The Impact of Dual-class Equity Structure on Corporate Innovation: A Case Study of Xiaomi Group

Qian Li, Yan Zhao, and Jiarui Cui

School of Accounting, Anhui University of Finance and Economics, Bengbu, Anhui 233030, China

Abstract

The innovation capability of an enterprise is not only the key to improving its competitiveness, but also determines the overall innovation level of a country. However, the process of innovation development cannot be separated from the demand for resources, and many companies choose to obtain financial support through financing. However, relying solely on equity financing may lead to the dilution of the founder's position during the financing process. As a new corporate governance mechanism, a dual-class share structure gives agents with partial ownership far greater control than their ownership, thereby giving agents strong control over the company's operations. This article takes Xiaomi Corporation as the research object, studies and analyzes the actual impact of the adoption of a dual-class share structure on the company's innovation level, draws conclusions, and provides some suggestions in order to provide reference and assistance to companies that plan to go public with a dual-class share structure in the future.

Keywords

Dual-class Equity Structure; Corporate Governance; Corporate Innovation.

1. Introduction

1.1. Research Background

Under the guidance of policies that encourage and support innovation and entrepreneurship in China, more and more companies are entering the market, and the role of innovation is becoming more prominent. As creators of economic wealth and important pillars of national economic development, enterprises' innovative development is not only an important measure to implement national strategic planning, but also a necessary action in the face of market competition. Only through innovation can enterprises form unique brand competitive advantages, keep up with the development trend of the times, improve management efficiency, and adapt to the requirements of economic development in the new era. It can be said that innovation is the lasting driving force for the sustainable development of enterprises, an important indicator of the progress of enterprise development, and a necessary path to achieve high-quality development.

The process of innovative development cannot be separated from the demand for resources, and many enterprises choose to obtain financial support through financing. Thus, the founder's position is threatened during the financing process. As a new corporate governance mechanism, the dual-class equity structure refers to the division of company stocks into super-voting rights stocks and ordinary voting rights stocks, where the voting rights of agents (internal controllers) who hold stocks are often several times or even tens of times that of ordinary stocks, while enjoying the same financial benefits per share. Therefore, it gives the agent with partial ownership far greater control than their ownership, thereby giving the agent significant control over the company's operations. Initially, this dual-class equity structure was mainly reflected

in overseas listings in our country, such as well-known companies like JD.com and Alibaba. Later, in the domestic capital market, the Hong Kong stock market first allowed the introduction of a dual-class equity system. In July 2018, Xiaomi Group became the first company to adopt the dual-class equity structure in the Hong Kong stock market. Subsequently, in April 2019, the Shanghai Stock Exchange officially allowed the use of a dual-class equity structure in China's domestic capital market. In early 2020, Youku Tudou Inc. became the first company to adopt the dual-class equity structure and list on the Sci-Tech Innovation Board of the Shanghai Stock Exchange. As of August 26, 2023, there are a total of 8 companies with dual-class equity structure listed in China's domestic market, 9 in the Hong Kong stock market, and 78 among the listed companies on the New Third Board.

1.2. Literature Review

1.2.1. Research on the Factors Influencing Corporate Innovation

Currently, scholars analyze corporate innovation behavior from two perspectives: internal factors and external factors. Internal factors mainly include equity structure and nature, company size, and executive characteristics, while external factors mainly include innovation policies and market environment. Among them, the most studied is the impact of corporate governance structure, which is analyzed from three aspects: equity perspective, ownership perspective, and controlling shareholder behavior. In this section, we will mainly provide an overview of the research on equity structure and corporate innovation.

From the perspective of equity, theoretically, shareholders are believed to be the most eager for the long-term development of the company, so concentrated ownership has a positive impact on corporate innovation[1]. The higher the shareholders' proportion of shares, the greater their emphasis on corporate innovation, and they are more likely to actively supervise other shareholders, effectively preventing free-riding behaviors by small and minority shareholders. On the other hand, the more dispersed the equity ownership, the higher the agency and contractual costs related to innovation. Concentrated ownership can better reduce these costs[2], enhance supervisory mechanisms, and increase R&D investment in the company [3]. However, there are also studies that argue that as the degree of ownership concentration increases, the intensity of R&D investment decreases[4]. Some scholars have found through empirical analysis that there is a "inverted U-shaped" relationship between ownership concentration and technological innovation, and there is a threshold for the relationship between equity ratio and R&D investment[5,6].

From the perspective of ownership, some scholars have found that the higher the independence of the board of directors, the more they tend to conduct in-depth research and increase related patent output, but the company's breakthrough innovation capability is lower in this case[7]. Other studies have shown that foreign ownership has a positive and significant impact on corporate innovation; state ownership and institutional investors' ownership have a positive impact on corporate innovation with a certain time lag, while insider ownership has a negative impact[8].

In terms of controlling shareholder behavior, "excessive supervision" by controlling shareholders has a negative impact on corporate innovation. Pledging of equity by controlling shareholders also leads to a decrease in corporate innovation level [9].

It can be seen that the unique equity structure will inevitably have an impact on the level of corporate innovation. The increase in investment and management in innovation will inevitably lead to an increase in the financing needs of companies, which is why more and more companies tend to choose a dual-class equity structure[10].

1.2.2. Research on the Economic Consequences of Corporate Innovation

Since its inception, corporate innovation has been recognized as one of the development strategies that businesses can use to gain a competitive advantage and enhance their technological capabilities and overall efficiency. The advantage of corporate innovation lies in its ability to continually innovate, absorb various useful resources, and increase the knowledge base related to innovation within the enterprise[11]. By achieving technological breakthroughs, companies can not only lead domestically but also internationally[12]. Furthermore, improving core competitiveness through innovation can increase market share and improve operational efficiency [13]. A higher level of innovation within a company also benefits its innovation performance[14]. Increasing investment in innovation also helps companies improve their innovation output, increase the knowledge of employees in innovation, and ultimately raise their innovation capabilities.

However, while innovation promotes business development, it can also exacerbate financing constraints and increase operational risks. Although increasing investment in innovation enhances a company's competitiveness, it is still uncertain whether innovation can generate output for the company. Additionally, the timeframe from initiating innovation to reaping returns is unpredictable. In this situation, business owners may be inclined to pursue innovation for high returns, but high-risk innovation activities can also increase operational risks[15,16]. The quality of information disclosure by enterprises also determines whether they face financial constraints[13]. Poor disclosure quality intensifies financing constraints, while high-quality disclosure mitigates their impact on innovation[9]. However, although corporate innovation may increase operational risks in the short term, from a long-term perspective of innovation development, it ultimately has a positive impact on business operations [17].

1.2.3. Research on the Impact of Dual-class Share Structure on Corporate Innovation

Currently, there is a lack of research on the impact of dual-class share structure on corporate innovation by scholars both domestic and international. In terms of research results, different scholars have varying opinions on the specific effects it generates. Furthermore, there hasn't been a clear linear relationship demonstrated between dual-class share structure and corporate innovation.

Firstly, some scholars believe that dual-class share structure can help companies withstand external market pressures. For example, by employing anti-takeover provisions, management can avoid being influenced by short-term market pressures[18]. This allows company agents to firmly grasp control, thereby reducing the risk of takeover threats and agent replacement, leading to the promotion of corporate innovation.

On the other hand, some scholars argue against dual-class share structure, believing that it impedes corporate innovation. Due to the pervasive information asymmetry in innovation activities, the enhancement of special shareholders' rights by the dual-class share structure worsens the agency problem in companies, increasing the opportunities for management, as special shareholders, to seek personal gains[19,12]. This pursuit of self-interest by internal controllers leads to adverse outcomes for corporate innovation by reducing the disposable resources within the company[20]. Furthermore, regarding high-risk innovation investments, agents who value their power over the allocation of innovation resources will become more conservative, thus suppressing innovation efficiency [21].

In addition, recent research has also uncovered new findings. Chinese companies that adopt a dual-class share structure through overseas listings do experience an overall increase in R&D investment and patent output. However, this promotive effect shows an inverted U-shaped relationship with the increase in voting rights multiples[22]. Moreover, in an environment with well-established external governance institutions, dual-class share structure contributes to promoting research and development innovation[23,12,15]. However, in emerging markets or contexts with inadequate external governance mechanisms, dual-class share structure instead has a reverse effect, inhibiting research and development investment and hindering corporate innovation[24].

1.3. Theoretical Foundation

1.3.1. Agency Theory

In modern enterprises, the general issue of agency arises from the separation of ownership and control. The main content of agency theory is that the owners of a company entrust the management rights of the business to professional managers, who then control and use the company's economic resources. Based on the assumption of self-interested individuals, this theory suggests that both the principal (the owner) and the agent (the manager) act in their own self-interest. This means that the agent may use their position to pursue personal gains, which could harm the interests of the company owners. Additionally, the agent has more information advantage than the principal, making it difficult for the principal, who is in an information disadvantage, to effectively monitor the agent's behavior. This gives rise to the agency problem.

However, under this theory, in a two-tier ownership structure where different voting rights shareholders and ordinary shareholders have different control and cash flow rights, there may also be a second type of agency problem between major shareholders and minority shareholders. In collective decision-making, the existence of such differences can cause the true preference of some shareholders to be inaccurately reflected in decision outcomes, thus causing agency costs for the company's management to a certain extent.

1.3.2. Control Right Theory

The concept of control rights was introduced by Berle and Means in 1932 to study the separation of ownership and control in joint-stock companies. This theory holds that control rights enable the owners to have a say in corporate governance and influence important decisions regarding the company's development. Control rights can be classified in various ways, such as formal control rights and actual control rights. Holding actual control rights means having control over information, which is the real control over the company, allowing for the exercise of power in investment, financing, and equity changes without threats to one's own position.

The actual controller of a company often possesses core development technologies and professional knowledge, overseeing the overall operations and development of the company. Therefore, in enterprises with a single stock ownership and equal voting rights, entrepreneurs need to have a relatively high shareholding percentage to have a say and guide the company's decisions. If the ownership percentage is too low, control over the company will be lost. However, a two-tier ownership structure can be used to increase the proportion of voting rights and achieve control over the company by implementing different power configurations. This facilitates the smooth implementation of the company's overall development plan. Control right theory also emphasizes that the personal abilities of entrepreneurs play an important role in company development. Therefore, a consideration of the personal skills and influence of managers should be taken into account when distributing ultimate control rights. In this case, a two-tier ownership structure with different voting and ownership rights is more conducive to considering the personal abilities of managers and allowing individuals with influence to have actual control over the company.

2. Case Analysis of Xiaomi Group's Dual-class Equity Structure

2.1. Overview of Xiaomi Group's Dual-class Equity Structure and Changes in Equity

In order to ensure the control rights of the founding team, defend against hostile takeovers from the external market, leverage internal human resources advantages, and achieve long-term stability and development, Xiaomi Group adopted a dual-class equity structure for its IPO listing on the Hong Kong Stock Exchange on July 9, 2018. The company's stock is set up with special arrangements: the common stock is divided into Class A and Class B. One share of Class A common stock corresponds to ten votes and is held by founders such as Lei Jun and Lin Bin. It can also be converted to Class B common stock at a ratio of 1:1. One share of Class B common stock corresponds to one vote and is held by shareholders and investors. The qualification to exercise high multiple voting rights is only given to the company's directors, and transferring Class A common stock will result in a loss of ten times the voting rights. Additionally, when it comes to the appointment and removal of independent directors, both types of common stock have the same voting rights.

The changes in equity after the adoption of the dual-class equity structure by Xiaomi Group mainly reflect the shareholding ratio and voting power of the two founders, as shown in the table below:

	Tuble		inges in Majo	1 Sharenoluei	5 Equity	
Shareholder	The equity	The equity	Voting	Voting	Percentage	Percentage
	ratio (in %)	ratio (in %)	rights ratio	rights ratio	of equity	of voting
	before	after	(%) before	(%) after	ownership	rights after
	adopting a	adopting a	adopting a	adopting a	after going	going public
	dual-class	dual-class	dual-class	dual-class	public	
	equity	equity	share	share		
	structure	structure	structure	structure		
Lei Jun	31.41	31.41	31.41	55.7	29.13	51.85
Lin Bin	13.33	13.33	13.33	30	12.36	28.97

Table 1. Table of Changes in Major Shareholders' Equity

2.2. The Impact of Xiaomi Group's Dual-Class Share Structure on Enterprise Innovation Level

Based on the rapid development of the Internet industry and the fast product iteration, a company's sustained research and development capabilities and innovation outcomes determine whether its core competitiveness can be maintained in the market. This article analyzes the impact of Xiaomi Group's dual-class share structure on its innovation level by selecting the following indicators for measurement: research and development investment and its proportion to sales revenue are used to measure the company's innovation input; changes in the number of patents granted are used to reflect innovation output. In addition, changes in the number of research and development technical personnel and their proportion to the total number of employees are also explained. The section headings are in boldface capital and lowercase letters. Second level headings are typed as part of the succeeding paragraph (like the subsection heading of this paragraph). All manuscripts must be in English, also the table and figure texts, otherwise we cannot publish your paper. Please keep a second copy of your manuscript in your office. When receiving the paper, we assume that the corresponding authors grant us the copyright to use the paper for the book or journal in question. When receiving the paper, we assume that the corresponding authors grant us the copyright to use the paper for the book or journal in question. When receiving the paper, we assume that the corresponding authors grant us the copyright to use.

2.2.1. Impact of Dual-class Share Structure on Xiaomi Group's Innovation Input

Taking the listing of Xiaomi Group with a dual-class share structure in 2018 as a milestone, this article organizes and summarizes the research and development investment situation and its proportion to sales revenue for the years before and after Xiaomi Group's dual-class share structure, based on the annual report information disclosed by Xiaomi Group. The data is gathered in the table below:

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Year	2015	2016	2017	2018	2019	2020	2021
R & D investment	15.12	21.04	31.51	57.77	74.93	92.56	132.21
(100 million yuan)							
The proportion of R & D investment to sales revenue is (%)	2.26	3.07	2.75	3.3	3.64	3.76	4.02

Table 2. Table of Innovation Input Situation Change
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From the information in the table, we can see that after adopting a dual-class share structure, Xiaomi Group's growth rate in research and development (R&D) investment has significantly increased compared to before, and the proportion of R&D investment to sales revenue is also increasing year by year. In 2018, R&D investment was equivalent to the total R&D expenditure of the previous two years. In 2021, R&D investment reached as high as 13.221 billion yuan, a growth of 42.3% compared to the previous year. Xiaomi Group also stated that it will continue to increase its investment in R&D in the next five years, with R&D expenditure expected to exceed 100 billion yuan.

Therefore, it can be seen that the founding team of Xiaomi Group, under the dual-class share structure, maintains absolute control over strategic decision-making while safeguarding their legal rights and interests. This enables them to prioritize R&D innovation and its impact on future development, thereby driving innovation and R&D in the company.

2.2.2. Impact of the Dual-class Share Structure on Innovation Output of Xiaomi Group

Taking the listing of Xiaomi Group with a dual-class share structure in 2018 as a reference point, this article collects and summarizes the number of invention patents granted and their yearon-year growth rates, based on the annual reports disclosed by Xiaomi Group in recent years, as shown in the table below:

Table 3. Table of Innovation Output Change							
Year	2015	2016	2017	2018	2019	2020	2021
Amount of invention patents granted (pieces)		470	344	145	915	1337	1415
Year-on-year growth (%)	-	-19.24	-26.81	-57.85	531.03	46.12	5.83

The number of invention patent grants selected in this article is the most representative indicator of innovation outcomes, which can best reflect the changes in a company's R&D capabilities. From the information in the table and the analysis in the previous sections, we can see that Xiaomi Group has achieved significant results in innovation output as R&D investment has increased significantly: before adopting the dual-class share structure, the number of invention patent grants decreased year by year, showing a clear downward trend; however, since 2018, there has been a significant increase and continuous year-on-year growth, especially in 2019, where it increased by more than five times compared to the previous year. This data fully proves that the adoption of a dual-class share structure enables the long-term development strategy of the company to be smoothly implemented under the absolute control of the founding team, and the company's level of innovation continues to improve.

2.2.3. Impact of Dual-class Share Structure on the Scale of R&D Technical Personnel in Xiaomi Group

In addition to R&D investment and output, the number of R&D technical personnel possessed by a company is also a key resource for measuring its innovation level. R&D technical personnel play a decisive role in the progress of the company's innovation work. The number of R&D technical personnel that a company possesses, the proportion they make up in the total number of employees, and the value they contribute to the company will all affect the company's innovation level and core competitiveness.

This article compiles and summarizes the number and proportion of R&D technical personnel in Xiaomi Group from 2017 to the present, based on the prospectus and annual report information disclosed by the company.

Table 4. Table of Scale Changes of K & D Technicians								
Year	2017	2018	2019	2020	2021			
Number of R & D Technicians (person)	5515	7371	8874	10484	15002			
Total Staff Number (person)	14513	16683	18170	22074	33793			
R & D Technicians in the proportion of Total Staff (%)	38.00	44.18	48.65	47.49	44.39			

Table 4. Table of Scale Changes of R & D Technicians

As shown in the table, in terms of quantity, after going public with a dual-class share structure, the number of R&D technical personnel within the group has been increasing year by year, with a growing trend in the growth rate. In terms of proportion, even before the adoption of the dual-class share structure, the proportion of R&D technical personnel at 38% already exceeded that of most companies. After adopting the dual-class share structure, the proportion continued to increase and even approached half at one point. Based on this growth rate and change in proportion, it can be concluded that Xiaomi attaches great importance to the company's R&D and innovation capabilities, and has a high demand for and emphasis on technical talent. The dual-class share structure has also served the purpose of safeguarding the company's innovation.

Without a doubt, these changes are due to the fact that after adopting the dual-class share structure, the founding team of Xiaomi Group has decision-making power over the company's future development direction, allowing the company to go further on the path of innovation. After going public with a dual-class share structure, Xiaomi Group has taken a series of measures to expand its R&D technical team, such as hiring high-end R&D technical personnel who have previously worked in the internet industry, establishing a technical committee to comprehensively control R&D innovation from five aspects: technical cooperation, technical strategy, technical organization, technical talent, and technical culture. In order to build a first-class technical team, high incentives have also been implemented to promote technological innovation. Therefore, it can be seen that after adopting the dual-class share structure, Xiaomi Group's level of corporate innovation has been continuously strengthened, the proportion of technical personnel has been increasing, and it has gradually become stable.

3. Research Conclusion and Recommendations

3.1. Research Conclusion

This article conducts a comparative analysis of various indicators before and after Xiaomi Group's dual-class share structure listing and finds that the adoption of the dual-class share structure does have a significant positive effect on the improvement of the company's innovation level. After adopting the dual-class share structure, there has been a significant increase in innovation investment. In 2021, R&D investment reached 13.2 billion yuan, more

than four times the 3.151 billion yuan in 2017 before adopting the dual-class share structure. Correspondingly, there has also been a good response in terms of innovation output. Compared to the negative growth in the past, there has been an increase and annual growth in the number of patented inventions authorized after the dual-class share structure listing. In addition, the positive changes in the scale of R&D technical personnel all symbolize the improvement of Xiaomi's innovation level. The dual-class share structure listing has not only provided sufficient funding for Xiaomi but also allowed the founding team to retain control of the company, thereby improving the level of innovation and creating actual value for the company.

3.2. Recommendations

The adoption of a dual-class share structure is the preferred option for the development of Chinese companies and a stable trend in the development of the capital market. First, many Chinese companies have encountered setbacks abroad while the domestic capital market has been developing increasingly well in recent years. Second, with the improvement of various supporting registration systems, many companies no longer need to wait for lengthy IPO approvals and can go public and raise funds as long as they meet the requirements of the system. Therefore, improving and expanding the positive effects of the dual-class share structure and regulating its operation will become one of the development directions of China's capital market in the future.

However, through the analysis in this article, one major drawback of the dual-class share structure can be observed indirectly, which is the excessive power of the founding team. Although the primary purpose of the dual-class share structure is to ensure the actual control of the founding team over the company, excessive power can also pose a series of risks, such as insider control and tunneling behavior that infringes upon the rights of shareholders and the board of directors. Therefore, this article suggests that while adopting a dual-class share structure, companies should strengthen internal control. Relevant supervision and management systems should be formulated, and effective channels for feedback should be established to reduce corresponding risks, promote the sound operation of the dual-class share structure, and ensure the positive effects of its implementation. In addition, the government and relevant departments should also develop and improve relevant laws and regulations to supervise corporate behavior, establish a sound and effective external market supervision mechanism, protect the interests of external investors, and promote the sustainable and healthy development of China's capital market.

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