generation.

The issue of succession has been an important topic in family business studies. Extant research on succession can be classified into three areas. The first is research on the factors determining the selection of successors. The second is research on the conditions of successful succession, focusing on relationships among family members, or the characteristics of the successor or incumbent CEO. The third is research on changes in the firm's performance, attributable to succession. This section reviews the existing literature in these three areas. Table 2 summarizes the empirical research that employs econometric models in these three areas.

Determinants of successor selection

Much of the research on CEO succession has been in the field of finance. These studies have identified factors affecting the choice of successors, such as whether the successor should be chosen from within the firm or from outside (Cannella Jr & Lubatkin, 1993; Ferris, Jayaraman, & Lim, 2015; Fredrickson, Hambrick, & Baumrin, 1988; Mobbs & Raheja, 2012). In addition to these options, family firms also have the option of choosing a successor from within the family (Lin & Hu, 2007; Minichilli, Nordqvist, Corbetta, & Amore, 2014). Deciding whether to choose a successor from within the family depends on the structure of the family, and the relationships within it. For example, using data on Italian firms, Calabrò, Minichilli, Amore, and Brogi (2018) argue that the family's oldest son is usually appointed as the successor when the family wants to preserve socioemotional wealth. In addition, some studies state that the existence of a youthful successor within the family provides an incentive for the current CEO to ensure that the successor will be a family member (Zellweger & Astrachan, 2008). These studies note that although it is uncertain whether young potential successors in a family will actually take over the business, at least until these candidates become adults and can make their own decisions as to what path they will take, the incumbent CEO will expect these young heirs to be a successor. In analyzing the determinants of a CEO's intentions that are critical to within-family succession, De Massis, Sieger, Chua, and Vismara (2016) state that the more children the CEO has, and the more family members that own shares, the more the current CEO will want a family member to be a successor.

Family firms also have the option of hiring a CEO from outside the family. Hiring a CEO who is not a family member means that the family is relinquishing fundamental control; thus, choosing to make the change from a family CEO to a non-family CEO is a critical decision for a family firm (Chang & Shim, 2014; Miller et al., 2003). Several empirical studies have identified

Table 2: Overview of Empirical Studies on Succession in Family Firms

Author(s)	Year	Journal	Time period	Country sample	# of sample	Theoretical lens	Dep. Variable	Ind.Variable	Moderator	Main findings
Successor appointment										
Bocatto, E., Gispert, C., & Rialp, J.	2010	JSBM	1994-2005	Spain	29	Agency theory & RBV	family succession	Performance prior to succession, outside involvement, family involvement, & successor experience		Performance prior to succession does not affect these nominations, while directive experience does.
Calabrò, A., Minichilli, A., Amore, M. D., & Brogi, M.	2018	SMJ	2000-2012	Italy	771 6,242 firm-year observations	SEW	SEW endowment & selecting a second or subsequent born child	Selecting the first born child as the next family leader & post succession performance	Aspiration level & generation	Appointing a family firstborn sibling is more likely when there is a high degree of SEW endowment and the family firm has pre-succession performance below aspiration levels. Appointing a second- or subsequent-born sibling has a positive and significant effect on post-succession firm profitability.
Damaraju, N.L., & Makhija, A. K.	2018	SMJ	2001–2009	India	7715	N/A	CEO hiring & ROA	CEO candidate belonged to the same caste/religion as the firm owners		Caste/religion plays a crucial role in CEO selection as a source of information (positive discrimination)

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(Table continues)

Author(s)	Year	Journal	Time period	Country sample	# of sample	Theoretical lens	Dep. Variable	Ind.Variable	Moderator	Main findings
Dehlen, T; Zellweger, T; Kammerlander, N; Halter, F	2014	JBV	N/A	DEU, Swiss, Austria(*)	613	Information asymmetry theory	Choice of exit route	Educational achievement of successor, work experience prior to the succession, & screening efforts made by the incumbent	Firm age	Several mechanisms that alleviate information asymmetries – education and work experience of the succession candidate as signal of his or her superior abilities as well as the incumbents' screening efforts – affect the probability of an external transfer of ownership and management.
De Massis, A., Sieger, P., Chua, J. H., & Vismara, S.	2016	FBR	2012	Italy	274	Theory of Planned Behavior	Incumbent's attitude toward intra-family succession	# of children, # of family shareholders, duration of family ownership, & perceived positive firm performance		Family ownership and number of generations involved in the business have significant relationships with incumbents' attitude toward intra-family succession.
Wiklund, J., Nordqvist, M., Hellerstedt, K., & Bird, M	2013	ETP	2004-2008	Sweden (*)	3,829 12,125 firm‐year observations	Embeddedness perspective	Ownership transitio	Ownership dispersion		Ownership dispersion, number of potential heirs, multigenerational involvement, and whether the chief executive officer is a family member influence the choice of an internal or external transition of ownership.

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Author(s)	Year	Journal	Time period	Country sample	# of sample	Theoretical lens	Dep. Variable	Ind.Variable	Moderator	Main findings
Succession process										
Chrisman, J. J., Chua, J. H., & Sharma, P.	1998	FBR	N/A	Canada	485	N/A	Desirable attitudes of successors attributes	Business profiles Personal profiles		The older the family business and the longer the respondent's tenure in that business, the more important these attributes became. Birth order and gender were rated the least important, despite the attention the literature has given to those attributes.
Eddleston, KA; Kellermanns, FW; Floyd, SW; Crittenden, VL; Crittenden, WF	2013	ETP	N/A	USA(*)	107	N/A	Family firm growth	Succession planning & strategic planning	Family firm generation	The degree to which strategic planning and succession planning are associated with family firm growth depends on the generation managing the firm. Strategic planning is negatively associated with their level of growth.
Filser, M; De Massis, A; Gast, J; Kraus, S; Niemand, T	2018	JPIM	2013 2015	Finland(*)	116	SEW	Innovativeness	Five major dimensions of SEW		Family functionality is positively linked to SEW, whereas divergences emerge on the effect of different SEW dimensions on innovativeness.
Marshall, J. P., Sorenson, R., Brigham, K., Wieling, E., Reifman, A., & Wampler, R. S.	2006	JBV	1997-2000	USA	205	Leadership theory	Leadership style, conflict management style	The importance of succession planning & formal succession planning		Older owner age was positively associated with formal succession plans. Autocratic and relational leadership are positively related to the importance of succession planning.

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Author(s)	Year	Journal	Time period	Country sample	# of sample	Theoretical lens	Dep. Variable	Ind.Variable	Moderator	Main findings
Sharma, P., Chrisman, J. J., & Chua, J. H.	2003	JBV	N/A	Canada	76	Stakeholder theory	Satisfaction with the succession process	Succession timing, propensity of the incumbent to step aside, willingness of the successor to take over, agreement to maintain family involvement, extent of succession planning		Satisfaction with the succession process in family firms is enhanced by the incumbent's propensity to step aside, the successor's willingness to take over, agreement among family members to maintain family involvement in the business, acceptance of individual roles, and succession planning.
Venter, E., Boshoff, C., & Maas, G	2005	FBR	N/A	South Africa(*)	332	N/A	The perceived success of the succession process	Willingness to take over the business, Family harmony, Preparation level of successor, & Relationship between owner and successor		The successor-related factors that influence satisfaction with the process are, on the one hand, the willingness of the successor to take over and the relationship between the owner-manager and successor, on the other hand. The continued profitability of the business is influenced by the willingness of the successor to take over the business, the preparation level of the successor, and the relationship between the successor and owner-manager. The relationship between the owner-manager and successor is in turn influenced by the extent to which interpersonal relationships in the family can be described as harmonious. Based on these findings recommendations for successful succession are offered.

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Author(s)	Year	Journal	Time period	Country sample	# of sample	Theoretical lens	Dep. Variable	Ind.Variable	Moderator	Main findings
Post succession performance										
Amore, M. D., Minichilli, A., & Corbetta, G.	2011	JCF	2003-2007	Italy	4,251	N/A	Debt/Capital & Short-term debt/Capital	Managerial succession		Substantial heterogeneity in the impact of professional successions on debt financing: the increase in debt is particularly pronounced for young firms, firms with a high level of investment, and firms in which the controlling family maintains a dominant representation on the board of directors.
Anderson, R. C., Mansi, S. A., & Reeb, D. M.	2003	JFE	1993-1998	USA	252 1,052 firm-year observations	Agency theory	Corporate yield spread	Succession (CEO descendent), Family management (CEO-family), & Family ownership		Founding family ownership is common in large, publicly traded firms and is related, both statistically and economically, to a lower cost of debt financing Founding family firms have incentive structures that result in fewer agency conflicts between equity and debt claimants.
Anderson, R. C. & Reeb, D. M.	2003	JLE	1993-1999	USA	319 firms 2,108 firm-year observations	Agency theory	Excess value, economic value added	Succession (Descendent-CEO), Family management (Founder CEO), & Family ownership (family ownership ratio)		Family firms actually experience less diversification than, and use similar levels of debt as, nonfamily firms. Direct measures of equity risk are not related to founding-family ownership. Minority shareholders in large U.S. firms benefit from the presence of founding families.

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Author(s)	Year	Journal	Time period	Country sample	# of sample	Theoretical lens	Dep. Variable	Ind.Variable	Moderator	Main findings
Barontini, R., & Caprio, L.	2006	EFM	1999-2001	West Europe	675	N/A	Tobin's q & ROA	Succession (next generation CEO or non-executive) Family management (Family CEO) Family control (dummy for family firm)		Valuation and operating performance are significantly higher in founder-controlled corporations and incorporations controlled by descendants who sit on the board as non-executive directors. When a descendant takes the position of CEO, family-controlled companies are not statistically distinguishable from non-family firms in terms of valuation and performance.
Bennedsen, M., Nielsen, K. M., Perez-Gonzalez, F., & Wolfenzon, D.	2007	QJE	1994-2002	Denmark	4,692 successions	N/A	ROA	Succession & family management (Family CEO)		Family successions have a large negative causal impact on firm performance. Family-CEO underperformance is particularly large in fast-growing industries, industries with highly skilled labor force, and relatively large firms. Professional, nonfamily CEOs provide extremely valuable services to the organizations they head.
Calabro, A., Minichilli, A., Amore, M. D., & Brogi, M.	2018	SMJ	2000-2012	Italy	771 6,242 firm-year observations	SEW	SEW endowment & selecting a second or subsequent born child	Selecting the first born child as the next family leader & post succession performance	Aspiration level & generation	Appointing a family firstborn sibling is more likely when there is a high degree of SEW endowment and the family firm has pre-succession performance below aspiration levels. Appointing a second- or subsequent-born sibling has a positive and significant effect on post-succession firm profitability.

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Author(s)	Year	Journal	Time period	Country sample	# of sample	Theoretical lens	Dep. Variable	Ind.Variable	Moderator	Main findings
Chang, S. J., & Shim, J.	2015	SMJ	1949-2004	Japan	1,152	SEW	CEO succession & Performance	CEO succession		Performance improvement is more pronounced when (1) families maintain high ownership control but leave no family legacy behind, (2) when the transition moves from non-founder family managers to professionals, and (3) when professional managers graduated from elite universities.
Chung, C. N., & Luo, X. R.	2013	SMJ	1996 - 2005	Taiwan	573	Social embeddedness & institutional theory	ROA	CEO change & successor origin	Family ownership, business group membership, & high tech industries	Outsiders are associated with higher post-succession profitability than inside and family successors. Outsider premium is reduced in firms embedded in family and business group relationships.
Gomez-Mejia, L. R., Nunez-Nickel, M., & Gutierrez, I.	2001	AMJ	1966-1993	Spain(*)	216	Agency theory	CEO tenure & editor tenure	Performance & business risk	Family tie	Firm performance and business risk are much stronger predictors of chief executive tenure when a firm's owners and its executive have family ties and that the organizational consequences of CEO dismissal are more favorable when the replaced CEO is a member of the family owning the firm. Executives operating under weakly relational (less ambiguous) contracts are held more accountable for firm performance and business risk outcomes, even under nonfamily contracting.

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(Table2 continued)

Author(s)	Year	Journal	Time period	Country sample	# of sample	Theoretical lens	Dep. Variable	Ind.Variable	Moderator	Main findings
Minichilli, A., Nordqvist, M., Corbetta, G., & Amore, M. D.	2014	JoMS	1998–2007	Italy	1,610 firm-year observations	SEW & Agency Theory	ROA	Succession mechanism (relay succession, horse race succession), Outside non-family CEO, & CEO succession event	Family involvement on the board of the firm	Implementing one of these succession mechanisms reduces the negative impact that typically characterizes CEO transitions in family firms. Family presence on the board offsets the benefits of having selected these balancing succession mechanisms, in either placing too much emphasis on SEW, or creating negative dynamics that make the chosen succession mechanisms less effective.
Molly, V., Laveren, E., & Jorissen, A.	2012	ETP	2006	USA(*)	425	Trade-off theory, Agency theory, & Pecking order theory	Capital structure & growth behavior			Next-generation companies grow slower because they have the tendency to forego part of their growth rather than risk the loss of family control due to the increased use of debt.
Pérez-González, F.	2006	AER	1994	USA	335	N/A	ROA and Tobin's q	Succession (Next generation CEO)		Firms where incoming CEOs are related to the departing CEO, to a founder, or to a large shareholder by either blood or marriage underperform in terms of operating profitability and market-to-book ratios, relative to firms promoting unrelated CEOs. Lower performance is prominent in firms that appoint family CEOs who did not attend “selective” undergraduate institutions.

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factors that influence such a change. For example, Bocatto, Gispert, and Rialp (2010) analyze the relationship between choosing whether to select a successor from inside or outside the family, and company performance prior to succession. The study shows that when pre-succession performance is high, the successor is usually chosen from within the family, but when pre-succession performance is poor, there is a tendency to choose a successor from outside the family. In addition, Damaraju and Makhija (2018), who analyze the similarities between incumbent CEOs and their designated successors at 7,715 Indian companies, found that there were more religious similarities between the incumbent CEO and the successor at family firms that hire the next CEO from the outside, than at those who hire the successor from within the family.

Although much extant research on choosing successors for family firms have not made an issue of ownership transfer, family firms also have the option of selling the business or relinquishing ownership. Selling ownership of a family firm to an external party can sometimes be a good way to protect the family's economic assets or socioemotional wealth (Sharma & Manikutty, 2005). Wiklund, Nordqvist, Hellerstedt, and Bird (2013) analyze decision-making regarding the ownership transfer from the standpoint of family structure and involvement. According to this study, it is easier for a family to transfer ownership within the family when the incumbent CEO is a family member, when the family has a large number of successor candidates under the age of 17, and when stock ownership is more concentrated.

Factors affecting the success or failure of succession

Choosing a successor does not necessarily mean that the succession will succeed. Succession is a process that involves the incumbent CEO, non-candidate family members, financial institutions, and other stakeholders. Extant studies have showed factors that impede the succession process. Issues in the succession process at family firms result from several sources.

The first is the personal characteristics of the incumbent CEO and the successors. The incumbent CEOs will be concerned about losing their social status and power when a succession takes place (Lansberg, 1988; Le Breton-Miller et al., 2004). Therefore, for succession to be effective, it is necessary for the incumbent CEO to have the intention of passing the torch, and to be able to transfer power at the appropriate time (Dyer, 1988; Handler, 1994; Le Breton-Miller et al., 2004).

Successors can also cause problems during this process. For succession to take place within the family, the successor must have the desire and the ability to take over the business (Sharma, 2004; Sharma, Chrisman, Pablo, & Chua, 2001; Venter, Boshoff, & Maas, 2005). In an analysis of data from 485 family firms in Canada, Chrisman, Chua, and Sharma (1998) indicate that sincerity and proactive involvement are the ideal characteristics for successors. For example, in comparing methods for grooming successors in family- and non-family firms, Fiegener, Brown, Prince, and File (1994) assert that family firms tend to use methods that favor more personal, relationship-centered approaches, while non-family firms prefer formalized, task-oriented development approaches. In addition, Lansberg (1988) states that the key to an effective succession is to understand the difference between giving advice and preparing for successions, so that one can offer the best advice and preparations in a timely manner.

The relationship between the incumbent CEO and the successor is another factor influencing succession (Chrisman et al., 1998; Lansberg, 1999). For example, when there is conflict between the two, it is more likely that the successor will end his/her involvement with the business, or that the incumbent CEO will block the successor's appointment, which heightens the risk that the succession process will fail. Both, the relationship between the incumbent CEO and the successor, and harmony within the family, play important roles in successfully handing over a business. In particular, when conflict occurs between siblings who are potential successors, the

risk that the succession process will end in failure increases (Calabrò et al., 2018).

A succession plan helps an incumbent family CEO, the successor, and all stakeholders play their proper roles in the succession process. Davis, Schoorman, and Donaldson (1997) state that a succession plan has three main objectives: (1) the effective and fair allocation of wealth from the current to the next generation; (2) the transfer of management authority in a way that secures effective leadership; and (3) the promotion and maintenance of family harmony. A succession plan that aims to achieve all three of these objectives promotes collaboration among the incumbent CEO, the successor, and other stakeholders, thus enabling a smooth and efficient succession (Morris, Williams, Allen, & Avila, 1997; Sharma et al., 2001).

Extant research shows that the sudden retirement of a CEO without a succession plan in place leads to confusion over who is in charge, and conflict among successor candidates (Lansberg, 1988). Yet, even though the importance of having a succession plan is acknowledged, family firms do not necessarily make any plans for succession (Sharma et al., 1996; Sharma, 2000). With this challenge in mind, Lansberg (1988) points out that most stakeholders in family firms may have negative feelings toward succession. For example, the incumbent CEO may feel mental resistance toward a succession that means the loss of one's authority. Furthermore, other family members may fear that a succession plan will erode harmony within the family, and the company's identity, and thus avoid creating such a plan. Employees and executives who have worked alongside the incumbent CEO for a long time may show resistance to losing their personal relationship with the incumbent CEO by shifting over to the successor (Sharma et al., 1996).

Several studies have examined the factors that impact the effectiveness of a succession plan and whether a succession plan is in place. Sharma, Chrisman, and Chua (2003), for example, show that satisfaction with a succession process depends on the existence of a succession plan. In

addition, using data obtained from a survey of family business owners, Marshall, Sorenson, Brigham, Wieling, Reifman, and Wampler (2006) show that the older the CEO, the more likely they are to create a succession plan. However, although the importance of creating a succession plan has been noted in case studies and several empirical studies, few studies have actually examined the correlation between the succession plan and whether the succession succeeds or fails.

Post-succession performance

In the management field, many negative views have been expressed regarding the impact of CEO succession on business performance (Cao, Maruping, & Takeuchi, 2006; Karaevli, 2007; Kesner & Sebora, 1994). According to these studies, a CEO succession is a destructive event that harms organizational morale and productivity, because it destabilizes the organization and causes tension in stakeholder relationships (Cao et al., 2006). In addition, a CEO's retirement creates discomfort within an organization and among its stakeholders and is considered to have a negative impact on subsequent firm performance (Miller, Steier, & Breton-Miller, 2003; Schulze et al., 2001; Shen & Cannella Jr, 2002), because it leaves an organizational void that generates uncertainty regarding the future (Finkelstein, Hambrick, & Cannella, 2009; Sharma et al., 2003).

However, in the context of a family firm, there are clear differences in post-succession performance depending on whether the new CEO is a family member or a professional hired from outside. For example, using data on publicly traded companies in Taiwan, Chung and Luo (2013) show that post-succession performance is better when the successor is hired from outside, than when the successor is hired from within the firm. In addition, Chang and Shim (2015) show, based on longitudinal data on Japanese family firms, that performance improves when, after the second generation, succession shifts to an outside professional manager,. Moreover, according to Wennberg, Wiklund, Hellerstedt, and Nordqvist (2011), firms that transferred authority to an

external party showed more improvement in their performance, than did firms that transferred authority to another family member. Bennedsen et al. (2007), who focuses on succession within families, holds that succession within a family and post-succession performance are negatively correlated, and that this correlation is more pronounced in rapidly growing industries and large corporations. Amore, Minichilli, and Corbetta (2011), in an analysis of Italian family firms, examine the impact of CEO succession on corporate financial policies. This study shows that appointing an external professional who is not a family member facilitates the procurement of debt financing. In addition, Pérez-González (2006) holds that when a relationship through blood or marriage exists between the next CEO and the incumbent CEO, the founder, or the major shareholder, the firm's profitability, and ratio of market value to book value is lower than when no such relationship exists.

Discussion and Conclusion

While succession has become a popular topic in studies on family firms (Chrisman et al., 2005; Sharma, Chrisman, & Gersick, 2012), some have pointed out that succession lacks much of a presence in recent research on family firms (Yu, Lumpkin, Sorenson, & Brigham, 2012). This may be attributable to an analytical issue. Although many empirical studies on the impact of succession on performance have been conducted in such fields as finance, in the case of the other two research questions, most studies have only gone as far as to show anecdotal evidence. Selection of successors and the success or failure of succession are linked to many factors that are difficult to measure, such as familial ties, and the emotional factors that go along with them. Of course, many more case studies will be needed to develop theories to explain the unique qualities of family firms, and to bring research in this field to maturity. At the same time, it will also be

necessary to use data to validate the hypotheses that these case studies generate.

As summarized in this paper, existing studies on the issue of succession have primarily focused on the factors that impact selection of a successor, the factors that affect the success or failure of succession, and post-succession performance. However, these studies have not sufficiently clarified the impact of succession on the strategic decision-making of the incumbent CEO. As extant studies have also pointed out, the current CEO must make plans for a smooth succession to the next generation, and coordinate with stakeholders. At the same time, they must make strategic decisions. Strike, Berrone, Sapp, and Congiu (2015) is one of the few studies that deals with the relationship between the issue of succession and the strategic decision-making of the incumbent CEO. Using panel data, they find that CEOs having a shorter career horizon, which refers to time left until retirement (Antia, Pantzalis, & Park, 2010), are less inclined to make international acquisitions in cases of succession within a family than in cases of succession at non-family firms. These findings suggest the possibility that incumbent CEOs make strategic decisions taking into account how these decisions would affect the next generation.

The impact of succession issues on the strategic decision-making of the incumbent CEO is especially great in SMEs, as it is much harder to find successors for these firms than for large firms. In large firms, regardless of whether they are family-owned or not, there is a high likelihood that a successor will be present, and it is perhaps easier to ensure perpetuity. However, that a succession will succeed is not a given in SMEs. In these firms, the incumbent CEO probably makes strategic business decisions while having no certainty that the firm will survive and continue into the next generation. Given these points, answering the question of how the uncertainty of succession affects the strategic decision-making of CEOs at family firms, which comprise of the bulk of SMEs, and whether the effect will vary depending on the successor's attributes, will

contribute to the development of research on succession at family firms.

Chapter 3: Study 1 - The CEO's Subjective Career Horizon and Environmental Investments

Introduction

In recent years, amongst those attributes of CEOs that affect the long-term investment behavior of the company, CEOs' career horizon has attracted special attention. The relationship between CEOs' career horizon and long-term investment behavior is referred to as the "career horizon problem". As a CEO's retirement approaches, he/she tends to choose short-term investments that will benefit him- or herself, avoiding long-term investments that would benefit his/her business. In fact, in empirical analysis, a positive relationship has been consistently observed between CEOs' career horizon, and long-term investment. For example, in Butler and Newman (1989) and Dechow and Sloan (1991), it is revealed that the shorter a CEO's career horizon, the less likely he/ she is to make long-term investments such as R&D and advertising. Focusing on corporate behavior, Matta and Beamish (2008) and Levesque and Minniti (2006) reveal that as a CEO's career horizon becomes shorter, corporate actions accompanied by risks such as international acquisitions and entrepreneurial behavior decreases.

However, in interpreting the estimation results of these studies, we must pay attention to the fact that existing studies use easily observable variables such as CEO age as a proxy variable for CEO career horizon. For example, Barker and Mueller (2002) and Cho and Kim (2017) measure career horizon by CEO age and examine the relationship between CEO career horizon and innovation activities. Moreover, some researchers use the difference between uniform retirement age and actual CEO age as a proxy variable for career horizon and examine its effect on long-term investment behavior (Heyden Reima, & Van Doorn, 2017; Krause, Withers, & Semadeni, 2017; Matta & Beamish, 2008). The prevalence of such operationalization of career horizons is due primarily to the fact that most existing research focuses on large-scale, publicly

listed firms. Generally, in the case of large-scale firms, CEO terms and retirement age are predetermined. As a result, in many existing studies, analysis of the effects of career horizon has been carried out based on the assumption that CEOs can make predictions regarding their remaining careers based on their current age (Yim, 2013).

When targeting larger firms, it thus makes a certain amount of sense to use the CEO's age as a proxy variable for career horizon. However, there are still analytical problems arising from such operationalization. We can consider that CEOs' age captures several CEO characteristics, which are difficult to observe, other than career horizon. Existing literature in the field of management regards CEOs' age itself as an important variable affecting their strategic decision-making. For example, Child (1974) suggests that, as they grow older, CEOs begin to experience a decline in the abilities needed to implement organizational changes and tend to choose lower-growth strategies compared to younger CEOs. Based on this suggestion, by using the CEO's actual age as a proxy variable for career horizon, we confront the challenge of being unable to interpret whether the estimate results imply the effects caused by changes in various hard-to-observe factors based on CEOs' age, or that of changes in the CEOs' career horizon. Even when assuming a certain retirement age, the same challenge arises. There is perfect correlation between CEO age and a variable where the actual age is subtracted from the retirement age. Therefore, even in this case, only the constant term changes, and the estimated coefficient of a focal variable does not differ from a model where actual age is used as a proxy for CEO career horizon. Such problems that result from using the CEO age-related variable as a proxy to career horizon have not been pointed out sufficiently in the past.

In the present study, after resolving this analytical problem in career horizon research, we clarify the influence of CEOs' subjective career horizon on environmental investment, which is a

long-term investment behavior. More specifically, we firstly measure the subjective career horizon of the CEO directly through survey investigations. We estimate the model including both subjective career horizon and CEO age, identifying the effects by CEO age, and that by career horizon. Based on a framework for myopic loss aversion, a CEO with a short career horizon will assess the risks of environmental investment on firm performance over a short period of time and will evaluate these risks more frequently. Therefore, even if they are the same age, it is expected that the CEO with the shorter subjective career horizon will more often avoid the risks associated with environmental investments. Using survey data on 1,147 manufacturing SMEs located in the Tokyo metropolitan area, we found strong evidence that CEOs' subjective career horizons are associated with their firm's environmental investment.

This study makes several contributions to existing research. First, through a survey investigation, we clarify how CEOs actually think about their careers. Many of the existing studies on career horizons make an implicit assumption that CEOs have the same career horizon, by their age. This study contributes to existing research by pointing out that this assumption does not hold. Put differently, there is heterogeneity of career horizon among the same age group. Moreover, by using the CEO's subjective career horizon, measured through the survey on SMEs, together with the actual CEO age in the estimation model, we extracted the true effects of career horizon from the effects of various factors that CEO age captures. As a result, we have made a significant contribution to research on career horizons, in that we are able to discuss the influence of CEO career horizons more accurately.

Theory and Hypothesis

The CEO is the most influential decision-maker in the company. It is for this reason that

so much research has been carried out on the relationship between the various CEO characteristics and long-term investment, which is a source of sustainable competitive advantage (Chatterjee & Hambrick, 2007; Gerstner, Konig, Enders, & Hambrick, 2013; Hambrick, 2007; Hambrick & Finkelstein, 1987; Hambrick, Geletkanycz, & Fredrickson, 1993; Hambrick & Mason, 1984; Hambrick & Quigley, 2014). In particular, the career horizon problem is a topic that has drawn increasing interest in recent years. Existing studies dealing with this problem have consistently confirmed a positive relationship between a CEO's career horizon and long-term investment. In recent years, Lundstrum (2002), Coles, Daniel, and Naveen (2006), and Demers and Wang (2010) have also confirmed a positive relationship between career horizon and R&D investments, suggesting that as retirement approaches and the career horizon becomes shorter, CEOs gradually begin to make more short-term investments. Moreover, Oh, Chang and Cheng (2016) reveal that the tendency for CEOs to undertake corporate social responsibility (CSR) activities is lessened by a shorter career horizon. In this way, the career horizon problem has been considered a challenge, due to the opportunistic behavior of CEOs facing retirement.

Underlying reasons for these opportunistic actions based on career horizons is the fact that management incentives change throughout a CEO's career stage. Evaluation of CEO ability depends greatly on the success or failure of the CEO's strategic decision-making (Matta & Beamish, 2008). As a result, it has been pointed out that whether to carry out long-term investments such as environmental investments and R&D, which are risky and uncertainty, depends largely on the career stage of the CEO (Gibbons & Murphy, 1992). Specifically, early in their careers, CEOs still have time to recover from failure; thus, there is an incentive to make high-risk choices such as long-term investments, so as to gain positive feedback from the external labor market. On the other hand, for a CEO in the latter part of their career, long-term investment may weigh on short-

term corporate performance, and thus negatively impact the CEO's evaluations. For that reason, in order to preserve his/ her record of success, CEOs avoid strategies that are highly uncertain and serve to undercut their own profits, instead choosing strategies that enhance their short-term compensation and reputation (Hambrick & Fukutomi, 1991). The stage of a CEO's career that greatly influences such decision-making as long-term investments may depend on their age. As a result, existing research assumes that the change in incentives throughout a CEO's career can be seen by their age.

However, CEO age not only represents changes in management incentives, but also in the CEO's experience, knowledge and attitudes (Hermann & Datta, 2006). For example, younger CEOs may lack knowledge related to management, but this increases with experience (Buchholtz, Ribbens, & Houle, 2003; Henderson, Miller, & Hambrick, 2006). Moreover, by accumulating management experience, the CEO develops a detailed understanding of the market and customers and develops an understanding of changes in the business environment (Von den Driesh et al 2015). Accordingly, as the CEO grows older, changes in managerial ability and knowledge occur, which can affect long-term investment decision-making. Furthermore, as the CEO grows older, his/ her attitudes may also change. For example, middle-aged CEOs tend to be more conservative (Buchholtz et al., 2003; Hambrick & Mason, 1984; Henderson et al., 2006; Herrmann & Datta, 2006). Moreover, because older CEOs are especially prone to preferring to maintain the status quo, they are less interested in, and committed to, innovative ideas (Hambrick & Mason, 1984). As a result, they prefer low-risk behavior that will bring financial security, avoiding long-term investment. Thus, extant research in the field of management has regarded CEO age as a variable that represents changes in his/her knowledge, experience, abilities, and attitude.

Based on these points, we can infer that, in the extant studies, the influence of CEOs'

career horizons on the long-term investment behavior would include both, the effects of changes in incentives throughout the career stage, and that of changes in experience, knowledge, and attitudes as the CEO ages. Yim (2013) has made similar remarks in this regard, indicating that, given the high correlation between CEOs' career horizon and their age, it is difficult to distinguish between the two effects caused by a change in age. However, there is little research that systematically identifies the effects of career horizon and the effects of age itself.

One way to identify the effects of career horizon and that of CEO age is to simultaneously introduce both, the career horizon subjectively perceived by the CEO, and their actual age, to the model. The influence of subjective evaluation on individual choice behavior has received much scholarly attention, mainly in the field of economics. For example, many economic studies have noted that the subjective evaluation of life expectancy influences individual investment behavior such as savings, consumption, and portfolio selection, based on the myopic loss aversion theory. For example, Spaenjer and Spira (2015) reveal that the share of risky investments in an individual's portfolio tends to increase as the self-reported expectation of remaining lifespan grows longer. Moreover, Gan, Gong, Hurd, and McFadden (2015) show that the higher the subjective risk of death based on personal health information, that is, the shorter one's subjective life expectancy, the more the individual will tend to choose current consumption over savings. It has also been shown that this subjective evaluation has a higher prediction accuracy than estimates based on the standard life expectancy tables offered by life insurance companies.

From the perspective of myopic loss aversion, when a CEO evaluates his or her career horizon based on personal information such as physical strength and ability, the subjective career horizon of the CEO can influence long-term investment behavior by changing the evaluation period for the impact of long-term investment, and the frequency of such evaluations. Given the

characteristics of environmental investments, that usually take a long time to turn a profit (Mahapatra, 1984), a CEO with a subjectively short career horizon will shorten the period for evaluating the impact of environmental investment on corporate performance and will evaluate these effects more frequently. Accordingly, it is anticipated that such CEOs will avoid the risks involved with making environmental investments.

Hypothesis 1: There is a positive relationship between CEOs' subjective career horizon and CEOs' investment behavior related to the environment.

Research Method

Data collection and sample

To test the hypothesis, we used data obtained from a questionnaire survey conducted in 2016. The companies surveyed were 15,111 SMEs located in Tokyo metropolitan area, with either 300 or fewer employees, or capital of 300 million yen or less. The names and the site location were specified using Tokyo Shoko Research data. The survey form was designed so that it could be administered in both paper and online formats. A reminder letter was sent two weeks after the distribution of the questionnaire, and a response was requested within one month.

In our questionnaire, we requested CEOs to respond by themselves, because our focus is on how CEOs evaluate their career horizons based on their own physical strengths and psychological status. Therefore, responses from individuals other than CEOs were excluded from the sample in order to avoid biased estimation. As our target firms were SMEs, almost all responses were from CEOs themselves. Responses were obtained from 1,499 CEOs (9.9%). After excluding incomplete responses, the sample size finally used for analysis is 1,147.

Variables

Environmental investments: In the questionnaire, we asked whether respondents have implemented six environmental investments (investments in emission reductions at new business sites, development of new low-emission products, design of environmental products, introduction of clean technology/manufacturing methods/processes, fuel conversion, investment in/cooperation with reforestation efforts). We created dummy variables that take the value of one if firms make each environmental investment, zero otherwise, and then used these as explanatory variables. About 25% of firms were engaged in some form of environmental investment. "Introduction of clean technology/manufacturing methods/processes" is the most frequent investment, with 27.9% of firms making this investment (see Table 3).

The CEO's subjective career horizon: In order to better understand the effects of a CEO's career horizon, we used the answer to the question "up to what age will you be able to carry out your CEO duties satisfactorily?" Then, we make the variable that represents the difference between the answer and the actual CEO age at the time of the survey, using it as a variable indicating the CEO's subjective career horizon. This variable differs from one that represents the difference between the actual CEO age and assumed retirement age, which has been used in empirical research on career horizons. For example, by using this variable, we could understand at what age the CEO believes that he/ she will no longer be able to fulfill his/ her managerial duties. In fact, about 5% of CEOs had a negative value for subjective career horizons, which consists of CEOs with an average age of 73.3 years. Within this group, the CEO with the largest negative subjective career horizon reported that he/she has already been working for more than 32 years; this CEO is 80 years old. The longest career horizon is 50 years; this CEO is 35 years old. In the present study, in order to capture such negative values, we controlled this variable without taking logarithms.

Subjective career horizon demonstrated a strong negative correlation with the CEO age (γ=-0.78), suggesting that the older the CEO, the shorter the subjective career horizon tends to be. In this study, we also estimated a model with CEO age as a proxy variable for career horizon, in a similar manner to the previous studies.

Instrumental variable: A CEO's subjective career horizon may actually be an endogenous variable due to omitted variables. Unobservable factors such as opportunism and optimism affect a CEO's subjective career horizon, as well as environmental investment decisions. For example, an optimistic CEO may perceive a longer career horizon, and not be aggressive to environmental investments. If this is the case, the coefficient of the subjective career horizon would be underestimated. To avoid the potential omitted variable bias, we used the instrumental variables method. As an instrumental variable, we used a dummy variable that takes the value of one if the CEO's father had already died, and zero otherwise. Our identification assumption is that this instrumental variable is unrelated to factors that affect environmental investment behaviors, once we control the CEO's subjective career horizon and other variables.

Control variables: Based on the responses to the questionnaire and the data of Tokyo Shoko Research, we created a series of control variables that can affect long-term investment behavior related to the environment. These variables consisted of both the CEO's and his/her firm's demographic backgrounds. Ownership structure plays an important role in determining corporate philosophy and governance structure. This is particularly true for SMEs, where stock is often owned by the CEO's family members. Therefore, it is necessary to control for the influence exercised by the CEO's family. For this purpose, we used the percentage of shares owned by the CEO's family. In addition, we also controlled for the firm's age, that could influence environmental investment behavior. Because older firms may be able to accumulate resources,

knowledge, and ability to handle uncertainty (Levitt and March 1988), it is possible that these firms are more likely to invest in environmental practices. In order to control these influences, this study control for a natural logarithm of firms' age. Similarly, the firm's size can also affect environmental investment behavior. The firm's size is thus controlled for using a natural logarithm of the number of employees. We also considered differences between generations. For example, management style varies greatly between the founder, first generation and second generation (Dyer, 1988; Sonfield & Lussier, 2004). Accordingly, we expect that such differences among generations will also affect environmental investments. In order to control for the influence of generations, we use a dummy variable that takes the value of one if the current CEO is also the founder, and zero otherwise. Extant research has pointed out that the capital structure would affect long-term investments (Choi, Kumar, & Zambuto, 2016). In order to better understand the influence of capital structure, we used a dummy variable that takes the value of one if the firm has a debt, and zero otherwise. The variables that control for the attributes of CEOs are the number of years of employment (natural logarithm), education level (dummy variables indicating whether the CEO has a bachelor's degree), and gender (dummy variable). Table 3 shows the descriptive statistics for variables used in the analysis, and the correlation between these variables.

Estimation models

This research aims to examine the influence of CEOs' subjective career horizon on firms' environmental investment behavior, and to distinguish the effects of career horizon and CEO age on this behavior. To this end, we estimate a model that includes CEO age as a proxy variable for career horizon, as well as another model that simultaneously includes both, the subjective career horizon and CEO age. Furthermore, we control for the endogeneity of the subjective probability

Table 3: Summary Statistics and Correlations

	Average	Std. Dev.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Independent Variables																				
1 Investment in emission reductions at new facilities (d)	0.24	0.43	0	1																
2 Development of new, low-emission	0.25	0.43	0	1	.78															
3 Design of environmental products (d)	0.24	0.43	0	1	.75	.81														
4 Introduction of clean technology / manufacturing methods / processes (d)	0.28	0.45	0	1	.70	.72	.72													
5 Fuel conversion (d)	0.25	0.43	0	1	.78	.73	.69	.68												
6 Investment in/cooperation with reforestation efforts (d)	0.23	0.42	0	1	.84	.75	.71	.66	.76											
Instrument Variable																				
7 CEO's father's death (d)	0.23	0.42	0	1	-.16	-.15	-.16	-.16	-.15	-.18										
CEO attributes																				
8 Subjective career horizon	9.96	8.65	-32	50	.20	.17	.18	.18	.16	.20	-.39									
9 Age	60.38	11.36	29	92	-.21	-.16	-.18	-.19	-.18	-.23	.43	-.78								
10 Tenure	16.93	13.56	1	58	-.15	-.13	-.13	-.12	-.14	-.17	.29	-.49	.67							
11 Education (d)	0.68	0.47	0	1	.01	.02	.01	.02	.01	.01	.04	.04	-.05	-.10						
12 Gender (d)	0.95	0.22	0	1	.01	.02	-.01	.02	.01	.00	-.04	.05	-.02	.10	.14					
13 Founder (d)	0.29	0.45	0	1	-.02	-.02	.00	-.05	-.02	-.03	.07	-.19	.28	.37	-.19	-.01				
Firm Attributes																				
14 Sales (log)	12.16	1.46	4.61	17.44	.08	.07	.05	.09	.06	.09	-.06	.05	-.10	-.13	.13	.07	-.24			
15 Debt (d)	0.85	0.36	0	1	.02	.01	.01	.04	.01	.00	.05	-.04	.05	.06	-.04	.03	.01	.14		
16 Age	48.66	26.26	1	199	-.02	-.03	-.07	.00	.00	-.04	.01	.01	.03	.06	.15	.04	-.57	.21	.04	
17 Family ownership ratio	0.74	0.34	0	1	-.01	-.01	.00	.03	.00	-.02	.03	.10	-.05	.19	-.08	-.06	.12	-.28	.04	.02

Note: (d) means a dummy variable. N=1,147.

of succession by applying the method proposed by Terza, Basu, and Rathouz (2008). We first regressed the endogenous variables with covariates and the instrumental variable, then calculated the residuals from the reduced form equation, and added them to the second-stage structural form equation as explanatory variables. This technique, named "two stage residual inclusion approach (2SRI)", ensures consistency, and is able to test for endogeneity. Since the dependent variable is a binomial variable, the structural form equations are estimated using a probit model.

Results

To test for endogeneity in the CEOs' subjective career horizon, we first needed to check the relevance of the instrument in the reduced form equation. The instrument had a negative and statistically significant relationship with the subjective career horizon (β = -1.06, robust std. err. = 0.37). Therefore, this variable satisfies at least one of the conditions of a valid instrumental variable. The instrumental variable's *F*-statistic is found to be 30.70. An often-used rule of thumb proposed by Staiger and Stock (1997) is that an *F*-statistic of less than 10 indicates weak instruments in the context of the two-stage least squares estimator; this suggests that our estimation is unlikely to suffer from the weak instrument problem.

In all models assuming that the CEOs' subjective career horizon is an endogenous variable, the coefficients of residuals calculated from the first stage equation were significant, at least at 5%. This means that the null hypothesis that the CEOs' subjective career horizon is an exogenous variable is rejected. Table 4 shows the marginal effect calculated based on the estimated results of this model.

First of all, in the odd-numbered model including actual CEO age as a proxy variable for career horizon, the coefficient of CEO age is negative and statistically significant for all

environmental investments. The marginal effect calculated based on the estimation result is the largest at -0.0076, indicating a 0.76% reduction in the probability of investing in emission reductions at a new business site. It is worth noting that even when we utilized a variable that represents the difference between the assumed retirement age (70 years old) and actual CEO age, the estimation results do not change qualitatively. We obtain similar results, even when we assume the retirement age is 75 and 80 years old. These results are consistent with previous studies dealing with the career horizon problem.

In the even-numbered model, we include both, CEO age and their subjective career horizon simultaneously. The coefficient of the subjective career horizon is positive and statistically significant at least at 5%, regardless of the type of environmental investment. This result shows that the subjective career horizon may have a positive influence on environmental investment behavior, which is consistent with Hypothesis 1. The marginal effect calculated based on the estimate results is the largest at 0.07, suggesting that with the subjective career horizon shortened by one year, the probability of introducing clean technologies and manufacturing methods/processes decreased by 7%. In each model that controlled for subjective career horizon, except for model (2), the coefficients of CEO age are positive and statistically significant, while that in the odd-number model show the opposite signs. These results imply that CEO age has a positive impact on environmental investment, after eliminating the influence of career horizon.

Discussion and Conclusion

In this study, we examined the relationship between environmental investments, which are long-term investments, and the subjective career horizon, using data from 1,147 SMEs in the Tokyo metropolitan area. Our results indicates that the shorter the subjective career horizon, the

Table 4: Estimated Marginal Effects

	Investment in emission reductions at new facilities		Development of new, low-emission products		Design of environmental products		Introduction of clean tech. / mfg. methods / processes		Fuel conversion		Investment in/ cooperation with reforestation efforts	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CEO attributes												
Subjective career horizon		0.05 **		0.06 **		0.06 **		0.07 **		0.06 **		0.06 **
		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)		(0.03)
Age	-0.01 ***	0.02	-0.00 ***	0.03 *	-0.01 ***	0.03 *	-0.01 ***	0.04 *	-0.01 ***	0.03 *	-0.01 ***	0.03 *
	(0.00)	(0.02)	(0.00)	(0.02)	(0.00)	(0.02)	(0.00)	(0.02)	(0.00)	(0.02)	(0.00)	(0.02)
Tenure (10^{-2})	-0.03	0.00	-0.06	-0.04	0.00	-0.09	-0.02	-0.04	-0.19	-0.14	-0.12	-0.07
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education (d)	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	-0.01
	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.03)
Gender (d)	-0.01	-0.08	0.04	-0.05	-0.03	-0.12	0.02	-0.08	0.02	-0.06	-0.01	-0.10
	(0.06)	(0.09)	(0.06)	(0.09)	(0.06)	(0.10)	(0.06)	(0.11)	(0.06)	(0.09)	(0.06)	(0.09)
Founder (d)	0.03	-0.03	-0.02	-0.08	0.00	-0.03	0.00	-0.06	0.04	-0.03	0.02	-0.06
	(0.05)	(0.06)	(0.04)	(0.06)	(0.04)	(0.06)	(0.05)	(0.06)	(0.05)	(0.07)	(0.04)	(0.06)
Firm attributes												
Sales (log)	0.02 ***	0.03 ***	0.02 **	0.02 **	0.02 **	0.02 *	0.03 ***	0.03 **	0.02 *	0.03 **	0.02 ***	0.03 **
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Debt (d)	0.03	0.03	0.01	0.02	0.02	0.03	0.04	0.05	0.02	0.02	0	0.01
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)	(0.05)	(0.03)	(0.05)
Age (log)	-0.02	-0.06 *	-0.05 **	-0.05 **	-0.05 **	0.00 **	-0.01	0.00	-0.01	-0.06	-0.02	-0.08 **
	(0.02)	(0.04)	(0.02)	(0.03)	(0.02)	(0.00)	(0.02)	(0)	(0.02)	(0.04)	(0.02)	(0.04)
Family ownership ratio	0.00	-0.05	0.02	-0.10	0.02	-0.06	0.06	-0.01	0.02	-0.04	-0.00	-0.07
	(0.04)	(0.06)	(0.04)	(0.06)	(0.04)	(0.06)	(0.04)	(0.07)	(0.04)	(0.06)	(0.04)	(0.06)
Residual		-0.05 **		-0.02 **		-0.06 **		-0.07 **		-0.06 **		-0.06 **
		(0.03)		(0.01)		(0.03)		(0.03)		(0.03)		(0.03)

Note: Standard errors in parentheses for odd-numbered column, while we show the bootstrapped standard errors in parentheses for the endogeneity models (even-numbered column). (d) means a dummy variable. (10^{-2}) indicates that actual coefficient is 1/100. *: p<0.10、**p<0.05 ***p<0.01. N=1,147.

less likely they make long-term investments, suggesting the validity of using CEO age as a proxy variable for career horizon. However, there is a difference in the size of the marginal effect of the career horizon between the model using age as a proxy variable, and that using subjective career horizon. As an example of this, let us look at a model that estimates the effects on emission reductions at new business sites [columns (1) and (2) of Table 4]. When CEO age is used as a proxy variable for career horizon, if the CEO was a year older (i.e., his/her career horizon is shortened by one year), the probability of investing in emission reductions at a new business site decreased by 0.76%. On the other hand, in the model including both the CEO's subjective career horizon and the CEO age, if the CEO's subjective career horizon were shortened by one year, the probability of investing in emission reductions at a new business facility decreased by 5.12%. This suggests that extant studies that have used age as a proxy variable for CEO career horizon may have underestimated the effect of career horizon. In other words, the impact of the opportunistic behavior of CEOs approaching retirement on long-term investment behavior may be even greater than what is indicated in previous studies.

This study is not without its limitations. There are several limitations with regard to data collection. First of all, we carried out our analysis using cross-sectional data. While we use the instrumental variables method to deal with the endogeneity problem caused due to missing variables, we do not take account of the problem of reverse causality. In order to directly measure CEO career horizon, this research focused on analyzing SMEs. In SMEs, unlike large firms, retirement age is rarely specified, and the timing of the CEOs' retirement is largely up to personal discretion. As a result, there is the possibility that some mechanisms between the subjective career horizon and environmental investments do not remain valid for publicly listed firms. A future research opportunity is whether the influence of such subjective career horizons can be confirmed

even in large firms where retirement age is often predetermined, and CEOs are more likely to engage in opportunistic behavior. Moreover, because extant research on career horizons has used R&D-related variables as an indicator for long-term investment behavior, it will be necessary to verify whether the same relationships hold in the R&D context.

Chapter 4: Study 2 - Family CEOs' Expectations of Managerial Succession and Investment Time Horizons

Introduction

A firm's investments are sometimes long-term and may not completed during the tenure of its current CEO. Succession of CEOs is inevitable for all firms and is crucial for the continuity and completion of long-term investments that take the form of internationalization, research and development (R&D), and introduction of new products (Covin & Miller, 2014; Gómez-Mejia, Makri, & Kintana, 2010; Laverty, 1996; Le Breton-Miller & Miller, 2006; Miller & Le Breton-Miller, 2005). In family firms, defined as firms "in which multiple members of the same family are involved as major owners or managers, either contemporaneously or over time," (Miller, Breton-Miller, & Lester, 2007: 836) certainty about CEO succession would be more salient in deciding long-term investments. This is because the prospect of long-term investments being neglected owing to failure to find successors could ruin a family's socioemotional wealth, that is, the "non-financial aspects of the firm that meet the family's affective needs, such as identity, the ability to exercise family influence, and the perpetuation of the family dynasty." (Gómez-Mejia et al., 2007: 106) Family owners and managers use socioemotional wealth as their primary frame of reference when making managerial decisions; thus, they tend to choose options that increase socioemotional wealth (Gómez-Mejia et al., 2007; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011).

Although managerial succession inevitably occurs in any firm and directly affects the firm's performance and continuity (Minichilli, Nordqvist, Corbetta, & Amore, 2014; Strike, Berrone, Sapp, & Congiu, 2015), previous studies have largely overlooked the uncertainty about a successor as an antecedent of the variance among the periods over which family firms evaluate

their investments. Not all family firm CEOs have successors and those that think their successors are unlikely to be found would be concerned about the marshaling of their long-term investments. As the value of a manager's socioemotional wealth conceptually arises from his/her subjective assessment of financial and non-financial return on investment, his/her perceived uncertainty about the return on investment would change his/her investment horizons. In fact, the empirical results regarding family firms managers' tendency to make long-term investments are mixed. Some studies have found that family firms tend to prefer making long-term investments (e.g., Gómez-Mejia et al*.,* 2007; Kellermans, Eddeleston, Barnett & Pearson, 2008; Miller & Le Breton-Miller, 2005; Miller, Le Breton-Miller, & Lester, 2010), whereas others do not find such a tendency (e.g., Chen & Hsu, 2009; Chrisman & Patel, 2012; Duran, Kammerlander, van Essen, & Zellweger, 2016). These inconclusive findings suggest that family firms' CEOs are not necessarily homogeneous in their investment time horizons and there would be potential determinants of such behavioral heterogeneity among them (Chua, Chrisman, Steier, & Rau, 2012; Duran et al*.,* 2016). Therefore, the research question of this study is: why and how do the expectations of managerial succession by family firm CEOs, or a belief in someone succeeding them in the future, influence their investment time horizons?

We tackle this research question by using the socioemotional perspective to go beyond the myopic loss aversion framework. Myopic loss aversion is the combination of the sensitivity to loss and frequent evaluation of investment outcomes (Benartzi & Thaler, 1995; Thaler et al*.,* 1997). The infrequent assessment of their investments by family managers, based on their firm's possible continuity, lengthens the period of evaluation, leading to their preference for risky investments that generate returns in the long run (Chrisman & Patel, 2012). Family firm CEOs invest for both themselves and subsequent generations so that they can hand over the family businesses in as good

a condition as is possible, thereby preserving the family's socioemotional wealth (Le Breton-Miller & Miller, 2006). However, when the CEO of a family firm does not have any potential successors in mind, he/she might perceive that his/her long-term investments are unlikely to pay back fully. Thus, the uncertainty prompts to monitor and evaluate investments more frequently during his/her tenure. As a result, the family firm CEO will become more myopically loss averse and is likely to avoid long-term investments, as these would eventually reduce the socioemotional wealth owing to the greater likelihood of financial losses.

Further, the status of successors, that is whether or not they are the family firm CEO's children or her, affects the relationship between his/her expectations of managerial succession and the firm's investment time horizons. Long-term investments are inherently risky, owing to unanticipated changes, and require considerable managerial skills for success. Compared to short-term investments, long-term investments are more likely to cause losses and even bankruptcy. The loss of socioemotional wealth from such negative investment outcomes varies, depending on the status of the successors. The failure in nurturing long-term investments by children successors cause greater losses to their family's socioemotional wealth than those by others (hereafter, non-children). This is because such failures ruin their careers and may lead to the loss of private property, thereby jeopardizing the prosperity of their offspring. Accordingly, when a family firm CEO expects that his/her children are more likely to succeed him/her than non-children, the firm is less likely to engage in long-term investments to avoid the likelihood of substantial losses in socioemotional wealth.

Using survey data on 410 small- and medium-sized manufacturing firms owned and managed by families in the metropolitan area of Tokyo, we find strong evidence that a family firm CEO's expectations that his or her successors will be found significantly increase the likelihood

that he/she makes long-term investments, such as internationalization activities, R&D, and new product introduction. Further, we find that a family firm is more likely to engage in long-term investments when its CEO expects a non-family member to be his/her successor.

The findings of this study make three significant contributions to the theory and empirics on family firms. First, we explain how family firm CEOs' expectations of managerial succession affect family firms' varied investment time horizons, thus expanding the socioemotional wealth perspective. Second, we clarify the impact of successors being related to a family firm CEO on his/her investment time horizon, indicating that expected losses in socioemotional wealth from long-term investments vary depending on the status of successors. Finally, we apply a new method for measuring subjective probabilities, recently developed in economics (Giustinelli & Manski, 2016; Manski, 2004; Stinebrickner & Stinebrickner, 2013), to CEOs' expectations of managerial succession, thereby broadening the methodological repertoire of management studies.

Theory and Hypotheses

Family firm CEO's expectations of managerial succession and investment time horizons

Family firms are characterized by family ownership, management, or both (Arregle, Duran, Hitt, & von Essen, 2017). Family firms are known to engage in a variety of specific behaviors, as family managers and owners have a stock of affect-related values pertaining to family control and influence, family members' identification with the firm, binding social ties, emotional attachment, and the renewal of family bonds to the firm through dynastic succession, (Berrone et al*.,* 2012; Chua et al*.,* 2012; Gómez-Mejia et al*.,* 2007). In particular, family firms are likely to undertake long-term investments (Le Breton-Miller & Miller, 2006) because they tend to favor socioemotional goals, such as firm continuity and transgenerational control, which require a long-

term perspective (Gómez-Mejia et al., 2007; Laufs & Schwens, 2014; Fernandez & Nieto, 2006; Lumpkin, Brigham, & Moss, 2010).

However, not all family firms prefer long-term investments. For example, although Miller & Le Breton-Miller (2005) argue that the managers of family firms are likely to invest more in R&D over the long run, Chen & Hsu (2009) find a negative relationship between family ownership and R&D investment, suggesting that the former may restrain investment in risky long-term R&D activities. Similarly, Anderson, Duru, & Reeb (2012) find that family firms, unlike non-family firms, prefer investing in physical assets rather than riskier R&D projects. Further, Gómez-Mejia et al. (2010) find that, family firms are less likely to internationalize than non-family firms. In addition, Souder, Zaheer, Sapienza, & Ranucci (2016) empirically demonstrate that family firms are less likely to adopt new technologies. According to a meta-analysis by Duran et al. (2016), non-family firms, the R&D input of family firms is smaller than that of non-family firms and varies according family management and ownership. These results suggest that the presence of unknown antecedents can explain the heterogeneity in the investment time horizons of family firms.

One possible antecedent is derived from a family firm's managerial succession. Managerial succession inevitably occurs in all firms; sometimes, it entails changes in knowledge, expertise, and cognitive ability within top management teams, and brings about flux in executive decision-making routines (Berns & Klarner 2017; Bigley & Wiersema, 2002; Kesner & Sebora, 1994; Summers, Humphrey, & Ferris, 2012; Weng & Lin, 2014). The process of managerial succession is more salient for family firms than non-family ones, because the former may face uncertainty of transgenerational control and continuity, potentially decreasing their socioemotional wealth (e.g., Chang & Shim, 2015; Cucculelli & Micucci, 2008; Hillier & McColgan, 2009; Minichilli et al., 2014; Nordqvist, Wennberg, Bau, & Hellerstedt, 2013). The family members of

family firms are concerned about the needs of their future generations (Ward, 2016). Indeed, family members accumulate wealth not only for themselves, but also to ensure the financial health of successive generations (Chen, Hsu, & Chang, 2014; Calabrò, Minichilli, Amore, & Brogi, forthcoming). Succession planning in family firms represents a clear expression of future orientation (Sharma, Chrisman, & Chua, 2003), because its aim is to transfer the control of the business to the next generation of family members. Similarly, Strike, Berrone, Sapp, and Congiu (2015) find that a CEO nearing retirement is concerned about transgenerational control and legacy for future generations in making long-term investments. Because the primary motivation behind a family firm CEOs' long-term investments is the preservation of socioemotional wealth (Berrone et al., 2012; Gomez-Mejia et al., 2011), he or she evaluates the likelihood of returns from these long-term investments. A family firm CEO's expectations of managerial succession provide a bright long-term outlook for his/her firm because expectations act as a cognitive structure organizing related attributes and their relationships (Fiske, 2004). Thus, the investment decisions of a family firm depend on the current CEO's perception about the certainty of being succeeded. Nonetheless, few studies have either theoretically or empirically examined how a family firm CEO's expectation of managerial succession influences the investment time horizon of his/her family firm.

The myopic loss aversion framework explains the relationship between a family firm CEO's expectation of managerial succession and long-term investment. According to this framework, individuals are assumed to be loss averse and their problem framing is affected by the period over which an investment is evaluated (Benartzi & Thaler, 1995). The less frequent evaluation of an investment leads to the aggregation of its outcomes for a longer period of time, resulting in preferences for riskier options (Loewenstein & Thaler, 1989; Thaler et al., 1997). By

adopting this framework, Chrisman & Patel (2012) argue that owing to the transgenerational control of family firms, they tend to evaluate the socioemotional wealth generated by their investments over longer time horizons.

A family firm CEO's expectations that his/her successors will be found would prolong his/her firm's investment time horizon. Long-term investments, by definition, need a certain period to yield returns. From the myopic loss aversion framework, the investment time horizons are affected by the frequency with which the investments are evaluated (Chrisman & Patel, 2012). When a firm evaluates its investments less frequently, it accepts greater risks in decision making. Based on this idea, when a family firm CEO expects to be succeeded by a certain individual, the evaluation periods of the firm's investments could extend because managerial succession ensures firm continuity, and accordingly, the CEO may not face end-game scenarios in investments (Patel & Fiet, 2011). In contrast, if there are no potential successors in mind, a family firm CEO would hesitate to make long-term investments because he/she would feel uncertain about getting a return during his/her tenure. Such uncertainty makes the family firm CEO reconsider more frequently his/her investments during his/her tenure, a relatively short period of time, and become more myopically risk averse in decision making. This leads to the avoidance of long-term investments, which are inherently risky.

Indeed, previous studies have found that a family firm CEO's expectations of managerial succession are a potential driver of long-term investment. For example, Claver, Rienda, & Quer (2009) empirically demonstrate that the number of generations that have run a family firm—a higher value indicates that its managerial succession is highly predictable—has a positive impact on high-level resource commitments for internationalization. Similarly, Fernandez & Nieto (2005) show that the involvement of a family firm's second and subsequent generations in its running

promotes internationalization. These results indicate that a family firm tends to engage in long-term investments when it has high expectations of managerial succession through the involvement of subsequent generations in management.

The concept of a CEO's expectations of managerial succession is theoretically and empirically different from CEO career horizons; the latter reflect a CEO's expected tenure until his/her retirement. Near-retirement CEOs may behave opportunistically to maximize their own benefits, thereby avoiding long-term projects with uncertain short-term outcomes. Based on this argument, Strike et al. (2015) empirically demonstrated that longer career horizons of a CEO (obtained by subtracting his or her age from 70) increased the likelihood of an international acquisition— a type of long-term investment —by a firm. Career horizons and expectations of managerial succession may have a similar mechanism in terms of explaining long-term investment. Nonetheless, the concepts shed light on different aspects of CEOs' concerns. A CEO's career horizon pertains to concerns about ongoing managerial issues *until* his/her retirement, whereas a CEO's expectations of managerial succession relates to his/her concerns regarding how effectively ongoing and future managerial issues will be processed *after* his/her retirement. This becomes clear if you imagine a hypothetical situation in which two CEOs of the same age are nearing retirement but only one of them is certain about his/her successor. The career horizons viewpoint indicates that the two CEOs would have a weaker tendency for long-term investment; however, the managerial succession expectations viewpoint suggests they would have completely opposing tendencies. Therefore, the following hypothesis is proposed:

Hypothesis 1: The likelihood that a family firm engages in long-term investment is positively associated with its CEO's expectation that successors will be found.

Family firm CEO's expectations of managerial succession by children and non-children

Even when a family firm CEO is confident that his/her successors will be found, the firm's investment time horizon might still depend on the family status of these potential successors, who could be either children successors—having strong blood relations with the family firm CEO—or non-children successors, such as sons/daughters-in-law, cousins, distant relatives, or those from outside the family. The success of children in their careers may lead to the prosperity of their offspring, which is a source of socioemotional wealth. Because family firm CEOs have an incentive to preserve their socioemotional wealth when making investment decisions, it is predicted that they consider the family status of successors when deciding on investments.

Threats to the socioemotional wealth of family firm CEOs trigger a "loss mode" (Berrone et al*.,* 2012), leading them to choose strategic options based primarily on potential losses in socioemotional wealth. As such, CEOs tend to be loss averse and inclined to avoid risky decisions that may cause huge losses in socioemotional wealth. Accordingly, a family firm CEO's investment choices depend on an evaluation of their impact on socioemotional wealth.

When a family firm CEO expects his/her children to succeed him/her in the family firm, he/she is less likely to engage in long-term investments because of non-negligible potential losses in socioemotional wealth from such investments. When children successors fail to manage the long-term investments and their firm goes bankrupt, their family's socioemotional wealth could disappear for three reasons. First, through firm bankruptcy, children successors would waste their managerial skills and ruin their careers as managers, most of which are typically firm-specific and sunk. Children successors who have failed in running their family firm would not easily find equivalent jobs or recover their previous standard of living, thereby reducing their family's socioemotional wealth. Second, the failure of a family firm could destroy the wealth and property

of its family managers, who frequently mortgage their own homes to raise capital. When the firm becomes insolvent, its family managers must pay its liabilities, which may be considerable in countries where the bankruptcy laws are strict (Lee, Peng, & Barney, 2007); this implies a higher chance of personally going bankrupt. Third, the bankruptcy of a firm lead to its managers incurring psychological costs (Shepherd, 2003). Further, children successors feel ashamed and responsible for the firm's failure, which harms their psychological well-being.

In contrast, the failure of a family firm managed by non-children successors would result in lower losses of socioemotional wealth. The effect of bankruptcy on the lives of non-children successors has much less impact on a family firm CEO's socioemotional wealth. This is because the non-children successors and their offspring do not influence the family firm CEO's affective needs, such as family control and influence, identity, and the perpetuation of his or her family dynasty, which are the core dimensions of socioemotional wealth (Berrone et al., 2012). Accordingly, a family firm CEO, who is typically loss averse, is more likely to engage in long-term investment when he or she expects that non-children successors will take his or her place as opposed to children successors, owing to the lower fear of the failure of such investments causing a decline in socioemotional wealth.

As the defining feature of a family-controlled business, a family firm CEO typically intends to maintain the firm's continuity by passing it onto succeeding generations (Lansberg, 1999). Nevertheless, because of a family firm CEO's loss aversion, the potential losses in socioemotional wealth derived from the failure of children successors would loom much larger than the potential gains arising from their successful recovery of long-term investments. This discourages the family firm CEO to leave risky long-term investments as his or her legacy. Accordingly, we propose the following hypothesis.

Hypothesis 2: The likelihood that a family firm engages in long-term investment is more positively associated with its CEO's expectation that non-children will succeed him/her rather than his/her children.

Research Methods

Our dataset is based on a time-lagged survey of small- and medium-sized enterprises (SMEs). The target firms were incorporated manufacturers located in the Tokyo metropolitan area, and had either fewer than 300 regular employees or less than 300 million yen in capital stock. The names and addresses of these firms were identified by Tokyo Shoko Research, Ltd., the largest credit reporting agency in Japan. We chose the Tokyo metropolitan area as the sampled area, because the largest number of SMEs in Japan are located there. Thus, the sampled manufacturing SMEs, which are from a variety of industries, reflect industry effects on long-term investments.

In November 2016, we sent the first survey on firm attributes, CEO demographic characteristics, and their succession expectations to 15,111 firms that met the above conditions. Then, in January 2018, we sent the second survey on long-term investments, which are the dependent variables of this study, to 1,499 respondents of the first survey. Because the second survey was lagged for one year from the first, which collected a set of independent variables, the possibility of reverse causality is effectively eliminated. For both surveys, we used a mixed-mode strategy (Groves et al*.,* 2009). Specifically, we sent each firm a hard copy of our questionnaire and a cover letter explaining the purpose of this study, along with the respondent's identification number and password required for answering the online survey. A reminder letter was sent to each firm two weeks after the surveys had been mailed. Respondents were asked to answer within a

month each questionnaire, either by the mail or online option.

Although we obtained responses to the second survey from 732 firms—a response rate of 48.8%—we apply the following two conditions to further limit our sample. First, we only used firms where the CEOs themselves answered the questions about their expectation of succession. Including responses from non-CEOs in our analysis would bias our estimation results, as we are interested in the effect of CEOs' expectations that their successors will be found. As our target firms were SMEs, most of the responses were provided by CEOs. Indeed, the CEOs of large firms rarely answer questionnaires themselves, even if they are designated as the survey respondents. Second, owing to our core interest, we restricted our observations to family firms. There is a lack of consensus among researchers on the definition of a family firm (Kontinen & Ojala, 2010). Hence, we chose the most prevalent definition in studies of family firms, which is based on the proportion of a firm's equity held by family owners (Crick et al., 2006; Davis & Harveston, 2000; Okoroafo, 1999). In particular, most studies define family SMEs as businesses in which the founding family owns over 50 percent share (Astrachan & Kolenko, 1994). Therefore, we adopted this ownership-based definition. After removing incomplete responses, we used 410 observations in our analysis.

Variables capturing long-term investments

Using the data from the second survey, we adopt three variables to capture long-term investments, following previous studies: internationalization activities, R&D, and new product development (Laverty, 1996; Reilly, Souder, & Ranucci, 2016). The first variable is an indicator of whether firms plan to expand their businesses into overseas markets (Tihanyi, Johnson, Hoskisson, & Hitt, 2003). In our sample, about 3.9 percent of firms planned to internationalize, suggesting that most Japanese family SMEs may not have positive attitudes toward

internationalization. The second variable is an indicator of whether firms perform R&D activities (Chrisman & Patel, 2012; Desyllas & Hughes, 2010; Hopp, 1987). In total, 31.5 percent of our firms performed R&D activities. The third variable measures the involvement of firms in inventing new products and services (Nadkarni & Chen, 2014; Souza, Bayus, & Wagner, 2004). The responses ranged from one (not at all involved) to seven (extremely involved) and were categorized. Respondents who answered "not at all involved" comprised the highest share (21.7%), suggesting that many Japanese family SMEs are not enthusiastic about developing new products and services.

Subjective probability of managerial succession

To understand the effects of uncertainty about managerial succession, we constructed a variable using the following question in the first survey, "(h)ow likely is it that there will be a successor to take over the firm?" We asked respondents to report their probabilistic expectations (on a scale from zero to one). Hereafter, this variable is referred to as the "subjective probability of (managerial) succession." Over the past 20 years, economists have increasingly captured probabilistic expectations from survey respondents (Manski, 2004). Expectations, measured by subjective probabilities, are considered to have high predictive power in situations where individuals have considerable private information (Hurd, 2009). In fact, applied microeconomics studies, especially those in health economics and labor economics, have used subjective probabilities to examine individual choice behaviors (e.g., Giustinelli & Manski, 2016; Montmarquette & Cannings, 2002; Stinebrickner & Stinebrickner, 2013; Wiswall & Zafar, 2015).

In our observation, the sample mean of the subjective probability of managerial succession is 0.55. While the probabilities provided were concentrated at zero (31.3%) and one (44.8%), about one-third of the CEOs provided probabilities between zero and one, expressing perceived uncertainties about succession. In addition, if the CEOs' probabilities were greater than

zero, we then asked about their potential successors (i.e., children or non-children). The sample mean of the subjective probability of succession by children was 41.7 percent and that by non-children was 15.8 percent.

The subjective succession probability variable could be endogenous owing to omitted factors. For example, unobserved factors, including the personality traits of the CEO, such as optimism and narcissism, may affect his/her investment time horizon (Chatterjee & Hambrick, 2007); further, they are correlated with his/her expectations that a successor will be found. Accordingly, we used an instrumental variable approach to account for the endogenous nature of the subjective probability of succession. In particular, we used the presence of a son as an instrument. In Japanese family firms, incumbent CEOs consider their children as the first in line to succeed their businesses. Indeed, children with family business backgrounds tend to take over their parents' businesses. As Japanese women generally take the last names of their husbands, family firm CEOs would expect their sons to succeed them in their family businesses. In addition, extant research indicates that firms in which the CEO's first child is male are more likely to pass on control to a family firm CEO (Bennedsen et al*.,* 2007). Thus, our identification assumption was that the presence of a son is unrelated to factors that affect long-term investment decisions, once we control for the subjective probability of succession and other variables. In our sample, 68.3 percent of family firm CEOs had at least one son.

Control variables

Using information from responses to the first survey, we constructed a set of control variables that affect long-term investment decisions. These control variables reflected the effects of both firm and CEO demographic backgrounds. To control for the extent of family influence within a firm, we used the family ownership ratio. As the family plays an important role in

determining the vision and control mechanisms in a family firm (Anderson et al., 2012), family ownership significantly influences its major decisions. To capture familiness better, we also included a dummy variable indicating whether the name of a firm derives from its family's last name. In our sample, 24.9 percent of firms used family names as part of their firm names.

We also controlled for firm age because this may be associated with long-term investments. Thus, as older firms accumulate resources, managerial knowledge, and the ability to handle uncertainty (Levitt & March, 1988), they would be more likely to make long-term investments. To control for this effect, we included the natural logarithm of firm age, as in previous studies (Claver et al., 2009; Fernandez & Nieto, 2005, 2006; Gómez-Mejia et al., 2010; Sciascia et al., 2012). Similarly, firm size may also play a role in long-term investments; thus, large firms can achieve economies of scale and access sufficient resources for long-term investments. Accordingly, we measured firm size by taking the natural logarithm of the number of employees.

A firm's international experience would provide many opportunities to acquire profound knowledge of new foreign markets. This knowledge would enable decision making when firms make long-term investments (Fernandez & Nieto, 2005). To control for the effect of a firm's international experience, we used three variables: (1) a dummy variable taking value one if the firm had entered overseas markets in the past and zero otherwise; (2) the ratio of export to total sales (Chang, 1995); and (3) the ratio of imports to total purchases (Chang, 1995).

We also considered differences in investment time horizons across generations. Extant research indicates remarkable differences between the first generation (founder) and subsequent generations of a firm in several aspects (Sonfield & Lussier, 2004). For instance, the management styles of CEOs might differ considerably across generations (Dyer, 1988; McConaughy & Phillips, 1999). Therefore, such managerial differences across generations may influence long-term

investment decisions. To control for the effects of generation, we included a categorical variable that takes four values: one if the CEO of a firm is its founder; two if he/she is from the second generation; three if from the third-generation, and four if the CEO is from the fourth-generation or later. In our sample, the second generation CEOs were 39.5 percent of the respondents and constituted the largest category.

Previous literature also indicates links between capital structure and investment behavior (Du, Guariglia, & Newman, 2015; Choi, Kumar, & Zambuto, 2016). To control for the effect of capital structure, we used a categorical variable taking one if a firm has less than 10 million yen in debt; two if their debt is between 10 million and 100 million yen; and three if they have more than 100 million yen in debt. There is no qualitative change in our results when an alternative variable is used to measure whether firms have debt.

Other control variables that capture CEO demographic background were CEO tenure (measured by taking the natural logarithm of CEO tenure), international experience (a dummy variable to capture whether a CEO has experience of living abroad), educational level (a dummy variable that indicates whether a CEO has a bachelor's degree or higher), age (the natural logarithm of CEO's age), and gender (a dummy variable to capture whether a CEO is male). These demographic background characteristics may be valid indicators of the CEO's cognitive capabilities (Carpenter, Pollock, & Leary, 2003; Hambrick & Mason, 1984). The literature shows that the CEO's age (Deakin et al*.,* 2004; Taylor, 1975), tenure (Finkelstein & Hambrick, 1990; Wiersema & Bantel, 1992), and international experience (Carpenter, Sanders, & Gregersen, 2001) affect long-term investment decisions; this is because these factors influence the extent to which CEOs are willing to take risks and the information-processing demands they face when making important strategic decisions, such as internationalization (Laufs, Bembom, & Schwens, 2016).

For example, although a CEO with a longer tenure is more likely to hold onto the organizational status quo (Hambrick, Geletkanycz, & Fredrickson, 1993), a CEO with a shorter tenure is more inclined to take risks because of his/her novel information and flexible attitude (Finkelstein & Hambrick, 1990). Table 5 reports summary statistics and correlations among the variables used in our analysis.

Models

Estimation models for Hypothesis 1

To test Hypothesis 1, we use two types of variables as dependent variables: two binary variables and an ordered variable. Specifically, the binary variables are (i) a variable that captures plans of entering overseas markets and (ii) a variable for performing R&D activities. The ordered variable is a variable for developing new products and services. For the binary dependent variables, we estimate probit models to account for their binary nature:

$$y_i = I(\alpha \cdot sp_i + \mathbf{x}_i'\beta + u_i \geq 0), \quad (1)$$

where subscript i indicates firm I; sp_i is the CEO's subjective probability of managerial succession; $\mathbf{x}_i$ is a set of other observed factors; u_i is an error term, which is assumed to follow a standard normal distribution; and $I(\cdot)$ is an indicator function.

As mentioned earlier, the estimation of these models may suffer because the subjective probability of succession (sp_i) may be an endogenous variable. To address this issue, we control for the endogeneity of the subjective probability of succession by applying the method proposed by Terza, Basu, & Rathouz (2008). For this, we slightly modify equation (1) by decomposing u_i into two parts:

$$y_i = I(\alpha \cdot sp_i + \mathbf{x}_i'\beta + \rho_1\omega_{1i} + v_i \geq 0), \quad (2)$$

where ω_{1i} captures a set of unobserved factors correlated with sp_i; ρ_1 is the corresponding parameter; and v_i captures a set of unobserved factors not correlated with sp_i and assumed to be standard normally distributed. Conditional on ω_{1i} (as well as sp_i and $\mathbf{x}_i$), the response probability is

$$\Pr(y_i = 1|sp_i, \mathbf{x_i}, \omega_{1i}) = \Phi(\alpha \cdot sp_i + \mathbf{x}_i'\beta + \rho_1\omega_{1i}), \quad (3)$$

where $\Phi(\cdot)$ is the cumulative distribution function of a standard normal random variable. Endogeneity emerges owing to the presence of ω_{1i}; if a probit model is estimated via maximum likelihood without dealing with ω_{1i}, the estimator will be inconsistent unless $\rho_1 = 0$.

To control for ω_{1i}, we specify a reduced-form equation to formalize the relationship between sp_i and ω_{1i}:

$$sp_i = g(\mathbf{x}_i'\gamma + \delta z_i) + \omega_{1i}, \quad (4)$$

where $g(\cdot)$ is some function and z_i is an identifying instrument. This instrumental variable satisfies the following three conditions (Terza et al., 2008): it is not correlated with ω_{1i}; it is sufficiently correlated with sp_i; and it can neither have a direct influence on y_i nor be correlated with v_i.

The subjective probability of succession (sp_i) has a particular nature; it takes values in the unit interval [0, 1], with a grouping at both zero and one. To account for this nature, we specify a probit function $\Phi(\cdot)$ for $g(\cdot)$ in equation (4) so that $E(sp_i|\mathbf{x_i}, z_i) = \Phi(\mathbf{x}_i'\gamma + \delta z_i)$. This specification allows sp_i to take any values in the unit interval, including at the endpoints, while the fitted values for sp_i are between 0 and 1, as desired. This equation can be consistently estimated using the Bernoulli QMLE fractional probit regression (Papke and Wooldridge, 1996; Wooldridge, 2010).

Table 5: Summary Statistics and Correlations

Variable	Mean	Std. Dev	Min	Max	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
1. Plan to internationalize (d)	0.04	0.19	0	1																									
2. R&D (d)	0.32	0.46	0	1	.22																								
3. New products	3.84	2.07	1	7	.19	.59																							
4. Subjective probability of successi	0.55	0.44	0	1	.12	.17	.20																						
5. By children	0.42	0.46	0	1	.05	.05	.10	.67																					
6. By non-children	0.16	0.31	0	1	.04	.15	.18	.23	-.37																				
7. Son (d)	0.68	0.47	0	1	.00	-.02	.03	.23	.42	-.22																			
8. Family ownership	0.88	0.16	0.50	1	-.08	-.12	-.11	-.09	-.02	-.08	.01																		
9. Family name (d)	0.25	0.43	0	1	.00	-.05	-.12	-.01	.09	-.09	-.01	.05																	
10. Firm age	50.99	26.34	1	168	.01	-.05	-.02	.11	.18	-.06	.04	.00	.24																
11. Debt (< 10 million yen)	0.29	0.46	0	1	-.07	-.11	-.19	-.22	-.19	.00	-.08	.07	-.04	-.10															
12. Debt (10 million - 100 million yen	0.41	0.49	0	1	-.07	.01	.02	.00	.02	-.08	.07	.08	-.01	-.07	-.54														
13. Debt (> 100 million yen)	0.30	0.46	0	1	.15	.10	.17	.23	.17	.09	.00	-.15	.05	.18	-.42	-.54													
14. Firm's international experience (d)	0.07	0.26	0	1	.24	.08	.10	.01	-.04	.03	-.12	-.06	-.03	.07	-.05	-.06	.11												
15. Current generation (founder)	0.30	0.46	0	1	.04	.07	.12	.03	-.05	.05	-.02	.02	-.20	-.57	.04	.12	-.17	-.07											
16. Current generation (2nd)	0.40	0.49	0	1	-.03	-.04	-.09	-.07	.02	-.07	.03	.07	.11	-.01	.01	-.05	.05	-.01	-.52										
17. Current generation (3rd)	0.22	0.42	0	1	.01	-.06	-.05	-.01	-.01	.01	.01	-.05	.09	.34	-.06	-.04	.10	.15	-.35	-.43									
18. Current generation (4th or later)	0.09	0.28	0	1	-.02	.05	.03	.09	.05	.02	-.03	-.07	.00	.44	.01	-.05	.04	-.09	-.20	-.25	-.17								
19. Export ratio	0.09	0.21	0	1	.06	.09	.13	-.01	-.07	.06	.01	.01	-.10	-.14	-.07	.04	.02	.08	.08	-.07	.00	.00							
20. Import ratio	0.04	0.12	0	0.98	.05	.08	.11	.06	.01	.01	.03	-.09	.02	.07	-.03	-.01	.03	.05	-.01	-.11	.07	.09	.10						
21. The number of employee (log)	2.24	1.03	0	5.48	-.02	.12	.14	.24	.18	.17	-.04	-.28	.13	.27	-.35	-.21	.57	.11	-.27	.08	.12	.14	.00	.10					
22. CEO tenure	20.07	14.41	1	65	.05	-.02	.02	.22	.26	-.08	.10	.07	-.07	.02	-.11	.13	-.03	-.03	.42	-.12	-.23	###	###	###	-.06				
23. CEO education (d)	0.70	0.46	0	1	.02	.11	.08	-.02	-.03	.06	.01	-.05	.10	.19	.02	-.06	.05	.08	-.21	.17	.06	-.04	-.01	.07	.12	-.11			
24. CEO age	59.98	11.74	29	88	.04	.02	.02	.26	.26	-.04	.14	.00	.00	-.01	-.03	.09	-.06	-.09	.37	-.09	-.23	-.11	-.13	.00	-.13	.72	-.04		
25. CEO's international experience (d)	0.10	0.30	0	1	.10	.09	.14	-.02	-.02	-.03	-.10	.03	.09	-.02	-.05	-.05	.11	.10	-.04	.05	.00	-.02	.03	.21	.07	-.14	.10	-.14	
26. Sex (d)	0.97	0.18	0	1	.04	-.05	.02	-.04	-.08	.07	.05	-.09	.02	.00	-.03	-.03	.06	.05	.00	.04	.04	-.13	.01	.05	.03	.10	.20	.03	.02

Note: Correlation greater than 0.09 are significant at p<0.05; greater than 0.13 are significant at p<0.01. (d) means a dummy variable. N=410.

Given equations (3) and (4), we can control for endogeneity using the following two-stage procedure. In the first stage, we estimate equation (4) and compute the residual $\widehat{\omega}_{1i} = sp_i - g(\mathbf{x}_i'\hat{\gamma} + \hat{\delta}z_i)$. In the second stage, we estimate the probit model represented by equation (3) by substituting $\widehat{\omega}_{1i}$ into ω_{1i}. We compute the estimates of the standard errors using bootstrap resampling (500 replications) to account for the fact that $\widehat{\omega}_{1i}$ is a generated regressor of ω_{1i}. If ρ_1 is not statistically different from zero, it can be concluded that the subjective probability of succession (sp_i) is an exogenous variable.

For the ordered dependent variable, we estimate an ordered probit model. As the endogeneity problem for this model is dealt with in a manner similar to that for the probit estimation, we do not repeat the model descriptions.

Estimation model for Hypothesis 2

We now decompose the CEO's subjective probability of succession (sp_i) into (i) the subjective probability that his/her children will succeed him/her at the firm (sp_{ci}) and (ii) the subjective probability that non-children will succeed him/her at the firm (sp_{nci}); thus, $sp_i = sp_{ci} + sp_{nci}$. This approach allows us to test Hypothesis 2 by examining the extent to which the effect of the former on long-term investment is smaller than that of the latter.

Therefore, we relax the assumption (implicitly imposed on equation [1]) that the coefficient on sp_{ci} is the same as that on sp_{nci}[1]:

$$y_i = I(\alpha_1 \cdot sp_{ci} + \alpha_2 \cdot sp_{nci} + \mathbf{x}_i'\beta + u_i \geq 0). \quad (5)$$

Equation (5) has the same endogeneity problem as equation (1), in that sp_{ci} and sp_{nci} may be correlated with u_i. To control for potential endogeneity, we decompose u_i into three parts:

[1] If $\alpha_1 = \alpha_2 = \alpha$, then equation (5) becomes equation (1), given that $sp_i = sp_{ci} + sp_{nci}$.

$$y_i = I\left(\alpha_1 \cdot sp_{c_i} + \alpha_2 \cdot sp_{nc_i} + \mathbf{x}_i'\beta + \rho_{21}\omega_{21i} + \rho_{22}\omega_{22i} + v_i \geq 0\right), \quad (6)$$

where ω_{21i} (ω_{22i}) captures the set of unobserved factors correlated with sp_{ci} (sp_{nc_i}); ρ_{21} and ρ_{22} are the corresponding parameters; and v_i captures the set of unobserved factors not correlated with sp_{ci} and sp_{nci}, and assumed to be standard normally distributed. Conditional on ω_{21i} and ω_{22i} (as well as sp_{ci}, sp_{nc_i}, and $\mathbf{x}_i$), the response probability can be expressed as

$$\Pr\left(y_i = 1 \middle| sp_{ci}, sp_{nc_i}, \mathbf{x_i}, \omega_{21i}, \omega_{22i}\right) \quad (7)$$

$$= \Phi(\alpha_1 \cdot sp_{ci} + \alpha_2 \cdot sp_{nci} + \mathbf{x}_i'\beta + \rho_{21}\omega_{21i} + \rho_{22}\omega_{22i}).$$

To control for ω_{21i} (ω_{22i}), we specify a reduced-form equation to formalize the relationship between sp_{ci} (sp_{nci}) and ω_{21i} (ω_{22i}):

$$sp_{ci} = g_c(\mathbf{x}_i'\gamma_c + \delta_c z_i) + \omega_{21i}, \quad (8)$$

$$sp_{nci} = g_{nc}(\mathbf{x}_i'\gamma_{nc} + \delta_{nc} z_i) + \omega_{22i}. \quad (9)$$

These variables can be regarded as multivariate share data because they are within the unit interval [0, 1] and the total of these probabilities and the subjective probability of not being succeeded (sp_{ni}) is one. To account for the nature of sp_{ci} and sp_{nci}, we choose the multinomial logit functional form for $g_j(\cdot)$ $(j = c, nc)$, which is an extension of the fractional regression methodology mentioned above.

$$E\left(sp_{ji} \middle| \mathbf{x}_i, z_i\right) = g_j\left(\mathbf{x}_i'\beta_j + \delta_j z_i\right) = \frac{\exp\left(\mathbf{x}_i'\beta_j + \delta_j z_i\right)}{1 + \sum_j \exp\left(\mathbf{x}_i'\beta_j + \delta_j z_i\right)} \; j = c, nc,$$

and $E(sp_{ni}|\mathbf{x}_i, z_i) = 1 - E(sp_{ci}|\mathbf{x}_i, z_i) - E(sp_{nci}|\mathbf{x}_i, z_i)$. The multinomial fractional logit model (Koch, 2010; Mullahy, 2015) can be estimated using the quasi-maximum likelihood method (see Mullahy (2015) for details of this estimation technique).

Given equations (7), (8), and (9), we use the following two-stage procedure. We first estimate a multinomial fractional logit model and compute the first-stage residuals:

$$\widehat{\omega}_{21i} = sp_{ci} - E(sp_{ci}|\mathbf{x}_i, z_i),$$

$$\widehat{\omega}_{22i} = sp_{nci} - E(sp_{nci}|\mathbf{x}_i, z_i).$$

In the second stage, we estimate equation (7) by substituting $\widehat{\omega}_{21i}$ and $\widehat{\omega}_{22i}$ for the unobserved latent factors, ω_{21i} and ω_{22i}. We compute the standard errors using bootstrap resampling (500 replications). If the null hypothesis that $\rho_{21} = \rho_{22} = 0$ is not rejected, it is appropriate to treat the subjective probabilities of succession (sp_{ci} and sp_{nci}) as exogenous variables (Geraci, Fabbri, and Monfardini, 2016).

Results

Endogeneity test

To test for endogeneity in the subjective probabilities, we must first check the relevance of the instrument (i.e., the presence of a son) in the reduced-form equations for the subjective probabilities. As presented in Table 6, the presence of a son is found to be positively and significantly associated with the subjective probability of succession in the fractional probit model. In the multinomial fractional logit model—despite this variable being significantly associated with only the subjective probability for children-we can reject the joint null hypothesis that the coefficients on the "presence of a son" are all simultaneously zero ($\chi^2 = 64.17, p = 0.000$). Therefore, this variable satisfies at least one of the requirements for a valid instrument.

We also estimate a linear model to further examine how strongly the instrument is correlated with the subjective probability of succession. The instrumental variable's *F*-statistic is found to be 19.34. An often-used rule of thumb proposed by Staiger & Stock (1997) is that an *F*-statistic of less than 10 indicates weak instruments in the context of the two-stage least squares estimator; this suggests that our estimation is unlikely to suffer from the weak instrument problem.

Similar results were obtained for the subjective probabilities for children (82.31) and non-children (19.09).

The lower part of Table 6 provides the second-stage results, particularly the estimated coefficients of the residuals from the first-stage regressions. They are not significant, even at the 10 percent level. Moreover, a Wald test of the joint insignificance of ρ_{21} and ρ_{22} is not rejected at the 10 percent level. These results provide evidence in favor of the exogeneity of all the variables measuring the subjective probabilities. Therefore, we can conclude that the results under the assumption of exogeneity are relevant.

Estimation results under the assumption of exogeneity

As the subjective probabilities are found to be exogenous, we next estimate the models under the assumption of exogeneity. Columns (1), (2), and (3) of Table 7 provide the estimation results for the internationalization equation, when excluding the subjective probability measures, including the subjective probability of managerial succession, and including those by children and non-children, respectively. Similarly, columns (4), (5), and (6) present the results of the R&D equation and columns (7), (8), and (9) contain the results of the new product/service equation.

In columns (2), (5), and (8), the coefficient of the subjective probability of managerial succession is found to be positive and significant at least at the 5 percent level. These results support Hypothesis 1, suggesting that the subjective probability of managerial succession is more likely to facilitate long-term investments.

We further confirm the importance of the subjective probability of succession when decomposing the potential successors into children and non-children. Specifically, in columns (3), (6), and (9), the subjective probability of succession by non-children is positively and significantly associated with long-term investments. Similar results are obtained for the CEO's children. The

null hypothesis for Hypothesis 2 is $H_0: \beta_c = \beta_{nc}$. The alternative is one-sided, $H_1: \beta_c < \beta_{nc}$, which implies that a one-unit increase in the probability of succession by the CEO's children has less worth than that by non-children. For the R&D equation (column [3]), the null hypothesis is rejected ($\chi^2 = 2.56$, $p = 0.055$). Similarly, the null hypothesis isrejected ($\chi^2 = 5.53$, $p = 0.009$) for the new product/service equation (column [9]). These results imply that the effect of the subjective probability of succession by non-children is statistically larger than that by the CEO's children; thus Hypothesis 2 is supported.

We also measure the extent to which the subjective probability of managerial succession influences each of the dependent variables. For this, we compute the marginal effects on the means under the assumption of exogeneity. As presented in Table 8, the marginal effects of the subjective probability of managerial succession are found to be 0.059 for planning internationalization, 0.153 for R&D activities, and 0.058 for new product/service development. In other words, firms whose CEOs are certain of succession are 5.9 percent, 15.3 percent, and 5.8 percent more likely to internationalize, implement R&D activities, and engage in new product/service development than those whose CEOs are not at all certain whether a successor will be found.

In addition, for each long-term investment, we find the predicted probabilities of CEOs' expectations of potential successors, based on the estimated coefficients. The results, presented in Tables 9(a), 9(b), and 9(c), provide some insight into how long-term investment decisions are influenced by the family status of potential successors. In particular, the results reveal that even if two CEOs of family firms have the same subjective probability of managerial succession, their long-term investment behavior may differ, depending on the family status of their expected successors. Consider the planning of internationalization as an example. Table 9 shows five combinations of CEO expectations in which the subjective probability of managerial succession is

Table 6: Tests for Endogeneity of Subjective Succession Probabilities

1st stage	Subjective probability of succession		
		by children	by non-children
	Fractional probit	**Multinomial fractional logit**	
	(1)	(2)	(3)
Son (d)	0.55 **	2.22 **	-0.20
	(0.12)	(0.30)	(0.26)
Family ownership	-0.18	0.15	0.36
	(0.39)	(0.75)	(0.81)
Family name (d)	-0.08	0.29	-0.51
	(0.14)	(0.28)	(0.34)
Firm age(log)	-0.06	0.22	-0.37 †
	(0.12)	(0.28)	(0.23)
Debt (10 million - 100 million yen)	0.22	0.30	-0.15
	(0.14)	(0.28)	(0.32)
Debt (100 million yen -)	0.49 **	0.72 †	0.29
	(0.18)	(0.38)	(0.42)
Firm's international experience (d)	0.14	0.07	0.05
	(0.21)	(0.55)	(0.49)
Current generation (2nd)	-0.04	0.20	-0.37
	(0.19)	(0.38)	(0.42)
Current generation (3rd)	0.11	0.26	-0.08
	(0.23)	(0.48)	(0.53)
Current generation (4th or later)	0.49 †	0.54	0.21
	(0.28)	(0.57)	(0.60)
Export ratio	0.00	-0.45	0.10
	(0.27)	(0.57)	(0.57)
Import ratio	0.19	-0.55	0.13
	(0.45)	(0.90)	(0.93)
The number of employee (log)	0.23 **	0.61 **	0.78 **
	(0.08)	(0.16)	(0.18)
CEO tenure (log)	0.10	0.48 *	-0.20
	(0.09)	(0.21)	(0.22)
CEO education (d)	-0.07	-0.21	0.33
	(0.13)	(0.27)	(0.29)
CEO age (log)	1.40 **	2.14 **	2.13 *
	(0.39)	(0.80)	(0.93)
CEO's international experience (d)	0.07	0.22	-0.62
	(0.19)	(0.42)	(0.40)
Gender (d)	-0.46	-1.74 **	0.79
	(0.30)	(0.55)	(0.82)
Constant	-6.12	-12.80	-10.48
	(1.66)	(3.35)	(3.91)
log pseudo likelihood	-244.57	-333.37	
2nd stage			
calculated residuals	ω_1	ω_{21}	ω_{22}
Plan to internationalize	0.43	0.53	5.14
	(1.77)	(1.78)	(5.01)
R&D	0.82	0.36	-0.07
	(0.78)	(0.73)	(1.55)
New Products	-0.37	-0.19	0.57
	(0.60)	(0.56)	(1.22)

Note : Robust standard errors in parentheses for 1st stage estimation results, while we show the standard errors in parentheses for the raw residual(s). (d) means a dummy variable. When estimating the internationalization equations, we dropped 14 observations where Gender=0, because female CEO (Gender=0) perfectly predicts "do not have plan to internationalize (Plan to internationalize=0)." N=410. †, *, and ** imply that the coefficient is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

Table 7: Estimated Coefficients under the Assumption of Exogeneity

	Plan to internationalize (Probit)			R&D (Probit)			New product (Ordered probit)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Subjective probability of succession		0.96 *			0.48 **			0.37 **	
		(0.44)			(0.17)			(0.13)	
By children			0.84 †			0.39 *			0.46 **
			(0.45)			(0.18)			(0.14)
By non-children			1.15 *			0.75 **			0.89 **
			(0.56)			(0.24)			(0.19)
Family ownership	-1.66 *	-1.81 *	-1.92 *	-0.70 †	-0.71 †	-0.75 †	-0.40	-0.38	-0.43
	(0.82)	(0.86)	(0.88)	(0.43)	(0.43)	(0.43)	(0.34)	(0.34)	(0.34)
Family name (d)	0.20	0.17	0.23	-0.11	-0.11	-0.10	-0.29 *	-0.28 *	-0.27 *
	(0.35)	(0.36)	(0.37)	(0.17)	(0.17)	(0.17)	(0.13)	(0.13)	(0.13)
Firm age (log)	0.05	0.08	0.09	-0.21	-0.20	-0.18	-0.09	-0.09	-0.07
	(0.40)	(0.42)	(0.43)	(0.15)	(0.15)	(0.15)	(0.11)	(0.11)	(0.11)
Debt (10 million - 100 million yen)	0.26	0.11	0.15	0.25	0.20	0.25	0.28 *	0.25 †	0.28 *
	(0.44)	(0.47)	(0.47)	(0.17)	(0.17)	(0.17)	(0.13)	(0.13)	(0.13)
Debt (100 million yen -)	1.49 **	1.39 **	1.44 **	0.33	0.23	0.28	0.48 **	0.42 *	0.45 **
	(0.52)	(0.54)	(0.54)	(0.21)	(0.22)	(0.22)	(0.17)	(0.17)	(0.17)
Firm's international experience (d)	1.18 **	1.27 **	1.35 **	0.28	0.27	0.29	0.33	0.34	0.36 †
	(0.37)	(0.39)	(0.40)	(0.26)	(0.27)	(0.27)	(0.21)	(0.21)	(0.21)
Current generation (2nd)	-0.09	-0.09	-0.15	-0.16	-0.18	-0.16	-0.32 †	-0.33 †	-0.32 †
	(0.48)	(0.51)	(0.52)	(0.22)	(0.22)	(0.22)	(0.17)	(0.17)	(0.17)
Current generation (3rd)	-0.21	-0.26	-0.22	-0.23	-0.28	-0.27	-0.31	-0.34	-0.35
	(0.66)	(0.68)	(0.69)	(0.28)	(0.29)	(0.29)	(0.22)	(0.22)	(0.22)
Current generation (4th or later)	-0.03	-0.14	-0.17	0.20	0.11	0.14	-0.07	-0.13	-0.13
	(0.93)	(0.98)	(1.03)	(0.35)	(0.36)	(0.36)	(0.27)	(0.28)	(0.28)
Export ratio	0.56	0.48	0.39	0.32	0.31	0.32	0.44 †	0.44 †	0.46 †
	(0.65)	(0.71)	(0.72)	(0.32)	(0.32)	(0.32)	(0.26)	(0.26)	(0.26)
Import ratio	0.02	-0.29	0.13	0.45	0.40	0.46	0.50	0.45	0.52
	(1.10)	(1.19)	(1.08)	(0.55)	(0.55)	(0.55)	(0.44)	(0.44)	(0.44)
The number of employee (log)	-0.56 **	-0.68 **	-0.74 **	0.11	0.08	0.05	0.07	0.05	-0.01
	(0.19)	(0.21)	(0.23)	(0.09)	(0.09)	(0.09)	(0.07)	(0.07)	(0.07)
CEO tenure (log)	0.34	0.28	0.34	0.09	0.08	0.10	0.02	0.01	0.02
	(0.38)	(0.40)	(0.41)	(0.12)	(0.12)	(0.13)	(0.09)	(0.09)	(0.09)
CEO education (d)	-0.04	-0.09	-0.09	0.47 **	0.49 **	0.47 **	0.27 *	0.28 *	0.27 *
	(0.32)	(0.33)	(0.34)	(0.16)	(0.16)	(0.16)	(0.12)	(0.12)	(0.12)
CEO age (log)	-0.12	-0.62	-0.42	0.02	-0.26	-0.22	0.16	-0.04	-0.11
	(1.20)	(1.26)	(1.26)	(0.48)	(0.49)	(0.49)	(0.37)	(0.38)	(0.38)
CEO's international experience (d)	0.46	0.53	0.57	0.28	0.30	0.35	0.43 *	0.43 *	0.48 **
	(0.40)	(0.41)	(0.42)	(0.23)	(0.23)	(0.23)	(0.18)	(0.18)	(0.18)
Gender (d)				-0.71 †	-0.66 †	-0.71 †	-0.15	-0.11	-0.14
				(0.37)	(0.38)	(0.38)	(0.31)	(0.31)	(0.31)
Constant	-0.82	1.17	0.32	0.49	1.44	1.27			
	(4.62)	(4.82)	(4.79)	(1.98)	(2.02)	(2.02)			
Log likelihood	48.74	-45.90	-45.92	-236.60	-232.62	-231.25	-740.10	-736.01	-727.82

Note : Standard errors in parentheses. (d) means a dummy variable. When estimating the internationalization equations, we dropped 14 observations where Gender=0, because female CEO (Gender=0) perfectly predicts "do not have plan to internationalize (Plan to internationalize=0)." To save space, we do not report the estimated cut points in (7)- (9). †, *, and ** imply that the coefficient is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

100 percent ($sp = sp_c + sp_{nc} = 100$). For example, the highest predicted probability of R&D is found to be 47.3 percent, which occurs when $(sp_c, sp_{nc}) = (0, 100)$, while the lowest is 33.3 percent when $(sp_c, sp_{nc}) = (100, 0)$. Therefore, the highest is 1.5 times as large as the lowest. Similar results are obtained for the development of new products/services. Overall, long-term investment decisions are influenced by the family status of a potential successor in a non-negligible manner.

Discussion and Conclusions

Beginning with the research question that family firm CEOs' expectations of managerial succession affect their firms' investment time horizons, we tested two hypotheses using survey data on 410 family firm CEOs of small- and medium-sized manufacturers in the metropolitan area of Tokyo, Japan. The following are our two major findings. First, when a family firm CEO is sure that his/her successor will be found, his/her firm is more likely to engage in long-term investment. Second, a family firm CEO's expectation of managerial succession by his/her children or someone other than his/her children has a differential impact on the firm's investment time horizons. Specifically, the expectation that someone other than their children will succeed them is more likely to trigger long-term investment than the expectation that children will be the likely successors.

Theoretical, empirical, and practical implications

The findings of this study contribute to the theory, empirics, and practice of family businesses. The first theoretical contribution is the finding that a family firm CEO's expectation of managerial succession serves as an antecedent of investment time horizons. Theoretically, the beliefs of top managers are predictors of corporate behavior; however, few studies have

Table 8: Estimated Marginal Effects under the Assumption of Exogeneity

	Plan to internationalize (Probit)		R&D (Probit)		New product (Ordered probit)	
	(1)	(2)	(3)	(4)	(5)	(6)
Subjective probability of succession	0.06 *		0.15 **		0.06 **	
	(0.03)		(0.05)		(0.02)	
By children		0.05 †		0.13 *		0.06 **
		(0.03)		(0.06)		(0.02)
By non-children		0.07 *		0.26 **		0.15 **
		(0.03)		(0.09)		(0.04)
Family ownership	-0.11 *	-0.12 *	-0.23 †	-0.24 †	-0.06	-0.07
	(0.05)	(0.06)	(0.14)	(0.14)	(0.05)	(0.05)
Family name (d)	0.01	0.01	-0.04	-0.03	-0.04 *	-0.04 *
	(0.02)	(0.02)	(0.05)	(0.05)	(0.02)	(0.02)
Firm age (log)	0.01	0.01	-0.07	-0.06	-0.01	-0.01
	(0.03)	(0.03)	(0.05)	(0.05)	(0.02)	(0.02)
Debt (10 million - 100 million yen)	0.01	0.01	0.06	0.08	0.03 †	0.04 *
	(0.03)	(0.03)	(0.05)	(0.05)	(0.02)	(0.02)
Debt (100 million yen -)	0.09 *	0.09 *	0.07	0.09	0.06 *	0.07 *
	(0.03)	(0.03)	(0.07)	(0.07)	(0.03)	(0.03)
Firm's international experience (d)	0.08 **	0.08 **	0.09	0.10	0.06	0.07
	(0.03)	(0.03)	(0.09)	(0.09)	(0.05)	(0.05)
Current generation (2nd)	-0.01	-0.01	-0.06	-0.05	-0.05 †	-0.05 †
	(0.03)	(0.03)	(0.07)	(0.07)	(0.03)	(0.03)
Current generation (3rd)	-0.02	-0.01	-0.09	-0.09	-0.06	-0.06
	(0.04)	(0.04)	(0.09)	(0.09)	(0.04)	(0.04)
Current generation (4th or later)	-0.01	-0.01	0.04	0.05	-0.02	-0.02
	(0.06)	(0.06)	(0.12)	(0.12)	(0.05)	(0.05)
Export ratio	0.03	0.02	0.10	0.10	0.07 †	0.07 †
	(0.04)	(0.04)	(0.10)	(0.10)	(0.04)	(0.04)
Import ratio	-0.02	0.01	0.13	0.15	0.07	0.08
	(0.07)	(0.07)	(0.18)	(0.18)	(0.07)	(0.07)
The number of employee (log)	-0.04 **	-0.05 **	0.03	0.01	0.01	0.00
	(0.01)	(0.01)	(0.03)	(0.03)	(0.01)	(0.01)
CEO tenure (log)	0.02	0.02	0.03	0.03	0.00	0.00
	(0.02)	(0.02)	(0.04)	(0.04)	(0.01)	(0.01)
CEO education (d)	-0.01	-0.01	0.16 **	0.15 **	0.04 *	0.04 *
	(0.02)	(0.02)	(0.05)	(0.05)	(0.02)	(0.02)
CEO age (log)	-0.04	-0.03	-0.08	-0.07	-0.01	-0.02
	(0.08)	(0.08)	(0.16)	(0.16)	(0.06)	(0.06)
CEO's international experience (d)	0.03	0.03	0.10	0.12	0.08 *	0.09 *
	(0.03)	(0.03)	(0.08)	(0.08)	(0.04)	(0.04)
Gender (d)			-0.23 †	-0.25 †	-0.02	-0.02
			(0.13)	(0.13)	(0.05)	(0.05)

Note: Standard errors in parentheses. (d) means a dummy variable. For the sake of saving space, we only report the marginal effects on the probability of choosing "extremly involved" in (5)- (6). When estimating the internationalization equations, we dropped 14 observations where Gender=0, because female CEO (Gender=0) perfectly predicts "do not have plan to internationalize (Plan to internationalize=0)." †, *, and ** imply that the coefficient is significantly different from zero at the 10%, 5%, and 1% levels, respectively. Marginal effects of subjective probability of succession for children and non-children are calculated as follows,

Probit model:
$$ME = \Phi(\hat{\alpha}_1 * 1 + \hat{\alpha}_2 * 0 + \mathbf{x}_i'\beta) - \Phi(\hat{\alpha}_1 * 0 + \hat{\alpha}_2 * 0 + \mathbf{x}_i'\beta),$$
$$ME = \Phi(\hat{\alpha}_1 * 0 + \hat{\alpha}_2 * 1 + \mathbf{x}_i'\beta) - \Phi(\hat{\alpha}_1 * 0 + \hat{\alpha}_2 * 0 + \mathbf{x}_i'\beta).$$

Ordered probit model:
$$ME = \left\{1 - \Phi\left(\theta_6 - \hat{\alpha}_1 * 1 - \hat{\alpha}_2 * 0 - \mathbf{x}_i'\beta\right)\right\} - \left\{1 - \Phi\left(\theta_6 - \hat{\alpha}_1 * 0 - \hat{\alpha}_2 * 0 - \mathbf{x}_i'\beta\right)\right\},$$
$$ME = \left\{1 - \Phi\left(\theta_6 - \hat{\alpha}_1 * 0 - \hat{\alpha}_2 * 1 - \mathbf{x}_i'\beta\right)\right\} - \left\{1 - \Phi\left(\theta_6 - \hat{\alpha}_1 * 0 - \hat{\alpha}_2 * 0 - \mathbf{x}_i'\beta\right)\right\},$$

where θ_6 is a 6th cut point.

theoretically and empirically identified the beliefs that have impact and how they matter. To bridge this gap in the literature, we successfully apply the concept of socioemotional wealth to explain how a family firm CEO's expectation of managerial succession determines the choice of investment time horizons by varying the periods over which firms evaluate investments. Among family firms, managerial beliefs in future socioemotional wealth could be an influential driver of managerial behaviors. Because the possibility of managerial succession varies significantly across family firms, its expectations may at least partially explain why such firms are sometimes less growth-oriented, less innovative, and more conservative (Kets de Vries, 1993; Miller, Le Breton-Miller, and Scholnick, 2008). We also show that family firm CEOs have different expectations of managerial succession, despite having children. For instance, children might choose their own jobs and be reluctant to assume the position of CEO in their family firms if their own jobs are more lucrative. The presence of children is a necessary, but never a sufficient condition for family managerial succession. Accordingly, to obtain more accurate estimation results, we need to consider family firm CEOs' expectations of managerial succession, rather than the number of children, as a proxy for succession.

Second, we clarify how the family status of a successor that a family firm CEO has in mind influences his/her firm's investment time horizon. Managerial succession by family members is generally considered to preserve the family's socioemotional wealth because such succession achieves transgenerational control. However, our argument shows that a family firm CEO might find that being succeeded by his/her children causes huge losses in socioemotional wealth when firms cannot effectively manage long-term investments, leading to bankruptcy. The family status of successors would change potential socioemotional wealth, and accordingly, the choices of

Table 9: Predicted Probabilities of Long-term Investment across CEOs' Expectations for Potential Successors

(a) Plan to internationalize

		Subjective probability of succession by children				
		0%	25%	50%	75%	100%
Subjective probability of succession by non-children	0%	0.002	0.003	0.006	0.011	0.018
		(0.002)	(0.004)	(0.005)	(0.007)	(0.121)
	25%	0.004	0.007	0.013	0.022	
		(0.004)	(0.006)	(0.008)	(0.012)	
	50%	0.009	0.016	0.027		
		(0.007)	(0.010)	(0.015)		
	75%	0.019	0.032			
		(0.015)	(0.021)			
	100%	0.038				
		(0.031)				

Note: Delta-method standard error in parentheses. N=396.

(b) R&D

		Subjective probability of succession by children				
		0%	25%	50%	75%	100%
Subjective probability of succession by non-children	0%	0.207	0.236	0.266	0.299	0.333
		(0.036)	(0.029)	(0.026)	(0.030)	(0.041)
	25%	0.265	0.297	0.331	0.367	
		(0.033)	(0.026)	(0.026)	(0.036)	
	50%	0.329	0.365	0.402		
		(0.039)	(0.037)	(0.042)		
	75%	0.399	0.437			
		(0.055)	(0.057)			
	100%	0.473				
		(0.076)				

Note: Delta-method standard error in parentheses. N=410.

(c) New products

		Subjective probability of succession by children				
		0%	25%	50%	75%	100%
Subjective probability of succession by non-children	0%	0.037	0.047	0.060	0.075	0.093
		(0.010)	(0.011)	(0.012)	(0.014)	(0.019)
	25%	0.059	0.074	0.092	0.112	
		(0.013)	(0.013)	(0.015)	(0.020)	
	50%	0.090	0.110	0.134		
		(0.018)	(0.020)	(0.024)		
	75%	0.132	0.159			
		(0.029)	(0.032)			
	100%	0.186				
		(0.045)				

Note: Delta-method standard error in parentheses. For the sake of saving space, we only report the predicted probability of choosing "extremely involved." N=410.

family firms could also vary. This finding complements recent studies of managerial succession in family firms. Several empirical studies report that managerial succession by family members tends to decrease firm performance more than that by non-family members (e.g., Chang & Shim, 2015; Cucculelli & Micucci, 2008; Hillier & McColgan, 2009; Minichilli et al*.,* 2014). This relationship can be explained by investment decisions made by former family CEOs. As we found, when a predecessor family CEO expects managerial succession by children, he/she tends to avoid long-term investments. Because long-term investments generally lead to higher firm performance (Souder, Reilly, Bromiley, & Mitchell, 2016), miserable firm performance after the succession by children can be attributed to lower level of engagement in long-term investments by a family firm's predecessor CEOs.

In addition, we contributed to the empirics of management studies by introducing a new approach for understanding the impact of family firm CEOs' expectations on their strategic decision making. This is one of the first studies in management to measure individual subjective probability, which has recently been used in the field of applied microeconomics to predict individual choice behaviors. Conventional management research has paid little attention to the fact that CEOs have a subjective probability distribution. Thus, our findings contribute to the literature by confirming the effectiveness of the subjective probabilistic approach.

Our findings also provide intriguing implications for practitioners and policymakers. First, family firm CEOs may *unconsciously* avoid long-term investments when they confidently expect their children to succeed them owing to their inherent aversion to loss of socioemotional wealth. Accordingly, family firm CEOs with children successors in mind should be cautious that their investment decisions are not too short-term in orientation. Second, our results indicate that governmental support for the managerial succession in SMEs, such as successor candidate

matching services or tax reductions for succession, would promote long-term investments by family SMEs by reducing the perceived uncertainty in managerial succession. In particular, because our results suggest that expectations of managerial succession by non-children encourage long-term investments, governmental agencies and officers of SMEs that are eager to increase investments by SMEs could introduce external candidates to such firms.

Limitations and future directions

Although we provide interesting insights into the relationships between a CEO's concern about managerial succession and his/her long-term investment decisions, the findings should be interpreted with caution, considering the following two limitations. First, our study sample is firmly established in the national context of Japan. As Japanese culture is characterized by a high level of uncertainty avoidance (Hofstede, 1980), the CEOs of the sampled firms might show relatively stronger risk aversion when making investment decisions. Therefore, the findings of this study might overestimate the impact of the expectations of managerial succession on long-term investments. If we tested the same relationships in societies where uncertainty avoidance is low, the positive impact of a family firm CEO's expectations of managerial succession on investment time horizons might weaken. Further, Japanese succession laws— the law of inheritance in Japan imposes a higher tax on the transfer of property to family members—may influence the impact of expectations of managerial succession. Accordingly, family firm CEOs in Japan who expect managerial succession would be more likely to invest their financial resources to reduce taxable assets. We would need to shift the focus to these cross-national differences in CEOs' expectations of managerial succession to corroborate the generalizability of our findings.

Second, our findings are based on a sample of family SMEs. The CEO position in SMEs is generally less attractive than that in large, listed firms, because limited financial resources of the

former mean that they often provide relatively lower compensation to CEOs. Further, SMEs have a relatively smaller pool of human resources than large, listed firms do. Accordingly, SMEs may have difficulty finding potential successors, causing managerial anxiety about succession and firm continuity. On the contrary, owing to a large stock of human resources, the large and listed family firms can easily find potential successors from within or outside the firm. Therefore, even when CEOs of large and listed family firms have no potential successors in mind, they would not hesitate to make long-term investments; this is because it is almost certain that someone will eventually assume the CEO role and the firm will continue. Accordingly, if we test the same hypothesized relationships between a CEO's expectations of managerial succession and the likelihood of long-term investments using the sample of large and listed family firms, the relationship would be weaker than that for family SMEs. Further investigation of our findings is necessary; their generalizability can be tested by using a sample of large and listed family firms.

Chapter 5: Study 3 - CEOs' Religiosity and Corporate Proactivity

Introduction

Firms undertake CSR activities, or "context-specific organizational actions and policies that take into account stakeholders' expectations and the triple bottom line of economic, social, and environmental performance" to contribute to sustainable development (Aguinis 2011, p. 855). One CSR issue is environmental concerns, and firms proactively engage in environmental management practices to address them. This proactive engagement, called environmental proactivity, is "the voluntary implementation of practices and initiatives aimed at improving environmental performance" (González-Benito and González-Benito 2006, p. 88). Environmental proactivity can be composed of a bundle of environmental practices in the firm's context, such as reducing electricity and water consumption, pollution emissions, greenhouse gas emissions, and so on. The intensity of pro-environmental activities varies across firms and existing studies have antecedents such as organizational slack, governmental and self-regulations, peer pressure, stakeholder influence, and business ethics (Berchicci and King 2007). Nevertheless, these previous studies provided little insight into the micro-foundations of these activities, which are "individual action and interactions inside the firm" (Aguinis and Glavas 2012, p. 956).

Among the micro-foundations of CSR, we investigate managerial religiosity as a new way of perceiving the drivers of environmental proactivity. Religiosity (or religious beliefs) is "belief in superhuman entities or powers, notions of afterlife" (Höllinger and Eder 2016, p. 4, Norris and Inglehart 2011). Because more than 82 percent of people worldwide believe that religion is important in their daily lives (Crabtree & Pelham, 2009), most managers would also have their thoughts on religion in the workplace (Chan-Serafin, Brief, & Geroge, 2013). Accordingly, managerial religiosity is a potential influential driver because managerial personal

values and beliefs would reflect the ethical tenets of religions, forming the core values of corporate environmental proactivity. Recent studies that adopt upper echelon theory (Hambrick and Mason 1984, Hambrick 2007) indicate that CEOs' expertise, personality, emotions, and ideology influence diverse aspects of firm behaviors, like managerial risk taking, mergers and acquisitions, and technological adoption (e.g., Chatterjee and Hambrick 2007, Gerstner et al. 2013, Gupta and Wowak 2017, Hayward and Hambrick 1997, Li and Tang 2010). Against the backdrop of these findings, we propose that a CEO's religiosity leads to his/her firm's environmental proactivity. Recent studies in economics and sociology report that individual religiosity triggers pro-environmental attitudes and behaviors at the individual (Owen and Videras 2007) and societal levels (Barro and McCleary 2003, McCleary and Barro 2006). Accordingly, we expect that a CEO's religiosity naturally affects corporate environmental proactivity, which are beyond his/her personal practices, but surely within his/her sphere of influence.

The main thesis of this study is that a CEO's religiosity promotes his/her firm's environmental proactivity. A religious CEO tends to have strong religious role expectations to fulfill (Glock and Stark 1965, Weaver and Stansbury 2014). Such expectations evoke the CEO's perception of monitoring to fulfill these roles by supernatural powers or religious members. The perception of monitoring would evoke cooperation with others to maintain public goods like natural resources. Because a CEO can wield power in corporate decision making, his/her firm will engage in more pro-environmental behaviors. Additionally, the positive impact of CEOs' religiosity on his/her firm's environmental proactivity will be alleviated as his/her decision-making style is participative rather than autocratic because intuitive ideas derived from a CEO's religiosity are diluted through logical discussion with his/her subordinates in the decision-making process.

Using unique survey data on CEOs' religious beliefs and pro-environmental practices

from 1,184 small- and medium sized manufacturing companies in Tokyo, Japan, we categorized CEOs' religious belief systems into eight classes through latent class modeling to identify classes by choice sets of religious beliefs from data rather than ad hoc choice sets of a single belief (Owen and Videras 2007). We found strong empirical support for the aforementioned relationships. In this study, we make two contributions to the literatures on corporate environmental proactivity, upper echelons, and religions. First, this is the first empirical study of how CEO's religiosity influences corporate practices, providing a new theoretical view of the impact of CEOs' novel personal characteristic, which is prevalent in society. Second, an individual's religiosity triggers his/her firm's environmental proactivity, suggesting a new analytical view of the micro-foundations of environmental proactivity.

Theoretical Background and Hypotheses

Environmental integrity in sustainable development and its corporate micro-foundations

Sustainable development rests on three principles: environmental integrity, social equity, and economic prosperity (Scherer et al. 2013). Although the sphere of the concept is not restricted to environmental concerns (e.g., Bansal 2002, 2005, Hart and Dowell 2011, Scherer et al. 2013), environmental integrity, which ensures that "human activities do not erode the earth's land, air, and water resources" (Bansal 2005, p. 198), tends to attract the most attention in academia and practice (Bansal and Song 2017, Starik and Rands 1995). In response to the call for CSR, firms engage in environmental management practices to contribute to environmental integrity (Bansal and Song 2017). Beyond the mandatory environmental regulations of greenhouse gas and pollution emissions, energy consumption, and water consumption, firms often voluntarily adopt practices and initiatives to improve environmental integrity, called corporate environmental proactivity.

Although previous studies find antecedents of corporate environmental proactivity from diverse theoretical perspectives such as the resource-based perspective (Bansal 2005), agency theory (Calza et al. 2016), intuitional theory (Bansal 2005), and stakeholder theory (Bansal and Roth 2000, Freeman 1984, Henriques and Sadorsky 1999; Buysse and Verbeke 2003), their explanations are restricted mainly to corporate or institutional characteristics. Little research sheds light on the micro-foundations of environmental proactivity (Aguinis and Glavas 2012); how would individual action and interactions inside the firm form its environmental proactivity? This is not a small piece lacking in the picture of CSR. Recent strategy researchers shifted their focus to the behavioral aspects of the firm and find how collective actions emerge from individuals (Powell et al. 2011; Felin et al., 2015).

The CEO's personal values and beliefs as a micro-foundation is a possible factor in corporate environmental proactivity. A CEO's values and beliefs are their principles or standards (Agle et al. 1999) influencing the decision-making processes, whether individuals realize it or not. It is thus important to understand how values influence engagement in corporate-level decisions (Hay and Gray 1974, Swanson 1999). An upper-echelon perspective (Hambrick and Mason 1984, Hambrick 2007) explains top executives' personal characteristics, including values and beliefs have a significant impact on their cognition and behaviors in diverse aspects of management (see a comprehensive review by Finkelstein et al. 2009). Because top executives determine a firm's strategy for corporate sustainable development, managers' personal values and beliefs would also influence the firm's social strategies. For instance, Dahl et al. (2012) report that the male CEO of a small Danish firm changed his employees' wages after fathering a child, which affected his personal values and beliefs. Accordingly, a CEO's personal values and beliefs are associated with prosocial corporate behaviors. Nonetheless, few studies attempt to investigate what personal

values and beliefs promote or hinder corporate pro-environmental behaviors.

Managerial religiosity as a micro-foundation of corporate environmental proactivity

Among managers' personal values and beliefs, their religiosity would be closely tied to corporate environmental proactivity because individual religiosity evokes individual morality, which is the theoretical origin of CSR. Early management studies argue that legal frameworks and managers' moral responsibilities to society should guide their decisions related to labor, local communities, and product safety (see Bansal and Song 2017, Aguinis and Glavas 2012). In the organizational context, individual religiosity is closely tied to his/her morality, leading to prosocial behaviors.

From social identity theory and schematic social cognition perspectives, Weaver and Agle (2002) explain how individual religiosity formulates individual cognitive schemas and behavioral scripts (Wimberley 1984, 1989). A religious individual has stronger levels of self-identification with a religion, which comes with affective, cognitive, and behavioral role expectations. Richer religious schemas and scripts enable individuals to identify more opportunities "to think, feel, and act in religiously informed ways" (Weaver and Stanbury 2014, p. 68). From these perspectives, several previous studies report that individual religiosity is prevalent at the workplace and leads to prosocial behaviors (e.g., Brief and Motowidlo, 1986; Kutcher et al, 2010). Nonetheless, these studies have yet to examine the linkage between managerial religiosity and firm-level prosocial behaviors quantitatively, which is observed qualitatively, even among Fortune 500 companies (Rossi, 2014).

We propose that a CEO's religiosity will trigger the firm's environmental proactivity. A religious CEO holds religious role expectations and is willing to take action to fulfill them. Because a CEO can wield considerable power to make decisions at the corporate level, his/her religiosity

will encourage corporate actions to fulfil religious role expectations (Glock and Stark 1965). Holding such religious role expectations, CEOs would perceive that they are being monitored to fulfill the expectations of supernatural agents and religious members (Johnson and Bering 2006, Rossano 2007). A strong perception of monitoring tends to solicit cooperative behaviors with others to maintain public goods (Atkinson and Bourrat 2011). For instance, Monsma (2007) report that people who regularly go to religious services are more likely to give time and money to charities. Likewise, Ben-Ner et al. (2009) empirically demonstrate that religious believers tend to offer and share a greater amount than non-believers in dictator game experiments. In light of environmental proactivity, Owen and Videras (2007) finds that religious individuals tend to show their pro-environmental attitudes and behaviors. Therefore, our first hypothesis is:

Hypothesis 1: A firm's environmental proactivity is higher when its CEO has religious beliefs.

Moderating impact of a CEO's decision-making style

A CEO's leadership in the decision-making process would moderate the impact of religiosity on the firm's environmental proactivity. Leaders with an autocratic decision-making style maintains control of and responsibility for decisions with little involvement from followers, whereas those with a participative decision-making style allows a higher degree of followers' involvement in making decisions through their direct or indirect voices (Kahai et al. 1997, Locke and Schweiger 1979, Koopman and Wierdsma 1998, Somech 2006). Participative decision making enables group members to engage in decision making. Group decision-making tends to reduce errors and aggregate knowledge compared to individual decision making because group members typically bring diverse perspectives to consider issues from different angles (Kerr and Tindale 2004, Larrick 2016). Additionally, because discussion in a collective decision-making process inevitably

promotes logical reasoning to explicitly explain ideas to group members, abstract ideas from personal intuitions and values would be diluted.

The link between a CEO's religious beliefs and the firm's environmental proactivity would be weaker under a participative rather than an autocratic decision-making style. Although a CEO with a participative decision-making style is intuitively urged by his/her religiosity to engage in corporate pro-environmental activities, he/she may have to rationally explain to his/her subordinates (who may not hold the same religiosity) why such pro-environmental activities are required to achieve his/her firm' goals. The CEO would not provide logical reasons to persuade subordinates to agree. On the other hand, a CEO with an autocratic decision-making style can initiate pro-environmental activities at will, following his/her religiosity. Accordingly, we propose the following hypothesis:

Hypothesis 2: A CEO's decision-making style moderates the positive impact of his/her religiosity on the firm's environmental proactivity, such that as his/her decision-making style is participative, the impact of his/her religiosity is weaker.

Research Methods

Data collection and sample

To tackle our research questions, we conducted a survey of SMEs in 2016. The target firms are incorporated manufacturers located in the Tokyo metropolitan area that satisfy the following conditions: either the firm has fewer than three hundred employees or have capital of less than three hundred million yen. The conditions are in line with the Small and Medium Enterprise Basic Act for manufacturing industries in Japan. TOKYO SHOKO RESEARCH, LTD, the largest credit reporting agency established in Japan identified the names and addresses of firms

that meet these conditions. The number of corresponding firms is 15,111.

For this survey, we used the mail-web mixed mode strategy (Groves et al. 2009). Specifically, we first sent a hard copy of our questionnaire and cover letter along with the respondent's identification number and password required to answer the survey online to each of the target firms on November 12, 2016. We then sent a follow-up letter to each firm two weeks after mailing the survey. We asked the respondents to answer the questionnaire by December 9 either by mail or online. We obtained responses from 1,499 firms, a response rate of 9.9 percent.

One of the important features of this survey is that we requested CEOs to answer the questionnaire themselves because our analysis requires data on their religious beliefs as well as their decisions on environmental practices. Because the target firms are SMEs, the CEOs directly provided almost all responses. This would be extremely difficult, if not impossible, for large-sized firms: CEOs of large-sized firms rarely answer questionnaires themselves, even if they are appointed as survey respondents. To prevent possible bias in the estimation results from responses from non-CEOs, this study only uses responses in which CEOs answered themselves.

Determining religious belief systems

Japan's Religious Background. The religious composition of Japan is remarkably different from that of Western countries, where Judeo-Christian values are predominant. Buddhism and Shinto are the dominant religions in Japan, which account for 45 percent and 51 percent of the Japanese population, respectively. In contrast, Christianity represents only approximately one percent (Japanese Agency for Cultural Affairs 2016). In particular, Shinto and Buddhism played an important role at various points of Japanese history (Kuroda et al. 1981), thereby deeply rooting them in Japanese culture.

It is worth noting that most Japanese people tend to consider themselves non-religious;

they have no interest in limiting their daily behaviors to specific religious rules and teachings (Ama 2005). Because Japanese people tend to feel it unnecessary to commit to any particular religion, they are flexible in incorporating events from different religions into their daily life. For example, even those who adhere to a religion besides Christianity enjoy celebrating Christmas and holding parties as year-end events. Likewise, many Christians do not hesitate to attend Shinto weddings or Buddhist funerals. Since Shinto, Buddhism, and Christianity are combined together in this manner, Japanese people consider these events not as part of religious activities, but rather traditions (Ama 2005).

This feature of Japan does not mean that Japanese people are non-religious. Even if Japanese people are less religious, they certainly have religious beliefs. According to worldwide social surveys such as the World Values Survey (WVS) and the International Social Survey Programme (ISSP), Japanese people more or less believe in religious concepts such as life after death, heaven, and hell. For example, the religion module of the ISSP 2008 shows that about half of Japanese people believe in life after death and heaven. These facts may indicate that religious attendance or expressed religious affiliation do not tell accurately what Japanese people see as important for realizing their religious values.

Another important feature of Japanese religious backgrounds is that religious affiliation is a delicate subject. Even the few Japanese people who are religious do not wish to talk about their religious affiliation with those they do not know well because they keep their religious affiliations a private and family affair. Within this context, Japanese society has a tacit agreement to avoid conversation about religion. Therefore, it is quite difficult for Japanese scholars to collect data about religious affiliations through a questionnaire.

CEOs' Religious Beliefs. We measured CEOs' religious beliefs using responses to the

Table 10: Religious Belief Distribution

	Afterlife	Heaven	Hell	Miracles	Reincarnation	Nirvana	Supernatural power
Yes	268 (19.8%)	217 (16.0%)	166 (12.3%)	162 (12.0%)	279 (20.6%)	341 (25.2%)	363 (26.8%)
No	466 (34.4%)	507 (37.4%)	544 (40.1%)	575 (42.4%)	471 (34.8%)	389 (28.7%)	417 (30.8%)
Don't know	621 (45.8%)	631 (46.6%)	645 (47.6%)	618 (45.6%)	605 (44.6%)	625 (46.1%)	575 (42.4%)

Note: N=1,355.

questions "(d)o you believe in each of the following religious concepts: (1) life after death (Y_1), (2) heaven (Y_2), (3) hell (Y_3), (4) religious miracles (Y_4), (5) reincarnation, meaning "being recurring rebirth in this world," (Y_5), (6) nirvana, which is a Buddhism term to mean "the highest spiritual state possible," (Y_6), and (7) super natural power of deceased ancestors (Y_7)?" Our questionnaire uses the same wording for questions about religious beliefs as the ISSP survey. However, we adapted the answer options to Japanese religious culture; specifically, we provide "don't know" as an answer option, in addition to "yes" and "no" as in the ISSP survey because the "don't know" option may play an important role in comprehending religious beliefs among Japanese people, given that many tend to have a passive view of religion (Tanaka 2010). In fact, according to the six waves of the WVS, 31.2 percent of respondents in Japan report "don't know" for the question "(d)o you believe in God?" in contrast to zero percent in the U.S., 9.2 percent in China, and 4.5 percent in Spain. Moreover, in terms of the existence of hell, 40.2 percent of Japanese respondents report "don't know," which is the largest share among surveyed countries. Y_j $(j = 1, \dots, 7)$ takes the nominal value of 1, 2, or 3, for responses of yes, no, or don't know, respectively.

For this study, we use 1,355 observations where CEOs respond to all seven religious concepts. Table 10 presents the distribution of the responses for each religious concept. The

Table 11: The Ten Most Frequent Response Patterns for Religious Concepts

Rank	Afterlife	Heaven	Hell	Miracles	Reincarnation	Nirvana	Supernatural power	Cumulative percentage
1	DK	DK	DK	DK	DK	DK	DK	28.0
2	N	N	N	N	N	N	N	47.5
3	Y	Y	Y	Y	Y	Y	Y	51.1
4	DK	DK	DK	DK	DK	DK	Y	53.7
5	N	N	N	N	N	Y	N	55.4
6	N	N	N	N	N	N	Y	56.6
7	Y	Y	Y	N	Y	Y	Y	57.8
8	DK	DK	DK	DK	DK	Y	DK	59.0
9	DK	DK	DK	N	DK	DK	DK	60.1
10	N	N	N	N	N	DK	N	61.0

Note 1: Y, N, and DK imply Yes, No, and Don't know response, respectively. N=1,355.

results show that respondents are more likely to believe in nirvana and super natural power than the other religious concepts. In contrast, respondents are more likely to disbelieve in miracles and hell than other concepts. Importantly, "don't know" occupies the largest share for each religious concept, like in the WVS. For example, 45.8 percent, 46.6 percent, and 47.6 percent of respondents answered "don't know" for afterlife, heaven, and hell, respectively. These results seem to be in line with the view that many Japanese are vague and uncertain about religion.

We observe a great deal of heterogeneity in CEOs' religious beliefs, with 262 unique response patterns. To investigate the distribution of response patterns, we sort them according to frequency in descending order. Table 11 presents the ten most frequent patterns. The mass seems to be concentrated on the two most frequent patterns, "don't know" for all religious concepts is the most frequent (28.0%), while the second is "no" for all concepts (19.5%). These two patterns apply to approximately half of respondents; in contrast, the other half yields 260 patterns, each of which occupies a very small share: the third, fourth, and fifth most frequent patterns account for only 3.6% ("yes" for all), 2.6% ("don't know" for all except supernatural power), and 1.7% ("no" for all except nirvana).

In the following, we examine whether and how CEOs' religious beliefs influence their firms' pro-environmental practices, relying on insights from Owen and Videras' (2007) argument that religiosity is a multi-dimensional construct consisting of beliefs about various religious concepts, suggesting the need to measure a complex set of beliefs to explore how religiosity affects human behaviors. Based on their argument, we examine the combination of religious beliefs CEOs hold (i.e., CEOs' religious belief systems) as a determinant of their firms' pro-environmental practices. Accordingly, we apply the same empirical methodology as Owen and Videras (2007) did. Specifically, we take a set of observed religious beliefs as an indicator for unobserved CEOs' religious systems and thereby classify similar CEOs into groups using Latent Class Analysis (LCA). We then use latent class memberships as determinants of firm's environmental practices.

Latent Class Model. LCA is a statistical method to identify underlying subgroups (i.e., latent classes) that explain relationships among observed data. LCA has proven highly useful for modeling complex behaviors, including alcohol drinking (Bucholz et al. 1996), gambling addiction in young adults (Chamberlain et al. 2017), weight-loss strategies among women (Lanza et al. 2010), and marijuana use (Chung et al. 2006). However, researchers in social sciences often do not use LCA for standard cluster analysis, although it may be a better choice for achieving their research purposes (Andersen et al. 2014). LCA has a number of advantages over other types of clustering techniques, the most important of which is that LCA is a model-based approach (Magidson and Vermunt 2002) that assumes a sample drawn from a population consisting of a finite number of latent classes. Additionally, LCA adopts a probabilistic approach; we can thus choose the number of classes less subjectively in a statistical manner. Moreover, LCA provides superior accuracy in the classifications over standard clustering and has a lower rate of miss-classification (Magidson and Vermunt 2002).

To reduce the 262 unique response patterns to more fundamental underlying religious belief systems, we assume that the population of CEOs consists of T mutually exclusively latent classes denoted by $q \in \{1, 2, \dots, T\}$. We assume that CEOs within the same class are homogeneous; in other words, the probability of observing a particular response to religious concept Y_j $(j = 1, 2, \dots, 7)$ depends only on the CEO's latent class. We further assume that a set of variables $Y = (Y_1, \cdots, Y_7)$ are associated with each other only through their latent class. Essentially, the latent class is why they are correlated. This assumption, called local independence, is standard in the literature.

Under these assumptions, the joint probability of Y is

$$\Pr(Y) = \sum_{t=1}^{T} \pi_t \cdot \prod_{j=1}^{7} \Pr\big(Y_j = y_j \big| q = t\big), \qquad (1)$$

where $\pi_t = \Pr(q = t)$ is the mixing proportion (also called the prior probability) for class t, with the restriction that $\sum_{t=1}^{T} \pi_t = 1$ (probabilities must sum up to one). The probability for the discrete choice a CEO makes among the three alternatives (yes, no, don't know) for religious concept j, given that the CEO belongs to class t, is assumed to take a multinomial logit form:

$$\Pr\{Y_j = k \big| q = t\} = \frac{\exp(\mu_{jk})}{\sum_{k=1}^{3} \exp(\mu_{jk})} \qquad (k = 1, 2, 3), \qquad (2)$$

where μ_{jk} is a free parameter. For normalization, we set $\mu_{j1} = 0$.

We estimate the parameters μ_{jk} and π_t for $j = 1, 2, \dots, 7$, $k = 2, 3$, and $q = 1, 2, \dots, T$ by maximum likelihood. Using these estimated parameters and the Bayes theorem, we compute the posterior probability, $class_{it}$, which is the probability that CEO i belongs to class t, conditional on observing his/her response to each religious concept.

We determine the final number of latent classes by an iterative process. We first estimate the model

Table 12: Fit Statistics for the Latent Class Model

	Log likelihood	BIC	The number of parameters	p-value of Pearson statistic
1 class	-9768.70	19638.36	14	<0.001
2 classes	-7013.33	14235.80	29	<0.001
3 classes	-5958.93	12235.17	44	<0.001
4 classes	-5718.63	11862.74	59	<0.001
5 classes	-5527.31	11588.27	74	0.800
6 classes	-5436.98	11515.78	89	1.000
7 classes	-5353.29	11456.58	104	1.000
8 classes	-5294.31	11446.79	119	1.000
9 classes	-5258.18	11482.71	134	1.000
10 classes	-5242.47	11559.47	149	1.000
11 classes	-5227.16	11637.02	164	1.000
12 classes	-5211.10	11713.07	179	1.000
13 classes	-5196.94	11792.93	194	1.000
14 classes	-5187.17	11881.56	209	1.000
15 classes	-5169.84	11955.07	224	1.000

Note: N=1,355

assuming only one class, then re-estimate the model with two classes, then increase the number of classes to three and re-estimate, and so on. We chose the optimal number of classes based on the Bayesian Information Criterion (BIC) (Schwarz 1978).

Latent Class Model Results. Table 12 reports the goodness of fit results, based on the BIC and p-value of the Pearson statistic. We estimated models with up to 15. The results indicate that the model with 8 classes is the best fitting solution compared to the other models because it has the lowest BIC.

Table 13 shows the probability structure of the 8 classes model, which provides a basis for interpreting and labeling the classes. As Table 13 shows, 26.0 percent of CEOs consist of class 1 (π_1 =26.0%), named the "secular class," characterized as high probabilities of reporting "no" for all religious concepts. For example, if CEOs are in class 1, they will answer "no" for belief in an afterlife with a probability of 96.2 %, for heaven with a probability of 100%, and for hell with a probability of 100%. Latent class 2 (π_2 =34.0%) is the largest class. CEOs in this class showed

Table 13: Probability Structure of the Model with 8 Classes

		(1) Class 1	(2) Class 2	(3) Class 3	(4) Class 4	(5) Class 5	(6) Class 6	(7) Class 7	(8) Class 8
Indicators	π_t	0.260	0.340	0.090	0.083	0.072	0.072	0.042	0.041
Afterlife									
	Yes	0.010	0.012	0.384	0.898	0.651	0.021	0.160	0.651
	No	0.962	0.014	0.036	0.001	0.342	0.745	0.115	0.056
	Don't know	0.029	0.974	0.580	0.101	0.008	0.234	0.725	0.293
Heaven									
	Yes	0.000	0.002	0.040	0.989	0.412	0.001	0.073	0.994
	No	1.000	0.000	0.008	0.002	0.587	0.976	0.001	0.004
	Don't know	0.000	0.998	0.951	0.010	0.001	0.023	0.926	0.002
Hell									
	Yes	0.000	0.000	0.000	0.922	0.280	0.000	0.018	0.606
	No	1.000	0.000	0.011	0.049	0.719	0.978	0.045	0.286
	Don't know	0.000	1.000	0.989	0.029	0.001	0.022	0.937	0.108
Miracles									
	Yes	0.020	0.002	0.258	0.683	0.275	0.099	0.037	0.130
	No	0.970	0.046	0.103	0.218	0.687	0.557	0.831	0.110
	Don't know	0.010	0.953	0.639	0.099	0.038	0.344	0.132	0.761
Reincarnation									
	Yes	0.020	0.009	0.621	0.918	0.565	0.100	0.136	0.285
	No	0.980	0.004	0.011	0.055	0.422	0.364	0.680	0.016
	Don't know	0.000	0.987	0.368	0.027	0.012	0.536	0.184	0.700
Nirvana									
	Yes	0.086	0.039	0.619	0.879	0.601	0.400	0.130	0.239
	No	0.878	0.000	0.016	0.027	0.346	0.067	0.600	0.002
	Don't know	0.037	0.961	0.366	0.094	0.053	0.532	0.270	0.760
Supernatural power									
	Yes	0.068	0.077	0.700	0.890	0.643	0.202	0.201	0.432
	No	0.908	0.001	0.044	0.070	0.307	0.211	0.556	0.019
	Don't know	0.025	0.922	0.256	0.040	0.049	0.587	0.244	0.549

Note: The cells larger than 0.5 are highlighted. Each religious class is described as follows.

Class 1: "Secular class," very high probability of disbelieving on all indicators.

Class 2: "Ambivalent class," very high probability of "don't know" on all indicators.

Class 3: Relative high probability of believing in reincarnation, nirvana, and supernatural power.

Class 4: "Strong believers," very high response probabilities on all indicators.

Class 5: Relative high probability of believing in life after death, nirvana, and supernatural power.

Class 6: Relative high probability of disbelieving in life after death, heaven, and hell.

Class 7: Relative high probability of disbelieving in reincarnation, and supernatural power.

Class 8: Relative high probability of believing in life after death, heaven, and hell.

N=1,355.

a high probability of reporting "don't know" for each religious concept, which we may refer to as the "ambivalent class." CEOs in latent class 3 (π_3 =9.0%) tend to believe in Buddhism concepts such as reincarnation, nirvana, and supernatural power, while they are unsure about the existence of heaven and hell. Latent class 4 (π_4 =8.3%) is the "strong believer class" with a high probability of reporting "yes" for each concept. Class 5 (π_5 =7.2%) shows a response pattern that reflects high probabilities of reporting "yes" for life after death, nirvana, and supernatural power, while disbelieving in hell and miracles. We refer to Class 6 (π_6 =7.2%) to as the "not believing life after death class," because CEOs in this class are characterized by relatively high probabilities of reporting "no" for concepts related to life after death such as heaven and hell. Latent class 7 (π_7 =4.2%) includes CEOs who tend to answer "no" for all Buddhism concepts. Finally, latent class 8 (π_8 =4.1%) is characterized by high probabilities of answering "yes" for concepts related to the afterlife and answering "don't know" for Buddhism concepts.

Variables and measures

In our questionnaire, we asked CEOs whether their firms adopt each of the 19 environmental practices (see the Note of Table 14), which reflect a firm's environmental proactivity. We identified these environmental practices by interviewing multiple CEOs and researchers of environmental economics and management. Our dependent variable ($envprac_i$) is the number of the categories for which CEO i answered "yes," which takes a non-negative integer value. There are few large counts, with 90% of the observation taking values of less than 11. By asking about the actual adoption of environmental practices as an objective measure, we attenuated possible common method variance such that it will not be a threat to this study's validity (Fuller et al. 2016).

Using information from the survey, we also construct a set of control variables ($\mathbf{x}_i$) that

affect firms' environmental practices based on prior studies in the literature. The control variables reflect both firm and CEO demographics. First, to control for the extent of family influence in a firm, we use the family ownership ratio. Because a family plays an important role in determining the vision and control mechanisms in family firms (Anderson et al. 2012), which are typical among SMEs, family ownership may significantly influence the key decisions and direction of the firm. To capture familiness further, we also include a dummy variable for whether a firm name is derived from the family's name. In our sample, 22.2 percent of the firms use the family name as part of their firm name.

CEOs' religious affiliation also has potential importance in understanding their firm's environmental behaviors. Previous literature highlights the role of religious affiliation on individual environmental practices (Minton, Kahle, & Kim, 2015; Morrison, Duncan, & Parton, 2015). In fact, attitude toward nature is fundamental to many religious doctrines. For example, Buddhism includes deep respect for the natural environment (Du, Jian, Zeng, & Du, 2014) and has a long history of addressing environmental issues (Gottlieb, 2017). Therefore, A CEO's religion may affect his/her firm's environmental practices. Although an individual's religious affiliation seems to be associated with their religious belief systems, religious affiliation does not completely determine religious belief systems, and vice versa. Owen and Videras (2007) indicate that these two factors do not necessarily correspond one-to-one. Our data also contains some variation within each religion, and none of the classes consists of only one religious affiliation when we assign each individual into the class in which the posterior class membership probability is the highest. For example, Buddhist, Shinto, and Christian believers consist of 8 classes, 6 classes, and 5 classes, respectively. This implies that individuals may have different religious belief systems, even if they believe in the same religion. In line with Owen and Videras (2007), we focus on the effect of CEOs'

religious belief systems on their firms' environmental behavior after controlling for their religious affiliation (Buddhism, Shinto, other affiliation, no affiliation, decline to answer/no answer).

Firm age may be associated with environmental proactivity. Because older firms may be able to accumulate resources, knowledge, and ability to handle uncertainty (Levitt and March 1988), it is possible that these firms are more likely to invest in environmental practices. Additionally, large firms can achieve economies of scale and access enough resources for environmental practices. To control for these effects, we include the natural logarithm of firm age as in previous studies, as well as firm size measured by the natural logarithm of annual sales.

Other control variables that capture CEO demographics, are CEO tenure (measured by the natural logarithm of years as CEO), educational level (a dummy variable for whether a CEO has a Bachelor's degree or higher), age (the natural logarithm of CEO age), and sex (a dummy variable for whether CEO is male). Extant literature shows that age (Deakin et al. 2004, Taylor 1975) and tenure (Finkelstein and Hambrick 1990, Wiersema and Bantel 1992) affect firms' investment decisions. These factors influence the extent to which CEOs are willing to take risks and information-processing demands when making important strategic decisions (Laufs et al. 2016). For example, the longer CEOs' tenure is, the more CEOs tend to maintain the organizational status quo (Hambrick et al. 1993). In contrast, because CEOs with short tenure have fresh information and flexible attitudes (Finkelstein and Hambrick 1990), they may be more likely to take risks. Therefore, these CEO demographics may be valid indicators of cognitive capabilities (Carpenter et al. 2003, Hambrick and Mason 1984). After removing incomplete responses, we have 1,184 firms for the estimation. In Table 14, we present the descriptive statistics of the variables used in the regression and the correlations among the variables.

Table 14: Descriptive Statistics and Correlations

	Mean	Std. dv.	Min	Max	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.
Dependent variable																											
1. The number of environmental practices	6.44	3.75	0	19																							
Instrument variable																											
2. Parental religiosity (d) (=1 if CEO's parent have attended religious facilities every week)	0.04	0.20	0	1	.00																						
Class membership probability																											
3. class 1	0.32	0.45	0	1	.02	-.06																					
4. class 2	0.26	0.43	0	1	-.08	-.08	-.44																				
5. class 3	0.09	0.26	0	1	.01	.00	-.16	-.22																			
6. class 4	0.09	0.26	0	1	.02	.09	-.23	-.20	-.11																		
7. class 5	0.07	0.23	0	1	.06	.07	-.23	-.14	-.11	-.01																	
8. class 6	0.08	0.25	0	1	-.03	.04	-.23	-.13	-.11	-.11	-.03																
9. class 7	0.04	0.19	0	1	.01	.02	-.14	-.14	-.02	-.07	-.07	-.07															
10. class 8	0.04	0.18	0	1	.04	.04	-.15	-.14	-.06	.01	-.06	-.07	-.05														
CEO attributes																											
11. Decision style (d) (=1 if CEO consult with others before making decision)	0.83	0.37	0	1	.14	.01	.03	-.07	.02	-.03	.04	.05	-.01	.03													
12. CEO education (d) (=1 if CEO has a bachelor's degree)	0.68	0.47	0	1	.10	.05	.00	.00	-.03	.01	.03	.02	-.06	.01	.03												
13. CEO tenure	17.70	14.25	1	73	-.05	.00	-.01	.02	-.01	.00	-.02	-.02	.04	-.03	-.16	-.04											
14. CEO age	60.50	11.52	29	92	-.05	.00	.01	.05	.00	-.04	-.05	.01	.03	-.05	-.10	-.03	.60										
15. Gender (d) (=1 if CEO is a male)	0.95	0.22	0	1	.04	-.01	.00	.07	-.07	.01	-.01	-.01	-.01	-.05	-.03	.15	.08	.01									
Firm Attributes																											
16. Family ownership ratio	0.73	0.34	0	1	-.12	-.03	-.03	.00	.05	.03	.01	-.04	-.02	.04	-.11	-.09	.23	-.05	-.07								
17. The number of employees (ln)	2.36	1.10	1	7.03	.29	.00	.10	-.05	-.02	-.02	-.01	-.02	.01	-.04	.24	.14	-.09	-.07	.06	-.26							
18. Family name (d) (=1 if family's name is part of firm's name)	0.22	0.42	0	1	.14	.03	.03	-.06	.01	.01	.00	-.04	.05	.04	.04	.12	.17	.11	.05	.05	.33						
19. Firm age (year)	50.47	30.76	1	357	.02	-.03	-.03	.03	-.01	-.01	.01	-.01	.04	.01	-.07	.05	.06	.00	.07	.19	.04	.26					
Religious Affiliation																											
20. Buddhism (d)	0.10	0.30	0	1	.03	.01	-.01	-.06	.01	.07	.01	.04	-.02	.01	-.02	.03	.06	.09	.06	.07	-.05	.07	.06				
21. Shinto (d)	0.01	0.12	0	1	.02	.05	-.01	-.05	.10	-.01	.05	-.01	-.02	-.03	.04	.04	.06	.00	.00	.03	.02	.00	.00	-.04			
22. Other Affiliation (d)	0.02	0.13	0	1	-.01	.14	-.07	-.02	.03	.02	.11	.01	-.03	.01	.02	-.01	.04	.02	.03	.03	-.03	-.01	-.02	-.05	-.02		
23. No Affiliation (d)	0.01	0.08	0	1	-.02	-.06	.05	.06	-.05	-.05	-.07	-.04	.06	-.03	.00	-.04	-.04	-.05	-.05	-.05	.04	-.04	-.04	-.72	-.26	-.27	
24. No answer/Decline to answer (d)	0.30	0.46	0	1	-.01	-.03	-.02	.02	.00	-.01	.01	.01	-.05	.05	.00	.01	-.07	-.06	.00	-.04	.01	-.01	-.01	-.08	-.03	-.03	-.48

Note: (ln) means natural logarithm and (d) means dummy variable. Correlations whose absolute value exceeds 0.06 are significantly different from zero at the 5% level of significance, two-tailed test. The number of environmental practices consists of the following 19 environmental practices: (a) To set a goal of reducing paper usage (the mean is 0.08); (b) To assess overall paper usage every month (0.16); (c) To require employees to reduce copies (0.46); (d) To set a goal of reducing the amount of discharge (0.08); (e) To assess the amount of discharge every month (0.11); (f) To make waste separation and reduction (0.66); (g) To collect packaging materials (0.29); (h) To set a goal of reducing electricity usage (0.17); (i) To assess overall electricity usage every month (0.42); (j) To turn off the light when the room is not used (0.70); (k) To turn the electronic devices off outside working hours (0.61); (l) To turn off the PC when not in use (0.56); (m) To maintain the proper temperature (28°C in summer, 20°C in winter) in the office (0.52); (n) To clean air conditioners and filters frequently (0.37); (o) To practice the "cool-biz" / "warm-biz" (0.48); (p) To cultivate employees the interest for environment issues (0.20); (q) To practice gene purchase when papers, stationary and electronic devices are in need (0.17); (r) To use a fuel-efficient vehicle as a company car (0.32); (s) To join the local environmental preservation activities (0.09).

Estimation models

Given a set of characteristics $\mathbf{x}_i$ and religious class membership probabilities ($\boldsymbol{class}_i = (class_{i1}, \dots, class_{i8})$), we estimate the Poisson regression model. We model the following conditional mean function:

$$\lambda_i = E(envprac_i|\mathbf{x}_i, \boldsymbol{class}_i) = \exp\left(\sum_{t=2}^{8} \alpha_t class_{it} + \mathbf{x}_i'\boldsymbol{\beta}\right), \quad (3)$$

where we drop the probability of secular class membership ($class_{i1}$) to avoid perfect collinearity because class membership probabilities must sum up to unity.

Poisson distribution implies the assumption that the conditional mean is equal to variance (equidispersion). Nonetheless, in our data, the variance of the number of environmental practices (14.29) exceeds the mean (6.43), which is often the case with count variables. One might think that our data violates the Poisson assumption, and that the estimators would be inconsistent. However, we should note that the Poisson quasi maximum likelihood estimator (QMLE) has a robustness property. It is consistent as long as we correctly specify the conditional mean function, even if we assume an incorrect distribution (Cameron and Trivedi 2013, Wooldridge 2010). For a robustness check, we also estimate Negative binomial models.

A potential problem with estimating equation (3) is that $class_{it}$ $(t = 2, \dots, 8)$ may be endogenous variables due to omitted factors. For instance, unobserved factors such as the degree of opportunism may affect environmental practices and may be correlated with religious belief systems at the same time. Another possible source of endogeneity is reverse causality. However, it is reasonable to assume that there is no reverse causality because it is highly unlikely that carrying out environmental practices affects the CEO's religious belief system. Therefore, in the following, we assume that the omitted factors are the only source of endogeneity.

To account for the possible endogeneity in religious latent class membership probability,

we modify equation (3) as follows:

$$E(envprac_i|\mathbf{x}_i, \boldsymbol{class}_i) = \exp\left(\sum_{t=2}^{8} \alpha_t class_{it} + \mathbf{x}_i'\beta + \sum_{t=2}^{8} \rho_t \omega_{it}\right), \quad (4)$$

where ω_{it} $(t = 2, \cdots, 8)$ are unobserved variables that are potentially correlated with religious class probabilities $class_{it}$, and ρ_t are the corresponding parameters. If the corresponding parameters are jointly zero ($\rho_2 = \cdots = \rho_8 = 0$), the QMLE of equation (3) will be consistent. In contrast, if any ρ_t is not equal to zero, the QMLE of equation (3) will be inconsistent.

To address this issue, we apply Terza et al.'s (2008) proposed method. We specify a reduced form equation to formalize the relationship between $class_{it}$ and ω_{it}:

$$class_{it} = g_t(\mathbf{x}_i'\boldsymbol{\theta}_t + \delta_t z_i) + \omega_{it}, \quad (5)$$

where $g_t(\cdot)$ is some function and z_i is an identifying instrument. This instrument variable must satisfy three conditions (Terza et al. 2008): it is not correlated with ω_{it}, it is sufficiently correlated with $class_{it}$, and it cannot have a direct influence on $envprac_i$.

Because $class_{it}$ takes values in the unit interval [0, 1] and the sum of these probabilities is one, we choose the multinomial fractional logit function (Mullahy 2015, Papke and Wooldridge 1996) for $g_t(\cdot)$, which is an extension of the fractional regression methodology.

$$E(class_{it}|\mathbf{x}_i, z_i) = g_t(\mathbf{x}_i'\boldsymbol{\theta}_t + \delta_t z_i) = \frac{\exp(\mathbf{x}_i'\boldsymbol{\theta}_t + \boldsymbol{\delta}_t z_i)}{\sum_{t=1}^{8} \exp(\mathbf{x}_i'\boldsymbol{\theta}_t + \boldsymbol{\delta}_t z_i)} \quad . \quad (6)$$

Identifying the fractional multinomial model requires normalizing one set of parameters. We normalize $\boldsymbol{\theta}_1 = \boldsymbol{\delta}_1 = \mathbf{0}$; in other words,

$$E(class_{it}|\mathbf{x}_i, z_i) = \frac{1}{1 + \sum_{t=2}^{8} \exp(\mathbf{x}_i'\boldsymbol{\theta}_t + \boldsymbol{\delta}_t z_i)} \quad t = 1, \quad (7)$$

$$E(class_{it}|\mathbf{x}_i, z_i) = \frac{\exp(\mathbf{x}_i'\boldsymbol{\theta}_t + \boldsymbol{\delta}_t z_i)}{1 + \sum_{t=2}^{8} \exp(\mathbf{x}_i'\boldsymbol{\theta}_t + \boldsymbol{\delta}_t z_i)} \qquad \forall t \neq 1. \quad (8)$$

We can estimate the multinomial fractional logit model by the quasi-maximum likelihood method (Geraci et al. 2016).

Given equations (4), (7), and (8), we use the following two stage procedure. We first estimate a multinomial fractional logit model and compute the first stage residuals:

$$\widehat{\omega}_{it} = class_{it} - E(class_{it}|\mathbf{x}_i, z_i) \qquad t = 2, \cdots, 8. \tag{9}$$

In the second stage, we estimate equation (4) by substituting $\widehat{\omega}_{it}$ for the unobserved latent factors ω_{it}. If the joint null hypothesis that $\rho_2 = \cdots = \rho_8 = 0$ is not rejected, we can treat the class probabilities $class_{it}$ as exogenous variables (Geraci et al. 2016).

For z_i, we use parental religiosity as an instrumental variable, which takes a value of 1 if the CEO's parents attended religious activities such as a church and temple every week in the CEO's childhood, and 0 otherwise. Our identification assumption is that parental religiosity is unrelated to factors that affect the degree of firms' pro-environmental practices after controlling for religious latent class membership probability and other variables.

Results

In Table 15, we report the estimated coefficients and robust standard errors in parentheses when we assume latent class probabilities ($class_j,\ j = 2, \ldots, 8$) are exogenous. As in column (1), the coefficients on $class_4$, $class_5$, and $class_8$ are positive and statistically significant at least at the ten, one, and five percent levels, respectively. This implies that CEOs belonging to class 4 (belief in all religious concepts), class 5 (belief in life after death, nirvana, and supernatural power), and class 8 (belief in life after death, heaven, and hell) are more likely to introduce environmental practices to their firms than those belonging to the other classes. We also find that each religious affiliation is not significantly associated with the number of environmental practices. Although

Table 15: Estimation Results

	The number of environmental practices			
	Poisson (1)	Poisson (2)	Neg. bin. (3)	Neg. bin. (4)
Class membership probability				
class 2	0.05	0.25 †	0.06	0.24 †
(Don't know for all religious concepts)	(0.05)	(0.13)	(0.05)	(0.13)
class 3	0.09	0.15	0.09	0.15
(Yes for REI, NIR, & SNP)	(0.06)	(0.18)	(0.06)	(0.18)
class 4	0.10 †	0.15	0.11 †	0.14
(Yes for all religious concepts)	(0.06)	(0.18)	(0.06)	(0.18)
class 5	0.18 **	0.58 **	0.18 **	0.55 **
(Yes for LAD, HEAVEN, & HELL)	(0.07)	(0.17)	(0.07)	(0.17)
class 6	0.00	0.19	0.01	0.18
(No for LAD, HEAVEN, & HELL)	(0.07)	(0.20)	(0.07)	(0.19)
class 7	0.10	0.56 **	0.11	0.56 **
(No for REI, , NIR, & SNP)	(0.09)	(0.21)	(0.09)	(0.21)
class 8	0.19 *	0.53 *	0.20 *	0.51 *
(Yes for LAD, HEAVEN, & HELL)	(0.09)	(0.22)	(0.09)	(0.24)
Decision style ** class 2		-0.24 †		-0.22
		(0.14)		(0.14)
class 3		-0.08		-0.07
		(0.19)		(0.19)
class 4		-0.05		-0.04
		(0.19)		(0.19)
class 5		-0.46 *		-0.44 *
		(0.19)		(0.19)
class 6		-0.23		-0.21
		(0.21)		(0.20)
class 7		-0.55 *		-0.56 **
		(0.23)		(0.23)
class 8		-0.40 †		-0.37
		(0.23)		(0.25)
CEO attributes				
Decision style (d)	0.13 *	0.30 **	0.14 **	0.30 **
	(0.05)	(0.1)	(0.05)	(0.1)
CEO education (d)	0.06 †	0.07 *	0.06 †	0.07 †
	(0.03)	(0.03)	(0.03)	(0.03)
CEO tenure (ln)	0.00	0.00	0.00	0.00
	(0.02)	(0.02)	(0.02)	(0.02)
CEO age (ln)	-0.08	-0.08	-0.09	-0.09
	(0.11)	(0.11)	(0.11)	(0.11)
Gender (d)	0.04	0.04	0.03	0.03
	(0.08)	(0.08)	(0.08)	(0.08)
Firm Attributes				
Family ownership ratio	-0.10 †	-0.11 *	-0.10 †	-0.10 †
	(0.05)	(0.05)	(0.05)	(0.05)
The number of employees (ln)	0.12 **	0.12 **	0.12 **	0.12 **
	(0.02)	(0.02)	(0.02)	(0.02)
Firm age (ln)	0.04 †	0.04 †	0.04 †	0.04
	(0.02)	(0.02)	(0.02)	(0.02)
Family name (d)	0.01	0.01	0.01	0.01
	(0.04)	(0.04)	(0.04)	(0.04)
Religious affiliation				
Buddhism (d)	0.10	0.10	0.11	0.10
	(0.09)	(0.09)	(0.09)	(0.09)
Shinto (d)	0.07	0.07	0.08	0.07
	(0.14)	(0.14)	(0.14)	(0.14)
Other affiliation (d)	0.02	0.02	0.04	0.03
	(0.14)	(0.13)	(0.14)	(0.13)
No Affiliation (d)	0.04	0.03	0.05	0.04
	(0.07)	(0.07)	(0.07)	(0.07)
Constant	1.54	1.38	1.54	1.40
	(0.44)	(0.45)	(0.44)	(0.45)

Note: Robust standard errors are shown in parentheses. (ln) means natural logarithm and (d) means dummy variable. The reference group for posterior class membership probabilities is Class1 (Secular class). The reference group for religious affiliation is "refuse to answer/no answer." †, *, and ** imply that the coefficient is significantly different from zero at the 10%, 5% and 1% level, respectively. N=1,184.

this result differs from that of Owen and Videras (2007), the point is that a CEO's religious belief systems significantly predict the number of their firm's environmental practices, even after controlling for CEOs' religious affiliation and other control variables.

According to the point estimates, a change in class membership probability from zero to one for classes 4, 5, and 8 leads to a 10.3, 17.8, and 19.1 percent increase, respectively, in the number of firms' environmental practices. To investigate whether these class memberships actually have differential effects, we test the following three null hypotheses: $H_0: \beta_{class_4} = \beta_{class_5}$, $H_0: \beta_{class_5} = \beta_{class_8}$, and $H_0: \beta_{class_4} = \beta_{class_8}$. We cannot reject any of these null hypotheses, even at the ten percent level, suggesting that these class memberships have the same effect on the number of firms' environmental practices.

One interpretation of this finding may be that the difference among these three religious belief systems does not really matter to firms' environmental practices. Put differently, a common characteristic among these religious belief systems, which is "belief in life after death," may be the only important determinant influencing firms' environmental practices. To see whether this is the case, we generate dummy variables for the observed attitudes ("yes," "no," and "don't know") towards each religious concept, and estimate an alternative model with these variables instead of the class membership probabilities. In this model, we use "no" as the reference category for each religious concept. If the coefficients on $class_4$, $class_5$, and $class_8$ capture only the positive effect of belief in life after death on the number of proactive environmental practices, the coefficient in the alternative model must be positive and statistically significant as well. However, as Table 16 shows, the estimated coefficient on "yes" for life after death is not significantly different from zero. It is also noteworthy that the other coefficients except for "don't know" for life after death are not statistically significant, even at the ten percent level. These results strongly

Table 16: Estimation Results: Alternative Model Including Dummy Variables for Attitudes toward Each Religious Belief

		The number of environmental practices	
		Coef.	Std. Err.
After Life			
	Yes	0.01	(0.07)
	Don't know	0.12 †	(0.06)
Heaven			
	Yes	0.12	(0.08)
	Don't know	-0.03	(0.13)
Hell			
	Yes	-0.08	(0.08)
	Don't know	-0.02	(0.13)
Miracles			
	Yes	0.00	(0.05)
	Don't know	-0.06	(0.05)
Reincarnation			
	Yes	0.01	(0.07)
	Don't know	-0.05	(0.07)
Nirvana			
	Yes	0.01	(0.06)
	Don't know	0.02	(0.06)
Supernatural power			
	Yes	0.08	(0.06)
	Don't know	0.08	(0.06)

Note: Control variables are included. The reference group for religious affiliation is "refuse to answer/no answer." Robust standard errors are shown in parentheses. †, *, and ** imply that the coefficient is significantly different from zero at the 10%, 5%, and 1% level, respectively. N=1,184.

indicate that the complex religious belief systems CEOs hold, not belief in each religious concept per se, affect firms' proactive environmental practices, supporting Hypothesis 1.

We further examine whether the effect of the religious belief systems weakens when the CEO's has a participative decision-making style. For this purpose, we add to the original model

interaction terms $decision\_style \cdot class_j,\ j = 2, \ldots, 8$, where $decision\_style = 1$ if the CEO's decision-making style is participative. Column (2) of Table 15 reports the results. We find a slight difference in the coefficients of class membership probabilities between the original and extended models. For example, the coefficients on $class_2$ and $class_7$ are positive and significant in the extended model, while not significant in the original model. In terms of size, the coefficients on $class_4$, $class_5$, and $class_8$ become larger than those in the original model. We also find that the interaction terms for classes 5 and 8 are negative and significant, while that for class 4 is not significant. These results imply that the moderating effects of decision-making style depend on religious belief systems. More specifically, the effect of membership for classes 5 and 8 is weakened when a CEO's decision-making style is participative; in contrast, the effect of membership for class 4 remains the same, regardless of the CEOs' decision-making styles.

We calculate marginal effects at means (MEM) for each class membership probability. As Table 17 indicates, the MEMs for class 4, 5, and 8 membership probabilities are 0.65, 1.16, and 1.26, respectively, for the number of firms' pro-environmental practices in the original model. These results imply that CEOs belonging to classes 4, 5, and 8 carry out 0.65, 1.16, and 1.26 additional environmental practices, respectively, compared to CEOs belonging to the secular class (class 2).

We also calculate MEMs for the model with the interaction terms, which we present in two different cases based on the value of $decision\_style$. When a CEO's decision-making style is participative (column (2)-1), the effect of class membership disappears. In other words, religious beliefs do not play a role in determining environmental practices in this case. In contrast, if a CEO's decision-making style is autocratic (column (2)-2), class memberships tends to matter: 1.33, 3.60, 3.43, and 3.27 additional environmental practices for membership in classes 2, 5, 7, and 8,

Table 17: Marginal Effects

	The number of Environmental Practices		
	Poisson	Poisson	
	(1)	(2)-1	(2)-2
		Decision style = 1	Decision style = 0
Class membership probability			
class 2	0.33	0.11	1.33 †
	(0.28)	(0.31)	(0.70)
class 3	0.56	0.48	0.75
	(0.38)	(0.42)	(0.91)
class 4	0.65 †	0.63	0.73
	(0.39)	(0.41)	(0.95)
class 5	1.16 *	0.76	3.60 **
	(0.49)	(0.52)	(1.25)
class 6	0.02	-0.24	0.98
	(0.41)	(0.44)	(1.07)
class 7	0.65	0.06	3.43 *
	(0.58)	(0.60)	(1.60)
class 8	1.26 *	0.93	3.27 *
	(0.61)	(0.66)	(1.59)

Note: Control variables are included. Standard errors are shown in parentheses. The reference group for posterior class membership probabilities is Class1 (Secular class). †, *, and ** imply that the coefficient is significantly different from zero at the 10%, 5%,

Marginal effects of $class_{ji}$ are calculated as follows,

$$ME_{(1)} = \exp\left(\hat{\alpha}_j + \hat{\beta}_{ds} \cdot \overline{decision\_style} + \bar{\mathbf{x}}_i'\hat{\eta}\right) - \exp\left(\hat{\beta}_{ds} \cdot \overline{decision\_style} + \bar{\mathbf{x}}_i'\hat{\eta}\right)$$

$$ME_{(2)-1} = \exp\left(\hat{\alpha}_j + \hat{\beta}_{ds*class_j} + \hat{\beta}_{ds} + \bar{\mathbf{x}}_i'\hat{\eta}\right) - \exp\left(\hat{\beta}_{ds} + \bar{\mathbf{x}}_i'\hat{\eta}\right)$$

$$ME_{(2)-2} = \exp\left(\hat{\alpha}_j + \bar{\mathbf{x}}_i'\hat{\eta}\right) - \exp\left(\bar{\mathbf{x}}_i'\hat{\eta}\right)$$

where β_{ds} is the coefficient of $decision\_style_i$, $\hat{\beta}_{ds*classj}$ is the coefficient of $decision\_style_i \cdot class_j$, $\boldsymbol{\beta} = (\beta_{ds}, \beta_{-ds})$ for ME (1), and $\boldsymbol{\beta} = \left(\beta_{ds}, \beta_{ds \cdot class_j}, \eta\right)$ for ME (2)-1 and (2)-2.

respectively. In sum, Hypothesis 2 was supported.

Robustness checks

To examine whether our main results are driven by the Poisson assumption, we also estimate negative binomial models. The results in columns (3) and (4) of Table 15 correspond to

Table 18: Estimation Result: Assumption of Endogeneity

1st stage (Multinomial fractional logit model)	Religious class membership probabilities						
	class 2	**class 3**	**class 4**	**class 5**	**class 6**	**class 7**	**class 8**
Instrument variable							
CEOs' parental religiosity (d)	-0.42	0.30	1.39 **	1.07 *	0.96 †	0.96	1.21 †
	(0.56)	(0.61)	(0.46)	(0.50)	(0.54)	(0.69)	(0.65)
CEO attributes							
Decision style	-0.22	0.09	-0.26	0.28	0.47	-0.01	0.48
	(0.20)	(0.28)	(0.28)	(0.34)	(0.34)	(0.41)	(0.44)
CEO education (d)	0.06	-0.11	0.07	0.22	0.18	-0.54 †	0.20
	(0.17)	(0.21)	(0.24)	(0.24)	(0.24)	(0.31)	(0.32)
CEO tenure (ln)	-0.01	-0.11	0.10	0.05	0.00	0.22	0.03
	(0.10)	(0.14)	(0.16)	(0.14)	(0.13)	(0.19)	(0.22)
CEO age (ln)	0.42	0.15	-1.20 †	-1.10 †	0.07	-0.15	-1.38
	(0.52)	(0.65)	(0.67)	(0.66)	(0.68)	(0.85)	(0.90)
Gender (d)	0.71 †	-0.58	0.04	-0.28	-0.22	-0.30	-0.77
	(0.42)	(0.39)	(0.51)	(0.46)	(0.49)	(0.57)	(0.56)
Firm Attributes							
Family ownership ratio	0.02	0.40	0.17	-0.02	-0.34	-0.54	0.34
	(0.25)	(0.38)	(0.38)	(0.35)	(0.34)	(0.48)	(0.55)
The number of employees (ln)	-0.14 †	-0.17	-0.17	-0.18	-0.19 †	-0.15	-0.38 **
	(0.08)	(0.11)	(0.11)	(0.12)	(0.12)	(0.13)	(0.14)
Firm age (ln)	-0.15	0.11	0.08	0.00	-0.14	0.31 *	0.36
	(0.11)	(0.15)	(0.14)	(0.16)	(0.15)	(0.22)	(0.23)
Family name (d)	0.26	-0.03	-0.07	0.21	0.15	0.45	0.13
	(0.19)	(0.26)	(0.27)	(0.27)	(0.29)	(0.33)	(0.37)
Religious Affiliation							
Buddhism (d)	-0.61	0.03	0.46	-0.17	0.03	1.76 *	-0.69
	(0.42)	(0.54)	(0.56)	(0.55)	(0.56)	(0.85)	(0.66)
Shinto (d)	-1.04	1.25 †	-0.56	0.47	-0.65	0.31	-6.65 **
	(0.90)	(0.75)	(1.09)	(0.83)	(1.15)	(1.25)	(1.02)
Other Affiliation (d)	0.64	1.57	1.27	2.02 *	1.01	1.12	0.35
	(0.95)	(0.98)	(1.01)	(0.94)	(1.08)	(1.29)	(1.40)
No Affiliation (d)	-0.24	-0.22	-0.16	-0.44	-0.41	2.16 **	-0.97 †
	(0.33)	(0.46)	(0.51)	(0.47)	(0.48)	(0.72)	(0.53)
Constant	-1.38	-1.24	3.45	3.44	-0.56	-4.01	3.66
	(2.15)	(2.79)	(2.80)	(2.70)	(2.82)	(3.31)	(3.81)
2nd stage							
	$\widehat{\omega}_2$	$\widehat{\omega}_3$	$\widehat{\omega}_4$	$\widehat{\omega}_5$	$\widehat{\omega}_6$	$\widehat{\omega}_7$	$\widehat{\omega}_8$
The number of environmental practices	-2.02	-5.36	-0.58	2.06	-4.58	-0.83	-3.22
	(2.00)	(2.70)	(1.91)	(2.37)	(2.52)	(2.14)	(2.05)

Note: Robust standard errors in parentheses for 1st stage estimation results, while we show the bootstrapped standard errors in parentheses for the raw residuals that are added to the 2nd stage equation (the number of replications is 500). (ln) means natural logarithm and (d) means dummy variable. The reference group for religious affiliation is "refuse to answer/no answer." We can reject the null hypothesis that all coefficients associated with CEOs' parental religiosity are 0 ($\chi^2 = 17.45$ $p < 0.05$). †, *, and ** imply that the coefficient is significantly different from zero at the 10%, 5%, and 1% level, respectively. N=1,184.

the models without and with the interaction terms, respectively. The results of the negative binomial models are qualitatively similar to those of the Poisson models in terms of both the significance and size of the estimated coefficients. Therefore, our results do not seem to depend on the Poisson assumption.

These results would not be legitimate if class probabilities are endogenous. To test for the exogeneity in $class_j$ $(j = 2,\ldots,8)$, we first need to check the relevance of the instrument in the reduced form equations for latent class membership probabilities. In the upper part of Table 18, we report the results of the first stage regressions. The coefficients on CEO's parental religiosity are positive and statistically significant, except for the equations for classes 2, 3 and 7. Further, we can reject the joint null hypothesis that the coefficients on CEOs' parental religiosity are all simultaneously zero at the five percent level (H_0: $\delta_2 = \cdots = \delta_8 = 0,\ \chi^2 = 17.45, p = 0.014$). Thus, this variable satisfies at least one of the requirements for a valid instrument in that it is correlated with the religious class membership probabilities.

The lower part of Table 18 provides the results of the second stage regressions, particularly the estimated coefficients on the residuals from the first stage regressions. A Wald test of the joint insignificance of ρ_t is not rejected at the ten percent level (H_0: $\rho_2 = \cdots = \rho_8 = 0$, $\chi^2 = 10.95, p = 0.141$). These results support the exogeneity of religious class membership probabilities. Thus, we can conclude that the results when assuming exogeneity presented earlier are relevant.

Discussion

Beginning with the research question of how a CEO's religiosity influences his/her firm's environmental proactivity, we tested the relationship using the survey data from 1,184 firms in the

Tokyo metropolitan area. Our findings are twofold. First, we find strong statistical evidence that environmental proactivity, measured by the number of firms' environmental practices, depends on the CEO's religiosity. Second, a participatory decision-making process attenuates the relationships between a CEO's religiosity and the firm's environmental proactivity.

From the further investigation of the empirical results, we could draw an interesting inference on the impact of religiosity. The nature of a CEO's religious beliefs would affect the impact on the firm's environmental proactivity. As Tables 13 and 15 show, among the classes reflecting respondents' religious beliefs (i.e., classes 3, 4, 5, and 8), those pertaining to belief in afterlife (i.e., classes 4, 5, and 8) have a significantly positive impact on environmental proactivity, while this is not the case for class 3, where CEOs indicated "don't know" related to afterlife. This finding implies that a CEO's belief systems including afterlife could particularly evoke a motivation to help others, leading to environmental proactivity. The possible reason is that because people who believe in life after death would have higher expectations that their good deeds would be rewarded and bad deeds be punished in the next life, even though such deeds are not found in this life, a CEO with belief systems including afterlife would exercise his/her power to engage in the firm's practices to improve environmental integrity. This inference is consistent with the recent psychological argument about an afterlife, where supernatural monitoring and punishment would discourage individuals from violating established moral norms and facilitate human cooperation, leading to the unjustifiability of moral transgressions (Atkinson and Bourrat 2011).

Theoretical, empirical, and practical implications

We can draw theoretical, empirical, and practical implications from our findings. In terms of theory, we clarified managerial religiosity as a micro-foundational mechanism of corporate environmental proactivity. Against the backdrop of a call for a serious investigation of religions in

management studies (Chan-Serafin et al. 2013, Tracey et al. 2014), this study is the first attempt to explicitly clarify the link between a CEO's religiosity and corporate environmental behaviors. Prior studies adopt the upper echelon perspective to examine the link between the nature of managers' personal values and beliefs and types of corporate behaviors beyond the heterogeneity among top management teams and board members (Hambrick and Mason 1984, Hambrick 2007). Our findings indicate that managerial religiosity evokes morality and leads to coporate environmental proactivity.

A second theoretical implication is that the impact of a CEO's personal beliefs on his/her firm's behavior depends on his/her decision-making style. Interactions with others, which inevitably occur in participative decision making, reduce the impact of individual personal beliefs on corporate decisions. This finding provides an insight into the explanation of the mechanisms in the micro-foundations of strategic decision-making. Although a CEO's personal values and beliefs would trigger corporate activities, his/her managerial discretion in the decision-making process may change their impact, which is consistent with findings in previous studies from the upper echelon theory perspective (e.g., Li and Tang 2010). In total, the study surely provides a new theoretical perspective on the micro-foundations mechanism of corporate activities for environmental integrity.

Our study also provides several empirical implications. First, by analyzing a relatively large sample of SME CEOs (over 1,000) with sophisticated statistical techniques, we find robust quantitative evidence that personal religious beliefs surely influence corporate environmental proactivity. Previous survey-based studies of SMEs generally have relatively small sample sizes (below 100), which makes it difficult to obtain reliable statistical findings. Additionally, previous studies of managerial personal values and beliefs rarely controlled for unobserved individual-

specific characteristics. Using the instrumental variables estimation, we eliminate the possible endogeneity bias derived from CEOs' idiosyncratic characteristics.

Second, this study corroborates the link between religious beliefs and environmental proactivity in field research. A major criticism of existing studies testing the relationships between religious beliefs and prosocial behaviors is that most studies rely on laboratory experiments (Galen 2012). Religious priming in laboratory experiments would not reflect actual religious beliefs (Shariff et al. 2016), but this priming psychologically evokes an individual cooperative mindset, leading to prosocial behaviors. Our study, however, supplies solid evidence that individual religious beliefs are associated with environmental practices. In addition, another controversy in previous studies is whether religious people show helping behaviors to only in-group religious members or also to non-group members (Norenzayan and Shariff 2008, Preston et al. 2010). Because the effects of environmental practices are not restricted to members sharing the same religious beliefs, but broadly spread in society, including non-group members, religious CEOs may be incentivized by their morality to contribute to others. Accordingly, this study's findings provide partial evidence corroborating the "religious prosociality hypothesis," indicating a new empirical way of seeing the relationships between religious beliefs and prosociality.

Finally, a practical implication for managers is that they need to be cautious about their biased decisions based on religiosity. As this study shows, it is possible that managers may, consciously or unconsciously, follow their religious beliefs in the decision-making process. Decisions based on personal religiosity would exceed a firm's appropriate level of environmental proactivity. Accordingly, to attenuate the effects of personal values and beliefs and avoid biased decisions, managers could consult with their subordinates in decision making.

Limitations and future directions

Our findings should be interpreted with caution. First, because we focus on the number of environmental practices as environmental proactivity, it remains unclear whether CEO's religious belief systems are associated with actual improvement in firms' environmental performance, which would then contribute to environmental integrity. Therefore, future studies should focus on the empirical relationships between a CEO's religiosity and his/her firm's environmental performance such as energy consumption or greenhouse gas emissions.

Second, because our sample is restricted to Japanese SMEs, the generalizability of the findings could be limited due to potential effects from the research context. In terms of country effects, several studies report that religious practices and beliefs in Japan are to some extent unique and are possibly different from those in Western countries (Krause et al. 2002). Accordingly, our findings could be specific to the Japanese religious context. It may therefore be worth examining possible cross-country differences in whether and how managerial religiosity affects firms' environmental proactivity. An improved comprehension of the role of CEOs' religiosity will expand our understanding of the micro-foundations of environmental proactivity.

The third potential effect from the research context would be sample of SMEs. Because CEOs in SMEs tend to have high power in decision making based on their large ownership and long tenure, they can proceed with their preferred decisions at will. A CEO's religiosity may not play an important role in large firms because his/her power is more restricted, and accordingly decision making in today's large firms tends to be collective rather than individual. Therefore, our findings for SMEs may show relatively larger effects of religiosity on environmental proactivity.

Chapter 6: General Discussion

This dissertation contributes to the broader literature on the relationship between upper echelon characteristics and organizational strategies, by showing the importance of CEOs' expectations and values. Study 1 represents a methodological improvement on CEO career horizon literature. Since previous studies have used CEO age as a proxy for CEOs' career horizon, they are unable to distinguish the effect of CEOs' career horizons from that of their age. We addressed this challenge by directly measuring CEOs' subjective career horizon through a survey and demonstrated that previous studies might have underestimated the effect of career horizon. Put differently, the impact of the opportunistic behavior of CEOs approaching retirement on long-term investment behavior may be even greater than that indicated in existing studies.

Study 1 also carries important implications for literature on the effects of CEO age on their decision-making. Although management research has regarded CEO age as one of the most important variables that affect CEOs' decision-making, there is no consensus on the effects that CEO age really have on their decision-making. For example, some studies emphasized the negative aspects of the increasing age of CEOs. They suggested that older CEOs find difficulty in integrating the information required for decision-making (Clapham & Schwenk, 1991; Hanmbrick &Mason, 1984), and bring attention to their personal benefit, such as their reputation and wealth (Dechow & Sloan, 1991; Murphy & Zimmerman, 1993; Matta & Beamish, 2008). On the other hand, other studies focus on the positive aspects, suggesting that the accumulation of firm-specific experience and managerial skills increase as CEO gets older (Buchholtz, Ribbens, & Houle, 2003). In fact, although almost all firm-level studies include CEO age in their empirical models, few studies systematically explore the effects of CEO age on firm outcome (Krause et al. 2014). Our methodological improvement in Study 1 opens up the possibility to identify a more accurate effect

of CEO age on their decision-making, by regarding the shorter CEOs' subjective career horizon as negative aspects of the increasing age of CEOs.

Regarding theoretical implications, Study 2 contributes to family firm succession literature. Although organizational researchers have indicated that the beliefs of top managers are predictors of corporate behavior, few studies have theoretically and empirically identified the beliefs that have impact, and the ways in which they impact. To bridge this gap in the literature, Study 2 successfully applies the concept of socioemotional wealth to explain the ways in which a family CEO's expectations of managerial succession determine the choice of investment time horizons, by varying the periods over which firms evaluate investments. This study also has methodological contributions to succession literature, suggesting that family CEOs have different expectations of managerial succession, despite having children. For example, children might choose their own jobs and be reluctant to take over the position of CEO if their own jobs are more profitable. Since the presence of children is a necessary, but never a sufficient condition for family managerial succession, measuring the CEOs' expectations of managerial succession provides more reliable estimation results than the number of children, which has been used in succession literature.

The results of Study 2 indicate that even if a CEO does not have a successor, he/she would carry out long-term investment in the expectation that successor will be found. This result has important policy implications for SME development. Nowadays, business succession issues are very urgent for Japanese SMEs because of a declining population. Moreover, CEOs of SMEs are facing the difficulty of succession, since their children are often not interested in taking over their business. Under these circumstances, by providing information about potential successors to aging CEOs who are not ready to transfer their business, government agencies can not only save SMEs from involuntary termination as a result of succession failure, but also facilitate their long-term

investments.

Study 3 clarified managerial religiosity as a micro-foundational mechanism of corporate environmental proactivity. Against the backdrop of a call for a serious investigation of religions in management studies (Chan-Serafin et al., 2013; Tracey et al., 2014), this study is the first attempt to explicitly clarify the link between a CEO's religiosity, and corporate environmental behaviors. Prior studies adopt the upper echelon perspective to examine the link between the nature of managers' personal values and beliefs, and types of corporate behaviors beyond the heterogeneity among top management teams and board members (Hambrick & Mason, 1984; Hambrick, 2007). Our findings indicate that managerial religiosity evokes morality and leads to corporate environmental proactivity.

Care must be taken in interpreting the results of this dissertation. First of all, several limitations exist with regard to data collection. First, each study in this dissertation is based on analysis using cross-sectional data. We control for possible endogeneity bias due to CEOs' idiosyncratic characteristics by using the instrumental variables method in each study, but there is still a possibility that reverse causality or other sources of endogeneity exist, especially in Study 1.

Our results may also suffer from the common method bias. This problem is caused either by using a common source to obtain information on both, the dependent and independent variables, or by specific characteristics of a questionnaire that strengthen respondents' tendency to answer the survey questions in a distorted way (Fuller et al., 2016; Jakobsen & Jensen, 2012). However, because common method bias is mostly related to perceptual measures, the fact-based variables used in our questionnaire, such as internationalization, R&D implement, new product development, and environmental behaviors, are unlikely to be affected by such problems. Moreover, we assured

the respondents that their responses are completely anonymous, thereby mitigating the probability of social desirability bias in their answers (Podsakoff et al., 2003). Therefore, common method bias is unlikely to be a challenge for the three studies in this dissertation.

Furthermore, partly because we needed to obtain a direct response from the CEO, the data of this dissertation are drawn from a survey of Japanese SMEs. It thus remains an open question as to how much of what we empirically found can be generalized to large firms, and how much of it is limited to Japan. A CEO's subjective factors may not play an important role in large firms, because his/her powers are more restricted, and accordingly, decision-making in today's large firms tends to be collective rather than individual. On the other hand, because CEOs of SMEs tend to have significant powers in decision-making based on their large ownership and long tenure, they can proceed with their preferred decisions at will. Therefore, our findings for SMEs may show relatively larger effects of CEOs' subjective factors on firm behaviors.

Despite these limitations, it is noteworthy that this dissertation provides compelling evidence that CEOs' subjective factors have significant impacts on their firms' behaviors. In future research, including the organizational context may be useful to better assess the association between CEOs' subjective factors and firm behaviors. For example, although in Study 3, we found that CEOs' decision-making style moderates the relationship between their religiosity and corporate environmental proactivity, we did not include such an organizational context in Studies 1 and 2 due to the limitations of the data. Future research should test the moderating effects of the organizational context on the relationship between CEOs' subjective factors and firm behaviors in a more sophisticated way.

Another possible research avenue is to address the homogeneity/heterogeneity of religious beliefs among top executives. As Bromiley and Rau (2016) argue, top management teams

(TMTs) are one of the sources of moderating effects on the relationship between CEOs' values and strategic decision-making. In our context, this argument suggests that CEOs derive more support from members of their boards if CEOs' religious views are similar with those TMT members, than if not. Therefore, it may be worthwhile to examine whether, and to what extent the homogeneity/heterogeneity of religious beliefs among top executives influences the role of the expectations of managerial succession on long-term investment.

This dissertation extends the methodological repertoire of management research and suggests some additional research avenues for literature on the importance of CEOs' expectations and values. We hope that others will use these methodologies to further advance research on the role of executives' values and expectations.

Conclusion

I study the effects of CEOs' subjective factors on firm behaviors to address critical issues in our understanding of firm behavior. Notwithstanding the importance of CEOs' subjective factors, the nascent literature provides limited insights into the relationship between these factors and its organizational-level effects. This dissertation focuses on expectations of career horizon, uncertainty of managerial succession, and religiosity as determinants of firm behavior. Altogether, the results provide consistent evidence in favor of my propositions and raise useful implications for scholars and managers.

Reference

Adhikari, B. K., & Agrawal, A. 2016. Religion, gambling attitudes and corporate innovation. ***Journal of Corporate Finance***, 37: 229-248.

Agle B. R, Mitchell R. K., & Sonnenfeld J. A. 1999. Who matters to CEOs? An investigation of stakeholder attributes and salience,corpate performance, and CEO values. ***Academy of Management Journal,*** 42(5): 507-525.

Aguinis H. 2011. Organizational responsibility: Doing good and doing well. In S. Zedeck (Ed.), ***APA handbook of industrial and organizational psychology***, vol. 3. Washington, DC, US: American Psychological Association.

Aguinis H., & Glavas, A. 2012. What we know and don't know about corporate social responsibility: A review and research agenda. ***Journal of Management,*** 38(4): 932-968.

Aldrich, H. E., & Cliff, J. E. 2003. The pervasive effects of family on entrepreneurship: Toward a family embeddedness perspective. ***Journal of Business Venturing***, 18(5): 573-596.

Alvarez, S. A., & Barney, J. B. 2004. Organizing rent generation and appropriation: toward a theory of the entrepreneurial firm. ***Journal of Business Venturing***, 19(5): 621-635.

Ama T. 2005. ***Why are the Japanese non-religious?: Japanese spirituality: Being non-religious in a religious culture.*** Maryland, US: University Press of America.

Amit, B. H., Krivoy, A., Mansbach-Kleinfeld, I., & Zalsman, G. 2014. Religiosity is a protective factor against self-injurious thoughts and behaviors in Jewish adolescents: Findings from a nationally representative survey. ***European Psychology***, 29(8): 509-513.

Amore, M. D., Minichilli, A., & Corbetta, G. 2011. How do managerial successions shape corporate financial policies in family firms? ***Journal of Corporate Finance***, 17(4): 1016-1027.

Anderson, R. C., & Reeb, D. M. 2003. Founding-family ownership and firm performance: Evidence from the S&P 500. ***The Journal of Finance***, 58(3): 1301-1328.

Anderson, R. C., Duru, A., & Reeb, D. M. 2012. Investment policy in family controlled firms. ***Journal of Banking & Finance,*** 36(6): 1744-1758.

Andersen S., Fountain J, Harrison G. W., & Rutstrom E. E. 2014. Estimating subjective probabilities. ***Journal of Risk Uncertainty,*** 48(3): 207-229.

Antia, M., Pantzalis, C., & Park, J. C. 2010. CEO decision horizon and firm performance: An empirical investigation. ***Journal of Corporate Finance***, 16(3): 288-301.

Arregle J. L., Naldi, L., Nordqvist, M., & Hitt, M. A. 2012. Internationalization of family-controlled firms: A study of the effects of external involvement in governance. ***Entrepreneurship Theory and Practice,*** 36(6): 1115-1143.

Arregle J. L, Duran, P., Hitt, M. A., & Essen, M. van. 2017. Why is family firms' internationalization unique? A meta-analysis. ***Entrepreneurship Theory and Practice,*** 41(5): 801-831.

Astrachan, J. H., & Kolenko, T. A. 1994. A neglected factor explaining family business success: Human resource practices. ***Family Business Review,*** 7(3): 251-262.

Astrachan, J. H., Klein, S. B., & Smyrnios, K. X. 2002. The F-PEC scale of family influence: A proposal for solving the family business definition problem. ***Family Business Review***, 15(1): 45-58.

Atkinson Q.D., & Bourrat, P. 2011. Beliefs about God, the afterlife and morality support the role of supernatural policing in human cooperation. ***Evolutional Human Behavior,*** 32(1): 41-49.

Bansal, P. 2002. The corporate challenges of sustainable development. ***Academy of Management***

Executive, 16(2): 122-131.

Bansal, P. 2005. Evolving sustainably: A longitudinal study of corporate sustainable development. ***Strategic Management Journal,*** 26(3): 197-218.

Bansal, P., & Roth, K. 2000. Why companies go green: A model of ecological responsiveness. ***Academy of Management Journal,*** 43(4): 717-736.

Bansal, R., & Song, H. C. 2017. Similar but not the same: Differentiating corporate responsibility from sustainability. ***Academy of Management Annals,*** 11(1): 105-149.

Barker III, V. L., & Mueller, G. C. 2002. CEO characteristics and firm R&D spending. ***Management Science***, 48(6): 782-801.

Baronchelli, G., Bettinelli, C., Del Bosco, B., & Loane, S. 2016. The impact of family involvement on the investments of Italian small-medium enterprises in psychically distant countries. ***International Business Review,*** 25(4): 960-970.

Barro R. J., & McCleary R. M. 2003. Religion and economic growth across countries. ***American Sociological Review,*** 68(5): 760-781.

Benartzi, S., & Thaler, R. H. 1995. Myopic loss aversion and the equity premium puzzle. ***The Quarterly Journal of Economics,*** 110(1): 73-92.

Bennedsen, M., Nielsen, K.M., Perez-Gonzalez, F., & Wolfenzon, D. 2007. Inside the family firm: the role of families in succession decisions and performance. ***Quarterly Journal of Economics,*** 122(2): 647-691.

Ben-Ner, A., McCall, B. P., Stephane, M., & Wang, H. 2009. Identity and in-group/out-group differentiation in work and giving behaviors: Experimental evidence. ***Journal of Economic Behavior and Organization***, 72(1): 153-170.

Berchicci, L., & King A. 2007. 11 Postcards from the edge: A review of the business and

environment literature. ***Academy of Management Annals,*** 1(1): 513-547.

Berns, K. V. D., & Klarner, P. 2017. A review of the CEO succession literature and a future research program. ***Academy of Management Perspectives,*** 31(2): 83-108.

Berrone, P., Cruz, C., & Gómez-Mejia, L. R. 2012. Socioemotional wealth in family firms: Theoretical dimensions, assessment approaches, and agenda for future research. ***Family Business Review,*** *25*(3): 258-279.

Berrone, P., Cruz, C., & Gomez-Mejia, L. R. 2014. Family-controlled firms and stakeholder management: A socioemotional wealth preservation perspective. In L. Melin, M. Nordqvist, & P. Sharma (Eds.), ***The sage handbook of family business***. London, England: Sage.

Berrone, P., Cruz, C., Gomez-Mejia, L. R., & Larraza-Kintana, M. 2010. Socioemotional wealth and corporate responses to institutional pressures: Do family-controlled firms pollute less? ***Administrative Science Quarterly***, 55(1): 82-113.

Besharov, M. L., & Smith, W. K. 2014. Multiple institutional logics in organizations: Explaining their varied nature and implications. ***Academy of Management Review***, 39(3): 364-381.

Bigley, G. A., & Wiersema, M. F. 2002. New CEOs and corporate strategic refocusing: How experience as heir apparent influences the use of power. ***Administrative Science Quarterly,*** 47(4): 707-727.

Blau, F. D., & Kahn L. M. 1992. The gender earnings gap: Learning from international comparisons. ***American Economic Review,*** 82(2): 533-538.

Block, J., Miller, D., Jaskiewicz, P., & Spiegel, F. 2013. Economic and technological importance of innovations in large family and founder firms: An analysis of patent data. ***Family Business Review***, 26(2): 180-199.

Bocatto, E., Gispert, C., & Rialp, J. 2010. Family-owned business succession: the influence of pre-

performance in the nomination of family and nonfamily members: Evidence from Spanish firms. ***Journal of Small Business Management***, 48(4), 497-523.

Brief, A. P., & Motowidlo, S. J. 1986. Prosocial organizational behaviors. ***Academy of Management Review,*** 11: 710-725.

Bromiley, P., & Rau, D. 2016. Social, behavioral, and cognitive influences on upper echelons during strategy process: A literature review. ***Journal of Management,*** 42(1): 174-202.

Bucholz, K. K., Heath, A. C., & Reich, T. 1996. Can we subtype alcoholism? A latent class analysis of data from relatives of alcoholics in a multicenter family study of alcoholism. ***Alcoholism: Clinical and Experimental Research***, 20(8): 1462-1471.

Buchholtz, A. K., Ribbens, B. A., & Houle, I. T. 2003. The role of human capital in postacquisition CEO departure. ***Academy of Management Journal***, 46(4): 506-514.

Butler, S. A., & Newman, H. A. 1989. Agency control mechanism effectiveness and decision making in an executive's final year with a firm. ***Journal of Institutional and Theoretical Economics (JITE)/Zeitschrift für die gesamte Staatswissenschaft***, 145(3): 451-464.

Buysse, K., & Verbeke, A. 2003. Proactive environmental strategies: A stakeholder management perspective. ***Strategic Management Journal,*** 24(5): 453-470.

Calabrò, A., Minichilli, A., Amore, M. D., & Brogi, M. 2018. The courage to choose! Primogeniture and leadership succession in family firms. ***Strategic Management Journal,*** 39(7): 2014-2035.

Calza, F., Profumo, G., & Tutore, I. 2016. Corporate ownership and environmental proactivity. ***Business Strategy and the Environment,*** 25(6): 369-389.

Cannella Jr, A. A., & Lubatkin, M. 1993. Succession as a sociopolitical process: Internal impediments to outsider selection. ***Academy of Management Journal***, 36(4): 763-793.

Cameron, A. C., & Trivedi, P. K. 2013. ***Regression analysis of count data.*** New York: Cambridge University Press.

Cao, Q., Maruping, L. M., & Takeuchi, R. 2006. Disentangling the effects of CEO turnover and succession on organizational capabilities: A social network perspective. ***Organization Science***, 17(5): 563-576.

Carney, M. 2005. Corporate governance and competitive advantage in family-controlled firms. ***Entrepreneurship Theory and Practice***, 29(3): 249-265.

Carpenter, M. A., Pollock, T. G., & Leary, M. M. 2003. Testing a model of reasoned risk-taking: Governance, the experience of principals and agents, and global strategy in high-technology IPO firms. ***Strategic Management Journal,*** 24(9): 803-820.

Carpenter, M. A., Sanders, W. G., & Gregersen, H. B. 2001. Bundling human capital with organizational context: The impact of international assignment experience on multinational firm performance and CEO pay. ***Academy of Management Journal,*** 44(3): 493-511.

Cennamo, C., Berrone, P., Cruz, C., & Gomez–Mejia, L. R. 2012. Socioemotional wealth and proactive stakeholder engagement: Why family–controlled firms care more about their stakeholders. ***Entrepreneurship Theory and Practice***, 36(6): 1153-1173.

Chamberlain, S. R., Stochl, J., Redden, S. A., & Odlaug, B. L. 2017. Latent class analysis of gambling subtypes and impulsive/compulsive associations: Time to rethink diagnostic boundaries for gambling disorder? ***Addictive Behaviors,*** 72: 79-85.

Chan-Serafin, S., Brief, A. P., & George, J. M. 2013. PERSPECTIVE—How does religion matter and why? Religion and the organizational sciences. ***Organization Science,*** 24(5): 1585-1600.

Chang, S. J. 1995. International expansion strategy of Japanese firms: Capability building through

sequential entry. ***Academy of Management Journal,*** 38(2): 383-407.

Chang, S. J., & Shim, J. 2015. When does transitioning from family to professional management improve firm performance? ***Strategic Management Journal,*** 36(9): 1297-1316.

Chatterjee, A., & Hambrick, D. C. 2007. It's all about me: narcissistic chief executive officers and their effects on company strategy and performance. ***Administrative Science Quarterly,*** 52(3): 351-386.

Chen, H. L., & Hsu, W. T. 2009. Family ownership, board independence, and R&D investment. ***Family Business Review,*** 22(4): 347-362.

Chen, H. L., Hsu, W. T., & Chang, C. Y. 2014. Family ownership, institutional ownership, and internationalization of SMEs. ***Journal of Small Business Management,*** 52(4): 771-789.

Chrisman, J. J., Chua, J. H., & Litz, R. 2003. A unified systems perspective of family firm performance: an extension and integration. ***Journal of Business Venturing***, 18(4): 467-472.

Chrisman, J. J., Chua, J. H., Pearson, A. W., & Barnett, T. 2012. Family involvement, family influence, and family-centered non-economic goals in small firms. ***Entrepreneurship Theory and Practice***, 36(2): 267-293.

Chrisman, J. J., Chua, J. H., & Sharma, P. 1998. Important attributes of successors in family businesses: An exploratory study. ***Family Business Review***, 11(1): 19-34.

Chrisman, J. J., Chua, J. H., & Sharma, P. 2005. Trends and directions in the development of a strategic management theory of the family firm. ***Entrepreneurship Theory and Practice***, 29(5): 555-575.

Chrisman, J. J., & Patel, P. C. 2012. Variations in R&D investments of family and nonfamily firms: behavioral agency and myopic loss aversion perspectives. ***Academy of Management***

Journal, 55(4): 976-997.

Cho, S. Y., & Kim, S. K. 2017. Horizon problem and firm innovation: The influence of CEO career horizon, exploitation and exploration on breakthrough innovations. ***Research Policy***, 46(10): 1801-1809.

Choi, B., Kumar, M. S., & Zambuto, F. 2016. Capital structure and innovation trajectory: The role of debt in balancing exploration and exploitation. ***Organization Science,*** 27(5): 1183-1201.

Chua, J. H., Chrisman, J. J., & Sharma, P. 1999. Defining the family business by behavior. ***Entrepreneurship Theory and Practice***, 23(4): 19-39.

Chua, J. H., Chrisman, J. J., & Steier, L. P. 2003. Extending the theoretical horizons of family business research. ***Entrepreneurship Theory and Practice***, 27(4): 331-338.

Chua, J. H., Chrisman, J. J., Steier, L., & Rau, S. 2012. Sources of heterogeneity in family firms: an introduction. ***Entrepreneurship Theory and Practice***, 36(6): 1103-1113.

Chung, H., Flaherty, B. P., & Schafer, J. L. 2006. Latent class logistic regression: Application to marijuana use and attitudes among high school seniors. ***Journal of the Royal Statistical Society. Series A, (Statistics in Society)***, 169(4): 723-743.

Chung, C. N., & Luo, X. R. 2013. Leadership succession and firm performance in an emerging economy: Successor origin, relational embeddedness, and legitimacy. ***Strategic Management Journal***, 34(3): 338-357.

Claessens, S., Djankov, S., & Lang, L. H. 2000. The separation of ownership and control in East Asian corporations. ***Journal of Financial Economics***, 58(1-2): 81-112.

Claver, E., Rienda, L., & Quer, D. 2009. Family firms' international commitment: the influence of family-related factors. ***Family Business Review***, 22(2): 125-135.

Coles, J. L., Daniel, N. D., & Naveen, L. (2006). Managerial incentives and risk-taking. ***Journal***

of Financial Economics, 79(2): 431-468.

Covin, J.G., & Miller, D. 2014. International entrepreneurial orientation: conceptual considerations, research themes, measurement issues, and future research directions. ***Entrepreneurship Theory and Practice,*** 38(1): 11-44.

Crick, D., Matlay, H., Bradshaw, R., & Chaudhry, S. 2006. "Successful" internationalising UK family and non-family-owned firms: A comparative study. ***Journal of Small Business and Enterprise Development,*** 13(4): 498-512.

Cruz, C. C., Gómez-Mejia, L. R., & Becerra, M. 2010. Perceptions of benevolence and the design of agency contracts: CEO-TMT relationships in family firms. ***Academy of Management Journal***, 53(1): 69-89.

Cucculelli, M., & Micucci, G. 2008. Family succession and firm performance: Evidence from Italian family firms. ***Journal of Corporate Finance,*** 14(1): 17-31.

Czarnitzki, D., & Kraft, K. 2009. Capital control, debt financing and innovative activity. ***Journal of Economic Behavior & Organization***, 71(2): 372-383.

Dahl, M. S., Dezso, C. L., & Ross, D. G. 2012. Fatherhood and managerial style: How a male CEO's children affect the wages of his employees. ***Administrative Science Quarterly,*** 57(4): 669-693.

Damaraju, N. L., & Makhija, A. K. 2018. The role of social proximity in professional CEO appointments: Evidence from caste/religion-based hiring of CEOs in India. ***Strategic Management Journal***, 39(7): 2051-2074.

Daspit, J. J., Holt, D. T., Chrisman, J. J., & Long, R. G. 2016. Examining family firm succession from a social exchange perspective: A multiphase, multistakeholder review. ***Family Business Review***, 29(1): 44-64.

Davis, J. H., Schoorman, F. D., & Donaldson, L. 1997. Toward a stewardship theory of management. ***Academy of Management Review***, 22(1): 20-47.

Davis, P. S., & Harveston, P. D. 2000. Internationalization and organizational growth: The impact of internet usage and technology involvement among entrepreneur-led family businesses. ***Family Business Review,*** 13(2): 107-120.

Deakin, J., Aitken, M., Robbins, T., & Sahakian, B. J. 2004. Risk taking during decision-making in normal volunteers changes with age. ***Journal of the International Neuropsychological Society,*** 10(4): 590-598.

Dechow, P. M., & Sloan, R. G. 1991. Executive incentives and the horizon problem: An empirical investigation. ***Journal of Accounting and Economics***, 14(1): 51-89.

Deephouse, D. L., & Jaskiewicz, P. 2013. Do family firms have better reputations than non-family firms? An integration of socioemotional wealth and social identity theories. ***Journal of Management Studies***, 50(3): 337-360.

De Massis, A., Frattini, F., & Lichtenthaler, U. 2012. Research on technological innovation in family firms: Present debates and future directions. ***Family Business Review***, 26(1): 10-31.

De Massis, A., Sieger, P., Chua, J. H., & Vismara, S. 2016. Incumbents' attitude toward intrafamily succession: An investigation of its antecedents. ***Family Business Review***, 29(3): 278-300.

Demers, E. A., & Wang, C. 2010. ***The Impact of CEO Career Concerns on Accruals Based and Real Earnings Management***. INSEAD Working Paper No. 2010/13/AC.

Desyllas, P., & Hughes, A. 2010. Do high technology acquirers become more innovative? ***Research Policy,*** 39(8): 1105-1121.

Dou, J., Zhang, Z., & Su, E. 2014. Does family involvement make firms donate more? Empirical

evidence from Chinese private firms. ***Family Business Review***, 27(3): 259-274.

Du, J., Guariglia, A., & Newman, A. 2015. Do social capital building strategies influence the financing behavior of Chinese private small and medium-sized enterprises? ***Entrepreneurship Theory and Practice,*** 39(3): 601-631.

Du, X., Jian, W., Zeng, Q., & Du, Y. 2014. Corporate environmental responsibility in polluting industries: Does religion matter? ***Journal of Business Ethics***, 124(3): 485-507.

Duran, P., Kammerlander, N., Essen, M. van., & Zellweger, T. 2016. Doing more with less: innovation input and output in family firms. ***Academy of Management Journal,*** 59(4): 1224-1264.

Dyer, W. G. 1988. Culture and continuity in family firms. ***Family Business Review,*** 1(1): 37-50.

Fama, E. F., & Jensen, M. C. 1983. Agency problems and residual claims. ***The Journal of Law and Economics***, 26(2): 327-349.

Fan, J. P., Wong, T. J., & Zhang, T. 2012. Founder succession and accounting properties. ***Contemporary Accounting Research***, 29(1): 283-311.

Felin, T., Foss, N. J., & Ployhart, R. E. 2015. The microfoundations movement in strategy and organization theory. ***Academy of Management Annals,*** 9(1): 575-632.

Fernandez, Z., & Nieto, M. J. 2005. Internationalization strategy of small and medium-sized family businesses: some influential factors. ***Family Business Review,*** 18(1): 77-89.

Fernandez, Z., & Nieto, M. J. 2006. Impact of ownership on the international involvement of SMEs. ***Journal of International Business Studies,*** 37(3): 340-351.

Ferris, S. P., Jayaraman, N., & Lim, J. 2015. Six decades of CEO successions: The importance of being an insider. ***Journal of Accounting & Finance***, 15(4): 11-39.

Fiegener, M. K., Brown, B. M., Prince, R. A., & File, K. M. 1994. A comparison of successor

development in family and nonfamily businesses. ***Family Business Review***, 7(4): 313-329.

Finkelstein, S., & Hambrick, D. C. 1990. Top-management-team tenure and organizational outcomes: The moderating role of managerial discretion. ***Administrative Science Quarterly,*** 35(3): 484-503.

Finkelstein, S., Hambrick, D. C., & Cannella, A. A. 2009. ***Strategic leadership: Theory and research on executives, top management teams, and boards***. Oxford, United Kingdom: Oxford University Press.

Fredrickson, J. W., Hambrick, D. C., & Baumrin, S. 1988. A model of CEO dismissal. ***Academy of Management Review***, 13(2): 255-270.

Fiske, S. T. 2004. ***Social beings: A core motives approach to social psychology***. Hoboken, NJ: John Wiley & Sons.

Freeman, R. E. 1984. ***Stakeholder management: framework and philosophy***. Mansfield, MA: Pitman.

Friedland, R., & Alford, R. R. 1991. Bringing society back in: Symbols, practices and institutional contradictions. In P. J. Dimaggio & W. W. Powell (Eds.), ***The New Institutionalism in Organizational Analysis***. Chicago: University of Chicago Press.

Fuller, C. M., Simmering, M. J., Atinc, G., Atinc, Y., & Babin, B. J. 2016. Common methods variance detection in business research. ***Journal of Business Research,*** 69(8): 3192-3198.

Gómez-Mejia, L. R., Haynes, K. T., Nunez-Nickel, M., Jacobson, K. J. L., & Moyano-Fuentes, J. 2007. Socioemotional wealth and business risks in family-controlled firms: evidence from Spanish olive oil mills. ***Administrative Science Quarterly***, 52(1): 106-137.

Gómez-Mejia, L. R., Makri, M., & Kintana, M. L. 2010. Diversification decisions in family-controlled firms. ***Journal of Management Studies***, 47(2): 223-252.

Gómez-Mejia, L. R., Nunez-Nickel, M., & Gutierrez, I. 2001. The role of family ties in agency contracts. ***Academy of Management Journal***, 44(1): 81-95.

Galen, L. W. 2012. Does religious belief promote prosociality? A critical examination. ***Psychological Bulletin***, 138(5): 876.

Gallo, M. A., & Garcia-Pont, C. 1996. Important factors in family business internationalization. ***Family Business Review***, 9(1): 45-59.

Gan, L., Gong, G., Hurd, M., & McFadden, D. 2015. Subjective mortality risk and bequests. ***Journal of Econometrics***, 188(2): 514-525.

Gedajlovic, E., & Carney, M. 2010. Markets, hierarchies, and families: Toward a transaction cost theory of the family firm. ***Entrepreneurship Theory and Practice***, 34(6): 1145-1172.

Gedajlovic, E., Carney, M., Chrisman, J. J., & Kellermanns, F. W. 2012. The adolescence of family firm research: Taking stock and planning for the future. ***Journal of Management***, 38(4): 1010-1037.

Geraci, A., Fabbri, D., & Monfardini, C. 2018. Testing exogeneity of multinomial regressors in count data models: Does two-stage residual inclusion work? ***Journal of Econometric Methods***, 7(1): 1-19.

Gersick, K. E., Gersick, K. E., Davis, J. A., Hampton, M. M., & Lansberg, I. 1997. ***Generation to generation: Life cycles of the family business***. Boston, MA: Harvard Business Press.

Gerstner, W. C., Konig, A., Enders, A., & Hambrick, D. C. 2013. CEO narcissism, audience engagement, and organizational adoption of technological discontinuities. ***Administrative Science Quarterly,*** 58(2): 257-291.

Gibbons, R., & Murphy, K. J. 1992. Optimal incentive contracts in the presence of career concerns: Theory and evidence. ***Journal of Political Economy***, 100(3): 468-505.

Glock, C. Y., & Stark, R. 1965. ***Religion and society in tension***. Chicago, IL: Rand McNally.

Giustinelli, P., & Manski, C. F. 2018. Survey measures of family decision processes for econometric analysis of schooling decisions. ***Economic Inquiry,*** 56(1): 81-99.

Gomez-Mejia, L. R., Cruz, C., Berrone, P., & De Castro, J. 2011. The bind that ties: Socioemotional wealth preservation in family firms. ***The Academy of Management Annals,*** 5(1): 653-707.

González-Benito J., & González-Benito Ó. 2006. A review of determinant factors of environmental proactivity. ***Business Strategy and the Environment,*** 15(2): 87-102.

Gottlieb R. S. 2017. Religious environmentalism and environmental activism. In J. Hart (Ed.), ***The Wiley Blackwell Companion to Religion and Ecology.*** Hoboken, NJ: Wiley-Blackwell.

Graves, C., & Thomas, J. 2006. Internationalization of Australian family businesses: A managerial capabilities perspective. ***Family Business Review***, 19(3): 207-224.

Graves, C., & Thomas, J. 2008. Determinants of the internationalization pathways of family firms: An examination of family influence. ***Family Business Review***, 21(2): 151-167.

Greenwood, R., Raynard, M., Kodeih, F., Micelotta, E. R., & Lounsbury, M. 2011. Institutional complexity and organizational responses. ***Academy of Management Annals***, 5(1): 317-371.

Groves, R. M., Fowler Jr., F. J., Couper, M.P., Lepkowski, J. M., Singer, E., & Tourangeau R. 2009. ***Survey methodology***. Hoboken, NJ: John Wiley & Sons.

Gupta, A., & Wowak, A. J. 2017. The elephant (or donkey) in the boardroom. ***Administrative Science Quarterly,*** 62(1): 1-30.

Höllinger, F., & Eder, A. 2016. Functional equivalence and validity of religiousness indicators in cross-cultural comparative surveys. ***Methodological Innovations,*** 9: 1-12.

Habbershon, T. G., Williams, M., & MacMillan, I. C. 2003. A unified systems perspective of family firm performance. ***Journal of Business Venturing***, 18(4): 451-465.

Habbershon, T. G., & Williams, M. L. 1999. A resource-based framework for assessing the strategic advantages of family firms. ***Family Business Review***, 12(1): 1-25.

Hambrick, D. C. 2007. Upper echelons theory: An update. ***Academy of Management Review,*** 32(2): 334-343.

Hambrick, D. C., & Finkelstein, S. 1987. Managerial discretion: A Bridge between polar views of organizational outcomes. ***Research in organizational behavior***, 9(1): 369-406.

Hambrick, D. C., & Fukutomi, G. D. 1991. The seasons of a CEO's tenure. ***Academy of Management Review***, 16(4): 719-742.

Hambrick, D. C., Geletkanycz, M. A., & Fredrickson, J. W. 1993. Top executive commitment to the status-quo: Some tests of its determinants. ***Strategic Management Journal***, 14(6): 401-418.

Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. ***Academy of Management Review***, 9(2): 193-206.

Hambrick, D. C., & Quigley, T. J. 2014. Toward more accurate contextualization of the CEO effect on firm performance. ***Strategic Management Journal***, 35(4): 473-491.

Hambrick, D. C. 2007. Upper echelons theory: An update. ***Academy of Management Review,*** 32(2): 334-343.

Handler, W. C. 1994. Succession in Family Business: A Review of the Research. ***Family Business Review***, 7(2): 133-157.

Hart, S. L., & Dowell, G. 2011. A natural-resource-based view of the firm: Fifteen years after. ***Journal of Management,*** 37(5): 1464-1479.

Haveman, H. A., & Rao, H. 1997. Structuring a theory of moral sentiments: Institutional and organizational coevolution in the early thrift industry. ***American Journal of sociology***, 102(6): 1606-1651.

Hay, R., & Gray, E. 1974. Social responsibilities of business managers. ***Academy of Management Journal,*** 17(1): 135-143.

Hayden, F. G. 1988. Values, beliefs, and attitudes in a sociotechnical setting. ***Journal of Economic Issues,*** 22(2): 415-426.

Hayward, M. L., & Hambrick, D. C. 1997. Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. ***Administrative Science Quarterly,*** 42(1): 103-127.

Henderson, A. D., Miller, D., & Hambrick, D. C. 2006. How quickly do CEOs become obsolete? Industry dynamism, CEO tenure, and company performance. ***Strategic Management Journal***, 27(5): 447-460.

Henriques, I., & Sadorsky, P. 1999. The relationship between environmental commitment and managerial perceptions of stakeholder importance. ***Academy of Management Journal,*** 42(1): 87-99.

Herrmann, P., & Datta, D. K. 2006. CEO experiences: Effects on the choice of FDI entry mode. ***Journal of Management Studies***, 43(4): 755-778.

Heyden, M. L., Reimer, M., & Van Doorn, S. 2017. Innovating beyond the horizon: CEO career horizon, top management composition, and R&D intensity. ***Human Resource Management***, 56(2): 205-224.

Hillier, D., & McColgan, P. 2009. Firm performance and managerial succession in family managed firms. ***Journal of Business Finance & Accounting,*** 36(3-4): 461-484.

Hofstede, G. 1980. Motivation, leadership, and organization: Do American theories apply abroad?

Organizational Dynamics, 9(1): 42-63.

Hopp, W. J. 1987. A sequential model of R&D investment over an unbounded time horizon. ***Management Science,*** 33(4): 500-508.

Holden, E., Linnerud, K., & Banister, D. 2014. Sustainable development: Our common future revisited. ***Global Environmental Change,*** 26: 130-139.

Hurd, M. D. 2009. Subjective probabilities in household surveys. ***Annual Review of Economics,*** 1: 543-562.

James, H. S. 1999. Owner as manager, extended horizons and the family firm. ***International Journal of the Economics of Business,*** 6(1): 41-55.

Japanese Agency for Cultural Affairs. 2016. ***Annual reports on religious affairs (in Japanese)***. Accessed online http://www.bunka.go.jp/tokei_hakusho_shuppan/hakusho_nenjihokokusho/shukyo_nenkan/pdf/h28nenkan.pdf. Viewed December 22, 2017.

Jaskiewicz, P., Heinrichs, K., Rau, S. B., & Reay, T. 2016. To be or not to be: How family firms manage family and commercial logics in succession. ***Entrepreneurship Theory and Practice***, 40(4): 781-813.

Jiang, D. S., Kellermanns, F. W., Munyon, T. P., & Morris, M. L. 2018. More than meets the eye: A review and future directions for the social psychology of socioemotional wealth. ***Family Business Review***, 31(1): 125-157.

Johnson, D., & Bering, J. 2006. Hand of God, mind of man: Punishment and cognition in the evolution of cooperation. ***Evolutionary Psychology,*** 4(1): 219-233.

Kahai, S. S., Sosik, J. J., & Avolio, B. J. 1997. Effects of leadership style and problem structure on work group process and outcomes in an electronic meeting system environment. ***Personnel***

psychology, 50(1): 121-146.

Kahneman, D., & Tversky, A. 1973. On the psychology of prediction. ***Psychological Review***, 80(4): 237-251.

Karaevli, A. 2007. Performance consequences of new CEO'Outsiderness': Moderating effects of pre- and post- succession contexts. ***Strategic Management Journal***, 28(7): 681-706.

Kellermanns, F.W., Eddleston, K. A., Barnett, T., & Pearson, A. 2008. An exploratory study of family member characteristics and involvement: Effects on entrepreneurial behavior in the family firm. ***Family Business Review***, 21(1): 1-14.

Kerr, N. L., & Tindale, R. S. 2004. Group performance and decision making. ***Annual Review of Psychology,*** 55: 623-655.

Kesner, I. F., & Sebora, T. C. 1994. Executive succession: Past, present & future. ***Journal of Management***, 20(2): 327-372.

Kets de Vries, M. F. R. 1993. The dynamics of family controlled firms: The good and the bad news. ***Organizational Dynamics***, 21(3): 59-71.

Klein, S. B., Astrachan, J. H., & Smyrnios, K. X. 2005. The F-PEC Scale of Family Influence: Construction, Validation, and Further Implication for Theory. ***Entrepreneurship Theory and Practice***, 29(3): 321-339.

Koch, S. F. 2010. ***Fractional multinomial response models with an application to expenditure shares***. Working Paper, University of Pretoria Department of Economics, Hatfield, South Africa.

Kontinen, T., & Ojala, A. 2010. The internationalization of family businesses: A review of extant research. ***Journal of Family Business Strategy***, 1(2): 97-107.

Kontinen, T., & Ojala, A. 2011. International opportunity recognition among small and medium-

sized family firms. ***Journal of Small Business Management***, 49(3): 490-514.

Koopman, P., & Wierdsma, A. 1998. Participative management. In P. J. D. Drenth, H. Thierry & Wolff C. J. (Eds.), ***Handbook of work and organizational psychology: Personnel psychology***, Vol. 3, East Sussex, United Kingdom: Psychology Press.

Kraatz, M. S., & Block, E. S. 2008. Organizational implications of institutional pluralism. In R. Greenwood, C. Oliver, T. B. Lawrence & R. E. Meyer (Eds.), ***The Sage handbook of organizational institutionalism***. London, England: Sage.

Krause, N., Liang, J., Shaw, B. A., Sugisawa, H., Kim, H. K., & Sugihara, Y. 2002. Religion, death of a loved one, and hypertension smong older adults in Japan. ***The journals of gerontology. Series B, Psychological sciences and social sciences***, 57(2): 96-107.

Krause, R., Withers, M. C., & Semadeni, M. 2017. Compromise on the board: Investigating the antecedents and consequences of lead independent director appointment. ***Academy of Management Journal***, 60(6): 2239-2265.

Kuroda, T., Dobbins, J. C., & Gay, S. 1981. Shinto in the history of Japanese religion. ***Journal of Japanese Studies,*** 7(1): 1-21.

Kutcher, E. J., Bragger, J. D., Rodriguez-Srednicki, O., & Masco, J. L. 2010. The role of religiosity in stress, job attitudes, and organizational citizenship behavior. ***Journal of Business Ethics,*** 95:319–337.

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. 1999. Corporate ownership around the world. ***The Journal of Finance***, 54(2): 471-517.

Lansberg, I. 1983. Managing human resources in family firms: The problem of institutional overlap. ***Organizational dynamics***, 12(1): 39-46.

Lansberg, I. 1988. The succession conspiracy. ***Family Business Review***, 1(2): 119-143.

Lansberg, I. 1999. ***Succeeding generations: realizing the dream of families in business***. Boston, MA: Harvard Business Press.

Lanza, S. T., Savage, J. S., & Birch, L. L. 2010. Identification and prediction of latent classes of weight-loss strategies among women. ***Obesity (Silver Spring)***, 18(4): 833-840.

Larrick, R. P. 2016. The social context of decisions. ***Annual Review of Organizational Psychology and Organizational Behavior***, 3: 441-467.

Laufs, K., Bembom, M., & Schwens, C. 2016. CEO characteristics and SME foreign market entry mode choice: The moderating effect of firm's geographic experience and host-country political risk. ***International Marketing Review,*** 33(2): 246-275.

Laufs, K., & Schwens, C. 2014. Foreign market entry mode choice of small and medium-sized enterprises: A systematic review and future research agenda. ***International Business Review***, 23(6): 1109-1126.

Laverty, K. J. 1996. Economic "short-termism": the debate, the unresolved issues, and the implications for management practice and research. ***Academy of Management Review***, 21(3): 825-860.

Le Breton-Miller, I., Miller, D., & Steier, L. P. 2004. Toward an integrative model of effective FOB succession. ***Entrepreneurship Theory and Practice***, 28(4): 305-328.

Le Breton-Miller, I., & Miller, D. 2006. Why do some family businesses out-compete? Governance, long-term orientations, and sustainable capability. ***Entrepreneurship Theory and Practice***, 30(6): 731-746.

Le, S., & Kroll, M. 2017. CEO international experience: Effects on strategic change and firm performance. ***Journal of International Business Studies***, 48(5): 573-595.

Leaptrott, J. 2005. An institutional theory view of the family business. ***Family Business Review***,

18(3): 215-228.

Lee, S. H., Peng, M. W., & Barney, J. B. 2007. Bankruptcy law and entrepreneurship development: A real options perspective. ***Academy of Management Review***, 32(1): 257-272.

Levesque, M., & Minniti, M. 2006. The effect of aging on entrepreneurial behavior. ***Journal of Business Venturing***, 21(2): 177-194.

Levitt, B., & March, J. G. 1988. Organizational learning. ***Annual Review of Sociology***, 14: 319-340.

Lin, S. H., & Hu, S. Y. 2007. A family member or professional management? The choice of a CEO and its impact on performance. ***Corporate Governance: An International Review***, 15(6): 1348-1362.

Locke, E. A., & Schweiger, D. M. 1979. Participation in decision-making: One more look. ***Research in Organizational Behavior***, 1(10): 265-339.

Loewenstein, G., & Thaler, R. H. 1989. Intertemporal choice. ***Journal of Economic Perspectives***, 3(4): 181-193.

Lounsbury, M. 2007. A tale of two cities: Competing logics and practice variation in the professionalizing of mutual funds. ***Academy of Management Journal***, 50(2): 289-307.

Lubatkin, M. H., Schulze, W. S., Ling, Y., & Dino, R. N. 2005. The effects of parental altruism on the governance of family-managed firms. ***Journal of Organizational Behavior***, 26(3): 313-330.

Lundstrum, L. L. 2002. Corporate investment myopia: A horserace of the theories. ***Journal of Corporate Finance***, 8(4): 353-371.

Lumpkin, G. T., Brigham, K. H., & Moss, T. W. 2010. Long-term orientation: Implications for the entrepreneurial orientation and performance of family businesses. ***Entrepreneurship &***

Regional Development, 22(3-4): 241-264.

Magidson, J., & Vermunt, J. 2002. Latent class models for clustering: A comparison with k-means. ***Canadian journal of marketing research,*** 20(1): 37-44.

Mahapatra, S. 1984. Investor reaction to a corporate social accounting. ***Journal of Business Finance & Accounting***, 11(1): 29-40.

Manski, C. F. 2004. Measuring expectations. ***Econometrica***, 72(5): 1329-1376.

Matta, E., & Beamish, P. W. 2008. The accentuated CEO career horizon problem: Evidence from international acquisitions. ***Strategic Management Journal***, 29(7): 683-700.

Marshall, J. P., Sorenson, R., Brigham, K., Wieling, E., Reifman, A., & Wampler, R. S. 2006. The paradox for the family firm CEO: Owner age relationship to succession-related processes and plans. ***Journal of Business Venturing***, 21(3): 348-368.

Martinez, M., & Aldrich, H. 2014. Sociological theories applied to family businesses. In L. Melin, M. Nordqvist & P. Sharma (Eds.), ***The sage handbook of family business***. London, England: Sage.

Mayda, A. M., & Rodrik, D. 2005. Why are some people (and countries) more protectionist than others? ***European Economic Review,*** 49(6): 1393-1430.

McCleary, R. M., & Barro, R. J. 2006. Religion and economy. ***Journal of Economic Perspective***, 20(2): 49-72.

McConaughy, D. L., & Phillips, G. M. 1999. Founders versus descendants: the profitability, efficiency, growth characteristics and financing in large, public, founding-family-controlled firms. ***Family Business Review***, 12(2): 123-132.

McConaughy, D. L., Matthews, C. H., & Fialko, A. S. 2001. Founding family controlled firms: Performance, risk, and value. ***Journal of Small Business Management***, 39(1), 31-49.

Melin, L., & Nordqvist, M. 2007. The reflexive dynamics of institutionalization: The case of the family business. ***Strategic Organization***, 5(3): 321-333.

Merino, F., Monreal-Perez, J., & Sanchez-Marin, G. 2015. Family SEMs' internationalization: Disentangling the influence of familiness on Spanish firms' export activity. ***Journal of Small Business Management***, 53(4): 1164-1184.

Miller, D., & Le Breton-Miller, I. 2005. ***Managing for the long run: Lessons in competitive advantage from great family businesses***. Boston, MA: Harvard Business School Press.

Miller, D., Le Breton-Miller, I., & Lester, R. H. 2007. Are family firms really superior performers? ***Journal of Corporate Finance***, 13(5): 829-858.

Miller, D., Le Breton-Miller, I., & Lester, R. H. 2011. Family and lone founder ownership and strategic behaviour: Social context, identity, and institutional logics. ***Journal of Management Studies***, 48(1): 1-25.

Miller, D., Le Breton-Miller, I., & Scholnick, B. 2008. Stewardship vs. stagnation: An empirical comparison of small family and non-family businesses. ***Journal of Management Studies***, 45(1): 51-78.

Miller, D., Steier, L., & Breton-Miller, L. I. 2003. Lost in time: Intergenerational succession, change, and failure in family business. ***Journal of Business Venturing***, 18(4): 513-531.

Minichilli, A., Corbetta, G., & MacMillan, I. C. 2010. Top management teams in family-controlled companies: 'Familiness', 'Faultlines', and their impact on financial performance. ***Journal of Management Studies***, 47(2): 205-222.

Minichilli, A., Nordqvist, M., Corbetta, G., & Amore, M. D. 2014. CEO succession mechanisms, organizational context, and performance: A socio-emotional wealth perspective on family-controlled firms. ***Journal of Management Studies***, 51(7): 1153-1179.

Minton, E. A., Kahle, L. R., & Kim C. H. 2015. Religion and motives for sustainable behaviors: A cross-cultural comparison and contrast. ***Journal of Business Research,*** 68(9): 1937-1944.

Mobbs, S., & Raheja, C. G. 2012. Internal managerial promotions: Insider incentives and CEO succession. ***Journal of Corporate Finance***, 18(5): 1337-1353.

Monsma, S. V. 2007. Religion and philanthropic giving and volunteering: Building blocks for civic responsibility. ***Interdisciplinary Journal of Research on Religion***, 3: 1-28.

Montmarquette, C., & Cannings, K. 2002. How do young people choose college majors? ***Economics of Education Review***, 21(6): 543-556.

Morck, R., Shleifer, A., & Vishny, R. W. 1988. Management ownership and market valuation an empirical analysis. ***Journal of Financial Economics***, 20(1-2): 293-315.

Morck, R., Wolfenzon, D., & Yeung, B. 2005. Corporate governance, economic entrenchment, and growth. ***Journal of Economic Literature***, 43(3): 655-720.

Morgan, T. J., & Gomez-Mejia, L. R. 2014. Hooked on a feeling: The affective component of socioemotional wealth in family firms. ***Journal of Family Business Strategy***, 5(3): 280-288.

Morris, M. H., Williams, R. O., Allen, J. A., & Avila, R. A. 1997. Correlates of success in family business transitions. ***Journal of Business Venturing***, 12(5): 385-401.

Morrison, M., Duncan, R., & Parton, K. 2015. Religion does matter for climate change attitudes and behavior. ***PloS one***, 10(8): e0134868.

Mullahy, J. 2015. Multivariate fractional regression estimation of econometric share models. ***Journal of Econometric Methods***, 4(1): 71-100.

Munari, F., Oriani, R., & Sobrero, M. 2010. The effects of owner identity and external governance systems on R&D investments: A study of Western European firms. ***Research Policy***, 39(8),

1093-1104.

Musteen, M., Francis, J., & Datta, D. K. 2010. The influence of international networks on internationalization speed and performance: A study of Czech SMEs. ***Journal of World Business***, 45(3): 197-205.

Nadkarni, S., & Chen, J. 2014. Bridging yesterday, today, and tomorrow: CEO temporal focus, environmental dynamism, and rate of new product introduction. ***Academy of Management Journal***, 57(6): 1810-1833.

Nelson, T., & Constantinidis, C. 2017. Sex and gender in family business succession research: A review and forward agenda from a social construction perspective. ***Family Business Review***, 30(3): 219-241.

Nordqvist, M., Wennberg, K., Bau, M., & Hellerstedt, K. 2013. An entrepreneurial process perspective on succession in family firms. ***Small Business Economics***, 40(4): 1087-1122.

Norenzayan, A., & Shariff, A. F. 2008. The origin and evolution of religious prosociality. ***Science***, 322(5898): 58-62.

Norris, P., & Inglehart, R. 2011. ***Sacred and secular: Religion and politics worldwide***. Cambridge, UK: Cambridge University Press.

Oh, W. Y., Chang, Y. K., & Cheng, Z. 2016. When CEO career horizon problems matter for corporate social responsibility: The moderating roles of industry-level discretion and blockholder ownership. ***Journal of Business Ethics***, 133(2): 279-291.

Okoroafo, S. C. 1999. Internationalization of family businesses: Evidence from Northwest Ohio, U.S.A. ***Family Business Review***, 12(2): 147-158.

Owen, A. L., & Videras, J. R. 2007. Culture and public goods: The case of religion and the voluntary provision of environmental quality. ***Journal of Environmental Economics and***

Management, 54(2): 162-180.

Pérez-González, F. 2006. Inherited control and firm performance. ***American Economic Review***, 96(5): 1559-1588.

Pache, A. C., & Santos, F. 2010. When worlds collide: The internal dynamics of organizational responses to conflicting institutional demands. ***Academy of Management Review***, 35(3): 455-476.

Papke, L. E., & Wooldridge, J. 1996. Econometric methods for fractional response variables with an application to 401 (k) plan participation rates. ***Journal of Applied Econometrics***, 11: 619-632.

Parada, M. J., Nordqvist, M., & Gimeno, A. 2010. Institutionalizing the family business: The role of professional associations in fostering a change of values. ***Family Business Review***, 23(4): 355-372.

Patel, P. C., & Fiet, J. O. 2011. Knowledge combination and the potential advantages of family firms in searching for opportunities. ***Entrepreneurship Theory and Practice***, 35(6): 1179-1197.

Pearson, A., Holt, D., & Carr, J. 2014. Scales in family business studies. In L. Melin, M. Nordqvist & P. Sharma (Eds.), ***The sage handbook of family business***. London, England: Sage.

Powell, T. C., Lovallo, D., & Fox, C. R. 2011. Behavioral strategy. ***Strategic Management Journal***, 32(13): 1369-1386.

Preston, J. L., Ritter, R. S., & Ivan Hernandez J. I. 2010. Principles of religious prosociality: A review and reformulation. ***Social and Personality Psychology Compass,*** 4(8): 574-590.

Raaijmakers, A. G., Vermeulen, P. A., Meeus, M. T., & Zietsma, C. 2015. I need time! Exploring pathways to compliance under institutional complexity. ***Academy of Management Journal***,

58(1): 85-110.

Rau, S. 2014. Resource-based view of family firms. In L. Melin, M. Nordqvist & P. Sharma (Eds.), ***The sage handbook of family business***. London, England: Sage.

Reay, T. 2009. Family-business meta-identity, institutional pressures, and ability to respond to entrepreneurial opportunities. ***Entrepreneurship Theory and Practice***, 33(6): 1265-1270.

Reay, T., Jaskiewicz, P., & Hinings, C. 2015. How family, business, and community logics shape family firm behavior and "rules of the game" in an organizational field. ***Family Business Review,*** 28(4): 292-311.

Reilly, G., Souder, D., & Ranucci, R. 2016. Time horizon of investments in the resource allocation process: review and framework for next steps. ***Journal of Management***, 42(5): 1169-1194.

Rossi, H. L. 2014. 7 CEOs with notably devout religious beliefs. ***Fortune***, November 11, accessed online http://fortune.com/2014/11/11/7-ceos-with-notably-devout-religious-beliefs. Viewed February 8. 2019.

Rossano, M. J. 2007. Supernaturalizing social life. ***Human Nature,*** 18(3): 272-294.

Scherer, A. G., Palazzo, G., & Seidl, D. 2013. Managing legitimacy in complex and heterogeneous environments: Sustainable development in a globalized world. ***Journal of Management Studies,*** 50(2): 259-284.

Schulze, W. S., Lubatkin, M. H., & Dino, R. N. 2001. Agency relationships in family firms: Theory and evidence. ***Organization science***, 12(2): 99-116.

Schulze, W. S., Lubatkin, M. H., & Dino, R. N. 2003. Toward a theory of agency and altruism in family firms. ***Journal of Business Venturing***, 18(4): 473-490.

Schwarz, G. 1978. Estimating the dimension of a model. ***Annals of Statistics***, 6(2): 461-464.

Sciascia, S., Mazzola, P., Astrachan, J. H., & Pieper, T. M. 2012. The role of family ownership in international entrepreneurship: Exploring nonlinear effects. ***Small Business Economics***, 38(1): 15-31.

Scott, W. R., Ruef, M., Mendel, P. J., & Caronna, C. A. 2000. ***Institutional change and healthcare organizations: From professional dominance to managed care***. Chicago, IL: University of Chicago Press.

Segaro, E. L., Larimo, J., & Jones, M. V. 2014. Internationalisation of family small and medium sized enterprises: The role of stewardship orientation, family commitment culture and top management team. ***International Business Review***, 23(2): 381-395.

Shariff A. F., Willard A. K., Andersen T., & Norenzayan A. 2016. Religious priming: A meta-analysis with a focus on prosociality. ***Personality and Social Psychology Review***, 20(1): 27-48.

Sharma, P. 2004. An overview of the field of family business studies: Current status and directions for the future. ***Family Business Review***, 17(1): 1-36.

Sharma, P., Chrisman, J. J., & Chua, J. H. 1996. ***A review and annotated bibliography of family business studies***. Boston, MA: Kluwer Academic Publishers.

Sharma, P., Chrisman, J. J., & Chua, J. H. 1997. Strategic management of the family business: Past research and future challenges. ***Family Business Review***, 10(1): 1-35.

Sharma, P., Chrisman, J. J., & Chua, J. H. 2003. Succession planning as planned behavior: Some empirical results. ***Family Business Review***, 16(1): 1-15.

Sharma, P., Chrisman, J. J., & Gersick, K. E. 2012. ***25 years of family business review: reflections on the past and perspectives for the future***. Los Angeles, CA: Sage Publications.

Sharma, P., Chrisman, J. J., Pablo, A. L., & Chua, J. 2001. Determinants of initial satisfaction with

the succession process in family firms: A conceptual model. ***Entrepreneurship Theory and Practice***, 25(3): 17-36.

Sharma, P., & Manikutty, S. 2005. Strategic divestments in family firms: Role of family structure and community culture. ***Entrepreneurship Theory and Practice***, 29(3): 293-311.

Sharma, S. 2000. Managerial interpretations and organizational context as predictors of corporate choice of environmental strategy. ***Academy of Management Journal***, 43(4): 681-697.

Shen, W., & Cannella Jr, A. A. 2002. Revisiting the performance consequences of CEO succession: The impacts of successor type, postsuccession senior executive turnover, and departing CEO tenure. ***Academy of Management Journal***, 45(4): 717-733.

Shepherd, D. A. 2003. Learning from business failure: Propositions of grief recovery for the self-employed. ***Academy of Management Review***, 28(2): 318-328.

Shukla, P. P., Carney, M., & Gedajlovic, E. 2014. Economic theories of family firms. In L. Melin, M. Nordqvist & P. Sharma (Eds.), ***The sage handbook of family business***. London, England: Sage.

Sirmon, D. G., & Hitt, M. A. 2003. Managing resources: Linking unique resources, management, and wealth creation in family firms. ***Entrepreneurship Theory and Practice,*** 27(4): 339-358.

Somech, A. 2006. The effects of leadership style and team process on performance and innovation in functionally heterogeneous teams. ***Journal of Management,*** 32(1): 132-157.

Sonfield, M. C., & Lussier, R. N. 2004. First-, second-, and third-generation family firms: A comparison. ***Family Business Review***, 17(3): 189-201.

Souder, D., Reilly, G., Bromiley, P., & Mitchell, S. 2016. A behavioral understanding of investment horizon and firm performance. ***Organization Science***, 27(5): 1202-1218.

Souder, D., Zaheer, A., Sapienza, H., & Ranucci, R. 2016. How family influence, socioemotional wealth, and competitive conditions shape new technology adoption. ***Strategic Management Journal***, 38(9): 1774-1790.

Souza G. C., Bayus, B. L., & Wagner, H. M. 2004. New-product strategy and industry clockspeed. ***Management Science***, 50(4): 537-549.

Spaenjers, C., & Spira, S. M. 2015. Subjective life horizon and portfolio choice. ***Journal of Economic Behavior & Organization***, 116: 94-106.

Staiger, D. O., & Stock, J. H. 1997. Instrumental variables regression with weak instruments. ***Econometrica***, 65(3): 557-586.

Starik, M., & Rands, G. P. 1995. Weaving an integrated web: Multilevel and multisystem perspectives of ecologically sustainable organizations. ***Academy of Management Review***, 20(4): 908-935.

Stinebrickner, R., & Stinebrickner, T. R. 2013. A major in science? Initial beliefs and final outcomes for college major and dropout. ***The Review of Economic Studies***, 81(1): 426-472.

Strike, V. M., Berrone, P., Sapp, S. G., & Congiu, L. 2015. A socioemotional wealth approach to CEO career horizons in family firms. ***Journal of Management Studies****, 52*(4): 555-583.

Summers, J. K., Humphrey, S. E., & Ferris, G. R. 2012. Team member change, flux in coordination, and performance: effects of strategic core roles, information transfer, and cognitive ability. ***Academy of Management Journal***, 55(2): 314-338.

Swanson, D. L. 1999. Toward an integrative theory of business and society: A research strategy for corporate social performance. ***Academy of Management Review****,* 24(3): 506-521.

Tan, W. L., & Fock, S. T. 2001. Coping with growth transitions: The case of Chinese family

businesses in Singapore. ***Family Business Review***, 14(2): 123-139.

Tanaka, K. 2010. Limitations for measuring religion in a different cultural context: The case of Japan. ***The Social Science Journal***, 47(4): 845-852.

Taylor, R. N. 1975. Age and experience as determinants of managerial information processing and decision making performance. ***Academy of Management Journal***, 18(1): 74-81.

Terza, J. V., Basu, A., & Rathouz, P. J. 2008. Two-stage residual inclusion estimation: Addressing endogeneity in health econometric modeling. ***Journal of Health Economics***, 27(3): 531-543.

Thaler, R. H. 2000. From homo economicus to homo sapiens. ***The Journal of Economic Perspectives***, 14(1): 133-141.

Thaler, R. H., Tversky, A., Kahneman, D., & Schwartz, A. 1997. The effect of myopia and loss aversion on risk taking: an experimental test. ***The Quarterly Journal of Economics***, 112(2): 647-661.

Thornton, P. H., & Ocasio, W. 1999. Institutional logics and the historical contingency of power in organizations: Executive succession in the higher education publishing industry, 1958–1990. ***American journal of sociology***, 105(3): 801-843.

Thornton, P. H., Ocasio, W., & Lounsbury, M. 2012. ***The institutional logics perspective: A new approach to culture, structure, and process***. New York: Oxford University Press.

Tihanyi, L., Johnson, R. A., Hoskisson, R. E. &, Hitt, M. A. 2003. Institutional ownership differences and international diversification: the effects of boards of directors and technological opportunity. ***Academy of Management Journal***, 46(2): 195-211.

Tracey, P., Phillips, N., & Lounsbury, M. 2014. Taking religion seriously in the study of organizations. P. Tracey, N. Phillips & M. Lounsbury (Eds.), ***Religion and Organization***

Theory. Bingley, United Kingdom: Emerald Group Publishing Limited.

Venter, E., Boshoff, C., & Maas, G. 2005. The influence of successor-related factors on the succession process in small and medium-sized family businesses. ***Family Business Review***, 18(4): 283-303.

Villalonga, B., & Amit, R. 2006. How do family ownership, control and management affect firm value? ***Journal of Financial Economics***, 80(2): 385-417.

von den Driesch, T., Da Costa, M. E. S., Flatten, T. C., & Brettel, M. 2015. How CEO experience, personality, and network affect firms' dynamic capabilities. ***European Management Journal***, 33(4): 245-256.

Waldkirch, M., Nordqvist, M., & Melin, L. 2018. CEO turnover in family firms: How social exchange relationships influence whether a non-family CEO stays or leaves. ***Human Resource Management Review***, 28(1): 56-67.

Ward, J. L. 2016. ***Perpetuating the Family Business***. Berlin, DEU: Springer.

Weng, D. H., & Lin, Z. 2014. Beyond CEO tenure: the effect of CEO newness on strategic changes. ***Journal of Management***, 40(7): 2009-2032.

Wennberg, K., Wiklund, J., Hellerstedt, K., & Nordqvist, M. 2011. Implications of intra-family and external ownership transfer of family firms: Short-term and long-term performance differences. ***Strategic Entrepreneurship Journal***, 5(4): 352-372.

Weaver G. R., & Agle, B. R. 2002. Religiosity and ethical behavior in organizations: A symbolic interactionist perspective. ***Academy of Management Review***, 27(1): 77-97.

Weaver G. R., & Stansbury J. M. 2014. Religion in organizations: Cognition and behavior. In P. Tracey, N. Phillips & M. Lounsbury (Eds.), ***Religion and Organization Theory***. Bingley, UK: Emerald Group Publishing Limited.

Westhead, P., Cowling, M., & Howorth, C. 2001. The development of family companies: Management and ownership imperatives. ***Family Business Review***, 14(4): 369-385.

Wiersema, M. F., & Bantel, K. A. 1992. Top management team demography and corporate strategic change. ***Academy of Management Journal***, 35(1): 91-121.

Wiklund, J., Nordqvist, M., Hellerstedt, K., & Bird, M. 2013. Internal versus external ownership transition in family firms: An embeddedness perspective. ***Entrepreneurship Theory and Practice***, 37(6): 1319-1340.

Wimberley, D. W. 1984. Socioeconomic deprivation and religious salience: A cognitive behavioral approach. ***Sociological Quarterly***, 25(2): 223-238.

Wimberley, D. W. 1989. Religion and role-identity: A structural symbolic interactionist conceptualization of religiosity. ***Sociological Quarterly***, 30(1): 125-142.

Wiseman, R. M., & Gomez-Mejia, L. R. 1998. A behavioral agency model of managerial risk taking. ***Academy of Management Review***, 23(1): 133-153.

Wiswall, M., & Zafar, B. 2015. Determinants of college major choice: Identification using an information experiment. ***Review of Economic Studies***, 82(2): 791-824.

Wooldridge, J. M. 2010. ***Econometric analysis of cross section and panel data*** **(2nd ed.)**. Cambridge, MA: MIT Press.

World Commission on Environment and Development. 1987. ***Report of the World Commission on Environment and Development: Our Common Future***. Accessed online http://www.un-documents.net/our-common-future.pdf. Viewed December 22, 2017.

Yim, S. 2013. The acquisitiveness of youth: CEO age and acquisition behavior. ***Journal of Financial Economics***, 108(1): 250-273.

Yu, A., Lumpkin, G. T., Sorenson, R. L., & Brigham, K. H. 2012. The landscape of family business

outcomes: A summary and numerical taxonomy of dependent variables. ***Family Business Review***, 25(1): 33-57.

Zahra, S. A., Hayton, J. C., & Salvato, C. 2004. Entrepreneurship in family vs. non-family firms: A resource-based analysis of the effect of organizational culture. ***Entrepreneurship Theory and Practice***, 28(4): 363-381.

Zellweger, T. M., & Astrachan, J. H. 2008. On the emotional value of owning a firm. ***Family Business Review***, 21(4): 347-363.

Zellweger, T. M., Kellermanns, F. W., Chrisman, J. J., & Chua, J. H. 2012. Family control and family firm valuation by family CEOs: The importance of intentions for transgenerational control. ***Organization Science***, 23(3): 851-868.