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How Does Successor's Power Affect Innovation Investment in Chinese Family Firms? Based on Organizational Identification Theory

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Abstract

The innovation investment willingness of family businesses has long been a focus of academic research. Within the context of intergenerational succession, how successors influence firms' innovation investment behavior is crucial to the sustainable development of family businesses. Drawing on organizational identification theory and employing a dual analytical framework of willingness and capability, this study investigates the impact of different types of successors' power on corporate innovation investment. Through empirical testing using a sample of Chinese listed family firms from 2009 to 2020, the research finds that both the formal and informal power of successors promote corporate technological innovation investment, but the effect of informal power is stronger. A significant synergistic effect exists between the two in driving innovation. Furthermore, the external competitive market environment strengthens the positive impact of successors' power on innovation investment, with a more pronounced effect on informal power. By incorporating the Chinese context, this study provides an in-depth analysis of the mechanisms through which successors' power structures influence corporate governance behavior. It reveals the distinct behavioral logic of successors after taking over the firm, offering a theoretical foundation and practical implications for family businesses in selecting suitable successors and optimizing power allocation.

Keywords: family firms; successor's power; organizational identification; innovation investment**JEL:** O32, L21, O30

1. Introduction

Family firms have made significant contributions to industries and markets worldwide through technological innovation (Migliori et al., 2020). Innovation investment, as an essential component of the technological innovation process, reflects a company's critical choices to adapt to rapid environmental changes and overcome hostile conditions (Sun et al., 2019). Therefore, maintaining continuous innovation investment plays a crucial role in the long-term survival and prosperity of family firms (Zhao et al., 2023). However, generational succession, a hallmark event in family firms, often brings leadership changes that may cause organizational turmoil and shift strategic objectives. This can affect attitudes toward innovation investment (Dorsch et al., 2023). Current research increasingly focuses on what influences family firms' attitudes toward innovation investment after succession. It seeks to understand how families can maintain a positive commitment to such investments (Wu et al., 2024; Zybura et al., 2021). Indeed, research shows that poor successor selection is often a starting point for family firm failure (Baltazar et al., 2023). As the actual decision-makers after succession, successors significantly shape a firm's innovation investment decisions. However, technological innovation involves exploring new territories

and transforming internally. It requires both a willingness to take risks and an ability to break existing norms. These characteristics demand higher requirements for the type of successor chosen (Lin et al., 2023). Thus, in markets where technological innovation is a key competitive goal, an important research question is which traits of family successors enable firms to persistently invest in such risky yet promising innovations. This is vital for ensuring sustainable technological capabilities in family firms (Bang et al., 2023). Understanding this issue is therefore critical for developing effective succession plans, choosing suitable successors, and ensuring the long-term success of family firms.

Current research has primarily explored how successors in leadership positions influence technological innovation investment in family firms based on theories such as Socioemotional Wealth (SEW) perspective or Upper Echelons Theory. However, findings from these studies remain inconsistent. Some studies, by identifying the successor's identity, argue that non-family successors bring fresh ideas and resources to the firm, thereby increasing the firm's investment in technology innovation (Block, 2012; Calabrò et al., 2023; Wong and Chen, 2018). However, scholars holding an opposing view suggest that compared to non-family successors, internal family successors are more conducive



to fostering technology innovation investment within the firm (Chen and Xu, 2023; Huang et al., 2019; Zhu et al., 2016; Zybura et al., 2021). Miller and Le Breton-Miller (2014) distinguish between two dimensions of SEW. One is restricted SEW, which emphasizes the preservation of family control, traditional values, and immediate family interests. Another is extended SEW, which focuses on the family's broader legacy, reputation, and long-term societal impact. Some scholars, based on SEW perspective, argue that successors with high family ownership tend to prioritize extended SEW perspective, thereby leading to stronger research and development (R&D) investment (Chen et al., 2025b). However, other researchers point out that the emphasis on restricted SEW may lead family successors to reduce investment in innovation activities due to risk aversion and emotional attachment to status quo (Swab et al., 2020; Xie et al., 2025). While some scholars have attempted to explain these debates by examining the personal characteristics of successors, such as education level, gender, tenure, and age, in relation to technology innovation investment (Vera and Dean, 2005; Wang et al., 2019; Zhu et al., 2024), these objective traits still fail to explain the variance in innovation performance among successors with the same characteristics (Kubiček and Machek, 2019; Zhu and Kang, 2022). The ongoing debate and gaps in existing research highlight the need for further investigation in this area.

Despite previous studies examining the relationship between successors and technology innovation investment from various angles, they have largely neglected the critical aspect of successor power. Successor power is defined as formal power derived from organizational position and governance structure, such as ownership rights and decision-making control (Finkelstein, 1992; Hambrick and Mason, 1984) and informal power stemming from personal characteristics and relational assets, such as expertise reputation, interpersonal trust, and background experiences (Lewellyn and Muller-Kahle, 2012). This oversight may be a significant reason for the ongoing debates within the literature. Specifically, technology innovation investment constitutes a critical strategic initiative involving both opportunities and risks requiring complex dynamic implementation. De Massis et al. (2014) indicate that risk-taking behavior in family firms depends on the decision-maker's ability and willingness. In family firms, the leader's power plays a crucial role in determining both the ability and willingness to pursue such goals (Suchman, 1995). R&D investment as a key resource allocation dimension is largely shaped by leader's power (Yu and Ao, 2024; Zhao et al., 2023). Higher successor power activates the approach behavior system while lower power activates the inhibition behavior system (Krause et al., 2015). Leadership succession involves not only positional power transfer under formal systems but also gaining capability recognition value alignment and resource inheritance (Minichilli et al., 2014; Rondi et al., 2024). These two aspects form the foundation

of the successor's power and are key to ensuring their effective decision-making in the future (Yan and Sorenson, 2006). Therefore, recognizing the successor's power as a fundamental aspect can bridge the existing gap and clarify their influential role in technology innovation investment decisions within family firms.

Furthermore, technology innovation investment, as a strategic choice for firms, is influenced by both internal factors and the current market environment. Since the primary goal of a firm's technology innovation investment is to enhance its competitive advantage by strengthening its innovation capabilities, the company's technology innovation investment strategy must align with the competitive landscape. As such, successors in family firms often make dynamic adjustments to their technology innovation investment decisions based on the company's actual development (Cyert and March, 2015). Existing research highlights the significant impact of product market competition on a firm's innovation behavior, demonstrating its ability to curb lax management and improve efficiency (Chhaochharia et al., 2017). In family firms, the level of market competition influences the intensity of oversight from shareholders and management. Weaker external oversight mechanisms may lead family shareholders to prioritize personal interests, potentially at the expense of external shareholders (Park and Shin, 2016). Particularly in the context of intense external competition, when profits are under pressure, successors need a higher level of power to engage in risky innovation projects. Although existing research often uses SEW perspective as a guiding framework for family firm strategic behavior, recent studies suggest that the influence of drivers of family firm strategic development depends on the expected competitive environment (Kotlar et al., 2018; Yeh and Liao, 2020; Zahra et al., 2008). These studies emphasize the importance of the market competition environment in shaping family firms' innovation strategies. Therefore, analyzing the interaction between a successor's power and the external competitive environment can provide valuable insights into the relationship between successors and technology innovation investment in family firms.

To address the relationship between intergenerational succession and subsequent innovation in family firms, we focus on two main questions: (1) How does the successor's power influence the firm's innovation decisions? (2) What role does the external market environment play in the relationship between the two? We utilize the organizational identification theory to address these questions, which emphasizes the close connection between individual behavior and personal and organizational identification (Cole and Bruch, 2006). From the perspective of the sources of power, we distinguish between successor's formal power and informal power. Following the concept of organizational identification, we conceptualize the successor's power as a critical mechanism through which organizational identification shapes strategic decision making.

This study makes several contributions. First, by demonstrating the influence of successors' power on technology innovation investment, it expands the research perspective that solely focuses on successor personal characteristics and identity in the context of family firm innovation (Chen et al., 2025a), offering a new angle for understanding the differences in technology innovation investment in the context of succession. Second, it uses organizational identification as a theoretical framework to explain this effect, overcoming the limitations of discussing the relationship between intergenerational succession and innovation based solely on family firms SEW perspective (Hauck and Prügl, 2015). Third, this study incorporates the competitive environment in which the firm operates into the framework of successors' power and technology innovation investment, responding to calls from scholars to explore the impact of specific external institutional environments on the relationship between family firms succession and innovation (Lin et al., 2023). This provides an explanation for the differences in innovation within family firms that have similar successor characteristics and helps in understanding the adaptability of family firms to changing market conditions.

2. Theoretical Background and Hypotheses

2.1 Organizational Identification and Successor's Power in Family Firms

The theoretical foundation of this study is primarily rooted in organizational identification theory. This theory posits that an individual's sense of identification with their organization profoundly influences their attitudes, motivations, and behavioral decisions (Cole and Bruch, 2006). In the context of family firms, this theory demonstrates unique explanatory power. Organizational identification not only shapes members' collective understanding of "who we are" but also defines the closeness of the connection between personal and organizational goals and interests (Yazici et al., 2022). For a successor, the effectiveness of their power stems not merely from the legal power conferred by position or shareholding, but more importantly, from whether they earn the genuine identification and followership of organizational members (Dukerich et al., 2002). This identification forms the deep socio-psychological foundation for the successor to exercise power, allocate resources, and implement strategies. When a successor is highly identified with by organizational members, the legitimacy and support for their decisions increase significantly, thereby paving the way for innovation activities that require extensive collaboration and resource commitment (Mueller and Flickinger, 2021). Therefore, applying organizational identification theory to interpret the relationship between successor power and innovation investment allows us to move beyond the surface of formal power structures and address the socialized and psychological processes of power operation.

Furthermore, this study draws upon and integrates the widely recognized ability-willingness dual perspective analytical framework in family firm research to deepen the understanding of the aforementioned mechanism (De Massis et al., 2014). Specifically, the strategic behavior of a successor promoting corporate innovation investment can be viewed as the result of the joint effect of their specific ability and willingness. The ability dimension focuses on whether the successor possesses the necessary power to initiate and sustain innovation activities. Innovation, as a resource-intensive and long-cycle strategic initiative, requires leaders to effectively mobilize financial, human, and informational resources both within and outside the firm. This mobilization capability directly depends on the power base held by the successor (Zou et al., 2021). The willingness dimension focuses on whether the successor possesses the subjective motivation and value orientation to actively engage in innovation investment. Innovation entails risk-taking and potentially sacrificing short-term stable returns. Leaders must harbor a strong sense of responsibility and commitment to the organization's long-term development and competitiveness enhancement (Wang et al., 2019). This willingness dedicated to the organization's long-term well-being is also closely linked to organizational identification. When a successor highly identifies with the firm's development vision, core values, and family mission, their personal goals become highly aligned with the organization's long-term objectives. This deep identification motivates the successor to transcend considerations of personal or short-term interests, making them willing to actively advocate for and invest in uncertain innovation activities to shape the organization's future.

Based on the above theoretical context, this study will systematically examine the impact of successor power on firm innovation investment. To analyze the different paths of power's influence more precisely, this paper draws on Raven et al. (1998) to categorize power into formal power and informal power. Formal power mainly includes owner power and organizational power, which are related to corporate governance arrangements and the Chief Executive Officer (CEO)'s position within the organization, also known as positional power. The informal power of the CEO includes expert power and reputational power, which are related to the CEO's personal characteristics and background, such as age, gender, education, professional titles, and experience. Informal power is also referred to as personal power, involving personal influence, charisma, and other attributes unrelated to position. By exploring whether these two types of power have differential or synergistic effects on innovation investment, this study aims to more comprehensively and deeply reveal the complex formation mechanism of innovation drivers in the context of family firm succession.

2.2 Hypotheses

2.2.1 The Successor's Power and Technology Innovation Investment

This study argues that a successor's power can enhance their willingness and ability to drive technological innovation investment by strengthening their internal organizational identification. However, the source of power determines the intensity and manner in which it shapes organizational identification, leading to varying degrees of effect in promoting innovation investment. Both formal and informal power can have a positive impact, but the latter typically elicits deeper identification and thus demonstrates a stronger promoting effect.

From the perspective of willingness formation, formal power provides the successor with statutory job security and decision-making autonomy, which constitutes the fundamental institutional guarantee for them to undertake long-term strategic investments (Goyal and Park, 2002). The organization's acceptance of the successor's positional power creates a certain psychological safety space, enabling them to withstand skepticism arising from short-term performance fluctuations in innovation (Li et al., 2024). However, this type of identification, based on institutional arrangements, is largely procedural and role-based (Zou et al., 2019). In contrast, informal power stems from the successor's professional expertise, past achievements, or personal charisma, earning emotional admiration and trust from organizational members. This form of identification, rooted in personal traits and capabilities, is more easily internalized as deep-seated trust in the successor's strategic vision and judgment. Gaining informal power within a family typically requires a profound identification with the company's long-term development, the family's socioemotional wealth, and the continuity of corporate culture. This fosters a preference for decisions that align with the family firm's governance philosophy (Abernethy et al., 2019). In this context, corporate culture becomes integral to organizational members' self-definition. This mindset encourages managers to recognize responsibility and empowerment, motivates personal commitment, influences managerial behavior, and fosters a greater willingness to take personal risks. Such attitudes and behaviors have long been regarded as key drivers of corporate innovation activities (Sieger et al., 2013). Therefore, when faced with high innovation uncertainty, the identification gained by a successor with informal power can more effectively shift their focus from job security to long-term value creation, fostering a more resolute and proactive willingness to invest in innovation.

From the perspective of capability building, formal power grants the successor the statutory power and command prerogative to allocate resources, providing a necessary framework for resource supply in innovation activities. However, its effectiveness in implementation may be limited by the extent of passive compliance from orga-

nizational members. In contrast, the identification foundation established by informal power can inspire members to actively collaborate and share knowledge beyond their formal duties (Xu et al., 2021). Based on trust in the successor's professional competence and personal qualities, organizational members are more willing to actively respond to innovation initiatives, contribute tacit knowledge, and tolerate trial and error in the innovation process (Brinkerink et al., 2020). This enables the successor to more smoothly integrate dispersed resources and information, overcome cross-departmental collaboration barriers, and translate innovation strategies into efficient collective action (Cater and Kidwell, 2014; Chen and Xu, 2022). Scholars have pointed out that, unlike the formal governance systems in typical firms, family firms often rely on relational governance models, where interpersonal trust, obligations, and other informal constraints among family members can achieve high governance efficiency (Zaheer and Venkatraman, 1995). Relational governance diminishes the influence of formal power in the decision-making process. Consequently, decisions regarding the use of important family assets and resources rely more on organizational members' identification with the successor (Gedajlovic and Carney, 2010). Therefore, informal power, by fostering a higher degree of voluntary compliance and team cohesion, often more effectively translates leadership intentions into organizational execution for innovation.

In summary, while both the successor's formal and informal power can positively influence their innovation willingness and capability by obtaining a certain degree of organizational identification, informal power typically achieves a deeper, more emotionally based identification. This deep identification gives it a comparative advantage in stimulating long-term-oriented strategic resolve and mobilizing complex collaborative execution capabilities. Based on the above theoretical reasoning, this study proposes the following Hypothesis 1:

H1: Successor's power can promote innovation investment, but the informal power of a successor has a stronger promoting effect on innovation investment than formal power.

This study further proposes that a successor's formal and informal power are not isolated from each other but demonstrate a significant synergistic effect. Their synergy can more effectively promote corporate technological innovation investment. The core mechanism of this synergistic effect lies in the fact that both forms of power jointly strengthen organizational members' identification with the successor through different pathways, thereby forming a combined force at the levels of resource mobilization and strategic commitment.

Formal power originates from institutional grants based on organizational structure and ownership arrangements. It provides the successor with the statutory power for decision-making and the legitimate basis for resource

command (Brahma and Boateng, 2025). However, its full effectiveness within family firms, which rely heavily on socio-emotional ties, is often constrained by the extent to which organizational members genuinely accept and comply (Yan and Sorenson, 2006). Here, informal power plays a crucial role as a lubricant and catalyst. Informal power is built upon the successor's professional expertise, established reputation, leadership charisma, and emotional connections within the family network. It can inspire emotional identification and voluntary followership among organizational members (Tan, 2025). When a successor also possesses informal power, directives issued based on position and ownership are more likely to be interpreted as stemming from professional judgment and shared interests, rather than mere coercive orders. This significantly reduces potential covert resistance during innovation-driven change and enhances the practical effectiveness of formal power in coordinating complex innovation activities and integrating cross-departmental resources. Conversely, formal power provides a stable institutional platform and resource guarantee for the exercise of informal power, enabling initiatives based on personal influence to be translated into binding organizational decisions and resource commitments.

From the perspective of organizational identification and the ultimate outcome of strategic action, this complementarity profoundly influences both the implementation capacity and long-term willingness essential for innovation investment. On one hand, the combination of formal and informal power establishes a leadership foundation that is both legitimate and reasonable. This maximizes organizational consensus, combining the resource-allocation capability granted by the institution with the social mobilization capability based on identification, thereby significantly strengthening the comprehensive execution capability required for high-uncertainty innovation projects (Zhao et al., 2010). On the other hand, this power combination also shapes a more stable strategic orientation (Huang et al., 2019). The job security provided by formal power reduces the successor's anxiety about short-term performance, while the sense of emotional commitment and responsibility for the organization's long-term development inherent in informal power further solidifies their tendency to focus on long-term competitiveness (Zhu et al., 2018). These two aspects reinforce each other, providing the successor with both the objective conditions and subjective motivation to bear the short-term risks associated with innovation and commit to technological investments that can shape long-term advantage. Therefore, this paper proposes Hypothesis 2:

H2: There is a synergistic effect between the successor's formal power and informal power in promoting corporate technological innovation investment.

2.2.2 Moderating Effects of Market Competition Environment

When examining the relationship between a successor's power and corporate technological innovation investment, this study further introduces the competitive market environment as a key contextual factor. Intense market competition, as a powerful external pressure and survival incentive, can profoundly alter the family firm's reliance on and response to leadership power, thereby moderating the impact intensity through which power from different sources affects innovation investment by shaping organizational identification.

A highly competitive market environment generally strengthens a successor's strategic willingness to promote innovation investment. Faced with external pressures for survival and growth, innovation transitions from an optional strategy to a necessity for business continuity (Kim and Atuahene-Gima, 2010). In this context, regardless of the power source, the successor has a stronger incentive to leverage their power to steer the firm toward innovation to adapt to competition. However, for successors relying primarily on formal power, competitive pressure may mainly reinforce their necessity-driven innovation willingness based on positional responsibility. For successors possessing informal power, competitive pressure is more likely to stimulate their proactive innovation willingness based on professional judgment and personal ambition (Zheng et al., 2020). The latter, stemming from a deeper sense of mission derived from strong identification, often exhibits greater strategic resolve and risk-taking propensity when facing crises. Thus, the increase in their willingness is likely more significant.

Furthermore, the competitive market environment moderates the efficiency with which different forms of power are translated into innovation execution capability by altering the conditions for resource acquisition and consensus building. In a context of intensified competition, firms face tighter resource constraints, and internal resistance to change may increase due to risk aversion (Yu et al., 2021). In such times, while the institutional commands of formal power remain effective in allocating tangible resources, their ability to inspire proactive behavior among members, promote knowledge sharing, and foster cross-departmental collaboration may face limitations (Choi et al., 2015). In contrast, the trust, prestige, and professional credibility underpinning informal power become especially valuable during crises. Informal power, rooted in deep identification, can more effectively foster a consensus within the organization to overcome challenges together, reduce psychological resistance to change, and motivate members to collaborate innovatively beyond their formal duties (LeCounte, 2022). Therefore, the more intense the market competition, the more pronounced the advantage of informal power becomes in uniting people, leveraging tacit resources and knowledge

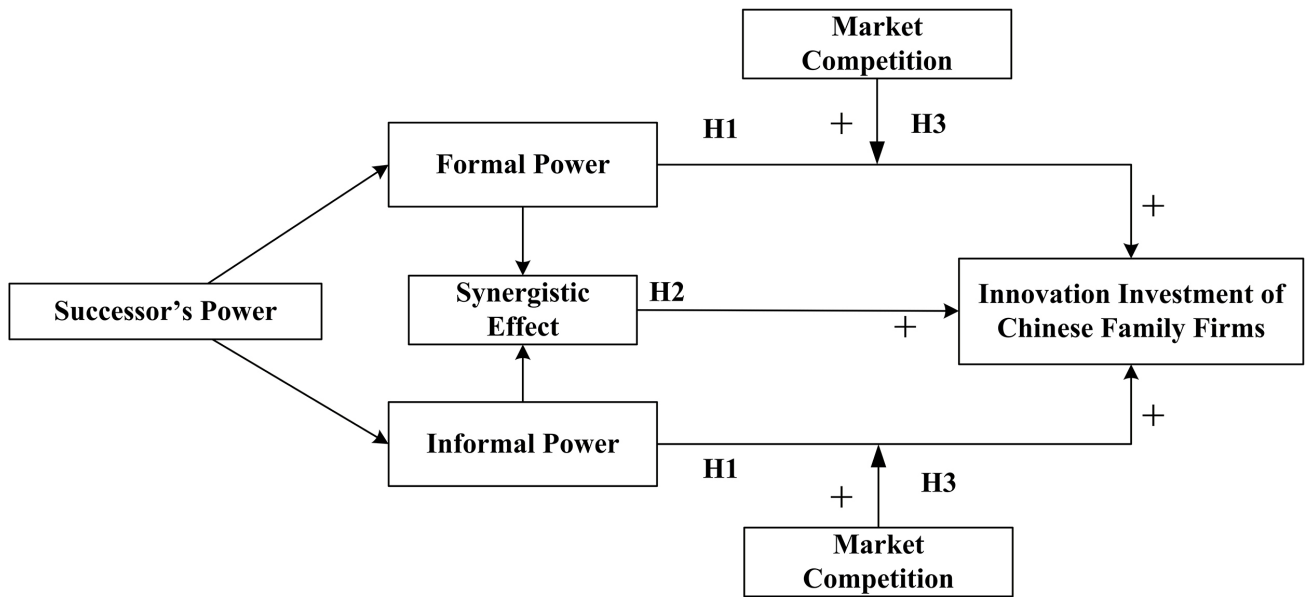


Fig. 1. Research framework.

to tackle challenges, suggesting its marginal utility in promoting innovation execution may be higher.

In summary, an intense competitive market environment serves as an intensifying mechanism that can simultaneously strengthen the positive impact of both a successor's formal and informal power on technological innovation investment. However, because informal power is built upon deeper emotional identification and professional trust, it possesses greater potential to enhance the capacity for fostering resolute willingness and mobilizing deep cooperation during crises. Consequently, its moderating effect is anticipated to be stronger. Based on the above analysis, this study proposes the following hypotheses:

H3: The competitive market environment positively moderates the positive effect of a successor's power on innovation investment, and this moderating effect is stronger for informal power than for formal power.

The research framework of this study is demonstrated in Fig. 1.

3. Research Methodology

3.1 Sample Selection and Data Source

China's family firms provide a suitable context for this study. According to the 2016 China Family Business Health Index Report (Chen and Dou, 2016), the trend of intergenerational succession has rapidly increased in recent years, with 60% of family firms being actively managed by second-generation members, 80% of whom hold CEO positions. Therefore, the hypotheses above were empirically tested using a panel dataset comprising publicly-listed Chinese family firms from 2009–2020. We collect family firm financial data and corporate governance information from the China Stock Market and Accounting Re-

search (CSMAR) database. CSMAR is the primary archival source for studies of Chinese privately-owned listed firms (Zhao et al., 2023). In this paper, the firm whose actual controller can be traced back to a specific family is defined as a family firm (Li, 2003). The CSMAR database provides a convenient distinction and classification of whether firms are family firms, facilitating the sample selection process. Since we focus only on intra-family succession, this paper selects only those samples in which the successor is related to the family founder.

In the event of intergenerational succession in Chinese family firms, the second generation is considered a sign of succession when the second generation is the CEO (Wang et al., 2014). The identity of the second generation is not limited to the sons and daughters of the founder. The children, sons-in-law, daughters-in-law, nephews, and nieces of family firm leaders can be considered the second generation. Since the change of CEO was announced, this study compares firms' annual reports and prospectuses to determine whether the succession has taken place and if the second-generation successor has taken over as CEO, the sample of firms is retained. And this study supplemented the data information by consulting the annual reports of listed firms and related announcements and processed the data as follows: (1) excluded financial industry firms with the missing data; (2) excluded firms that are specially treated (ST or *ST)¹ (*ST indicates that the company has been losing money for three consecutive years, * stands for delisting warning.); (3) excluded the sample with missing financial data within three years. Moreover, in order to avoid the influence of outliers, all continuous variables are winsorized at the 1% level on both sides. Then, a total of 2566 samples were finally collected. Table 1 reports the industry distribution of these family firms.

Table 1. Industry distribution of samples.

Industry	N	%
Agriculture	345	13.45
Mining/Metallurgy	278	10.83
Manufacturing	866	33.75
Power generation	135	5.26
Construction	196	7.64
Public management	178	6.94
Information technology	169	6.59
Culture & sport	131	5.11
Technology development	268	10.44

3.2 Variables and Constructs

3.2.1 Dependent Variable

The most direct way to enhance firms' innovation is to increase their R&D investment. Therefore, this study used the R&D investment intensity to measure the technology innovation investment of firms. That is, the ratio of R&D investment to operating income is measured. Compared with absolute R&D expenditure, the R&D investment intensity indicator has a more robust measurement effect (Duran et al., 2016).

3.2.2 Independent Variable

Drawing on the definition and classification of power proposed by Finkelstein (1992), this study comprehensively measures a successor's power across structural power, ownership power, expert power, and prestige power. Formal power is measured by structural power and ownership power, while informal power is measured by expert power and prestige power (Tan and Xia, 2025). Structural power stems from the distribution of formal positions within an organization and is measured using CEO-chair duality. This is a dummy variable indicating whether the company's CEO also serves as the board chairperson. The variable equals 1 if the successor holds both positions, and 0 otherwise, consistent with prior research (Chikh and Filbien, 2011; Veprauskaitė and Adams, 2013). Ownership power, which reflects the ability to influence decisions through shareholder identity, is measured by the proportion of total equity shares held by the successor (Lisic et al., 2016; Walls and Berrone, 2017).

Expert power derives from the ability to contribute to organizational success. A successor with relevant professional expertise is more likely to be consulted by other team members for advice during strategic decision-making, thereby exerting significant influence over decisions in specific domains. We use the successor's tenure and educational background as indicators of expertise. Successor tenure refers to the number of months the CEO has served in the role, consistent with prior studies (Muttakin et al., 2018). For education level, we code it as follows: 1 = Bachelor degree or below, 2 = Master degree, 3 = Doctoral degree.

Prestige power enables the successor to more easily acquire external resources and trust-based support. We measure this using the successor's political identity and the number of board directorships held in other companies. A successor is considered to have a political identity if they serve as a delegate to the People's Congress or as a member of the Chinese People's Political Consultative Conference (CPPCC), coded as 1; otherwise, it is coded as 0 (Huo et al., 2025).

Given that each indicator carries a different weight, using a simple average for calculation would be overly simplistic and arbitrary. Therefore, following the approach of existing scholars (Li et al., 2024), we apply Principal Component Analysis (PCA) to reduce the dimensionality for each power dimension. Through PCA, we ultimately derive composite measures for successor's formal power and informal power.

3.2.3 Moderating Variable

The Herfindahl-Hirschman Index (HHI) is widely recognized as a reliable measure for assessing market competition. Empirical studies in the field of industrial organization commonly employ the HHI to gauge the level of competition in product markets (Van Vo and Le, 2017). Higher HHI values imply lower levels of product market competition. The HHI is calculated as the sum of squared market shares in a given year and industry. A company's market share is defined as the proportion of its sales relative to the industry's total sales for a specific year. Following prior studies (Wang et al., 2017), the calculation formula of HHI value is as follows (Eqn. 1):

$$HHI(sales)_j = \sum_{i=1}^J s_{ij}^2 \quad (1)$$

Where S_{ij} is the i th firm's sales in the j th industry, and J indicates the total number of firms in the j th industry. HHI is the Herfindahl-Hirschman index of industry j based on sales volume. A more considerable index indicates a concentrated industry, while a small value reflects higher competition among firms (Arif Khan et al., 2020). For the convenience of analysis, HHI is then processed as follows (Eqn. 2).

$$Com = 1 - HHI(sales)_j \quad (2)$$

Where Com represents the competitive environment of firms in the market. The larger the Com is, the more intense the competition is.

3.2.4 Control Variable

A firm's investment in innovation will be affected by factors such as its operating conditions, characteristics, and

specific governance structure. Therefore, in this study, the asset-liability ratio (Alr), the return on equity (Roe), and the growth rate of gross operating income of the firms (Goi) are taken as the controlling effects of operating conditions (Zhu et al., 2016). The size and age of the firm are used as variables to control for the firm's characteristics. Firm age is measured as the number of years since founding (Age). Firm size is measured by the natural logarithm of total assets (Size). Based on the research conducted by Sanchez-Famoso et al. (2017), this paper examines the influence of family ownership and management in enterprises and includes family ownership (Fo) and management (Fm) as control variables. To assess managerial power, we adopt the ratio of family members to senior executives as a measurement. Finally, strategic decision-making coordination costs and direction are affected by the proportion of independent directors in the enterprise management. Therefore, referring to the study of Zhu et al. (2018), this study takes the number of independent directors on the board as a control factor in the corporate governance structure (Ind). Additionally, we controlled for firm-level fixed effects, year fixed effects, and industry fixed effects.

4. Results Analysis

4.1 Descriptive Statistics and Correlation Analysis

The descriptive statistical results and correlation analysis of variables are shown in Table 2. As can be seen from Table 2, the average value of R&D investment intensity is generally low at 3.412% during the sample period, and its standard deviation is 3.428, which indicates a significant variability in R&D investment among family firms. The mean value of the moderating variable Com is 0.779, reflecting that most family firms are currently facing a more competitive external environment. The correlation coefficients between R&D and Formal Power and Informal Power are 0.213 and 0.345 respectively, which are all significant at the 1% level. This result is consistent with Hypothesis 1. The pairwise correlation coefficients of other variables were all less than 0.5, which indicates that there is no multicollinearity among the variables. The details are shown in Table 2.

4.2 Hypotheses Testing

Based on the aforementioned hypotheses and variable construction, we conducted a panel regression test, with the results shown in Table 3. To more accurately compare the differences in the impact of the successor's different types of power on innovation investment, this study standardized both forms of the successor's power. Under this condition, we compared the coefficient sizes of formal power and informal power to determine their differential effects on innovation investment.

In Column 1, the coefficients for both formal power and informal power are significantly positive ($\beta = 0.152$, $p < 0.05$; $\beta = 0.366$, $p < 0.01$), indicating that the suc-

cessor's power significantly promotes innovation investment. However, the coefficient for informal power is larger than that for formal power, suggesting that the informal power of a successor has a stronger promoting effect on innovation investment than formal power. Hypothesis 1 is thus supported. In Column 2, we added the interaction term between formal power and informal power. A significantly positive coefficient for this interaction term indicates a synergistic effect between the two types of power on innovation. The results show that the coefficient for the interaction term between formal power and informal power is significantly positive ($\beta = 0.097$, $p < 0.05$), demonstrating that the two forms of power have a synergistic effect on corporate innovation investment. Hypothesis 2 is thus supported.

In Columns 3 and 4, by introducing interaction terms between the competitive environment (Com) and both types of power, we found that the coefficients for these interaction terms are also significantly positive ($\beta = 0.114$, $p < 0.1$; $\beta = 0.106$, $p < 0.05$). This indicates that the competitive environment has a significantly positive moderating effect on the relationship between successor power and innovation investment. In Column 5, we also standardized the competitive environment variable. The results show that the interaction coefficient between Formal Power and Com ($\beta = 0.161$, $p < 0.1$) is smaller than that between Informal Power and Com ($\beta = 0.316$, $p < 0.05$), indicating that the moderating effect of the competitive environment is stronger for the relationship between informal power and innovation investment. Hypothesis 3 is thus supported.

4.3 Robustness Check

4.3.1 One-Period Lag of the Dependent Variable

To mitigate the potential impact of reverse causality on the estimation results, this study re-estimates the regression by lagging the innovation investment variable by one period. This approach ensures, in temporal order, that the measurement of successor power precedes the occurrence of innovation investment, thereby helping to reduce estimation bias that could arise if contemporaneous innovation performance were to inversely influence the assessment or allocation of power. In this analysis, the dependent variable (R&D) is replaced with its one-period lagged value (L.R&D). The core explanatory variables and control variables remain consistent with those in the baseline model. The results of this estimation are presented in Table 4. The findings show that when regressing against the lagged dependent variable, the direction and significance of the coefficients for each variable are consistent with those reported in Table 3, confirming the robustness of the results in Table 3.

4.3.2 Replacing the Moderating Variable

To enhance the reliability of the empirical results, we replaced the moderating variable. Following Wang et al. (2025), this study adopts the industry-level Lerner index

Table 2. Descriptive statistics and correlation analysis.

Variable	R&D	Formal Power	Informal Power	Com	Age	Size	Roe	Alr	Goi	Fm	Ind	Fo
R&D	1											
Formal Power	0.213***	1										
Informal Power	0.345***	0.025*	1									
Com	0.063**	−0.017	0.023	1								
Age	−0.013	—	0.124	0.079***	1							
Size	—	—	0.106	0.066**	0.234***	1						
Roe	0.003	0.012	0.234**	0.015	−0.010	−0.003	1					
Alr	—	−0.022	—	0.008	0.094***	0.475***	—	1				
Goi	−0.007	0.035**	−0.086	0.018	0.033	0.014	0.005	−0.002	1			
Fm	−0.010	−0.036*	0.064**	−0.051*	—	—	0.008	—	0.011	1		
Ind	−0.048*	—	0.345***	0.043	0.018	0.060**	0.014	—	−0.003	—	1	
Fo	0.142***	0.167***	0.023**	−0.053*	—	—	0.044	—	−0.015	0.260***	—	1
Mean	3.412	0.234	0.453	0.779	15.270	9.421	0.061	0.344	0.990	0.178	3.036	41.332
Std. Dev	3.428	0.135	0.235	0.187	5.839	0.398	0.304	0.186	2.375	0.075	0.436	18.182

Note: ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. R&D, research and development; Com, the competitive environment of firms in the market; Age, Firm age (number of years since founding); Size, Firm size (natural logarithm of total assets); Roe, Return on equity; Alr, Asset-liability ratio; Goi, Growth rate of gross operating income; Fm, Family management (ratio of family members to senior executives); Ind, the number of independent directors; Fo, Family ownership; Mean, the mean value of each indicator; Std. Dev, the standard deviation of each indicator. R&D presented in percentage terms.

to measure the competitive market environment faced by firms. It is calculated as: (Total operating revenue of all firms in the industry – Total operating costs of all firms in the industry – Total selling expenses of all firms in the industry – Total administrative expenses of all firms in the industry) / Total operating revenue of all firms in the industry. A higher value indicates less intense product market competition. Since the index ranges from 0 to 1, for ease of interpretation, we subtract this value from 1. The transformed variable is denoted as Com1, where a larger value indicates a more intense competitive market environment faced by the firm. The results after replacing the moderating variable are shown in Table 5. The coefficients and significance levels of the interaction terms between the successor's formal/informal power and Com1 remain consistent with those in Table 3, indicating that the moderating effects are robust.

4.3.3 PSM Test

The succession of the successor is a self-selection process. The successor of the family is not an exogenous event. The enterprise operation situation will affect the process of inheritance and also affect the innovation activities of the

enterprise to a certain extent, which leads to the problem of selective bias (Zhao et al., 2015). Specifically, family firms that have completed the succession process are likely to be better managed, and firms with good performance tend to have the capability and motivation for innovation. Therefore, the technology innovation investment of the sample enterprises in this study may be due to their performance rather than the successor's power. We use the propensity score matching (PSM) method to address this potential issue to overcome this limitation. PSM enables the computation of the causal effect by comparing the Average Treatment effect and controlling for both treatment and control groups, thus minimizing the violation of model assumptions.

We grouped samples based on the median of informal power and formal power, and selected samples larger than the median as experimental group 1 (the sample for informal power of the successor) and experimental group 2 (the sample for formal power of the successor), respectively. And the remaining samples are control group 1 and control group 2 respectively. Then, we use these variables, which could reflect the operating conditions of enterprises, as covariates to reduce the difference between the experi-

Table 3. Regression analysis of variables.

Variables	(1) R&D	(2) R&D	(3) R&D	(4) R&D	(5) R&D
Formal Power	0.152** (1.98)	0.013* (1.85)	0.023* (1.91)		0.106* (1.89)
Informal Power	0.366*** (3.32)	0.119*** (2.96)		0.248** (1.99)	0.753** (2.38)
Formal Power*Informal Power		0.097** (2.03)			
Com			0.124** (2.36)	0.211** (2.16)	0.311** (1.97)
Formal Power*Com			0.114* (1.76)		0.161* (1.81)
Informal Power*Com				0.106** (2.06)	0.316** (2.33)
Age	0.126*** (2.64)	−0.028 (−0.42)	0.025 (0.93)	−0.031 (−1.44)	−0.018 (−0.78)
Size	−0.572 (−1.25)	−1.610 (−1.52)	−0.520 (−1.19)	−0.227 (−0.72)	−0.595* (−1.76)
Roe	−0.986 (−0.93)	−0.387 (−0.93)	1.669 (0.87)	−0.298 (−1.12)	−0.267 (−0.92)
Alr	−6.194*** (−7.01)	−4.729*** (−2.70)	−6.997*** (−6.10)	−4.743*** (−7.04)	−5.809*** (−8.32)
Goi	0.722*** (3.40)	−0.395*** (−2.84)	−0.005 (−1.31)	1.660*** (3.55)	−0.004 (−1.16)
Fm	−0.459 (−0.22)	−0.174 (−0.04)	−3.069 (−1.51)	−2.034 (−1.23)	−1.393 (−0.61)
Ind	−0.060 (−0.16)	−1.112 (−1.42)	−0.497 (−1.56)	−0.037 (−0.15)	−0.236 (−0.89)
Fo	0.009 (1.08)	−0.005 (−0.25)	0.011 (1.41)	0.008 (1.28)	0.002 (0.30)
Constant	9.114** (2.16)	24.430** (2.40)	11.580*** (2.77)	7.369** (2.41)	12.015*** (3.71)
Firm/Industry/Time	Control	Control	Control	Control	Control
Observations	2566	2566	2566	2566	2566
R ²	0.212	0.295	0.236	0.269	0.333

Note: ***, **, * denote significant at the 1%, 5% and 10% levels, respectively, with t-values in parentheses. The same below.

mental and the control group. The kernel density plots of the matching are shown in Figs. 2,3,4,5. Before matching, significant differences existed in some of the covariates between the groups. However, after matching, the standardized deviations between the groups were substantially reduced, indicating improved matching and meeting the requirement for equilibrium.

Table 6 presents the results for the treatment and control groups related to both types of power before and after matching. For informal power, the R&D of the treatment group is significantly higher than that of the control group both before and after matching, indicating that groups with higher informal power exhibit significantly greater R&D compared to those with lower informal power. Similarly, analogous conclusions are drawn for formal power. By

comparing R&D across samples for both types of power, it is observed that R&D in the informal power sample is generally higher overall, and the difference from the control group is more pronounced. This reflects that the impact of a successor's informal power on innovation investment is stronger than that of formal power. This conclusion aligns with previous empirical findings, further confirming the reliability of the above empirical results.

4.3.4 Instrumental Variable Method

While this study reveals the causal impact of different types of successor power on corporate innovation investment, the type and level of power a successor obtains are not exogenously or randomly assigned. Rather, they result from complex internal corporate succession and in-

Table 4. Robustness check with a one-period lag of the dependent variable.

Variables	(1) L.R&D	(2) L.R&D	(3) L.R&D	(4) L.R&D	(5) L.R&D
Formal Power	0.241* (1.89)	0.101* (1.76)	0.031* (1.86)		0.023* (1.79)
Informal Power	0.365** (2.25)	0.168** (2.16)		0.113* (1.93)	0.139** (2.38)
Formal Power*Informal Power		0.022** (1.98)			
Com			0.214** (2.05)	0.193** (2.28)	0.323** (2.22)
Formal Power*Com			0.314** (2.05)		0.062* (1.74)
Informal Power*Com				0.216** (2.18)	0.189** (2.39)
Age	0.129** (2.36)	−0.019 (−0.78)	−0.027 (−0.43)	0.009 (0.31)	−0.042* (−1.88)
Size	−0.578 (−1.06)	−1.161*** (−2.76)	−3.132*** (−2.93)	−0.694 (−1.47)	−0.113 (−0.34)
Roe	−0.714 (−0.65)	−0.506* (−1.85)	−0.476 (−1.31)	1.671 (0.85)	−0.552** (−2.27)
Alr	−5.807*** (−5.62)	−5.305*** (−6.88)	−2.093 (−1.22)	−6.352*** (−5.17)	−4.314*** (−6.08)
Goi	0.908*** (3.97)	0.042 (0.53)	−0.209* (−1.67)	0.799*** (3.53)	2.200*** (4.25)
Fm	0.760 (0.32)	−0.209 (−0.11)	−0.315 (−0.07)	−0.991 (−0.47)	−0.779 (−0.46)
Ind	−0.326 (−0.67)	−0.484 (−1.65)	−0.892 (−1.19)	−0.318 (−0.91)	−0.023 (−0.09)
Fo	0.001 (0.09)	0.014* (1.93)	−0.029 (−1.58)	0.010 (1.24)	0.006 (0.89)
Constant	9.729* (1.90)	17.049*** (4.18)	37.782*** (3.61)	12.104*** (2.67)	5.979* (1.81)
Firm/Industry/Time	Control	Control	Control	Control	Control
Observations	2218	2218	2218	2218	2218
R ²	0.249	0.282	0.397	0.296	0.416

Note: ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, with t-values in parentheses. L.R&D, the dependent variable (R&D) is replaced with its one-period lagged value.

heritance processes. These processes may correlate with a range of unobservable corporate or family-specific traits, such as a firm's inherent long-term innovation orientation, the founder's risk preference, or specific intergenerational succession philosophies, all of which could directly influence corporate innovation investment decisions. This correlation may lead to a relationship between the core explanatory variables and the error term, potentially biasing conventional regression estimates. To effectively mitigate this endogeneity bias and more reliably identify the causal effect of power on innovation investment, this study employs the instrumental variable (IV) approach as a supplementary estimation method in addition to the baseline regression analysis.

Based on the characteristics of regional peer effects in the governance practices of Chinese family firms, this study selects the average power of successors in other family firms within the same province (Ave_Formal Power and Ave_Informal Power) as instrumental variables. Firms within the same region often face similar institutional environments and social norms, and information sharing and imitation behaviors within entrepreneurial networks are relatively common (Chen and Wang, 2020). Consequently, a family firm's decisions regarding the power structure granted to its successor are likely influenced by the prevailing practices among similar firms in the region. This ensures a statistical correlation between the instrumental variables and the successor's power in the focal firm. The average level of successor power in other firms is theo-

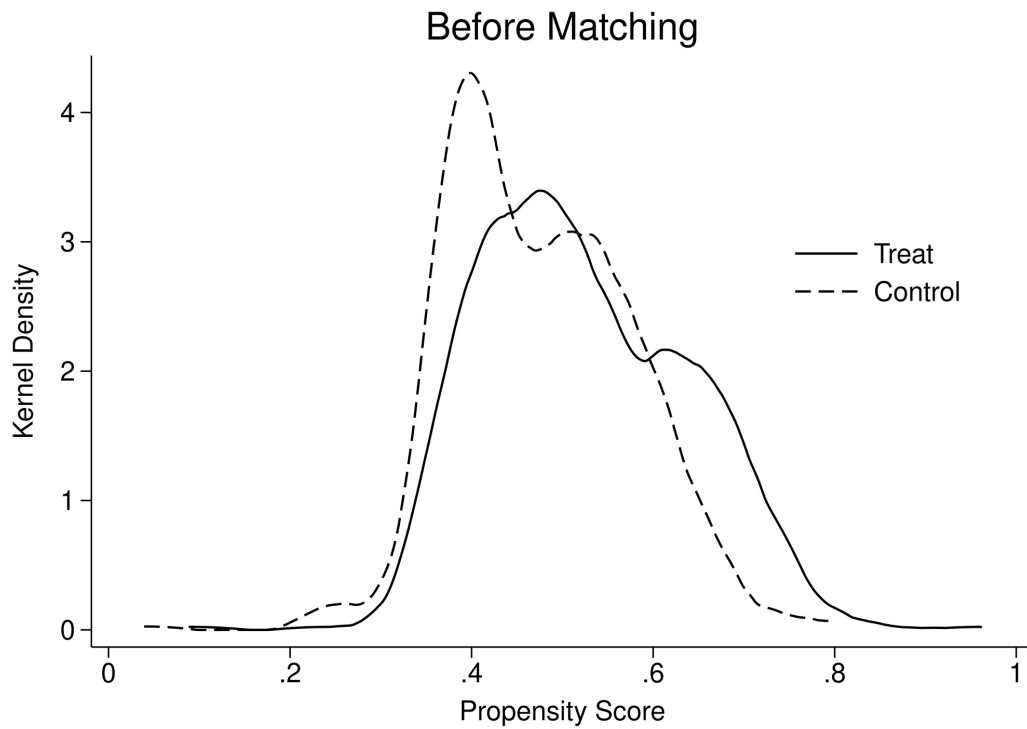


Fig. 2. Propensity score density function diagram before matching for informal power.

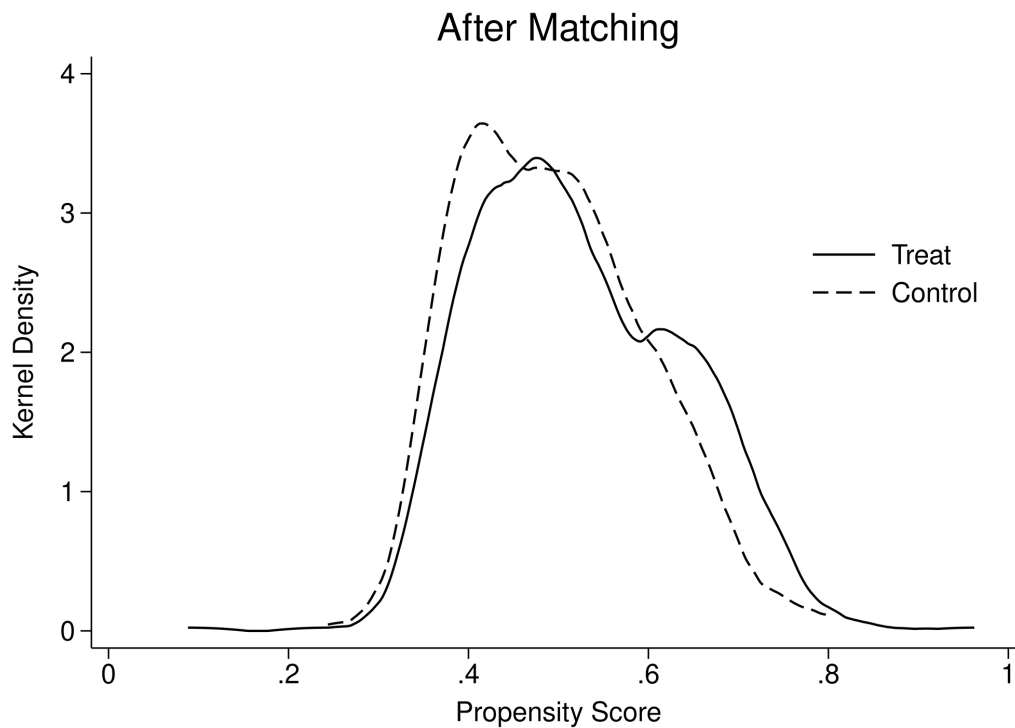


Fig. 3. Propensity score density function diagram after matching for the sample of informal power.

retically unlikely to directly affect the specific innovation investment decisions of the focal firm. This satisfies the

exogeneity requirement for an instrumental variable. For the instrumental variable estimation, we restrict the sam-

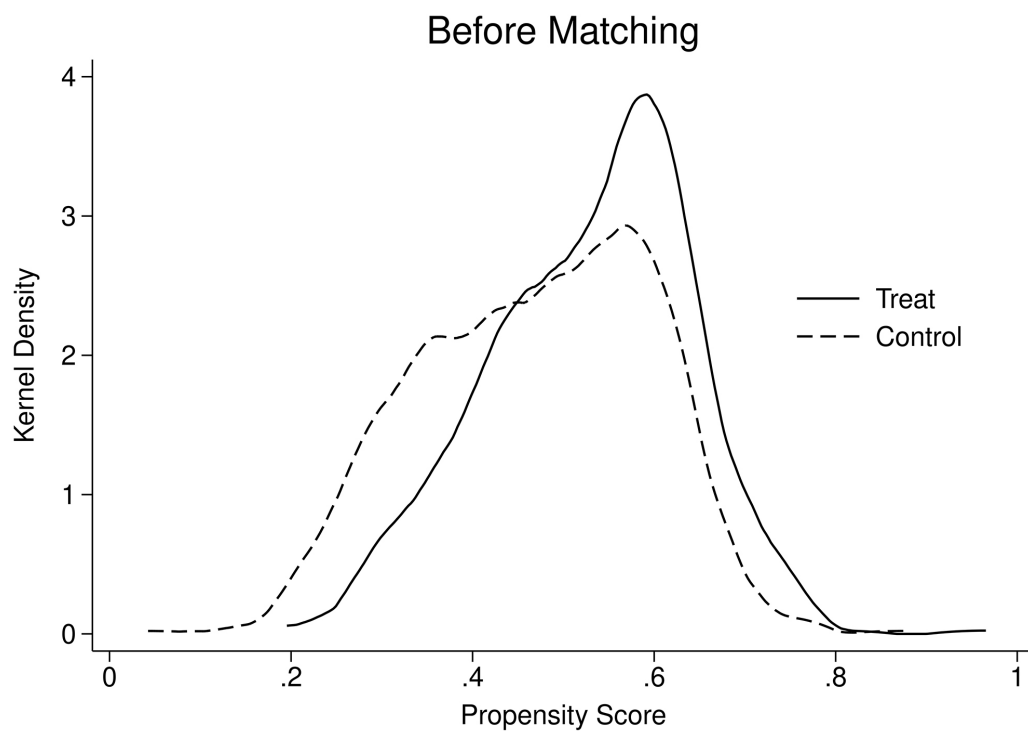


Fig. 4. Propensity score density function diagram before matching for formal power.

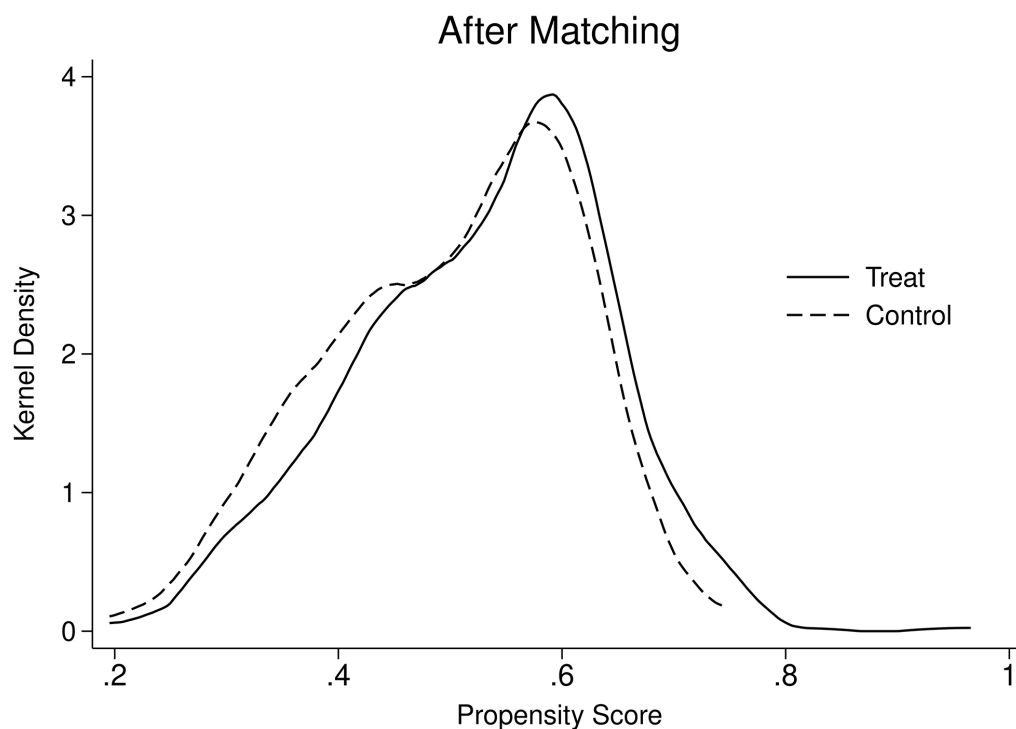


Fig. 5. Propensity score density function diagram after matching for formal power.

ple to ensure stable and valid peer-average instruments. We exclude provinces and industries with fewer than ten fam-

ily firm observations when constructing the provincial-level mean of successor power in other firms, because averages

Table 5. Robustness check by replacing the moderating variable.

Variables	(1) R&D	(2) R&D	(3) R&D
Formal Power	0.113* (1.68)		0.029** (2.12)
Informal Power		0.234** (2.16)	0.184** (2.35)
Com1	0.022** (1.98)	0.078** (2.01)	0.023* (1.82)
Formal Power*Com1	0.092** (2.11)		0.026* (1.79)
Informal Power*Com1		0.026** (2.28)	0.229** (2.33)
Age	-0.017 (-0.79)	-0.022 (-0.98)	-0.050** (-2.55)
Size	-0.624* (-1.90)	-0.744** (-2.09)	0.052 (0.19)
Roe	-0.287 (-0.98)	-0.463* (-1.70)	-0.168 (-0.77)
Alr	-6.123*** (-9.08)	-5.446*** (-7.50)	-4.250*** (-7.21)
Goi	-0.004 (-1.10)	-0.027 (-0.45)	1.086** (2.40)
Fm	-1.769 (-1.01)	-0.715 (-0.39)	-1.517 (-1.06)
Ind	-0.320 (-1.22)	-0.338 (-1.19)	0.114 (0.54)
Fo	0.003 (0.46)	0.003 (0.47)	0.013** (2.36)
Constant	12.664*** (4.02)	13.426*** (3.92)	4.064 (1.55)
Firm/Industry/Time	Control	Control	Control
Observations	2566	2566	2566
R ²	0.236	0.261	0.240

Note: ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, with t-values in parentheses.

from very small groups are noisy and easily distorted by outliers. After this screening and the removal of observations with missing values for any variable in the IV model, the final sample for the two-stage least squares estimation contains 974 firm-year observations.

Table 7 reports the results of the two-stage regression. The Cragg-Donald Wald F-statistic exceeds the critical value at conventional significance levels, indicating no issue of weak instruments. The Kleibergen-Paap RK LM test shows a *p*-value below 0.01, confirming that the instrument is correctly identified. In the first stage, the coefficient of Ave_Formal Power and Ave_Informal Power are 0.893 and 0.915, which are all significant at the 1% level, supporting the positive influence of regional and industrial practices on the successor's power. In the second stage, the coefficient and significance of successor's formal power

and informal power are consistent with our earlier results, providing further confirmation of the robustness of our conclusions.

5. Discussion and Conclusion

Succession has always been a critical topic in the field of family firm research. Selecting a suitable and capable successor is among the most crucial decisions for the survival and strategy of a family firm (Carney et al., 2019; Seaman et al., 2016). In the current innovation-driven market environment, possessing core innovation capabilities is vital for the long-term sustainable development of family firms (Scholes et al., 2021). However, existing research lacks a clear answer as to which type of successor is more conducive to promoting sustained innovation in family firms.

This study adopts the perspective of organizational identification theory and analyzes the relationship between successor power and innovation investment through the framework of willingness and capability. The findings reveal that the power possessed by a successor, whether formal power based on position and ownership or informal power rooted in personal expertise and reputation, significantly promotes corporate technological innovation investment. This aligns with existing research indicating that CEO organizational identification positively influences innovation investment (Du et al., 2022). Our study also confirms the importance of power as a foundation for resource mobilization and strategy implementation (Li et al., 2024). However, the strength of these two types of power differs. Informal power, being rooted in the successor's professional competence, personal charisma, and emotional connections with organizational members, tends to foster deeper organizational identification. This identification, based on admiration and trust, not only more effectively translates the successor's innovation willingness into firm strategic commitment but also better facilitates voluntary collaboration and knowledge sharing within the organization. Consequently, it demonstrates a stronger driving effect on innovation compared to formal power. This suggests that during family firm succession, it is crucial for the successor to build personal influence beyond their formal position.

Furthermore, the research reveals a significant synergistic effect between formal and informal power. When a successor possesses both types of power, their positive impact on technological innovation investment is not merely additive but generates a synergistic enhancement. Formal power provides institutional safeguards and a legitimate framework for resource allocation, while informal power acts as a lubricant and cohesive force that smooths the operation of this framework and reduces resistance during innovative change. The combination of both fosters a high-identification, high-authorization organizational environment, enabling the successor to have both the capabil-

Table 6. Mean Differences in R&D Investment Intensity Between High-Power and Low-Power Groups Before and After PSM.

Variable	Matching	Treated group	Control group	Difference	T-value
Informal Power	Before matching	3.987	2.390	1.597***	5.44
	After matching	3.987	2.848	1.139***	3.62
Formal Power	Before matching	3.488	2.886	0.602**	2.16
	After matching	3.488	2.774	0.714**	2.32

Note: *** and ** denote significance at the 1% and 5% levels, respectively, with t-values in parentheses.

Table 7. Two-stage regression based on instrumental variables.

Variables	(1)	(2)	(3)	(4)
	First stage Formal Power	Second stage R&D	First stage Informal Power	Second stage R&D
Formal Power		0.124** (2.34)		
Informal Power				1.117*** (3.50)
Age	0.128*** (4.56)	0.008 (0.36)	-0.013*** (-7.63)	0.002 (0.07)
Size	-0.131 (-0.32)	-0.651** (-2.04)	0.012 (0.46)	-0.596* (-1.83)
Roe	1.101*** (2.99)	-0.126 (-0.43)	-0.039* (-1.74)	-0.253 (-0.87)
Alr	4.930*** (5.78)	-5.568*** (-7.74)	-0.077 (-1.49)	-6.060*** (-9.08)
Goi	0.003 (0.55)	-0.004 (-1.07)	-0.000 (-0.26)	-0.004 (-0.98)
Fm	-7.869*** (-3.65)	-3.322* (-1.92)	0.344*** (2.63)	-2.190 (-1.28)
Ind	0.181 (0.55)	-0.228 (-0.89)	0.037* (1.84)	-0.402 (-1.54)
Fo	-0.040*** (-4.95)	-0.004 (-0.62)	0.002*** (3.73)	0.000 (0.01)
Ave_Formal Power	0.893*** (14.50)			
Ave_Informal Power			0.915*** (17.30)	
Observations	974	974	974	974
R-squared	0.134	0.188	0.112	0.157
Company time				YES
CraggDonald Wald F	210.279>	Stock-Yogo 10% threshold	299.121>	Stock-Yogo 10% threshold
Kleibergen-Paap RK LM	182.00***		240.160***	

Note: ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, with t-values in parentheses.

ity and stronger willingness to undertake innovation risks and allocate resources to long-term, uncertain technological exploration. This finding underscores the profound importance of building a composite power base for successors aiming to successfully drive strategic transformation.

Finally, this study finds that the external competitive market environment is a key contextual factor moderating the aforementioned relationship. Intense market competition, as a powerful external pressure and survival incen-

tive, generally strengthens the positive impact of successor power on innovation investment. However, the strength of this moderating effect also varies by power type. The moderating effect of market competition on informal power is significantly stronger than on formal power. While existing research indicates that lower innovation occurs in more competitive environments (Li et al., 2022), it lacks focus on successor power. Our study shows that in fiercely competitive environments, the informal power established by

a successor through professional credibility and personal charisma can more effectively build consensus to overcome challenges together. It inspires a sense of crisis and mission among organizational members, thereby enabling the robust support and advancement of innovation strategies even as resource constraints tighten. This highlights the unique resilience value and mobilization advantage of a leader's "soft power" compared to "hard power" in turbulent environments.

5.1 Theoretical Contribution

This study advances theoretical research in related fields primarily in the following three aspects. First, this study systematically deconstructs the dual composition of successor power and its differential impact on innovation strategy, deepening the understanding of the internal mechanisms of leadership succession in family firms. While existing literature has focused on the relationship between successor identity or personal characteristics and innovation behavior, it often struggles to explain why successors with similar backgrounds exhibit significant differences in innovation investment (Block, 2012; Chen and Xu, 2023). This study distinguishes successor power into formal power, based on position and ownership, and informal power, based on personal expertise, reputation, and identification. It reveals that both types of power promote innovation investment, but the promoting effect of informal power is stronger. This finding moves beyond the traditional perspective that equates successor influence simply with positional power, highlighting the core role of identification-based "core power" in driving long-term, high-risk innovation. It challenges the oversimplified dichotomy between family and non-family successor identity prevalent in this research area and shifts the focus toward successor power.

Second, this study reveals the synergistic effect between formal and informal power in promoting innovation, expanding our understanding of the synergistic mechanisms within family firm internal governance. The research not only confirms the independent value of both types of power but further finds that when a successor possesses both, their promoting effect on innovation investment is synergistically enhanced. This clarifies that, within the unique governance structure of family firms, institutional authorization and influence based on identification are not substitutes but can mutually reinforce each other, jointly building a leadership foundation conducive to resource allocation and strategy execution for innovation. This conclusion elucidates how informal relational networks and formal positional power interact to jointly shape corporate strategic choices, enriching the theoretical understanding of the synergistic mechanisms between relational governance and formal governance in family firms.

Third, this study clarifies the contingent influence of the competitive market environment on the relationship between successor's power and innovation, enriching the

contextualized theory of how family firms strategically respond to external pressures. Our research addresses the call by Kotlar and Chrisman (2019) to investigate how family firms balance external demands with internal governance, thereby bridging the gap between environmental determinism and strategic agency in family firm research. The findings show that intense market competition positively moderates the impact of successor power on innovation investment, and this moderating effect is stronger for informal power. This conclusion integrates a contingency theory perspective, specifying the interactive role of external competitive pressures and internal power structure in shaping corporate innovation strategy. It provides an explanatory path based on internal power dynamics for why different family firms exhibit divergent innovation responses within the same market environment.

5.2 Practical Implications

This study offers the following practical implications for family firms in developing successor cultivation and selection strategies, as well as in responding to changes in the market environment. First, family firm should place emphasis on systematically cultivating the successor's informal power to solidify the leadership foundation for long-term innovation. The research finds that informal power has a stronger promoting effect on innovation investment than formal power. This requires family firms, in their succession planning, to move beyond the simple transfer of positions and equity and consciously shape the successor's personal influence. Firms should arrange for successors to engage deeply in core business operations and key projects early in the succession process, allowing them to earn the trust and respect of internal members through practical performance and professional competence. Simultaneously, successors should be encouraged to establish extensive and deep connections with employees at all levels and external networks, accumulating social capital based on personal character, expertise, and vision. Building this informal power provides the successor with a deeper foundation of identification and enhanced resource mobilization capability for implementing long-term strategies such as innovation.

Second, the research confirms a synergistic effect between formal and informal power in promoting innovation. Therefore, firms should avoid focusing solely on positional appointments and formal power while neglecting the cultivation of identification. During the succession process, a dynamic balance between the two must be achieved. On the one hand, successors should be provided with necessary decision-making legitimacy and resource control through clear equity arrangements and management position delegation. On the other hand, as described above, efforts should be made to concurrently build their informal influence. The combination of both creates a leadership environment for the successor where power matches competence.

This ensures the institutional effectiveness of strategy execution while reducing internal organizational resistance, thereby more effectively translating innovation willingness into innovation outcomes.

Third, firms can consciously transform external competitive pressure into internal motivation for change, explicitly positioning innovation as the core strategy for survival and development. In this context, successors who have gained broad identification through professional competence and personal charisma—those with strong informal power—should be encouraged and supported to take on the role of innovation leaders. Their leadership is more likely to foster consensus and inspire courageous team collaboration in a crisis atmosphere, thereby transforming market challenges into opportunities for breakthrough innovation.

5.3 Limitations and Future Research

This study has several limitations, which also present valuable opportunities for future research. First, the nature of power, especially informal power, encompasses rich and subtle social, emotional, and cognitive dimensions that are difficult to fully capture using secondary data. Future research could employ methods such as in-depth multi-case studies or surveys to more directly measure the different sources of successor power and their dynamic evolution, thereby revealing their mechanisms of action more precisely. Second, this study did not account for the internal dynamics of Chinese family firms, which often involve multiple family members. During intergenerational succession, successors frequently face challenges from siblings. Future research could therefore incorporate qualitative or longitudinal research designs to explore how family relationship networks, intergenerational conflicts, and cooperation shape the formation and evolution of a successor's formal and informal power, as well as their deeper impact on subsequent strategic choices. Finally, this study primarily examined the influence of power on innovation investment as an intermediate strategic outcome. A more practically significant question is how different power structures, such as high formal/low informal, low formal/high informal, and others, affect the firm's long-term innovation performance, financial outcomes, and even survival capability. Future longitudinal research could track the long-term developmental trajectory of firms post-succession to assess the value of different power models across the complete business lifecycle.

Availability of Data and Materials

All data reported in this paper will be shared by the corresponding author upon reasonable request.

Author Contributions

LL and HL conceived and designed the research. LL conducted the investigation and data collection, managed the project administration, and prepared the original draft.

HL contributed to data curation and methodology, particularly the construction of the power indicators and instrumental variables. HL also provided essential guidance on the theoretical framework and the application of organizational identification theory during the revision. CC supervised the study. LL, HL, and CC contributed to the validation of results. All authors participated in the writing, review, and editing of the manuscript. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work. LL and HL contributed equally to this work.

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Conflicts of Interest

The authors declare no conflicts of interest.

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