Journal of Business Research 129 (2021) 88–95

Contents lists available at ScienceDirect

Journal of Business Research

journal homepage: www.elsevier.com/locate/jbusres

Heterogeneity of R&D in family firms

Byung-seong Min

Griffith University, Business School, Department of Business Strategy and Innovation, Nathan, Brisbane, Qld 4111, Australia

ARTICLE INFO

JEL Classification:
M10
M14

Keywords:
R&D
Family business group affiliate
Family standalone
Loss aversion
Corporate governance
Emerging market

ABSTRACT

Drawing on the loss aversion framework, this research posits that the risk behaviors of family business group (FBG) affiliates are more positive than those of family standalones. Empirical results, using the case of Taiwan, confirm that the use of R&D by these affiliates is greater than that by family standalones. Further analysis, however, indicates that this greater positive effect of FBG affiliates than of family standalones is attenuated if the managerial power exercised by controlling shareholders is greater than the power driven by legal ownership. By demonstrating the heterogeneity of risk behaviors *within* family firms, our research adds value to the existing literature by focusing on the differences *between* family and nonfamily firms.

1. Introduction

Determinants of family firms' R&D investments have largely been derived from the traditional behavioral agency model, as well as from the concept of socioemotional wealth (SEW), where SEW refers to normative values, including both transgenerational family control and the emotional benefits derived from social capital and from close identification with the family business (Berrone, Cruz, Gomez-Mejia, & Larraza-Kintana, 2010; Berrone, Cruz & Gomez-Mejia, 2012; Gomez-Mejia et al., 2007, 2010; Zellweger et al., 2012). In the traditional model, SEW is equivalent to current asset endowments, and the expected future wealth is assumed to be instantly amalgamated into current wealth. The primary concern of decision makers in family firms is to protect their stock of SEW. Therefore these decision makers, compared with those in nonfamily firms, would remain risk aversive, to the extent that R&D investment carries uncertainties about cash flows.

Although substantial literature exists that analyzes the determinants of R&D investments of family firms compared to those of nonfamily firms (Munoz-Bullon, et al. 2020; Schmid et al., 2014), gaps within these works limit their ability to provide an advanced understanding of family firms' investment for innovation, which is a pressing concern (Choi, Zahra, Toru & Han, 2015; Chua, Chrisman, & De Massis, 2015; Duran, Kammerlander, van Essen, & Zellweger, 2016; Jiang, Shi, & Zheng, 2020).

One particularly concerning issue is the reliance of the existing literature on the assumption of the differing utility functions between family and nonfamily firms, as raised by Schulze and Kellermanns (2015). The existing literature draws on the assumption of SEW primacy – that family firms consider the protection of their SEW to be the foremost goal despite potential threats to their economic benefit – to obtain conclusions regarding the difference in R&D investments between family and nonfamily firms (Gomez-Mejia, Haynes, Nunez-Nickel, Jacobson, & Moyano-Fuentes, 2007; Gomez-Mejia, Makri, & Larraza-Kintana, 2010; Jiang, Kellermanns, Munyon, & Lane Morris, 2018; Schulze & Kellermanns, 2015). However, this direct comparison of R&D investments between family and nonfamily firms could lead to incorrect conclusions as they are different cohorts (Chow, 1960). Chua, Chrisman, Steier, and Rau (2012) reinforce the importance of correctly classifying cohorts, as they maintain that examining heterogeneity *within* family firms is essential for understanding a family firm's R&D investments.

Traditional literature also relies on a further strong assumption of an instant endowment process from future cashflows. This is deemed unrealistic by Chua et al. (2015), who instead persuasively propose that a firm's stock of SEW must be sustained by inflows. In a similar vein, Choi, Zahra, Yoshikawa, and Han (2015) posit that the behavioral decision-making approach has a more adaptive viewpoint for understanding the family firm's R&D investments, as it highlights decision makers' aversion to loss as one of the key determinants of their risk preferences.

The existing literature on family firms also overlooks the different R&D investments that arise from differing organizational characteristics between family business group (FBG) affiliates and standalones. A key difference between such organizations is their approach to evaluating

E-mail address: b.min@griffith.edu.au.

https://doi.org/10.1016/j.jbusres.2021.02.040
Received 20 March 2020; Received in revised form 15 February 2021; Accepted 20 February 2021

projects, as the former relies on the pooling approach (Chang, Chung, & Mahmood, 2006; Belenzon & Berkovitz, 2010; Wright, Chrisman, Chua, & Steier, 2014) whereas the latter evaluates such projects individually. Chang et al. (2006) confirmed a positive relationship between organizational capabilities and radical innovation performance, where those organizational capabilities include the capabilities of openness, autonomy, integration and experimentation.

This research, with its focus on Taiwan, advances the existing literature on family firms' R&D investments through addressing all these remaining issues. Family firms are prevalent in Taiwan: our dataset indicates that approximately 62 percent of listed firms are classified as family firms, while the market value of family businesses accounts for over 60 percent of the publicly listed and OTC enterprises in Taiwan (KPMG, 2016). This research, which adopts a family firm focus, examines R&D heterogeneity within the field by comparing FBG affiliates with family standalones using data for the period 2002–2015 from those Taiwanese listed firms where family firms are prevalent, and by drawing on loss aversion theory.

1.1. Theory and empirical hypotheses

Loss aversion theory (Chrisman & Patel, 2012; Wiseman & Gomez-Mejia, 1998) provides insight into how decision makers avoid losses from foregone future cash flows by explicitly considering time horizons and the aggregation rule. As this theory focuses on preventing losses to future wealth-increasing opportunities, it conceptualizes SEW as a function of flows rather than assessing it solely in the context of protecting SEW (Chua et al., 2015). SEW, which refers to those non-financial aspects of the firm that meet the family's affective needs (Berrone et al., 2012; Gomez-Mejia, Haynes, Nunez-Nickel, Jacobson, & Moyano-Fuentes, 2007), is an essential factor for the family firm's strategic decisions and innovation (Gomez-Mejia et al., 2007; Gomez-Mejia, Cruz, Berrone, & De Castro, 2011; Gomez-Mejia et al., 2014). This is confirmed by empirical findings (Hernandez-Perlines, Moreno-Garcia & Yanez-Araque, 2019), particularly in the R&D strategy of family firms (Block, 2012; Chrisman & Patel, 2012; Gomez-Mejia et al., 2014). As such, the effective discount rate for affective endowment plays a crucial role in influencing risk behaviours associated with R&D. The observation that 'the longer the time horizon, the more relevant the application of the aggregation rule' refers to a delay of endowment process. This delay in turn would decrease the effective discount rate for SEW. Both the aggregation rule and the time horizon of the loss aversion theory explain why R&D investments of FBG affiliates differ from those of family standalones. Investment projects in family business groups, involving diverse cash flows from a multitude of affiliates, are usually more complex than those of family standalones. Project evaluations in affiliates of family groups require a heightened application of the pooling approach and a longer time horizon than is required by family standalones (Backman, 2001; Barnett, 1960; Chua, Chrisman, & Sharma, 1999; Eddleston & Kellermanns, 2007; James, 1999; Whyte, 1996). The aggregation rule is justified because those dynamic capabilities that are influenced by R&D are determined by the conditions of the firm and the environment (Hernandez-Perlines & Ibarra Cisneros, 2018). The aggregation rule also intuitively suggests that the family group major decision makers diversify portfolio risks across a multitude of firms, whereas those in family standalones are unable to do so (Wiseman & Gomez-Mejia, 1998).

The portfolio theory illustrates that riskiness in a pooling form is smaller than in an individual form. Furthermore, the benefits of spill-overs among affiliates increase the capacity of their investments (Belenzon & Berkovitz, 2010). Family business groups, in their context of increased collateral assets, available internal capital markets and established familial and social ties, have a higher likelihood of adopting a pooling based approach (Colpan, Hikino, & Lincoln, 2012; Guillen, 2000; N. Khanna & Tice, 2001; T. Khanna & Rivkin, 2001; Sirmon, Hitt, Ireland, & Gilbert, 2011). Because of their group networks, family groups usually want to maximize the expected spill-over effects and the efficient allocation of resources among affiliates (Agarwal, Echambadi, Franco, & Sarkar, 2004; Chesbrough, 2003; Dahlander & Gann, 2010; Mahmood, Zhu, & Zajac, 2011).

FBG affiliates place a higher value on longer family goals than that placed by family standalones. This is due to the size of organization being a source of affective value (Gomez-Mejia et al., 2011) and to the fact that establishing a family dynasty and business kingdom across generations arguably increases SEW (Gentry, Dibrell, & Kim, 2016; Martin, Campbell, & Gomez-Mejia, 2016; Schulze & Kellermanns, 2015; Parker, 2014). As building a family dynasty in the form of a family affiliate typically requires a longer time span than that needed to create a family standalone firm, family members within affiliates typically have strong emotional attachment to the firm (Zellweger et al., 2012). Emphasis on the long-term family goals allows decision makers in a FBG affiliate, vis-à-vis a family standalone, to avoid the immediate endowment process of anticipated cash flows from risky investments in reference to the current SEW held by the family.

Taken together, this research proposes its first hypothesis:

Hypothesis 1:. *The R&D investments of FBG affiliates are greater than those of family standalones.*

The prediction of the loss aversion theory, as outlined above in Hypothesis 1, differs depending on the discrepancy between the managerial powers wielded by the controlling shareholder (CSH) and that driven by legal ownership. The higher managerial power of the CSH enables improvement of the family's existing asset endowments (i.e. SEW) through manipulation of *current* cash flows, particularly in an affiliate where the equity ownership is partial (Anderson & Reeb, 2004; Edwards & Weichenrieder, 2009; Morck & Yeung, 2003, 2004). Though an increase in the CSH's equity ownership may appear to increase the CSH's stewardship and thus require consideration the well-being of a wide range of stakeholders, CSHs with higher managerial power often exercise that power to increase their current affective endowments (Faccio, Lang, & Young, 2001; Feldman, Amit, & Villalonga, 2016; Bebchuk et al., 2000). This increased net benefit represents a wide range of affective endowments, including an increase in firm size and/or in the maintenance of family controls (Cruz, Becerra, & Gomez-Mejia, 2010; Chrisman, Chua, & Sharma, 2005; Schulze et al., 2001, 2003; Gomez-Mejia, Nunez-Nickel, & Gutierrez, 2001). Manipulating prices of intra-firm transactions is a popular option for the generation of affective endowments (Bae, Kang, & Kim, 2002).

The attenuation of R&D by CSHs' higher managerial power increases when this power is exercised under crony-capitalism (Claessens, Djankov, & Lang, 2000; Khatri, Tsang, & Begley, 2006; Rhee & Lee, 2008). The crony-capitalism effect is a somewhat natural outcome in an economy where business groups are prevalent due to an absence of formal market-supporting institutions (Chittoor, Kale, & Puranam, 2015; Khanna & Yafeh, 2007). As CSHs' higher managerial powers exacerbate the effects of cronyism (Francis, Schipper, & Vincent, 2005), the reduction of R&D in FBG affiliates would be greater than that in family standalones

Therefore, this research proposes its second hypothesis:

Hypothesis 2:. *Greater R&D investment by FBG affiliates compared to family standalones is more attenuated by the discrepancy between the managerial power exercised by CSHs and that driven by legal ownership.*

2. Method

The sample includes all manufacturing firms listed in Taiwan between 2002 and 2015. The data were collected from the *Taiwan Economics Journal* (TEJ) electronic database, the most comprehensive database of listed companies in Taiwan. Classification of family firms by the TEJ is based on information from those firms' disclosed prospectuses or annual reports.

The dependent variable in our estimation model (1) for longitudinal data analysis is the R&D investment, measured by R&D expenditure scaled by sales (*R&D*), which is the variable most widely accepted by researchers.

$$R\&D_{i,t} = \alpha + \beta Familygroupaffiliate_{i,t} + Control_{i,t} + errors_{i,t} \quad (1)$$

Following the tradition in family firm research of using longitudinal data, this research used *Familygroupaffiliate,* referring to the FBG affiliates, to investigate Hypothesis 1 (H1). H1 implies a positive estimated coefficient of *Familygroupaffiliate*. One of the advantages of using this binary variable at an affiliate level is that it captures different levels of R&D among affiliates, although the total R&D of the group may be coordinated by the CSH. *Familygroupaffiliate* is defined as an affiliate of a family business group with at least one subsidiary.

To estimate the R&D effect of *Familygroupaffiliate* as outlined in H1, this research controlled for both time-variant observed variables and time-invariant year- and industry-effects. R&D investment is also influenced by other firm-level variables (Belenzon & Berkovitz, 2010; Galende et al., 1999; Min & Smyth, 2016). To control for the direct and indirect effects of such other variables, the estimation model in Eq. (1) includes *Control*, a vector of control variables including *CSH* (the controlling shareholder's higher managerial power), measured by the discrepancy between the ultimate CSH's voting rights and cash flow rights (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998); *Profitability,* measured by net income divided by assets; *Firmage,* the time (year) elapsed since establishment of the firm; *Boardindependence*, proxied by the portion of the appointed independent directors among the directors; *Shorttermdebt*, short-term debt; *Longtermdebt*, long-term debt; *Equityfinance*, finance from equity market; *Acidtest*, measured by short-term liquid assets divided by short-term liability; *Firmsize,* the natural logarithm of assets; *Dividend,* calculated by cash distribution divided by net profits; *Foreignfirm*, equity ownership by foreign investors; and *Regulation*, proxied by government ownership.

This research further includes a full set of year dummies and 32 industry-fixed effects. In estimation, this research used one-year lagged variables for all time-varying variables in order to mitigate reverse causality.

To examine hypothesis 2 (H2), this research augmented the baseline estimation by including *FamilygroupaffiliateXCSH*, an interaction variable between *Familygroupaffiliate* and *CSH*, in Eq. (2).

$$R\&D_{i,t} = \alpha + \beta Familygroupaffiliate_{i,t} + \gamma FamilygroupaffiliateXCSH_{i,t} + CSH_{i,t} + Control_{i,t} + errors_{i,t} \quad (2)$$

H2 indicates that the expected sign of the estimated coefficient of the interaction variable (γ)should be negative.

Summary statistics are documented in Table 1 (refer to Appendix 1 for the measurement and description of variables). Firms were dropped from the research if their natural logarithm of asset value was zero. Our dataset indicates that the 11,007 family firm-year observations are divided into 66 percent and 34 percent of family standalones and FBG affiliates, respectively. Removing lost observations by the lagging process showed 8,946 to be the estimated total of firm-year observations.

The average (median) value of R&D investment for family firms is 2.73 (0.82) percent in sales. *CSH*, CSH's exercised managerial power is on average 5.64 percent higher than the legal power driven by ownership. Table 2, which reports the correlation matrix, demonstrates that R&D has negative correlation with *Familyfirm* (*Familygroupaffiliate* and *Familystandalone*), *Profitability*, *Shorttermdebt, Longtermdebt, Firmsize, Regulation* and *Firmage* while having positive correlation with *CSH Boardindependence* and *Acidtest* and *Foreignfirm*.

3. Results

To investigate H1, regarding R&D investment by FBG affiliates in comparison to that of family standalones, this research restricts samples to family firms only. Consequently, the reference group for *Familygroupaffiliate* are the family standalones.

Table 1
Summary statistics.

Variable	Mean	Median	max	min	sd	N
Dependent variables						
R&D	2.73	0.82	95.70	0	6.4	11,007
Family firms						
Familystandalone	0.66	0	1	0	0.47	11,007
Familygroupaffiliate	0.34	0	1	0	0.47	11,007
Controlling Shareholder's Characteristics						
CSH	5.64	1.27	79.0	0	10.11	11,007
Control variables						
Boardindependence	0.15	0	0.75	0	0.17	11,007
Profitability	0.03	0.03	1.07	−2.05	0.12	11,005
Shorttermdebt	0.11	0.08	0.98	0	0.12	11,001
Longtermdebt	0.08	0.04	0.74	0	0.1	11,006
Equityfinance	0.05	0	3.99	−2.97	0.48	11,001
Dividend	0.09	0	76.14	0	1.13	11,004
AcidTest	1.35	1.10	5.99	0.01	1.02	11,007
Firmsize (log of asset)	15.3	15.14	21.62	9.8	1.43	11,007
Foreignfirm	0.17	0	26.62	0	0.81	10,998
Regulation	0.34	0	86.13	0	1.62	10,998
Firmage	27.5	27	67	0	12.79	11,007

Results of the baseline model by the panel random effects model, presented in columns (1) and (2) of Table 3, show that the estimated coefficients of *Familygroupaffiliate* are positive, with a range of 1.304–1.319 ($P < 0.00$). This is supportive evidence of H1. This finding is robust irrespective of model specifications. To address Schulze and Kellermann's (2015:453) concern that the relationship between firm stage and SEW is ambiguous, the model was rerun including the squared age of the firm, *Firmage_squared*, on column (2), and after dividing *Firmage* into five quintiles on column (3). However, our main findings are robust against these model specifications.

Hypothesis H2 indicates that CSH's higher managerial power has a negative moderation effect. Results in Table 4 report that the estimated coefficient of the interaction variable between *Familyaffiliate* and *CSH*, *Familygroupaffiliate*CSH*, ranges between −0.042 and −0.044 ($P < 0.05$) depending on model specifications. The coefficient of this interaction variable captures the differential R&D sensitivity to affiliates of family groups experiencing CSH's higher managerial power.

Using the estimated coefficients on column (1) in Table 4, this research further examined the R&D investment of FBG affiliates in comparison to family standalones when there is a change in discrepancy between the CSH exercised managerial power and the legal power driven by equity ownership. Fig. 1 shows an inverse relationship between the *CSH* and R&D in regard to FBG affiliates, where the reference firms are family standalones. As indicated by the estimated coefficient of the interaction variable *Familygroupaffiliate*CSH*, an increase in the *CSH* reduces the positive effect of FBG affiliates by 0.042, compared to family standalones. That is, the positive effects on R&D arising from being an affiliate of a family business group would diminish by 0.042 when there is a one-unit increase in the *CSH*. Given the coefficient of *Familygroupaffiliate* is 1.554, this marginal analysis indicates that a continuous increase in the *CSH* would reduce the discrepancy and that the effect of an affiliate is identical to that of a family standalone when the *CSH* is 36.9. This threshold level of the *CSH* is equivalent to the 97th percentile of the distribution of the *CSH*. Taking these together, this marginal analysis indicates that, in comparison to family standalones, the *CSH* negatively moderates the positive effect of FBG affiliates on R&D investment; however, the R&D by majority of affiliates remains larger than that of family standalones.

This research has thus far examined the heterogeneity of risk behaviors in family firms by highlighting the difference between FBG affiliates and family standalones. Affiliates of business groups arise from

Table 2
Correlation matrix.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
R&D (1)	1														
Familyfirm (2)	−0.13*	1													
Familygrpaffiliate (3)	−0.05*	0.40*	1												
Familystandalone (4)	−0.09*	0.65*	−0.44*	1											
CSH (5)	0.02*	−0.04*	0.33*	−0.31*	1										
Boardindependence (6)	0.16*	−0.13*	−0.16*	0.01	0.04*	1									
Profitability (7)	−0.12*	0.01	0.00	0.01	0.04*	0.08*	1								
Shorttermdebt (8)	−0.17*	0.13*	0.00	0.13*	−0.07*	−0.12*	−0.22*	1							
Longtermdebt (9)	−0.12*	0.06*	0.12*	−0.04*	0.01	−0.08*	−0.09*	−0.01	1						
Equityfinance (10)	0.00	0.00	0.03*	−0.02*	−0.02	0.00	−0.03*	0.00	−0.01	1					
Dividend (11)	0.00	0.00	−0.02*	0.01	0.00	−0.02	0.00	0.01	0.00	−0.01	1				
AcidTest (12)	0.24*	−0.10*	−0.07*	−0.04*	0.03*	0.19*	0.19*	−0.50*	−0.20*	−0.02	−0.01	1			
Size (13)	−0.19*	0.02	0.30*	−0.24*	0.11*	−0.15*	0.11*	0.02*	0.27*	0.22*	−0.02	−0.20*	1		
Foreignfirm (14)	0.02*	0.00	0.07*	−0.06*	−0.01	0.02*	0.04*	−0.04*	0.01	0.07*	0.00	0.03*	0.21*	1	
Regulation (15)	−0.03*	−0.13*	−0.02*	−0.11*	−0.02	−0.06*	0.04*	−0.08*	0.03*	0.02	0.00	0.03*	0.18*	0.02	1
Firmage (16)	−0.24*	0.23*	0.11*	0.14*	−0.12*	−0.37*	−0.01	0.09*	0.06*	0.09*	−0.00	−0.16*	0.26*	0.02	0.04*

Significance at 1 percent level.

Table 3
R&D investment effect of family business groups affiliates in comparison to family standalones.

	1	2	3
Familygroupaffiliate	1.313***	1.304***	1.319***
	(0.300)	(0.300)	(0.300)
CSH	−0.029***	−0.027***	−0.029***
	(0.010)	(0.010)	(0.010)
Profitability	−7.866***	−7.839***	−7.853***
	(0.465)	(0.465)	(0.465)
Boardindependence	−0.680	−0.611	−0.611
	(0.469)	(0.470)	(0.466)
Shorttermdebt	−2.949***	−3.026***	−2.894***
	(0.595)	(0.596)	(0.595)
Longtermdebt	−3.447***	−3.416***	−3.384***
	(0.645)	(0.645)	(0.646)
Equityfinance	0.053	0.035	0.054
	(0.094)	(0.094)	(0.094)
Dividend	0.001	0.001	0.001
	(0.004)	(0.004)	(0.001)
Acidtest	−0.001	−0.001	−0.001
	(0.001)	(0.001)	(0.001)
Firmsize	−0.799***	−0.789***	−0.814***
	(0.090)	(0.090)	(0.089)
Foreignfirm	0.087	0.085	0.089
	(0.063)	(0.063)	(0.063)
Regulation	0.026	0.024	0.026
	(0.034)	(0.034)	(0.034)
Firmage	−0.045***	0.001	
	(0.013)	(0.026)	
Firmage_squared		−0.001**	
		(0.000)	
10 < Firmage ⩽ 20			−0.044
			(0.236)
20 < Firmage ⩽ 30			−0.538*
			(0.287)
30 < Firmage ⩽ 40			−0.864**
			(0.340)
40 < Firmage			−1.251***
			(0.412)
N	8946	8946	8946
R^2_overall	0.253	0.250	0.252

Note: Numbers under the estimated coefficients are standard errors. Year- and industry-fixed effects are included in all estimations. Constant are suppressed for brevity. *: P < 0.1, **: P < 0.05; ***: P < 0.01.

either family business groups or nonfamily business groups. Though not our first-order concern, an interesting robustness check is to examine whether the heterogeneous R&D confirmed in both H1 and H2 is unique to family groups. To investigate this issue, our sample was selected from nonfamily firms only divided in turn into FBG affiliates and nonfamily standalones applying the same rule used for the division between FBG affiliates and family standalones. The model specification of column (1) in Table 5 is identical to that of the model in Table 3, other than replacing the *Familygroupaffiliate* variable with *Nonfamilygroupaffiliate*. The reference group in this estimation is nonfamily standalone. In contrast to the results in Table 3, *Nonfamilygroupaffiliate* is not statistically significant. This finding justifies that the heterogeneity of R&D between affiliates of business groups and standalones is unique in family firms. Furthermore, the model (2) in Table 5 directly compares FBG affiliates and nonfamily groups affiliates by restricting the sample to business group affiliates only. The result reports that the effect of FBG affiliates on R&D is smaller than that of nonfamily group affiliates. This finding is consistent with the existing literature reporting smaller R&D of family firms in comparison with nonfamily firms. Results in column (3) indicate that the sensitivity of R&D to FBG affiliates is greater than to nonfamily standalones, which is consistent with the implications of the aggregation rule.

Board structure and ownership may affect R&D investment decisions (Baysinger, Kosnik, & Turk, 1991). Anderson and Reeb (2004) claimed that independent directors balance conflicting interests between CSHs

Table 4
R&D investment effect of family business groups affiliates moderated by CSH.

	1	2	3
Familygroupaffiliate	1.554***	1.545***	1.550***
	(0.327)	(0.327)	(0.328)
Familygroupaffiliate*CSH	−0.042**	−0.042**	−0.043**
	(0.019)	(0.020)	(0.021)
CSH	0.001	0.003	0.004
	(0.019)	(0.019)	(0.019)
Profitability	−7.852***	−7.824***	−7.842***
	(0.464)	(0.465)	(0.465)
Boardindependence	−0.642	−0.572	−0.546
	(0.470)	(0.471)	(0.471)
Shorttermdebt	−2.914***	−2.991***	−2.987***
	(0.595)	(0.596)	(0.596)
Longtermdebt	−3.450***	−3.419***	−3.402***
	(0.645)	(0.645)	(0.646)
Equityfinance	0.052	0.034	0.033
	(0.094)	(0.094)	(0.094)
Dividend	0.001	0.001	0.002
	(0.004)	(0.004)	(0.004)
Acidtest	−0.001	−0.001	−0.001
	(0.001)	(0.001)	(0.001)
Firmsize	−0.802***	−0.792***	−0.792***
	(0.090)	(0.090)	(0.090)
Foreignfirm	0.085	0.082	0.082
	(0.063)	(0.063)	(0.063)
Regulation	0.025	0.023	0.023
	(0.034)	(0.034)	(0.034)
Firmage	−0.044***	0.001	
	(0.013)	(0.026)	
Firmage_squared		−0.001**	
		(0.000)	
10 < Firmage≤20			−0.036
			(0.236)
20 < Firmage≤30			−0.529*
			(0.287)
30 < Firmage≤40			−0.856**
			(0.340)
40 < Firmage			−1.238***
			(0.412)
N	8964	8964	8964
R^2_overall	0.253	0.250	0.252

Note: Numbers under the estimated coefficients are standard errors. Year- and industry-fixed effects are included in all estimations. Constant are suppressed for brevity. *: P < 0.1, **: P < 0.05; ***: P < 0.01.

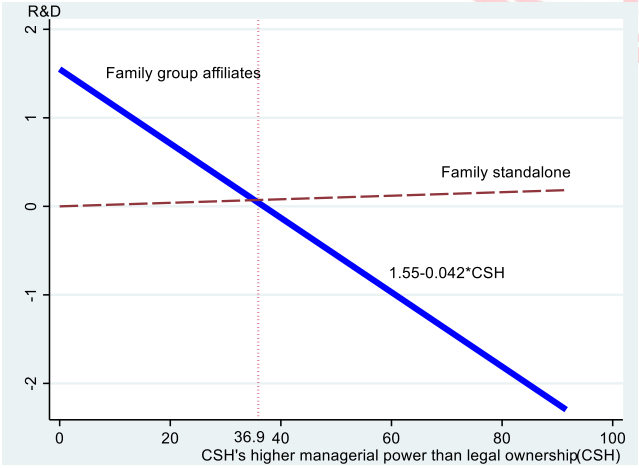

Fig. 1. R&D by family business groups affiliates vis-à-vis family standalones when CSH changes.

Table 5
Further estimation results by restricting samples.

	1 Non-family firms only	2 Family- and non-family groups only	3 Family groups and nonfamily standalones only
Nonfamilygroupaffiliate	0.474		
	(0.388)		
Familygroupaffiliate		−0.783**	0.552**
		(0.360)	(0.266)
CSH	−0.015	−0.024**	−0.007
	(0.012)	(0.011)	(0.009)
Profitability	−1.967***	−1.439***	−6.719***
	(0.238)	(0.378)	(0.339)
Boardindependence	0.330	−0.683	−0.845**
	(0.639)	(0.680)	(0.419)
Shorttermdebt	−1.840**	−1.294	−3.035***
	(0.795)	(0.974)	(0.514)
Longtermdebt	0.962	−0.904	−2.598***
	(0.784)	(0.953)	(0.545)
Equityfinance	0.375***	0.351***	0.208***
	(0.113)	(0.130)	(0.080)
Dividend	(0.008)	(0.004)	(0.004)
	−0.974	−0.866	−0.958
Acidtest	−0.001	−0.001	−0.001
	(0.001)	(0.001)	(0.001)
Firmsize	−1.318***	−0.961***	−0.882***
	(0.119)	(0.119)	(0.079)
Foreignfirm	0.153**	0.083	0.110*
	(0.074)	(0.074)	(0.060)
Regulation	0.052	0.021	0.042
	(0.038)	(0.030)	(0.028)
Firmage	−0.009	−0.014	−0.046***
	(0.027)	(0.021)	(0.013)
N	5046	5110	12,064
R^2_overall	0.281	0.271	0.261

Note: Numbers under the estimated coefficients are standard errors. Year- and industry-fixed effects are included in all estimations. Constant are suppressed for brevity. *: P < 0.1, **: P < 0.05; ***: P < 0.01.

and minority shareholders. To examine this argument, this research included a triple interaction variable, *Familygrpaffiliate*CSH*Boardindependence,* with all its relevant interaction auxiliary variables. This triple interaction variable is expected to be positive if an independent board successfully constrains the CSH's appropriation of future cash flows. This research generated a triple interaction variable using CEO duality instead of *Boardindependence.* However, results show that none of these triple interactions are statistically significant (not reported). Our sample period includes the global financial crisis (GFC). Results with a binary variable for the GFC also did not affect our main findings. The model obtained similar results when rerun after winsorising at 1 percent levels at both sides as a further robustness check.

This research also estimated using different estimation methods such as the population-average model, the ordinary least squares model and the Tobit model. Instead of using GLS, MLE estimation was utilized. These sensitivity analyses (not presented due to space limitations) still confirm our main findings. To address the potential endogeneity of *Familygroupaffiliate* associated with self-selection, this research estimated an instrument variable method which excluded instruments of *Firmage* and the ratio of cash flows to assets. Results of both 2SLS and GMM similarly confirmed our results; however, the (absolute value) magnitude of the estimated coefficients of *Familygroupaffiliate* and its interaction with *CSH* were increased substantially as expected. Given the difficulties of finding valid instruments, however, the estimation results were not reported. Finally, the inverse Mills ratio, included as an additional control variable, was not found to be statistically significant.

4. Discussion

4.1. Theoretical implications

Chua et al. (2012:1104) claimed that "a theory of the family firm must not only be able to distinguish between family and nonfamily firms but must also be able to explain variations among family firms." Chrisman and Patel (2012) also advocated that understanding the sources and contextual elements of heterogeneity in family firms is important to developing the family firm literature. Our results draw upon the loss aversion framework, confirming that the usually adopted approach in the evaluation of projects – the pooling approach – as well as the organizational characteristics of family business groups, emphasizing a longer-time horizon, lead to lowered risk aversion in affiliates of family business groups compared to that in family standalones. This research advances the literature on the R&D of family firms by uncovering the mechanism under which the risk behaviors of affiliates of family business groups are less aversive than those in family standalones.

The potential divergence between individual family members' goals within standalone firms (Kotlar & De Massis, 2013) does not raise a substantial issue, as these family firms are usually under the control of CSHs (Claessens et al., 2000) coordinating these diverse goals. This powerful CSH is particularly relevant in Asian economies where the influence of Confucianism is prevalent. Furthermore, Hofstede (1980) reported that Asian culture is typically characterised by a strong sense of hierarchy and group-orientation, reinforcing the power of the CSH compared to the Western value of individualism. Therefore, differing individual goals within standalones do not pose problems for our model.

Our research also contributes to the development of the literature on SEW by illustrating it as a function of flows, which extends those existing studies that focused on the stocks of SEW (Chua et al., 2015). Existing studies often focused, in nonfamily firms, on conflicts over current cash flows and asset endowments (Young et al., 2008; Gilson, 2006). Some researchers illustrated the benefits of business groups, in regards to innovation, without acknowledging the organizational characteristics of family firms (Belenzon & Berkovitz, 2010; Chang et al., 2006; Hsieh, Yeh, & Chen, 2010); others conducted research into R&D investment in family firms without differentiating between standalones and FBG affiliates (Block, 2012; Chrisman & Patel, 2012; Duran et al., 2016; Gomez-Mejia et al., 2014). Schulze and Gedajlovic (2010: 98) argued that "… the benefits of family, it appears, are conditional on a variety of factors that researchers are still striving to identify." Jiang et al. (2020) illustrated that family firms with family chairs develop more intensive R&D investment than developed by family firms without family chairs, due to their being less sensitive to the potential loss of SEW. Our results suggest that the complex structure of ownership among FBG affiliates strengthens the managerial power of their CSHs to exploit the current cash flows, at the expense of risky ventures, which otherwise would generate future cash flows for the benefit of minority shareholders. Our research, which uncovers the complex R&D behaviors of FBG affiliates in conjunction with the diverse roles of CSHs, expands the traditional research on SEW by extending it to future cash flows associated with R&D investment.

4.2. Managerial and policy implications

Our research highlights that affiliates of business groups have qualities that both increase R&D, as indicated by the concept of loss aversion, and decrease R&D, due to entrenched CSHs in the context of principal–principal conflicts. Though the importance of R&D is undeniable, irrespective of the industries (Hernandez-Perlines, Ariza-Montes, Han, & Law, 2019) and all the firms, our results illustrate that enhancing the innovative capability of affiliates by R&D is essential for the long-term sustainability of family business groups, where the principal–principal conflicts and their related agency costs may erode their competitiveness. Eliminating R&D-decreasing characteristics while strengthening R&D-increasing organizational characteristics in FBG affiliates is an important challenge for both public and managerial policies.

A strong founder's entrepreneurships and risk-taking behaviours cannot be easily maintained (Cucculelli, Le Breton-Miller, & Miller, 2014; Duran et al., 2016) is evidenced by the smaller value of firms in descendent-controlled family firms (Villalonga & Amit, 2006) and in affiliates of a business group (Chacar & Vissa, 2005). The results of our research, using listed firm data, therefore suggest that mitigating the conflicts between CSHs and minority shareholders in family business groups controlled by later-generation descendants of founders would be beneficial for maintaining their long-term competitiveness. Family business groups are prevalent in emerging Asian economies (Chang et al., 2006; Khanna & Yafeh, 2007; Morck and Yeung, 2003, 2004). These economies have common problems such as the higher managerial power of CSHs (Claessens et al., 2000; Min & Smyth, 2016; Purkayastha, Veliyath, & George, 2019) and the agency costs generated by the principal–principal conflicts (Claessens et al., 2000; Phan, 2008). As such, the case of Taiwan provides managerial implications for other emerging Asian economies where business environments are similar.

Interpretation of our research, however, requires caution, given its limitation, which is largely associated with the limitations of data availability. To draw meaningful managerial/policy implications, we may need a rigorous analysis using a larger dataset that includes firm-level data in the economies. Instead of using R&D expenditure scaled by sales, which is an input variable, an alternative option is using output variables such as numbers of patents held by family firms. The patent variable, however, is not a perfect substitute due to the lag issue. More importantly, an absence of patent data forced us to rely on the R&D variable.

5. Conclusion

In contrast to the existing studies, our research focuses on the unique characteristics of affiliates of business group vis-à-vis standalones *within* family firms. In doing so, this research examines the mechanism that explores the differences between the differing risk preference of FBG affiliates and that of family standalones. Our research illustrates that the effective discount rate for SEW associated with R&D in FBG is likely smaller than that found in family standalones due to the affiliates' focus on longer family goals and the application of the aggregation rule. Our research also suggests that the discrepancy between the exercise of CSH's managerial power and of legal power driven by equity ownership could erode the future cash flows of the affiliates more substantially than those of family standalones.

Funding

The author appreciates financial support from the Taiwan Fellowship 2018.

I am grateful for helpful comments and suggestions from Domingo Enrique Ribeiro-Soriano (editor), the three anonymous reviewers, Thomas Zellweger, Koji Aoki, Alexander Borisov, Adrian Cheung, Amon Chizema, Christina Cruz, Evan Douglas, Rodney Falvey, Peter Jordan, Carl Kock, Peter Verhoeven, and Russell Smyth. I also thank the participants of the seminars at Korea University in Korea and Kobe University in Japan. I also appreciate Chien-Nan Chen for providing data and Ko-Hsiung Lien for organizing the English proofreading at an early stage of this research. I also express my thanks to Chen-Fu Lin, the president of the Taiwanese Institute of Economic Research, for providing research facility while I stayed in Taiwan to undertake this research. The usual disclaimer applies.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix 1. Measurements and descriptions of variables

Variable	Description	Measurement	Type
R&D	R&D investment	R&D investment divided by sales (%)	Continous
Familygroupaffiliate	Affiliate of family business group	Firm belongs to a family business group, where family group is defined as unity if it has at least one affiliates and zero otherwise	Binary
CSH	Controlling shareholder's higher managerialpower than legal ownership	Controlling shareholder's voting rights minus cashflow rights	Continuous
Boardindependence	Board's monitoring of company management	Number of appointed independent directors from outside of the firm divided by number of board members	Continuous
Profitability	Performance	Net profit divided by total assets	Continuous
Shorttermdebt	Short-term debt	Short term borrowing divided by total assets	Continuous
Longtermdebt	Long-term debt	Long term borrowing divided by total assets	Continuous
Equityfinance	Growth in paid-in capital	[Paid-in-capital(t) – paid-in-capital(t-1)]/paid-in-capital(t-1)	Continuous
Dividend	Cash distribution as dividend	Dividend paid divided by net income	Continuous
Acidtest	Quick ratio	Short-term assets (exluding inventory) divided by short-term liabilities	Continuous
Firsize	Size of firm	Natural logarithm of total assets	Continuous
Foreignfirm	Foreign ownerhip	Portion of issued equity owned by foreign investors	Continuous
Regulation	Government ownership	Portion of issued equity owned by government multiplied by 100	Continuous
Firmage	Firm age	Year lapsed since establishment	Continuous

References

Agarwal, R., Echambadi, R., Franco, A. M., & Sarkar, M. (2004). Knowledge Transfer through inheritance: Spin-out generation, development, and survival. *Academy of Management Journal, 47*(4), 501–522.

Anderson, R., & Reeb, D. (2004). Board composition: Balancing family influence in S&P 500 firms. *Administrative Science Quarterly, 49*(2), 209–237.

Backman, M. (2001). *Asian Eclipse: Exposing the Dark Side of Business in Asia*. Singapore: John Wiley & Sons.

Bae, K.H., Kang, J.K., & Kim, J.M. (2002). Tunneling or value added? Evidence from Mergers by Korean Business Groups, Journal of Finance, LVII(6), 2695-2740.

Barnett, M. L. (1960). Kinship as a factor affecting Cantonese economic adaptation in the United States. *Human Organization, 19*(1), 40–46.

Baysinger, B. D., Kosnik, R. D., & Turk, T. A. (1991). Effects of board and ownership structure on corporate R&D strategy. *Academy of Management Journal, 34*(1), 205–214.

Bebchuk, L.A., Kraakman, R., & Triantis, G.G. (2000). Stock pyramids, cross-ownership, and dual class equity: The mechanisms and agency costs of separating control from cash-flow rights, in Morck, R.K. (eds) Concentrated Corporate Ownership, 295-314.

Belenzon, S., & Berkovitz, T. (2010). Innovation in business groups. *Management Science, 56*(3), 519–535.

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.

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

Block, J. H. (2012). R&D investments in family and founder firms: An agency perspective. *Journal of Business Venturing, 27*(2), 248–265.

Chacar, A., & Vissa, B. (2005). Are emerging economies less efficient? Performance persistence and the impact of business group affiliation. *Strategic Management Journal, 26*(10), 933–946.

Chang, S. J., Chung, C. N., & Mahmood, I. P. (2006). When and how does business group affiliation promote firm innovation?: A tale of two emerging economies. *Organization Science, 17*(5), 637–656.

Chesbrough, H. W. (2003). *Open innovation: The new imperative for creating and profiting from technology*. Boston, MA: Harvard Business Press.

Chittoor, R., Kale, P., & Puranam, P. (2015). Business groups in developing capital markets: Towards a complementarity perspective. *Strategic Management Journal, 36*(9), 1277–1296.

Choi, Y. R., Zahra, S. A., Yoshikawa, T., & Han, B. H. (2015). Family ownership and R&D investment: The role of growth opportunities and business group membership. *Journal of BusinessResearch, 68*(5), 1053–1061.

Chow, G. C. (1960). Tests of equality between sets of coefficients in two linear regressions. *Econometrica, 28*(3), 591–605.

Chrisman, J. J., & Patel, P. C. (2012). Variations in R&D investments of family and nonfamily firms: Behavioural agency and loss aversion. *Academy of Management Journal, 55*(4), 976–997.

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.

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

Chua, J. H., Chrisman, J. J., & De Massis, A. (2015). A closer look at socioemotional wealth: Its flows, stocks and prospect for moving forward. *Entrepreneurship: Theory and Practice, 39*(2), 173–182.

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

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

Colpan, A. M., Hikino, T., & Lincoln, R. (2012). *The Oxford handbook of business groups*. NY: Oxford University Press.

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

Cucculelli, M., Le Breton-Miller, I., & Miller, D. (2014). Product innovation, firm renewal and family governance, Firm Renewal and Family Governance (June 4). Available at SSRN: http://ssrn.com/abstract52446091.

Dahlander, L., & Gann, D. M. (2010). How open is innovation? *Research Policy, 39*(6), 699–709.

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

Eddleston, K. A., & Kellermanns, F. W. (2007). Destructive and productive family relationships: A stewardship theory perspectives. *Journal of Business Venturing, 22*(4), 545–565.

Edwards, J. S. S., & Weichenrieder, A. J. (2009). Control rights, pyramids, and the measurement of ownership concentration. *Journal of Economic Behavior and Organization, 79*, 489–508.

Faccio, M., Lang, L., & Young, L. (2001). Dividends and expropriation. *American Economic Review, 91*(1), 54–78.

Feldman, E., Amit, R., & Villalonga, B. (2016). Corporate divestitures and family control. *Strategic Management Journal, 37*, 429–446.

Francis, J., Schipper, K., & Vincent, L. (2005). Earnings and dividend informativeness when cash flow rights are separated from voting rights. *Journal of Accounting and Economics, 39*(2), 329–360.

Galende Del Canto, J., & Suarez Gonzalez, I. (1999). A resource-based analysis of the factors determining a firm's R&D activities. *Research Policy, 28*(8), 891–905.

Gentry, R., Dibrell, C., & Kim, J. (2016). Long-term orientation in publicly traded family businesses: Evidence of a dominant logic. *Entrepreneurship: Theory and Practice, 40*(4), 733–757.

Gilson, R. J. (2006). Controlling shareholders and corporate governance: Complicating the comparative taxonomy? *Harvard Law Review, 119*(6), 1641–1679.

Gomez-Mejia, L.R., Campbell, J., Martin, G., Hosskison, R., Makri, M., & Sirmon, D. (2014). Socioecomotional wealth as a mixed gamble: Revisiting family firm R&D investments with the behavioural agency model. Entrepreneurship: Theory and Practice, 38(6), 1351-1347.

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

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

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

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

Guillen, M. F. (2000). Business groups in emerging economies: A resource-based view. *Academy of Management Journal, 43*(3), 362–380.
Hernandez-Perlines, F., Moreno-García, J., & Yanez-Araque, B. (2019). The influence of socioemotional wealth in the entrepreneurial orientation of family businesses. *International Entrepreneurship and Management Journal, 15*(2), 523–544.
Hernandez-Perlines, F., Ariza-Montes, A., Han, H., & Law, R. (2019). Innovative capacity, quality certification and performance in the hotel sector. *International Journal of Hospitality Management, 82*, 220–230.
Hernandez-Perlines, F., & Ibarra Cisneros, M. A. (2018). The role of environment in sustainable entrepreneurial orientation. The case of family firms. *Sustainability, 10*(6), 2037.
Hofstede, G. (1980). *Culture's consequences*. Beverly Hills: Sage.
Hsieh, T. J., Yeh, R. S., & Chen, Y. J. (2010). Business group characteristics and affiliated firm innovation: The case of Taiwan. *Industrial Marketing Management, 39*(4), 560–570.
James, H. S., Jr. (1999). Owner as manager, extended horizons and the family firm. *International Journal of Economics of Business, 6*, 41–55.
Jiang, F., Shi, W., & Zheng, X. (2020). Board chairs and R&D investment: Evidence from Chinese family-controlled firms. *Journal of Business Research, 112*, 109–118.
Jiang, D. S., Kellermanns, F. W., Munyon, T. P., & Lane Morris, M. (2018). More than meets the eye: A review and future directions for the social Psychology of socioecomotional wealth. *Family Business Review, 31*(1), 125–157.
Khanna, T., & Rivkin, J. W. (2001). Estimating the performance effects of business groups in emerging market. *Strategic Management Journal, 22*(1), 45–74.
Khanna, N., & Tice, S. (2001). The bright side of internal capital markets. *Journal of Finance, 56*(4), 1489–1531.
Khanna, T., & Yafeh, Y. (2007). Business groups in emerging markets: Paragons or parasites? *Journal of Economic Literature, 45*(2), 331–373.
Khatri, N., Tsang, E.,W.K. & Begley.T.M, (2006), Cronyism: A cross-cultural analysis, Journal of International Business Studies, 27(1), 61-75.
KPMG, (2016), Family business services, https://home.kpmg/tw/en/home/insights/2016/07/family-business.html.
Kotlar, J., & De Massis, A. (2013). Goal setting in family firms: Goal diversity, social interactions, and collective commitment to family centered goals. Entrepreneurship: Theory & Practice, 37(6), 1263-1288.
La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance, Journal of Political Economy, 106(6), 1113-1155.
Mahmood, I. P., Zhu, H., & Zajac, E. J. (2011). Where can capabilities come from? Network ties and capability acquisition in business groups. *Strategic Management Journal, 32*(8), 820–848.
Martin, G., Campbell, J., & Gomez-Mejia, L. (2016). Family control, socioemotional wealth and earnings management in publicly traded firms. *Journal of Business Ethics, 133*(3), 453–469.
Min, B.-S., & Smyth, R. (2016). How does leverage affect R&D intensity and how does R&D intensity impact on firm value in South Korea? *Applied Economics, 48*, 5667–5675.
Morck, R., & Yeung, B. (2004). Family control and the rent-seeking society. *Entrepreneurship Theory and Practice, 28*(4), 391–409.
Morck, R., & Yeung, B. (2003). Agency problems in large family business groups. *Entrepreneurship: Theory and Practice, 27*(4), 367–382.
Munoz-Bullon, F., Sanchez-Bueno, M. J., & De Massis, A. (2020). Combining internal and external R&D: The effects on innovation performance in family and nonfamily firms. *Entrepreneurship: Theory and Practice, 44*(5), 996–1031.
Parker, S.C. (2014). Family firms and the "willingness successor" problem: Can forward-looking strategies help. Working Paper (recited from Schulze and Kellermanns, 2015).
Phan, P. H. (2008). Principal-principal conflict in the governance of the Chinese public corporation. *Management and Organization Review, 4*(1), 135–139.
Purkayastha, S., Veliyath, R., & George, R. (2019). The roles of family ownership and family management in the governance of agency conflicts. *Journal of Business Research, 98*, 50–64.
Rhee, M., & Lee, J. H. (2008). The signals outside directors send to foreign investors: Evidence from Korea. *Corporate Governance: An International Review, 16*(1), 41–51.
Schmid, T., Achleitner, A.-K., Ampenberger, M., & Kaserer, C. (2014). Family firms and R&D behaviour – New evidence from a large-scale survey. *Research Policy, 43*(1), 233–244.
Schulze, W. S., & Gedajlovic, E. R. (2010). Whither family business? *Journal of Management Studies, 47*(2), 191–204.
Schulze, W. S., & Kellermanns, F. W. (2015). Reifying socioemotional wealth. *Entrepreneurship: Theory and Practice, 39*(3), 447–459.
Schulze, W. S., Lubatkin, M. H., & Dino, R. N. (2003). Exploring the agency consequences of ownership dispersion among the directors of private family firms. *Academy of Management Journal, 46*(2), 179–194.
Schulze, W. S., Lubatkin, M. H., Dino, R., & Buchholtz, A. (2001). Agency relationships in family firms: Theory and evidence. *Organization Science, 12*(2), 99–116.
Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011). Resource orchestration to create competitive advantage breadth, depth, and life cycle effects. *Journal of Management, 37*(5), 1390–1412.
Villalonga, B., & Amit, R. (2006). How do family ownership, control and management affect firm value? *Journal of Financial Economics, 80*(2), 385–417.
Wiseman, R. M., & Gomez-Mejia, L. R. (1998). A behavioral agency model of managerial risk taking. *Academy of Management Review, 23*(1), 133–153.
Wright, M., Chrisman, J. J., Chua, J. H., & Steier, L. P. (2014). Family enterprise and context. *Entrepreneurship: Theory and Practice, 38*(6), 1247–1260.
Whyte, M. K. (1996). The Chinese family and economic development: Obstacle or engine? *Economic Development and Cultural Change, 45*(1), 1–30.
Young, M. N., Peng, M. W., Ahlstrom, D., Bruton, G. D., & Jiang, Y. (2008). Corporate governance in emerging economies: A review of the principal–principal perspective. *Journal of Management Studies, 45*(1), 196–220.
Zellweger, T. M., Kellermanns, F. W., Chrisman, J. J., & Chua, J. H. (2012a). Building a family firm image: How family firms capitalize on their family ties. *Journal of Family Business Strategy, 3*(4), 239–250.
Zellweger, T. M., Kellermanns, F. W., Chrisman, J. J., & Chua, J. H. (2012b). Family control and family firm valuation by family CEOs: The importance of intensions for transgenerational control. *Organization Science, 23*(3), 851–868.

Byung-seong Min is a senior lecturer at Griffith Business School, Department of Business Strategy and Innovation, Griffith University. He received his PhD in economics from the Australian National University. His research interests cover Asian business and strategy such as corporate governance, family firms, business groups, corporate social responsibility, trade and investment. His works appeared in prestige journals including Journal of World Business, Journal of Business Ethics, Journal of Cleaner Production, International Review of Finance and Pacific Basin Finance Journal, among others. He is a board member of Journal of the Asia Pacific Economy and Corporate Ownership and Control, among others.