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Risk control system construction of China's equity crowdfunding platforms: A comparative study on the differences between equity crowdfunding and traditional venture capital investment

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I hereby declare that this PhD dissertation is my original work
and it has been written by me in its entirety.
I have duly acknowledged all the sources of information
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This PhD dissertation has also not been submitted for any degree
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Abstract

Equity crowdfunding is a new type of public financing activity realized by Internet technology with small single investments funds, which is different from traditional venture capital. It greatly solves the equity investment problem of middle-class people and the difficulties of small and medium-sized enterprises and start-ups in financing. It is also conducive to the construction of multi-level capital market, and the healthy development of national financial system. Due to the advantages of equity crowdfunding, the global equity crowdfunding market has developed rapidly in recent years. Unfortunately, China's formal legislation on equity crowdfunding has not been introduced yet. Each platform can only exist in the form of a crowdfunding-alike equity investment platform, and most of them have been developing savagely with no effective risk control system established at all. Investment failure occurs frequently and investors suffer huge losses. The risk control system in this paper targets at the investment loss risk faced by equity crowdfunding investors due to non-systematic causes. The construction of the risk control system proposed here include not only the narrow-scale risk control at the project level, but also the various aspects of the overall business process of the platform.

This paper first reviews the literature and regulatory practices in the field of equity crowdfunding. Scholars have conducted researches on equity crowdfunding mainly from the perspectives of the participating parties' behavior motivation, factors affecting the success of financing, risks of equity

crowdfunding and countermeasures to deal with the risks. In terms of risk countermeasures, most scholars hope to reduce the risks by improving relevant laws and regulations at the national level and strengthening supervision by relevant national departments. At present, global regulatory practices of equity crowdfunding reflect the considerations of promoting capital formation, improving financing efficiency and balancing investor protection. In general, one way is to protect investors through the investor suitability and the investment cap; the second way is to ensure equity crowdfunding platforms to play the role of credit intermediary to prevent risks.

After that, this paper focuses on the analysis of causes of equity crowdfunding risks in China, which include the characteristics of the financing parties, the characteristics of investors, information asymmetry, principal-agent conflicts, and the platforms' excessive pursuit of short-term interests.

In view of the causes of equity crowdfunding risks, this paper analyzes and compares the similarities and differences between equity crowdfunding and traditional venture capital. Focusing on the significant differences between the two in terms of business model, positioning, investor endowment, and investor diversification abilities, this paper then proposes corresponding risk control measures and the overall construction of risk control system of China's equity crowdfunding platforms dividing into five aspects including risk control before the launch of the project, risk control in fundraising, risk control of post-investment, investor management and education, and platform team building

and incentives.

To make the risk control system operable, this paper proposes specific models to illustrate how to evaluate project risk and investor risk preference and tolerance. In terms of project risk assessment and classification, this paper proposes the method of combining Analytic Hierarchy Process and Fuzzy Comprehensive Evaluation to make the assessment process more accurate and scientific. In terms of investor risk preference and tolerance evaluation, a questionnaire is used to better understand investors, and the optimal scale method is used to regress the questionnaire data. It is found that age, education level, family annual disposable income is significantly related to investors' risk preference and tolerance.

Subsequently, a case study of the risk control system is conducted with real investment cases on one domestic platform. It is found that the risk control measures proposed in this paper better reveal the project risks, and are more advantageous for making judgment regarding the project and protecting the interest of investors.

Finally, on the basis of summary, the prospect of future research is proposed, hoping to better verify the effectiveness of the risk control system through continuous follow-up research and investigation.

Keywords: Equity Crowdfunding, Risk Control, Traditional Venture Capital

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Chapter I Introduction

1.1 Background and Significance

In 2008, the subprime crisis in the United States triggered a serious global financial crisis. The economic recovery after the crisis is extremely tortuous, and a large number of small and medium-sized enterprises, especially start-ups, experienced unprecedented financing difficulties. In this context, equity crowdfunding began to flourish. Equity crowdfunding is a new type of equity financing that is different from traditional venture capital. It uses the Internet platform as the transaction intermediary to directly connect the capital demand side and the supply side, effectively promoting the rapid matching and completion of transactions, which greatly solves the equity investment problem of middle-class people and the difficulties of small and medium-sized enterprises and start-ups in financing and customers obtaining. For China, equity crowdfunding is also conducive to the construction of multi-level capital market, and eventually conducive to the healthy development of the financial system.

The capital demand side of equity crowdfunding is mainly unlisted small and medium-sized enterprises ("SMEs"). The SMEs constitute an important pillar of the national economy and are the basis for sustainable economic growth of the country. By the end of 2018, the number of SMEs in China has exceeded 30 million, and the number of individual businesses has exceeded 70 million, contributing more than 50% of the national tax revenue, more than 60%

of GDP, more than 70% of technological innovation achievements and more than 80% of labor employment.[1] However, for SMEs, their asset-light asset structure is difficult to meet China's domestic debt financing requirements for collateral. Data show that the financing gap of China's small and micro enterprises is USD1.9 trillion, which accounts for approximately 17% of China's GDP in 2017 (International Finance Corporation, 2017). Therefore, a large number of SMEs are willing to sell shares to obtain funds in the early stage of development. However, the traditional venture capital institutions in China can only raise funds from qualified investors, and the amount of funds is relatively limited. Data show that as of the end of 2018, domestic traditional venture capital institutions has invested about 27,300 unlisted equity projects, forming a capital of RMB457.47 billion; of which, 22,600 investment projects are SMEs, with an investment of RMB274.928 billion (People's Bank of China & China Banking and Insurance Regulatory Commission, 2018). Traditional loan and investment are far from meeting the capital needs of SMEs. Equity crowdfunding, through small single investment and public means, enable more social capital and private capital to participate in the equity investment of SMEs. Companies can raise funds globally through the Internet, greatly expanding the boundaries of investors and increasing the amount of potential financing. Moreover, equity crowdfunding is more convenient than bank loans and

[1] See the press conference held by the Information Office of the State Council at 2 pm on Friday, September 20, 2019， http://finance.sina.com.cn/china/gncj/2019-09-20/doc-iicezueu7164785.shtml.

traditional venture capital investment. Enterprises can obtain more financing channels and reduce financing costs at the same time.

Equity crowdfunding can also help enterprises to acquire customers in advance so that enterprises can have better understanding of the target customer group and improve their own enterprise construction (Belleflamme, Lambert & Schwienbacher, 2014).It also helps enterprises to test, develop, and promote products, to learn more about consumers' preferences, and to continually produce high-quality products and service (Belleflamme et al., 2014). Thus, from this perspective, equity crowdfunding can also be used as a way for enterprises to enhance company strategies and gain a deeper understanding of customer needs.

The capital supply side in equity crowdfunding is mainly middle-class individual investors. Individual investors participate in the equity investment of unlisted companies mainly to achieve a greater appreciation of assets. Compared with investing in stocks of listed companies,[2] if you can invest in good unlisted companies, the return will be very considerable. The popular saying "no stock, no wealth" refers to the stock of such unlisted companies. To become an investor in a traditional venture capital fund is one way to make equity investment. However, traditional venture capital institutions can only raise funds from qualified investors. Especially in China, the mandatory

[2] By calculating the 10-year annualized return of the S&P 500 price index (excluding dividends) from December 1937 to March 19, 2020, taking the monthly data as the sample, we can get that the historical average return of the S&P 500 index is about 6%.

requirement of a single minimum investment of RMB1 million from one qualified investor completely excludes the middle class from traditional equity investment. The second way is to invest in promising entrepreneurial projects founded by friends and relatives, but the probability of encountering this situation is relatively small. While, equity crowdfunding provides individual investors a new channel of equity investment, enabling them to find projects with better return-to-risk ratio, where investors can participate in the investee project's innovation practice to obtain spiritual gains, as well as material returns (Mollick, 2013).

Due to the advantages of equity crowdfunding, the global equity crowdfunding market has developed rapidly in recent years. MIT Technology Review highly recognizes that the crowdfunding model provides funding for the commercialization of new technologies and new products, and cultivates innovative loyal early users, and selected it as the top 10 breakthrough technologies in 2012.[3] For instance, there are about 60 equity crowdfunding platforms in the United States,[4] and about 30 equity crowdfunding platforms in the United Kingdom. China's equity crowdfunding industry began in 2011, and rapidly reached its peak in 2015. By the end of 2015, there are 141 equity crowdfunding platforms in China, with the amount of financing nearly RMB4.4

[3] MIT Technology Review (2016). Top of technology: In-depth analysis of 50 global breakthrough technologies of MIT technology review. Beijing: People's Posts and Telecommunications Press.

[4] This data only includes equity crowdfunding platforms that registered with SEC as funding portals, without platforms that registered as dealers.

billion in the single year of 2015.[5]

Equity investment itself is a high-risk investment activity. In equity crowdfunding, the capital demand side is SMEs that lack operating experience but have growth potential. The capital supply side is individual investors who lack professional equity investment judgment and experience. There is obvious asymmetry information between the two. In order to facilitate the transaction between the supply and demand parties, the Internet platform, as the intermediary in equity crowdfunding, should reduce information asymmetry as much as possible and do well in investor education and protection. This is also the general direction of legislation of the United States, Britain, Italy, Germany, France and other countries to supervise equity crowdfunding. Unfortunately, China's formal legislation on equity crowdfunding has not been promulgated yet. In some documents of China Securities Regulatory Commission, equity crowdfunding specifically refers to "public equity crowdfunding", and engaging in public equity crowdfunding requires a license. However, as far as the current situation is concerned, the business of the three equity crowdfunding platforms that have obtained licenses is at a standstill.[6] There is still no clear way to obtain licenses for platforms that are actually engaged in related business. They can only conduct non-public equity investments on the Internet and cannot directly promote related business to the public. “Crowdfunding-alike

[5] The data is collected from the statistics published on a Chinese third party platform focusing on equity crowdfunding “Zhongchoujia”. http://www.zhongchoujia.com/data/
[6] The three platforms are the platforms of Ali, Jingdong and Ping An.

equity investment platforms" is sometimes used to refer to such platforms.[7] In the absence of external legislative supervision, the vast majority of domestic equity crowdfunding platforms pursue short-term interests too much and do not play their theoretical role. Instead, they try to promote financing as much as possible to collect commission or management fee. As a result, risk projects on domestic platforms occurred frequently, and investors suffered huge losses. The equity crowdfunding industry in China quickly turned cold after a few years of rapid progress. This research visits 69 China's platforms that can be accessed to through public open channels one by one, among which there are 4 platforms are in normal operation, and the remaining are either in stagnation, transition, or inaccessible.[8] The rapid development of global equity crowdfunding is in sharp contrast to the bleakness of China's equity crowdfunding, and the huge losses of domestic investors are in sharp contrast to the short-term profits of domestic platforms and financing parties. It makes people have to think about what causes the risks of domestic equity crowdfunding, and how to control the

[7] *Administrative measures for private equity crowdfunding financing (draft for solicitation of comments)* (CSRC, Dec. 2014) defines equity crowdfunding as "private equity crowdfunding" which should be regulated by the *Interim measures for the supervision and administration of privately offered investment funds*, and limits the scope of investors to qualified investors. *Securities law of the people's republic of china (draft)* (Apr. 2015) permits the public issuance of the Internet crowdfunding. *Notice of the general office of the china securities regulatory commission on conduction special inspections of institutions engaging in equity financing via internet* (CSRC, Aug. 2015) stipulates that "equity crowdfunding" specifically refers to "public equity crowdfunding", "private equity crowdfunding" will be replaced by "private equity financing", and the maximum number of investors for a single project is 200. *Measures regarding the adjustment of the over-the-counter securities business filing* (China Securities Association, Aug. 2015) revises "private equity crowdfunding" to "internet non-public equity financing". *Letter of the csrc to local government to regulate equity financing activities via the internet* (CSRC, Aug. 2015) clearly states the no institution or individual may conduct equity crowdfunding activities without approval.

[8] See Table 1.

risks and protect the interests of investors, so as to promote the healthy development of the whole industry.

1.2 Research Objectives and Methods

On one hand, equity crowdfunding brings many benefits to investors and SMEs; on the other hand, equity crowdfunding faces a high rate of occurrence of risk projects. A large number of domestic scholars have studied how to solve the high frequency of risk projects on the domestic equity crowdfunding industry from the macro level of legislation and supervision, but the reality is that the legislation has not been promulgated and the problem has not been solved. Under such circumstances, this paper hopes to study and analyze the risk causes of China's equity crowdfunding and the inherent risk control logic of China's platform, and put forward a set of risk control system that can be used in practice, in order to reduce the risk of equity crowdfunding, protect the interests of investors, and promote the healthy development of the industry.

First of all, it needs to be clarified that the Committee of Sponsoring Organizations of the Treadway Commission's ("COSO") latest "Enterprise Risk Management Framework" (2017) defines risk as the occurrence of events and the possibility of affecting the realization of strategic and business objectives; while, the risk in the capital market mainly refers to uncertainty, [9] which can be further divided into systematic risk and non-systematic risk from the

[9] There are three elements of risk: 1) possible loss; 2) the amount of loss; 3) the uncertainty of loss occurrence (Yates, J.F. & Stone E.R., 1992).

perspective of controllability.[10] Risk control or risk management, is a scientific management process that organizations or institutions use the lowest cost to minimize the negative impact of risk through risk identification, risk assessment and risk treatment (Jia Shiguo, 2009).[11]COSO Enterprise Risk Management Framework (2017) defines enterprise risk management as the culture, capabilities, and practices that organizations rely on to manage risk in the process of creating, maintaining, and realizing value, combined with strategy formulation and execution. This kind of comprehensive risk management has a macroscopic view, focusing on how to implement the basic process of risk management in all aspects of business, cultivate a good risk management culture, and establish a comprehensive risk management system to provide a reasonable method for achieving the overall goal. An important part of comprehensive risk management is internal control, which mainly focuses on the operation of the entity and compliance with relevant laws and regulations. At present, China requires internal control mechanism to be implemented in state-owned enterprises and listed companies.[12] For capital market specifically,

[10] Systematic risk is caused by the uncertainty of basic economic factors, and cannot be dispersed through diversified investment, e.g. political risks, policy risks, exchange rate and interest rate risks, economic cyclical fluctuation risks and legal risks. Non-systematic risk is caused by a special and specific factor with consequences that do not have universality and only affect a few industries and companies, and can be dispersed through diversified investment, e.g. information asymmetry risk, moral risk, agency risk, management risk, exit risk and other controllable risks.

[11] Early risk management used insurance and other tools to avoid and transfer pure risk. Later, the introduction of modern economic analysis method makes financial risk management an important field in Finance (Cummins, 1976).

[12] *Accounting law of the People's Republic of China* (1999 revision) puts forward the requirements for establishment and improvement of internal control in the form of law for the first time. The Ministry of Finance immediately formulated and issued 7 internal accounting control standards including the *Internal accounting control standards – basic standards.* In 2006, the Stated-Owned Assets Supervision and Administration Commission

the goal of risk control is to pursue the realization of maximum return under the conditions of certain risk or minimum risk with certain return.[13]

This paper mainly focuses on the issue of equity crowdfunding investors suffering investment losses due to non-systematic risks, rather than directly focusing on the realization of the business objectives of equity crowdfunding platforms. Therefore, the construction of risk control system proposed in this paper does not focus on how the platform can better achieve its business objectives through comprehensive risk management including internal control mechanism. Instead, it aims to use a systematic and procedural framework to forecast, identify, measure and evaluate risk factors that may cause investment losses of equity crowdfunding investors, and to develop a risk warning, prevention, and control mechanism, so as to avoid, transfer, and diversify risks, provide investors maximum protection with lowest cost, and avoid investment

issued the *Guidelines for comprehensive risk management of central enterprises* to guide state-owned enterprises to carry out risk management. In June 2008, the Ministry of Finance, the CSRC, the National Audit Office, the China Banking Regulatory Commission, and the China Insurance Regulatory Commission jointly issued the *Basic standards for enterprise internal control*, which was implemented within the scope of listed companies from 1 July 2009, and encouraged large and medium-sized non-listed company to execute accordingly. In April 2010, the Ministry of Finance, the CSRC, the National Audit Office, the China Banking Regulatory Commission, and the China Insurance Regulatory Commission jointly issued the *Supporting guidelines for enterprise internal control* which was implemented on 1 January 2011 for companies listed domestically and abroad, and extended to companies listed on the main board of Shanghai Stock Exchange and the Shenzhen Stock Exchange from 1 January 2012.

[13] The important part of risk control theory is a series of modern micro financial methods: portfolio theory proposed by Markowitz, which states that investors' rational investment behavior is based on the pursuit of maximizing returns under the same risk or minimizing risk under the same benefits, and explains that diversification can reduce risk; modern portfolio theory developed by James Tobin, which believes that there is a correlation between different assets which can be minimized, and the overall risk can be reduced; capital asset pricing model proposed by Sharpe, which pioneered the modern risk asset pricing theory and proposed the basic law that the return of investment is directly proportional to the risk, and proves that the investment portfolio can effectively disperse non-systematic risks, but cannot disperse systematical risk; and options pricing model proposed by Black and Scholes, etc.

losses caused by non-systematic risks such as information, morality, agency, management and exit.

The construction of the risk control system proposed here include not only the narrow-scale risk control at the project level, but also the various aspects of the overall business process of the platform. It should be pointed out that the risk control system is an important method to control and manage the risks of equity crowdfunding and to protect investors, but the risk control system itself cannot completely eliminate the risks of equity crowdfunding.

Specifically, Chapter II will review the literature and regulatory practices in the field of equity crowdfunding. Chapter III will focus on the analysis of causes of equity crowdfunding risks in China. Chapter IV will propose specific measures and the overall construction of risk control system of China's platforms, based on the comparison of the similarities and differences between equity crowdfunding and traditional venture capital. Chapter V and VI will separately provide a more in-depth analysis regarding the project risk assessment and classification and the investor risk preference and tolerance evaluation, which are put forward in the risk control system. Chapter VII will conduct a case study of the risk control system with real investment cases on one domestic platform. Chapter VIII will conclude this paper and propose the prospect of future research.

1.3 Main Innovations

At present, the theoretical research on risk control of equity crowdfunding

is still at a very early stage; and no systematic research has been conducted by scholars. This paper may supplement this theoretical gap. Moreover, no scholars have studied the risk control system of equity crowdfunding platform from the perspective of the differences between equity crowdfunding and traditional venture capital. While filling the theoretical gap, this paper will also propose a set of risk control system that can be used in practice. The main innovations of the paper include:

(1) From the perspective of the differences between equity crowdfunding and traditional venture capital, this paper proposes the construction of the risk control system, which provides China's equity crowdfunding platforms a powerful tool for the risk control practice and investor protection.

(2) Use the Analytic Hierarchy Process ("AHP") and Fuzzy Comprehensive Evaluation ("FCE") to evaluate the risks of equity crowdfunding projects, combing qualitative and quantitative methods, which make the project risk assessment more accurate and practical.

(3) Investigate equity crowdfunding investors through a questionnaire survey to better understand their needs and perform an optimal scale regression analysis of investor risk preference and tolerance to better evaluate investors.

(4) Use real investment cases to analyze the proposed risk control system construction, better understand the causes of investment risks, and preliminary verify the effectiveness of risk control measures.

Chapter II Literature Review and Foreign Regulation Practice Overview

Modern crowdfunding originates in the United States.[14] After the financial crisis in 2008, a large number of crowdfunding platforms began to emerge. Ordanini, Miceli, Pizzetti, and Parasuraman (2011) defines crowdfunding as a kind of group behavior that people pool funds through the Internet to support projects initiated by other people or organizations. Mollick (2013) points out crowdfunding is a kind of financing behavior that entrepreneurs seek help from dispersed and unspecified public investors through crowdfunding platforms, pool large amounts of small investment together and promise to pay back in money or material terms.

According to different ways of return, crowdfunding can be divided into four categories: 1) donation-based crowdfunding, that is, investors do not require any return; 2) lending-based crowdfunding, that is, investors get expected interest; 3) equity-based crowdfunding, that is, investors acquire shares of the investee companies; 4) reward-based crowdfunding, that is, investors obtain tangible goods (Barbi & Bigelli, 2017).

Equity crowdfunding is a main form of crowdfunding. Mollick (2013) holds equity crowdfunding is a financing method that founders of creative projects release project information to the public and raise funds from the public through non-standard financial intermediaries such as the Internet platforms.

[14] Artistshare, the first crowdfunding website in the world was founded in 2001, and began to release crowdfunding projects to music artists and fans in 2003. See Zero Financial and Zero Data (2014). *The white paper on crowdfunding service industry*. China Economic Publishing House.

Douglas (2012) points out, broadly speaking, equity crowdfunding is a kind of security investment made by the public and a new way of equity financing for enterprises. International Organization of Securities Regulatory Commission defines equity crowdfunding as an activity consisting of financing parties, platforms, and investors, where financing parties obtains investment directly from individual or institutional investors, with the help of the Internet and other modern information interaction technologies.

Equity crowdfunding is an open, highly uncertain, and highly risky financing activity, consisting of numerous single small investments.[15] It is characterized by fragment of investment funds, diversification of investors, and the clear deadline for closing. Besides, financing information displayed on the platform, such as the investment deadline and other investors' status, will significantly affect investors' final decisions (Kuppuswamy & Bayus, 2013).

Scholars have conducted researches on equity crowdfunding mainly from four perspectives, the participating parties' behavior motivations, factors affecting the success of financing, risks of equity crowdfunding and countermeasures to deal with the risks.

2.1 Study on the Behavioral Motivations of Equity Crowdfunding Participants

As for the behavioral motivations of the financing parties, Moritz and Block (2014), Gerber, Hui and Kuo (2012), Belleflamme, Lambert and

[15] See the People's Bank of China and other ten departments (2015). *The guiding opinions on promoting the healthy development of internet finance* (yinfa No. 221).

Schwienbacher (2013) believe the main motivation of the financing parties is to raise funds, enhance social exposure of products, and test products and services. Macht and Weatherston (2014) argue the main motivation of the financing parties is to overcome the shortage of funds, improve popularity, get feedback of products and services, facilitate further financing, and prevent the loss of controlling rights and ownership. Myriam, Cheikh and Abdellatif (2015) find the main motivation of the financing parties is to make products obtain social recognition, take advantage of frequent and efficient interaction mechanism, make full use of the convenience of social network, and reproduce the pleasure of others' successful experience. Agrawal, Catalini and Goldfarb (2011) hold the financing parties can overcome regional barriers through equity crowdfunding and share values of investors in other aspects while making up for their own capital gap. Domestic scholars Wang Shuguang, He Xiao and Jia Di (2015) list the wide financing scope, simple financing mode, diversified return mode, and low information cost as the important motivations of many enterprises to choose equity crowdfunding.

As for the motivations of investors, Belleflamme et al. (2013) believe that financial return is not the sole driver, social reputation and inner motivation is also crucial. Harms (2007) divides motivations of investors into financial value, functional value, social value, cognitive value, and spiritual value, and his empirical research shows that except for cognitive value, the other four dimensions are positively correlated with investors' enthusiasm to participate.

Myriam et al. (2015) put forward that equity crowdfunding, as the carrier of different communities, enables investors to make friends, experience pride and belonging as a member to a particular community, and obtain immense satisfaction by participating in actions beneficial to society and others.

2.2 Study on Factors Affecting the Success of Financing of Equity Crowdfunding

A lot of researches in equity crowdfunding field focus on the analysis of factors affecting the successful financing. Maron, Robb and Sade (2015) find characteristics of the project are important factors that influence the success of equity crowdfunding financing. Burtch, Ghose and Wattal (2011) and Beier and Wagner (2014) find that the better quality of the project, the higher success rate of financing. Mollick (2013) discovers there is close relationship between the distinguish features of the project and the financing success. Cumming, Leboeuf and Schwienbacher (2014) and Mollick (2013) find that the shorter period of time of financing, the higher success rate of the financing. Some scholars find it is easier to succeed when set up a smaller amount of financing target. But, Agrawal, Catalini and Goldfarb (2014) hold that the amount of financing does not affect investors' decisions. Cordova, Dolci and Gianfrate (2015) find that the more discussions about the project, the higher success rate of financing. Some scholars also find that the situations of the financing parties can significantly affect the success rate of financing. Maron et al. (2015) discover that the gender of the project founder affects the equity crowdfunding.

Greenberg (2014) and Gorbatai and Nelson (2015) find Females are more likely to succeed. Ahlers, Cumming, Guenther and Schweizer (2015) find that teams having more board members, higher education background members, and more developed social network are more likely to achieve financing purpose. Domestic scholars Zheng Haichao, Huang Yumeng, Wang Tao and Chen Dongyu (2015) also find that the number and education background of the entrepreneurial team members are key factors that influence investors' decisions. Hildebrand, Puri and Rocholl (2014) discover that financing success rate is directly related to the credit rating risk, debt ratio, revenue, and family property of the financing party. The empirical research conducted by Ahlers, Cumming, Guenther and Schweizer (2015) highlights the important role of company's financial planning, corporate governance structure, and risk factors in initiating investors' investments. Mollick (2013) and Colombo, Franzoni and Rossi-Lamastra (2015) all find that stronger social network has positive influence on financing success rate. Agrawal et al. (2011), Lin and Viswanathan (2013), Burtch, Ghose and Wattal (2013) discover financing success rate is also affected by regional factors.

2.3 Study on Risks in Equity Crowdfunding

The financing party in equity crowdfunding faces two main risks, one is the infringement risk of intellectual property (Liu Hai, 2015; Tang Zhengwei, 2014; Yu Xiaomen, 2015; Lv Mingfan, 2015), the other is the management risk caused by the large increase of the number of shareholders (Guo Qingui, 2015).

In the terms of risks faced by the platforms, due to the lack of legislation on equity crowdfunding in China, compared with countries with relatively complete legislations, China's platforms have more uncertain legal risks, such as whether the operation is legal and compliant, whether it constitutes illegal fund raising and illegal issuance of securities, etc. (Lin Chao, 2016; Liu Hai, 2015).

Investors face the greatest risk in equity crowdfunding. First of all, most of the financing parties in equity crowdfunding are small and medium-sized enterprises that lack operating experience but have growth potential. The prospect of these enterprises is highly uncertain, and the failure rate of entrepreneurship is very high (Amara, 2015; Hughes, 2014), which means the investment risk of equity crowdfunding itself is very high. Even if the investee enterprises develop very well, equity crowdfunding still faces great uncertainty in exit, which means investors have to bear great liquidity risk (He Qianmei & Li Jingwei, 2016). These two kinds of risks are inherent in equity crowdfunding and are difficult to avoid.

In addition, the information asymmetry in equity crowdfunding is quite serious. Investors' understanding of the projects only comes from the information disclosed on the platforms (Kirby & Worner, 2014; Xu Jingping & Wang Runheng, 2016), which may easily lead to credit risks, such as the financing parties exaggerate publicity, even provide false information (Hughes, 2014; Gong Yingqing & Lan Haiping, 2014; Liu Hai, 2015). Moreover, the

platforms generally lack strong ability to punish defaulting financing parities, which further aggravates such risks (Xiao Benhua, 2013). If the platforms lower the requirements of financing parties for profit or even provide false information, the platforms or the leading investors conduct internal transactions with the financing parties (Hildebrand et al., 2014; Chen Jian, 2014), or the platforms misappropriation of funds (Lin Chao, 2016), investors have to bear additional risks.

Studies show that the behavior characteristics of investors make investors more likely to encounter risks. In equity crowdfunding, previous investors have significant influence on their fellows' decisions (Kim & Viswanathan, 2014). Especially when investors face overloaded information on the Internet, they do not deliberately dig out financing information (Lehner, 2014; Ramachandran, 2010; Lee & Lee, 2012), which means there is evident herd behavior in equity crowdfunding (Kuppuswamy & Bayus, 2013). Most investors in equity crowdfunding lack equity investment experience and are easy to follow the trend of investment. Herd behavior is particularly significant among investors at information disadvantage (Cumming & Johan, 2013). Domestic scholars also find that many equity crowdfunding investors lack investment related expertise and experience, and lack rationality (Chen Jian, 2014). Under the limitations of emotional bias and cognitive ability, the investment ability is limited (Wang E'nuo, 2014). In addition, investor preference is likely to lead to the accumulation of equity crowdfunding risk (Deng Chao, Cai Zihao & Pan Pan,

2018).

2.4 Study on Countermeasures to Risks in Equity Crowdfunding

Any party in equity crowdfunding may face risks, among which investors are the most exposed. Most scholars hope to reduce equity crowdfunding risks in the way of national legislation and regulation (Kuppuswamy & Bayus, 2013), for example, set investment cap to limit potential loss to an acceptable range (Hughes, 2014; Hazen, 2012), supervise platforms to be diligent in project investigation and to improve the credibility and quality of financing projects (Li, 2013), supervise financing parties on the use of financing funds, and establish a sound financing fund supervision mechanism (Ordanini et al., 2011). Domestic scholars generally hold China should learn from foreign experience to issue legislation as soon as possible, incorporate equity crowdfunding into the regulation of the legal system, restrict platform qualification, supervise fund use (Liu Zhijian & Wu Ke, 2014; Su Chenghui, 2015), decrease the entry threshold, set up investment cap, and emphasize the information disclosure obligation of platforms (Zhu Ling, 2014; Hu Wei, 2015; Li Jianing & Chang Rong, 2015; Zhang Ya, 2014).

A few scholars focus on the platforms and suggest the platforms should set investor access threshold, strengthen investor education, and strengthen project review to reduce equity crowdfunding risks (Schwienbacher & Larralde, 2010; Hu Jixiang & Wu Yingmeng, 2013; Su Chenghui, 2015), such as establish financing projects evaluation and rating mechanism, project information

disclosure system, and third-party custody (Li Shangyuan, 2018).

2.5 Overview of Foreign Regulation Practice on Equity Crowdfunding

With the development of equity crowdfunding, the United States, the United Kingdom, Italy, France, Germany and other countries have legalized equity crowdfunding, and made clear the regulation of equity crowdfunding. Many requirements are of great significance to the construction of risk control system of China's equity crowdfunding platforms.

2.5.1 the United States

The United States promulgated the Jumpstart Our Business Startups Act (the "JOBS Act") in 2012 and formulate Regulation Crowdfunding accordingly in 2015, which clarify the legal status of equity crowdfunding and establish the crowdfunding exemption rules. In order to ensure that the investor's contingent losses are within the scope of their affordability, Regulation Crowdfunding sets the annual investment cap for individual investors.[16] To reduce the risk of information asymmetry, Regulation Crowdfunding requires financing parties to disclose necessary information to the SEC, investors, and the platform.[17] At the same time, according to the financing amount of the financing party, the

[16] For investors with annual income or net assets less than USD100,000, the annual investment cap shall be USD2,000 or 5% of the smaller of the annual income or net assets (whichever is larger); for investors with annual income or net assets no less than USD100,000, the annual investment amount shall be 10% of the smaller of the annual income or net assets (whichever is smaller).

[17] For example, the name, legal identity, address and website of the financing party, basic information of directors, senior executives, and shareholders holdings more than 20% of the shares, business introduction and business plan of the financing party, the amount, purpose and use of the raised funds, the deadline and pricing mechanism, and the shareholding structure of the financing party (including the rights restrictions, dilution and risks that the shares may be subject to).

financing party should make differential disclosure, provide financial reports of different levels and standards, and guarantee its authenticity. In order to regulate equity crowdfunding transactions and reduce risks, Regulation Crowdfunding requires that equity crowdfunding must be conducted through with the SEC-registered fund-raising portals or dealers.[18] As a third-party intermediary, the platform shall not provide investment suggestions, the relevant stakeholders of the platform shall not have economic interests with the financing party,[19] and the platform must use third-party payment, and cannot directly retain the financing funds. At the same time, the platform shall have reasonable and appropriate basis to be sure that the financing party has complied with relevant requirements before allowing the financing party to use its platform for crowdfunding, and must make transaction records. In addition, the platform shall conduct investors qualification examination and education. When accepting the subscription of potential investors, the platform shall have proper reasons to believe that the investors meet the requirements of investment cap, and shall obtain statements from the investors to prove that the investors have read the education materials delivered by the platform,[20] understand the possible loss of their investment, and their economic ability can bear such loss, and shall conduct a questionnaire to prove their true understanding. Moreover,

[18] The Regulation Crowdfunding requires that the equity crowdfunding platform must be a dealer registered with the SEC or a fund-raising portal and a member of FINRA accepting the management of FINRA.

[19] Unless the economic benefit is paid for the provision of services.

[20] When the platform conducts investor education, it must send the potential investment client an educational material that is easy to understand and expressed in plain language.

the platform shall set up communication channels to facilitate the communication between investors and the financing parties, and set up reconfirmation rules and cooling period rules.[21]

2.5.2 the United Kingdom

In 2014, the United Kingdom began to implement the FCA's Regulatory Approach to Crowdfunding over the Internet and the Promotion of Non-Readily Realizable Securities by other Media， PS14/4 ("Crowdfunding Regulatory Rule"). The Crowdfunding Regulatory Rule stipulates that the platform shall test the suitability of potential investors to ensure that they have sufficient knowledge and experience to understand the risks involved, and only eligible investors can make equity crowdfunding investment.[22] At the same time, the platform must strictly perform its disclosure obligations and provide sufficient detailed information, including whether due diligence has been conducted on the investee company, the scope of the investigation and any relevant analysis results. It is necessary to ensure the compliance of the promotion activities on the platform and the fairness and accuracy of the promotion activities. At the

[21] The reconfirmation rule means that the platform re-informs the transaction details when the investor makes an investment commitment, allowing the investor to confirm the information twice. If there is a general change in the terms of the crowdfunding offer, the platform will resend the notice to the committed investor. If the investor does not reconfirm within 5 working days, the investment commitment is cancelled; if the terms of the offer have changed substantially, the platform should require the investor to re-execute the entire process of investment confirmation.

[22] Investors investing in equity crowdfunding projects must be professional investors, investors who have obtained regulated investment advice or authorized institutions to provide investment management services, venture capital or corporate finance stakeholders, certified or self-certified investors of mature investors, investors who are certified or self-certified as high net worth investors (except for basic residence, pension, and interest in specific insurance contracts, annual income of not less than GBP100,000 or net assets of not less than GBP250,000), an investor who promises to invest in the unlisted securities no more than 10% of his investable assets.

same time, it is necessary to give different risk warnings for promotion activities according to the different natures of investment.[23]

2.5.3 Italy

The Italian Securities and Exchange Commission (Commissione Nazionale per le Società e la Borsa) has issued a series of equity crowdfunding rules between 2013 and 2016.[24] The requirements on the qualification of equity crowdfunding issuers have changed from strict restriction to all innovative SMEs, and the portal managers have been added.[25] The portal manager also needs to fulfill relevant mandatory obligations, check each quotation order proposed by investors, and ensure that investors have sufficient experience and knowledge to understand the basic characteristics and risks involved in the investment.[26] If the portal manager fails to implement the aforementioned

[23] For example, the failure rate of start-ups is as high as 50%-70%, which may lead to capital loss; the listing of the company and the increase of shares may lead to the dilution of shareholder value; the actual controller does not distribute dividends and investors cannot get return; equity investment lacks effective liquidity in the secondary market; etc.

[24] In June 2013, Resolution No. 18592 was issued, which limits the crowdfunding to the financing activities of innovative start-ups. In 2015, Italy promulgated a resolution to expand the scope of equity crowdfunding and expand equity crowdfunding financing activities to innovative SMEs. In 2016, the Italian Securities and Exchange Commission issued Resolution No. 19520, which amended the previous regulations and made breakthrough provisions regarding equity crowdfunding platforms.

[25] Portal manager shall mean the subject which professionally practices the portal management service for the collection of risk capital, entered on the specific register kept by the Italian Securities and Exchange Commission. The qualification requirements of the equity crowdfunding portal manager include: 1) the company is a joint stock limited company, limited liability company or cooperative; 2) it is registered and has an administrative office in Italy, or registered in EU Member States with branches in Italy; 3) the company aims to provide online platform management for innovative companies to raise funds; 4) it has controlling shareholders, directors and auditors to meet the integrity and professionalism of the Italian national company and the stock exchange committee; 5) such entities shall not hold money or financial instruments owned by third parties under any circumstances.

[26] If the portal manager insists that the project is not suitable for the customer, it should warn the customer by means of an electronic communication system.

mandatory obligations, the provisions on investor investment cap apply.[27] In addition, Italy mandates equity crowdfunding platforms to audit their offerings to ensure that at least 5% of financing are subscribed to by professional investors, bank foundations or innovative business incubators.

2.5.4 France

France began to implement the participatory financing regulations in 2014. France did not place too many requirements on the qualification of equity crowdfunding issuers, but chose to focus on the supervision of equity crowdfunding intermediaries. In France, two types of intermediaries can provide equity crowdfunding services: the "prestataire de services investissement" that provides securities investment-type financial services as stipulated in the original financial regulatory regulations and the "conseillersen investments participatifs" which is specially set up for equity crowdfunding.[28] At the same time, France encourages equity crowdfunding intermediaries to provide investment advice and consulting services to make up for the lack of professional knowledge and experience of investors.[29]

2.5.5 Germany

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[27] The individual investor's single investment shall not exceed EUR500 or the annual total investment amount shall be no more than EUR1,000; the qualified investor's single investment shall not exceed EUR5,000 or the annual total investment amount shall be no more than EUR10,000.

[28] The qualifications include: 1) it must be a legal entity established in France; 2) its business manager must meet the requirements of certain age, reputation and professional ability; 3) it shall join the industry association and abide by the professional and due diligence rules.

[29] For the equity crowdfunding legislation of France, please see Gu Chen (2014). Introduction to crowdfunding legislation and regulation in France. *Internet Finance and Law, 10*, 21.

In 2015, Germany enacted the Small Investor Protection Act, which restricts investor's annual investment amount and the financing party's financing amount. It further stipulates the information that the financing party needs to disclose and stress the platform's information disclosure obligations (Bu Ya, 2016).

2.5.6 Summary

Different countries have designed different systems for equity crowdfunding based on their own legal traditions and market conditions, but they all reflect the considerations of promoting capital formation, improving financing efficiency and balancing investor protection in the context of equity crowdfunding. Countries are aware that equity crowdfunding as a financial activity still has great risks. Countries have imposed many restrictions on equity crowdfunding financing parities, platforms and investors on the consideration of protecting investors. In general, one is to protect investors through the method of investor suitability and the investment cap; the second is to ensure equity crowdfunding platforms to play the role of credit intermediaries to prevent risks.

Chapter III Analysis of the Risk Causes of China's Equity Crowdfunding

Equity crowdfunding is an activity composed of three main parties: the capital demand side – **the financing parties**, the capital supply side – **the investors**, and the intermediary side – **the platforms**. The financing parties raise funds through equity crowdfunding and reduce financing costs, but they may face the problems of intellectual property infringement and management risk increase caused by the increase in the number of shareholders. Investors use equity crowdfunding to choose equity investment projects with better return-to-risk ratio and potential development, so as to gain future asset appreciation. However, they need to face the risk that the investment return may be lower than expected or even the risk of principal loss. The Platforms earn commission or management fee through the conclusion of the transactions between the investors and financing parties, and need to face certain compliance and legal risks. The financing parties, investors, and platforms all face different levels of risk, among which the risks faced by investors are the most significant. This paper mainly focuses on investors' investment loss risk caused by non-systematic factors. Therefore, this chapter will not expand to analyze the risks faced by the financing parties and platforms, but focus on the analysis of the causes of the risks faced by investors.

Equity crowdfunding is a game and cooperation process among the financing parties, investors and platforms. Each of them has their own

characteristics different from the participants in traditional financial activities, and this is where the fundamental sources of risks come from.

3.1 Characteristics of the Financing Parties in Equity Crowdfunding and Corresponding Investment Risks

Most of the financing parties in equity crowdfunding are SMEs that lack operating experience but have potential of growth. According to the theory of enterprise life cycle, these enterprises are basically in the initial stage and growth stage.[30] For an enterprise in the initial stage, its products gradually move from concept to production, the production capacity of the enterprise is weak, and the market share of the product is low. The concept of corporate governance has not yet been formed, and the entrepreneur alone bears all major responsibilities. In this stage, it is uncertain whether the enterprise can develop the products within the expected time and whether the market will recognize. An enterprise in initial stage cannot obtain much capital, and can only maintain the short-term survival. If the enterprise cannot achieve break even or refinance, it will face the risk of bankruptcy. In the growth stage, an enterprise' products have opened the market and have some stable customers, and the organization

[30] In 1972, Professor Greiner at Harvard University proposed the concept of life cycle and used it to analyze and summarize the growth process of enterprises. In 1989, Dr. Adizes analyzed the different stages of enterprises and their characteristics. He pointed out the problems the enterprises have in these stages and provided solutions. The theory of enterprise life cycle was formed. After more than 30 years of development and debate, the theory of enterprise life cycle has formed multiple branches. According to one of the most influential theories, the stage theory of enterprise life cycle, various enterprise life cycle models basically include four stages, that is start-up, growth, mature, and recession. See Zhang Jun (2007). *Research on disruption innovation based on enterprise lifecycle* [Doctoral Dissertation, Shandong University]. CNKI. http://cdmd.cnki.com.cn/article/cdmd-10422-2008046934.htm

structure of the entity begins to be standardized. In this stage, with the increase in production scale, number of employees, and market area, the difficulty of management rises sharply, and competition with other companies becomes intense. Study shows that the prospects of enterprises in the initial and growth stage are uncertain, the failure rate of operation is very high (Amara, 2015; Hughes, 2014), and the valuation is difficult to determine.[31]

These enterprises are basically excluded from the domestic debt financing field, because their asset structure, cash flow and credit qualifications can hardly meet the requirements of domestic debt financing for credit enhancement measures such as collateral and guarantees. Data show that the financing gap of China's small and micro enterprises is USD1.9 trillion in 2017, which accounts for approximately 17% of China's GDP in that year (International Finance Corporation, 2017). Although traditional venture capital will also invest in SMEs, the amount of traditional venture capital is limited, and it is difficult to meet all capital needs. As of the end of 2018, domestic traditional venture capital institutions have invested about 22,600 equity projects of SMEs, with investment of RMB274.928 billion (People's Bank of China & China Banking and Insurance Regulatory Commission, 2018). Besides, due to the limitation of the duration of the fund, the consideration of the overall return, and other factors, most of the traditional domestic venture capital funds

[31] According to foreign media survey statistics, in the ten-year cycle, the successful start-ups accounted for only one-third of the statistics, see Scott Shane (2011). *Start-ups consistently fail*. The Forbes. http://www.forbes.com/sites/scottshane/2011/01/17/start-ups-consistently-fail.html

focus on high-tech, high-growth industries that have the potential of qualified initial public offerings (“IPO”) within 3-5 years. Traditional industries with relatively slow growth rates can hardly gain the favor of traditional venture capital. It can be seen that most of the financing parties in equity crowdfunding are SMEs that cannot meet domestic loan requirements. Some of them may be the potential investment targets of traditional venture capital; while, others may not meet the investment standards of traditional venture capital.

Concerning the characteristics of SMEs, investments in such enterprises have to face great risks.

3.2 Characteristics of Investors in Equity Crowdfunding and Corresponding Investment Risks

Behavioral finance theory points out that the participants in the market are not rational individuals in the sense of traditional economics, but only have "limited rationality". When people are in a complex and uncertain world, their ability of calculating and understanding the environment is limited and the information they obtained is incomplete. People often use the first sense to make decisions. Moreover, people's sensitivity to losses is higher than their sensitivity to returns, that is, loss aversion rather than risk aversion. It is easy for them to misunderstand the relationship between risk and return (Kahenman & Tversky, 1979).

Most investors in equity crowdfunding are individuals without professional investment judgment and experience. The problems pointed out by behavioral

finance theory have a more serious negative impact on them. For example, equity crowdfunding investors are prone to rely on intuition and follow others' recommendations, ignore their own risk tolerance to make impulsive investments, or even blindly choose high-risk projects that promise high returns. Researches have found that there is an irrational herd effect in equity crowdfunding, that is, investors simply imitate the investment decisions of others, while relevant information of projects has little impact on investors' investment decisions (Zhu Chuanqi, 2019). Empirical studies also show that after controlling the unobtrusive heterogeneity between projects, projects have obtained a higher proportion of financing will attract more potential investors to participate in the investment. In addition, crowdfunding has a strong "target effect", that is, whether the target amount of financing has been reached has a very important impact on the investment decision of potential investors. Moreover, many investors in equity crowdfunding lack rational judgment on their own risk tolerance and preference. The questionnaire conducted by this study finds that the most important reason for investors to participate in equity crowdfunding is to find projects with a better return-to-risk ratio, but many investors do not know their true risk preference and tolerance. Nearly half of the testees believe they have average financial risk preference and tolerance. 70% of them took and are now ready to assume medium level of risk. More than two-thirds of the testees choose to make most investment in combination A which provides less yields with less risk; while 68.1% of them want to pursue

higher returns and growth of capital, and are willing to bear limited principal loss (see Appendix I and Appendix II).

Therefore, the irrationality of investors in equity crowdfunding may lead to greater accumulation of investment risks.

3.3 There is Serious Information Asymmetry in Equity Crowdfunding

Information asymmetry theory proposed by economists George Stiglitz，George Akerlof and Michael Spence holds that, different people have different degrees of contact and understanding of market information. The party with sufficient information is in a more favorable position than the party with insufficient information. In other words, the party with insufficient information will face greater risks in the financial market (Wu Xiaoguang & Li Mingkai, 2011).

Information asymmetry is a common phenomenon and problem in the financial market, and it is particularly difficult to solve in the field of equity crowdfunding. In equity crowdfunding, investors have to face the information asymmetry with the financing parties, platforms, and even the leading investors, among which the information asymmetry between the financing parties and investors is the most fundamental.

First, the financing party naturally holds information related to the enterprise and the project and is in a relatively favorable position. This situation is not fundamentally different from the situation faced by traditional venture capital. However, different from professional institutions, equity crowdfunding

investors are mainly individuals who lack financial investment knowledge and experience and have obvious irrational behaviors. They lack the ability and willingness to conduct due diligence to reduce information asymmetry. The questionnaire of this study shows that 4% of the testees have little knowledge of financial products. 42.5% of them have only basic knowledge and understanding of financial products and related risks. Equity investment is a relatively complex financial transaction. The limited investment knowledge makes individual investors lack the ability to verify the information disclosed by the financing party as traditional venture capital institutions can do. Secondly, as the single investment amount of a single investor in equity crowdfunding is relatively small, its absolute return is relatively limited. From the perspective of cost and return, individual investors lack the willingness to conduct due diligence or to bear the time and financial costs of information acquisition and verification. They generally do not have the economic capacity to bear such costs as well. The psychology of free ride is relatively common (Zhao Hongjiang, Zhang Guohong & Lixia, 2018). Therefore, unlike traditional venture capital institutions who can effectively reduce the information asymmetry through due diligence, individual investors in equity crowdfunding can only make decisions mainly relying on the information disclosed by the financing parity and/or the leading investor, the information investigated by the platform, and the investment behaviors made by other individual investors (Xu Di, 2015).

Information asymmetry can easily lead to adverse selection and moral hazard. If there are no exogenous mandatory provisions (such as laws and regulations) or sufficient endogenous motivations, the financing parties, platforms and leading investors all have the possibility of making false disclosure, thus increasing the risks of investors. For example, a number of projects on 36Kr, a well-known equity crowdfunding platform in China, fell into the whirlpool of "suspected fraud".[32] The questionnaire of this study also shows that financing parties making false statements is the most important reason leading to equity crowdfunding investment failure (see Appendix I and Appendix II).

3.4 There are Serious Principal-agent Conflicts in Equity Crowdfunding

The principal-agent conflict refers to the phenomenon that when the principal is at information disadvantage and cannot fully supervise the agent, the agent may have the motivation to scarify the interests of the principal for his own interests. For short, the interests of the agent and the principal are not completely consistent in the process that the agent acts to achieve the goal for the principal. The essential reason of principal-agent conflicts lies in the asymmetry of information.

[32] See Li Feifan. (2016). *36Kr deep in the whirlpool of "suspected fraud" in equity crowdfunding projects*. TMT Post. https://www.tmtpost.com/1786615.html; Liu Piao. (2017). *36Kr equity crowdfunding project accused of fraud and insufficient information disclosure in preliminary approval*. Sina Finance. http://finance.sina.com.cn/roll/2017-07-15/doc-ifyiakur8942201.shtml.

There are two main business models in China's equity crowdfunding, the " lead and follow" model and the direct investment model. In the "lead and follow" mode, professional investors act as the leading investor who is responsible for project analysis and preliminary investigation, etc., while other common investors can follow to invest. If the financing is successfully closed, the leading investor and the following investors will jointly form the investment entity to invest. The leading investor will be responsible for post-investment management, and obtain additional rewards and returns. There are two types of principal-agent relationship in the "lead and follow" mode: the principal-agent relationship between the common investors and the leading investor, and the principal-agent relationship between all the investors and the controlling shareholder of the investee company (if the investment is successfully closed). In China, there are very few platforms adopting the direct investment mode. In direct investment mode, a project usually has a very small number of investors, those who have relatively stronger investment ability. The platform is merely responsible for the display of the project information, not responsible for project investigation or due diligence. Investors conduct investigation, communicate with the financing party, negotiate the investment terms, and directly invest in the project separately and independently. What exists in the direct investment model is mainly the principal-agent relationship between investors as minority shareholders and the controlling shareholders of investee enterprises.

The contract between the principal and the agent of investment activities must be based on certain incentives. Through a reasonable reward mechanism, the income of the agent is highly correlated with the investment performance, and the behaviors of the agent that may cause loss of investment and increase of management costs are restricted, so as to solve the principal-agent conflicts (Sahlman, 1988). Whether the principal-agent conflicts between common investors and leading investors can be effectively resolved depends on whether the platform can provide effective incentives and constraints to leading investors.

After the investment is closed, individual investors often lack the willingness and ability to supervise the investee enterprises due to their small amount of investment. In current regulatory environment in China, there is almost "no cost" for controlling shareholders to infringe the rights and interests of equity crowdfunding investors. Whether the principal-agent conflicts between equity crowdfunding investors and controlling shareholders can be effectively resolved depends on whether the platform can motivate the leading investors to play their due role and whether the platform itself is responsible. If the leading investors or the platform are passive or inactive, it is more likely that controlling shareholders will infringe the interests of minor shareholders (Xu Di, 2015; Ji Xi, 2016). For example, in an early co-investment project in platform Q which is analyzed later in this paper, due to the inaction of the leading investor, the common investors, as minority shareholders, had no

knowledge of many shareholder meeting decisions and the company funding decisions. After the investee project went into trouble, it is extremely difficult and time consuming for investors to defend their interests.

3.5 Equity Crowdfunding Platforms Chase Short-term Profits too Much

The current investment process of domestic platforms is generally as follows: 1) the financing party submits project introduction to the platform; 2) the platform review or investigate the project (contingent); 3) launch the project online and set target financing amount and deadline; 4) investors invest in the project. If the target amount is reached before deadline, the project will be considered as successfully financed; otherwise, the project will fail in financing and the raised funds will be returned to investors. In general, a platform that merely conducts transaction matching charge the financing party a certain percentage of the investment amount as commission fee; a platform that conduct project review or investigation charges investors a certain proportion of the investment amount as management fee or service fee. Under the mode of "lead and follow", the leading investor will receive a certain percentage of the investment return as performance remuneration when the investment obtains excess return. Some leading investors will charge common investors certain fees, based on the investment amount, as the cost of preliminary due diligence and post-investment management.

The financing parties in equity crowdfunding are SMEs with high failure

rate, the most important incentive of whom is to obtain funds and reduce financing costs. The investors in equity crowdfunding are individual investors with little professional investment experience, the most important incentive of whom is to obtain more investment opportunities and earn potential profits. There is heterogeneity between the incentives of the two sides (Wang Shuguang, Hexiao & Jia Di, 2015) and serious information asymmetry between them. As the intermediary party in equity crowdfunding, the platform's incentive mainly is to obtain income through commission or management fee, which is proportional to the investment or financing amount. Although the incentives of the platform are also heterogeneous with those of the investor and financing parties, by constructing the utility function of the three parties and solving the optimal solution for maximizing the utility of the three subjects under extreme conditions, it can be found the incentives of the three parties are compatible (Wang Shuguang et al., 2015). In other words, all three parties have the incentive to promote the project to more potential investors. The number of equity crowdfunding participated by one financing party is limited. Whether an investor continue to participate in equity crowdfunding depends on the returns of the previous projects invested. While, theoretically, a platform can operate perpetually. Therefore, whether there will be more potential investors investing in equity crowdfunding projects mainly depends on the platform. Moreover, according to the theory of financial intermediary, intermediary exists to reduce information asymmetry and transaction cost. Thus, in the long run, the

platforms should try to minimize information asymmetry and principal-agent conflicts as much as possible, do well in investor education and protection, promote the achievement of investment activities that benefit both investors and financing parties, attract more potential investors and financing parties with its good management, strict risk control, and successful investment cases, so as to realize a greater amount of investment that brings more profits to the platforms.

However, the vast majority of domestic platforms are too keen on short-term interests and only focus on matching financing, ignoring a series of issues such as the assessment of project risks and the qualification of leading investors, post-investment management and exit, and investor education. Excessive pursuit of short-term interests leads to frequent occurrences of risk projects and bankruptcy of platforms, resulting in huge losses of investors. The entire equity crowdfunding industry fell to the bottom. This paper visits 69 domestic platforms that can be known through public channels one by one, among which 65 platforms are in stagnation, transformation or inaccessible, 4 platforms are in normal operation. There are 6 platforms having preliminary risk control measures (such as information disclosure and review, investor certification, etc.), including 4 platforms that are in normal operation (see Table 1). While, the existing risk control measures of the 4 platforms are also relatively simple.

Currently, there is no platform in China setting investment cap, or evaluating and classification project risks. A very small number of platforms require investors to fill in the investor risk tolerance questionnaire, and no

platform evaluates whether the investor's risk tolerance is compatible with the project risk. Lack of a mechanism to match project risk with investor risk tolerance may lead investors to make investments that exceed their affordability. Coupled with the lack of investment cap, investors may suffer significant investment losses that beyond their capacity to bear. In addition, there are few platforms conducting effective investor education and the risk warnings are to a large extent formalized. Without effective investor education and risk warnings, investors are prone to impulsive investment, herd effect and other irrational behaviors, thus exacerbating investment risks.

The vast majority of domestic platforms adopt the "lead and follow" mode. However, these platforms pursue short-term interests too much. They have different requirements on the qualifications of leading investors and no specific constraints and standards on the due diligence and post-investment management conducted by the leading investors.[33] Study suggests that the specialization degree of individual venture capitalists and the success rate of investment are positively correlated (Gompers, Kovner & Lerne, 2009). The existence of leading investors does play an important role in increasing the

[33] For example, on the platform Dajiatou, the benefits of the leading investor are quantified, but no specific constraints on the leading investor can be found. The leading investors on some platforms only need to meet any of the followings: more than two years of experience as investment manager in angel funds or early VC funds; more than two years of entrepreneurial experience as the first founder; more than three years of experience as corporate director or above; more than five years of experience as corporate manager or above; two or more angel investment cases. The platform Renrentou requires the leading investors to be professional institutional investors or individual investors with rich investment experience. Individual investors should have personal annual income more than RMB1 million in the last three years, or have financial assets with market value more than RMB3 million. Institutional investor should have invested in no less than five equity projects, and hold more than RMB30 million with their own capital or non-raised funds.

probability of successful financing and the amount of financing, and the more the leading investors invest, the more obvious this effect (Zhao Hongjiang et al., 2018). Some risks faced by common investors are due to their lack of investment skills and experience. By binding of the interests of the leading investor and common investors through performance remuneration, common investors can follow the investment based on their trust of the leading investor. This model is not committed to changing the professional disadvantages of common investors (Lu Hui, 2015). Therefore, the professional competence, professional integrity and independence of the leading investor, as well as the platforms' management of the leading investor, are especially important. However, the platforms that adopt the "lead and follow" mode focus too much on the short-term achievement of financing. Many of them even mistakenly use the "lead and follow" mode as an advertisement to induce investors to invest. For example, in the well-known equity crowdfunding platform Yuntouhui, CCIC Investment Management Group Co., Ltd. serves as the leading investor of a large number of projects, while there are many associated investment relationships between companies belonging to the CCIC group and the platform. Under such circumstance, it is difficult to assure the independence of the leading investor. The "Monkey Group" project on 36Kr, the head equity crowdfunding platform in China, is even accused of fraud. The project was led by a former employee of the investee company who did not meet the requirements of leading investors of the platform. No more than two years after

the investment, the company operating "Monkey Group" project disappeared and the investors suffered huge losses.

Table 1 Overview of China's Equity Crowdfunding Platforms

No.	Platform Name		Status	Establishment	Number of Successful Financing Projects	With Risk Control System or Not
1	36Kr	36 氪	In Operation	2015-06	55	Yes
2	Zhongtoubang	众投邦	In Operation	2014-01	33	Yes
3	Yuntouhui	云投汇	In Operation	2015-07	23	Yes
4	Qunfengshe	群蜂社	In Operation	2015-12	41	Yes
5	Aijiutou	爱就投	In Transition	2014-05	N/A	N/A
6	Yuanshihui	原始会	In Stagnation	2013-12	31	No
7	Touhangquan	投行圈	In Stagnation	2014-08	15	No
8	Mayi Tianshi	蚂蚁天使	In Stagnation	2014-12	55	No
9	Toulang Jinfu	头狼金服	In Stagnation	2015-09	57	No
10	Niutou	牛投	In Stagnation	2014-10	48	No

11	Xinghuo Letou	星火乐投	Website cannot be accessed	2016-02	N/A	N/A
12	Tianshijie	天使街	In Stagnation	2014-06	10	No
13	Zhonghehui	众和汇	In Stagnation	2016-11	3	No
14	Xinghuili	兴汇利	In Stagnation	2014-05	3	No
15	Touhuwang	投壶网	In Stagnation	2015-04	5	No
16	Zhelirong	浙里融	Website cannot be accessed	2014-05	N/A	N/A
17	Baidu Baizhong	百度百众	In Stagnation	2016-04	8	Provide certain disclosure
18	Hesheng Jinfu	禾胜金服	Website cannot be accessed	2016-08	N/A	N/A
19	Zhonghehui	众和汇	In Stagnation	2016-11	3	No
20	Michou JInfu	米筹金服	Website cannot be accessed	2016-09	N/A	N/A
21	Yitianshi	宜天使	In Stagnation	2016-01	N/A	Yes
22	Yunan Jinfu	云岸金服	In Stagnation	2015-01	31	No
23	Tianshihui	天使汇	Website cannot be accessed	2011-11	N/A	N/A

24	Chuangtouquan	创投圈	Website cannot be accessed	2012-01	N/A	N/A
25	Choutao	筹道	Website cannot be accessed	2014-12	N/A	N/A
26	Dajiatou	大家投	Website cannot be accessed	2012-12	N/A	N/A
27	Aihetou	爱合投	Website cannot be accessed	2014-03	N/A	N/A
28	Zhijinhui	智金汇	Website cannot be accessed	2015-04	N/A	N/A
29	Zhongzheng Zhongchuang	中证众创	Website cannot be accessed	2015-01	N/A	N/A
30	Zhangsan Lisi	张三李四	Website cannot be accessed	2015-12	N/A	N/A
31	Fenfentou	分分投	Website cannot be accessed	2017-12	N/A	N/A
32	Zhonghuo Shichai	众伙拾柴	Website cannot be accessed	2016-05	N/A	N/A
33	Zhongtou Tiandi	众投天地	Web page cannot be browsed	2014-07	N/A	N/A
34	Huimeng Gongshe	汇梦公社	Website cannot be accessed	2015-06	N/A	N/A
35	Aichuangye	爱创业	Website cannot be accessed	2014-03	N/A	N/A
36	Zibenhui	资本汇	Website cannot be accessed	2014-09	N/A	N/A

37	Qi e Rong	企 e 融	Website cannot be accessed	2015-06	N/A	N/A
38	Jingbei Zhongchou	京北众筹	Website cannot be accessed	2015-06	N/A	N/A
39	Caida juzi	财大桔子	Website cannot be accessed	2015-09	N/A	N/A
40	Dahuotou	大伙投	Website cannot be accessed	2014-08	N/A	N/A
41	Baotuantou	抱团投	Website cannot be accessed	2014-11	N/A	N/A
42	360 Taojin	360 淘金	Web page cannot be browsed	2015-12	N/A	N/A
43	Tongchouwang	同筹网	Website cannot be accessed	2015-09	N/A	N/A
44	Tianshike	天使客	Website cannot be accessed	2014-05	N/A	N/A
45	Tiantiantou	天天投	Website cannot be accessed	2014-11	N/A	N/A
46	Renren Hehuo	人人合伙	Website cannot be accessed	2015-04	N/A	N/A
47	Hehuo China	合伙中国	Website cannot be accessed	2014-07	N/A	N/A
48	Zhongtoushe	众投社	Website cannot be accessed	2014-09	N/A	N/A
49	Jinmentou	津门投	Website cannot be accessed	2015-08	N/A	N/A

50	Kuaitou	快投	Website cannot be accessed	2015-09	N/A	N/A
51	Youdiantou	优店投	Website cannot be accessed	2016-12	N/A	N/A
52	Chuangyeyi	创业易	Website cannot be accessed	2013-11	N/A	N/A
53	Tianshiying	天使营	Website cannot be accessed	2015-07	N/A	N/A
54	Jutianxia	聚天下	Website cannot be accessed	2014-07	N/A	N/A
55	Youxichou	游戏筹	Website cannot be accessed	2015-03	N/A	N/A
56	Jiudiantou	九点投	Website cannot be accessed	2016-09	N/A	N/A
57	Liachouwang	来筹网	Website cannot be accessed	2014-11	N/A	N/A
58	Baitoubai	百投百	Website cannot be accessed	2015-09	N/A	N/A
59	Shenbaichou	身边筹	Website cannot be accessed	2016-05	N/A	N/A
60	Qiantou	牵投	Website cannot be accessed	2015-07	N/A	N/A
61	Hehuoquan	合伙圈	Website cannot be accessed	2015-06	N/A	N/A
62	Guzhongwang	股众网	Website cannot be accessed	2014-01	N/A	N/A
63	Youqurong	有趣融	Website cannot be accessed	2016-08	N/A	N/A

64	Guchouwang	股筹网	Website cannot be accessed	2014-01	N/A	N/A
65	taoyuji	掏娱集	Website cannot be accessed	2015-11	N/A	N/A
66	Yunchuanggu	云创股	Website cannot be accessed	2014-01	N/A	N/A
67	Heimadao	黑马岛	Website cannot be accessed	2015-03	N/A	N/A
68	Chuangtou Online	创投在线	Website cannot be accessed	2014-10	N/A	N/A
69	E Renchou	e 人筹	Website cannot be accessed	2015-05	N/A	N/A

Chapter IV Construction of Risk Control System of China's Equity Platforms Based on the Similarities and Differences between Equity Crowdfunding and Traditional Venture Capital

As can be seen in the analysis above, the risks of equity crowdfunding are derived from the characteristics of the financing parties, the characteristics of the investors, and the platforms as well. However, in the investor-platform-financing party relationship, the platform is the gatekeeper of qualified investors and financing parties, and is the bridge of investment relationship establishment and information interaction. A professional and responsible platform can effectively identify the authenticity and profitability of projects, provide high-quality projects for investors to choose (Chang Hui & Ji Chenyu, 2018), so as to effectively reduce the impact of information asymmetry and principal-agent conflicts. The higher the risk control ability of the platform, the lower the probability of loss suffered by equity crowdfunding investors. It is true that it is one choice to regulate equity crowdfunding industry systematically through legislation, and many domestic scholars have conducted a lot of researches on it. But the endogenous risk control of equity crowdfunding is more fundamental, especially when the domestic legislation has been delayed. Equity crowdfunding industry should proceed from the platforms' risk control system construction and make changes from the bottom up to minimize the risk of investors and to promote the healthy development of the industry. It should be clear that the construction of the risk control system proposed here refers to

the broad-sense risk control and management, including not only the narrow-scale risk control at the project risk level, but also the various aspects of the overall business process of the platform.

4.1 Risk Control Measures Based on Analysis of the Similarities and Differences between Equity Crowdfunding and Traditional Venture Capital

From the essence of investment, both equity crowdfunding and traditional venture capital are equity investments (see Table 2).The purpose of equity crowdfunding is to invest in a project or enterprise through crowdfunding and realize capital appreciation when exiting. Traditional venture capital provides capital support to venture enterprises, especially high-tech enterprises, cultivates the investee enterprises, and realizes capital appreciation by exiting after the enterprise grows to a certain stage (Zhang Qing, 2008). Equity crowdfunding faces many similar risks as traditional venture capital in the aspects of project selection, investment, management and exit, where equity crowdfunding can learn the risk control measures of traditional venture capital. The operation of traditional venture capital includes the initiation of transaction activities, screening of investment opportunities, evaluation, transaction construction and post-investment management, etc. (Tyebjee & Bruno, 1984). As a high-risk industry, the well performance of traditional venture capital mainly depends on an institution's ability to solve information asymmetry, principal-agent conflicts and other resulting problems in the process of

investment and exit (Sahlman, 1988). Study suggests the main tools used by foreign investment institutions include rigorous due diligence,[34] consideration of multiple indicators in investment decisions,[35] use of multiple investment instruments [36] and multiple-phase investment.[37] Domestic venture capital

[34] Due diligence refers to the independent investigation by venture capitalists on the status quo, prospects and management of enterprises. It is an important work in the project screening and evaluation stage. Many venture capital institutions have designed and developed a series of due diligence tools. An American company DuediligeneeIne divides due diligence into three levels: the first level is the general inquiry of the subject, including the review of business background and personnel background, the review of financial statements, and the review of legal affairs; the second level is the evaluation of the subject's past performance, including business review and value evaluation, and the feasibility evaluation of the current business situation; the third level is the evaluation of the subject's management, including new marketing strategies, the launch condition of new projects or new products, new development opportunities, prospects and cost-benefit of investment, the company's recent competitive strategy and medium- and long-term development strategy. The due diligence scale developed by ewinventureResources in Singapore has 60 items including market orientation, corporate targets and strategy, corporate culture, leadership practice, process and organizational efficiency, human resources, production management, technology development, sales management, customer service, evaluation and control, etc. Through the investigation, the computer generates a survey report, so that venture capitalists can understand the operation status of the enterprises in a detailed, objective and comprehensive manner, and help the management of enterprises to improve their operation.

[35] Tyebjee and Bruno proposed 23 factors that venture capital considers when screening and evaluating companies. After regression analysis and linear fitting, the basic evaluation indicators are obtained and divided into expected return and expected risk with five dimensions. Hisrich and Jankowicz selected real cases in different development stages and obtained 15 basic evaluation criteria through empirical study. See Hisrich D. & Jankowicz A. D. (1990). Intuition in venture capital decisions： An exploratory study. *Journal of Business Venturing,* 49-62. Macmillan et al. confirmed 27 risk investment evaluation criteria in 1985, see MacMillan I. C., Zemann L. & Subbanarasimha P. N. (1987). Criteria distinguishing successful ventures in the venture screening process. *Journal of Business Venture,* 123-137.

[36] Correctly designed convertible preferred stock can make investee enterprises lose the incentive to manipulate profits and prevent short-term behavior of entrepreneurs. Assuming that the company accepts two consecutive phases of investment, the second phase depends on the performance in the first phase. In order to obtain the second-phase investment, entrepreneurs have the motivation to manipulate profits, making short-term profits look higher. In the case of common stock and bond investments, entrepreneurs can easily manipulate the performance signals. However, if the investor owns convertible preferred stock and has a sufficiently low conversion price, the entrepreneur will not be able to manipulate the signal. Because a conversion triggered by a good signal will dilute the value of the entrepreneur's equity. See Brennan M. J. & Kraus A. (1987). Efficient financing under asymmetric information. *Journal of Finance,* 1225-1243.

[37] The investment institution generally does not invest all the funds required by the investee enterprise at one time, but invests in stages, which allows the investment institution to have an option, under which the institution can choose not to invest if the enterprise is not operating well or to increase investment with the agreed price and rights. In a highly uncertain environment, it effectively safeguards the interests of the institution

institutions have also formed relatively complete risk control systems in practice, such as due diligence, risk control list mechanism, investment committee, investment contract mechanism, multiple-phase investment, joint investment, portfolio investment, post-investment management, exit design, etc.

However, the fund-raising method of equity crowdfunding is "crowdfunding". It is significantly different from traditional venture capital in terms of business model, positioning, and investor endowment especially (see Table 2 and Table 3). As for investor endowment and behavior characteristics, equity crowdfunding is more similar to other types of crowdfunding, especially P2P debt crowdfunding (see Table 2). However, due to the more significant risks caused by capital pool and maturity mismatch in China's P2P industry, regulation, academic research and platform practice seldom pay attention to the risks caused by investor endowment and behavioral characteristics. The closure of domestic P2P industry in recent years also announced the end of this financial innovation in China. Therefore, as a new type of equity investment, the specific risk causes of equity crowdfunding should be analyzed regarding the business model, positioning, investor endowment and other aspects. Then, draw lessons from foreign mature regulatory measures, and design the risk control system suitable for domestic platforms.

Table 2 Comparison of Equity Crowdfunding, Traditional Venture Capital and P2P

and forms strong incentives and restraints for enterprises.

	Equity Crowdfunding	Traditional Venture Capital	P2P
Business Model	As a financial intermediary, the Internet platform charges the financing party commission based on the financing amount; or charges investors management fee based on the investment amount. The leading investor receives performance remuneration based on the investment return.	Management fee will be charged annually according to the management scale, and performance remuneration will be charged according to the investment performance.	As a financial intermediary, the Internet platform charges the financing party service fee or commission based on the financing amount; some platforms earn a spread between the interest borne by the financing party and the interest earned by the investors.
Investors	Common individual investors, generally have no professional investment experience.	Professional institutions invest in the projects after Qualified investors invest in funds.	Common individual investors.
Investment Consideration	Equity		Creditor's rights
Fund Raising Method	Crowdfunding	Private placement	Crowdfunding
Rate of Return	Uncertain		Fixed
Investment Duration	Uncertain		Fixed, usually no more than one year
Exit	Acquisition, merger, IPO, repurchase, etc.		Repayment of principal and interest

<table>
<tr><td>Investment Protection</td><td colspan="2">Valuation adjustment. Repurchase term is common in traditional venture capital investment of middle and late stage projects, while uncommon in traditional venture capital early stage projects and equity crowdfunding projects.</td><td>Mortgage, guarantee, and insurance are common. Some platforms have overdue debt transferred to a third party.</td></tr>
<tr><td rowspan="3">Risk</td><td colspan="3">Risks caused by information asymmetry, adverse selection and moral hazard, etc.</td></tr>
<tr><td colspan="2">High failure rate of investment and poor liquidity</td><td>Capital pool, maturity mismatch</td></tr>
<tr><td>Investor herd effect is obvious.</td><td>The irrational phenomenon of investment institutions is relatively controllable.</td><td>Investors tend to chase projects promising high interest.</td></tr>
</table>

4.1.1 Similarities and Differences of Project Risk Types and Degrees Between Equity Crowdfunding and Traditional Venture Capital and Corresponding Risk Control Measures

The financing parties in equity crowdfunding and traditional venture capital are mostly start-ups with capital needs. Both of them have to face the problem of high failure rate of start-ups. In addition, investors in equity crowdfunding and traditional venture capital are at an information disadvantage compared with financing parties. Both of them have to face the problem of information asymmetry, especially the information asymmetry before investment. Although the single investment amount of traditional venture capital is generally much larger than that of equity crowdfunding, it is rare for

investors to become major shareholders in both modes. Thus, both of them have to face the principal-agent conflicts between minority shareholders and controlling shareholders. The problems and risks faced by equity crowdfunding are more serious because it has more early projects, its investors have much weaker ability of investigation, lower single investment amount and less shares.

Since equity crowdfunding and traditional venture capital face similar types of project risk, China's equity crowdfunding platforms can learn from the risk control measures of the latter to reduce the pre-investment information asymmetry and the post-investment principal-agent conflicts. Measures to control pre-investment information asymmetry include strict due diligence on projects, screening of projects through the risk control checklist, further screening of projects through the investment committee, and release of screened projects only; the measures to control the post-investment principal-agent conflicts include drafting investment agreement through contract mechanism to protect the rights and interests of investors,[38] comprehensive use of convertible bonds and other financial instruments, joint investment and multi-phase investment where conditions permit, and post-investment management requiring the financing parties to regularly disclose the project situation so that platform can verify and timely intervene in the problematic projects.

4.1.2 Different Business Modes and Corresponding Risk Control Measures

[38] Investment agreements generally include contractual terms that protect investors, such as valuation adjustments.

Traditional venture capital is a high-risk and high-paying industry that pursues long-term profits. Professional investment institutions that conduct traditional venture capital are generally composed of professionals with relevant industry backgrounds and financial knowledge and experience. Most of them provide funds to companies with high growth potential or high-tech companies that have shown high rate of growth, so as to help the investee companies grow rapidly to obtain more profits and achieve IPO. The traditional venture capital generally operates in the form of investment fund as limited partnership. The institution manages the investment operation of the fund as the general partner. In the fund-raising stage, the general partner raises funds from the limited partners. After the completion of the fund raising, the general partner will operate in a closed manner (generally for a period of several years) and be responsible for the investment and post investment management of the project. When the fund exits, the investment income will be distributed to the limited partners. According to the size of the fund under management, the general partner will charge a certain proportion of management fee (generally 2%) annually, and earn performance remuneration (generally 20% of the excess return) when obtaining excess investment return.

Equity crowdfunding can't raise funds in advance like traditional venture capital does. A platform generally needs to select projects first, disclose project information on the platform and wait for investors to invest. If the fundraising is successful, then the platform assists the investors to set up the investment

entity (generally a limited partnership), and the investment entity enters as the shareholder of the investee company. In general, the platform that only conducts transaction matching charges a certain proportion of commission to the financing party according to the investment amount; the platform that is responsible for due diligence and post investment management generally charges a certain proportion of management fee to the investors according to the investment amount; under the “lead and follow” model, the leading investor will receive performance rewards when the investment yields excess investment income.

Traditional venture capital raises funds and collects management fee in advance, thus has more funds for talent recruitment, project mining and research. The incentives for performance compensation also make it pay more attention to the quality of investment projects rather than quantity. In comparison, equity crowdfunding platforms have to pay the cost of project research first. Whether it can earn commission or management fee depends on whether the project is successfully financed. As a result, the platforms tend to match more investment and increase the number of projects. In order to protect the rights and interests of investors and reduce risks, interests of investors and the platform should be better bound. The platform should not take financing matchmaking as the orientation or charge commission from the financing parties based on the financing amount, but adopts a “platform service” mode instead. Under the platform service mode, the platform is mainly responsible

for project selection, due diligence, and post-investment management. If the investment amount reaches the financing target, the platform organizes investors to form the investment entity, collects management fee from investors based on the investment amount, and receives performance remuneration if the investment earns excessive return. The proportion of performance remuneration should be increased, so that the platform has a stronger motivation to explore high-quality projects and actively conduct post-investment management. Platform service mode can also adopt “lead and follow” mechanism and the platform shall strictly control the qualifications of the leading investors, conduct substantive review of the projects recommended by them, and set the minimum leading investment. The platform charges common investors management fee based on the investment amount, and the leading investor receives tiered performance rewards according to the investment return. In a word, the platform should set up effective incentive and constraint mechanism to ensure that the leading investor is responsible.

4.1.3 Different Positioning and Corresponding Risk Control Measures

Traditional venture capital invests widely in enterprises at various stages of development. The amount of single investment is generally large. On one hand, it provides funds for high-tech enterprises to support their development, on the other hand, it serves high-net-worth individuals to increase their assets value by investing in high-risk and high growth industries.

Equity crowdfunding provides more benefits to common people. On one hand, it supports more early projects; on the other hand, it allows common people to enter the equity investment field, providing them with the investment method for maintaining and increasing the value of assets. The questionnaire of this study suggests that the return required by equity crowdfunding investors is not that high. The weighted average annualized return of exited equity crowdfunding projects on platform Q is about 63%.[39] 38.3% and 37.4% of the testees who have participated in equity crowdfunding (questionnaire testees are mainly members of platform Q) are satisfied with the annualized return rate of 20% and 20%-50% for a single project, and 41.4% of investors who have not participated in equity crowdfunding are satisfied with the annualized return rate of 20% for a single project. Investors, no matter whether they have participated in equity crowdfunding, have a strong preference for projects with continuous dividend (see Appendix I and II).

Because of the different positioning, standards should be formulated for selecting projects suitable for equity crowdfunding, such as: 1) projects with moderate single investment amount, good cash flow, and predictable earnings; 2) projects with clear exit channel, or continuous dividends without the need to exit; 3) projects with low volatility and high success rate. For equity crowdfunding, high-risk projects should be avoided to the largest extent even there is possibility of high return.

[39] The number is calculated based on the data in Table 14, and the game project that does not disclose IRR is not included.

4.1.4 Different Investor Risk Tolerance and Corresponding Risk Control Measures

Traditional venture capital is an industry under tight financial supervision, and can only raise funds from qualified investors. At the same time, Chinese law requires that the amount of a single private investment of a qualified investor should not be less than RMB1 million.[40] Researches show, risk tolerance is positively correlated to the total value of assets, thus traditional venture capital investors generally have strong risk tolerance.

Equity crowdfunding is not the case. In the spirit of crowdfunding, investors in equity crowdfunding should be all those who want to participate and have the ability to participate in investment. The ideal state is the middle class with a certain amount of asset accumulation. Although many countries' legislations consider the high risk of equity crowdfunding and stipulate the annual investment cap for individual investors, there is no restriction on the scope of equity crowdfunding investors.[41] At present, China has no relevant

[40] *Interim measures for the supervision and administration of privately offered investment funds* stipulates that the requirements of qualified investors include: 1) having corresponding ability of risk identification and tolerance; 2) investing no less than RMB1 million in a single private fund; 3) the net assets of an institutional investor shall be no less than RMB10 millions and the financial assets of an individual investor shall be no less than RMB3 millions or the average personal income in the last three years shall be no less than RMB500,000. According the Securities Act of 1933 of the US, private equity investment institutions can only raise funds from qualified investors. The basic requirements of qualified investors are: 1) personal net assets excluding the main residence shall be no less than USD1 million; 2) personal annual income shall be no less than USD200,000 (joint annual income of the couple shall be no less than USD300,000); at least USD150,000 have been invested in the capital market; the total investment in private funds shall not exceed 20% of personal assets.

[41] See section 2.5.

laws and regulations on the conditions of equity crowdfunding investors. Some platforms have certain requirements of investors' financial strength. However, the overall asset value of an equity crowdfunding investor is far less than that of a qualified investor. This makes the risk tolerance of the former much lower than that of the latter.

In view of the different investor risk tolerance, investor suitability management shall be carried out, and investors should be evaluated according to their financial status, income level, investment objectives, risk identification ability, risk tolerance and other indicators. Only those meeting the requirements of investor suitability will be allowed to invest in equity crowdfunding, and investors with risk tolerance lower than required should be excluded for their goods. At the same time, the investment cap should be set according to the specific situation of the project and the risk tolerance of the investor, to ensure the investment loss or contingent loss within the scope of investor's tolerance.

4.1.5 Different Investment Specialties and Corresponding Risk Control Measures

The investment decision of traditional venture capital is made by the investment decision-making committee based on the project investigation results of professional investment managers. The investment decision-making committee is composed of senior investment experts, industry experts, financial experts, etc. The professional investment manager will conduct detailed research on the project, in-depth analysis of the industry, and in-depth

interviews with the upstream and downstream of the industry. After listening to the reports of investment managers, the investment decision-making committee will make decisions based on its many years of experience and professional judgment. In the follow up, professional lawyers will draft relevant investment agreements and professional personnel will be responsible for the closing and post investment management.

Unlike the professional process of the investment institutions, equity crowdfunding is an investment made by a large number of non-professional individual investors. It is difficult for them to have a deep understanding of a certain industry that they are not engaged in. They often rely on the information disclosed by the platform/financing party and the behavior of other investors to make their own investment decisions. The authenticity and accuracy of the information may not be guaranteed, and the behavior of other investors may be just an irrational herd effect.

In view of different investment specialties, the platform should choose projects that are related to the life of its investors and are easy to understand. Projects that the platform or its internal personnel has interests in should not be launched. The platform should strengthen the communication between itself/financing parties and investors, fully explain the project without any inducement. When an investor makes a large investment, an additional risk warning should be given. Also, investment cooling period should be set, during which investors can withdraw funds unconditionally. As for investor education,

require investors to read relevant materials to ensure that they understand the characteristics and risks of crowdfunding. For investors lacking investment experience, a buffer period may be set, during which investment shall be restricted and investment education shall be emphasized. The platform may set up a simulated trading platform to familiarize investors with the modes and risks of crowdfunding investment. The platform can also educate investors with actual investment cases through community operation and help them improve the ability of equity investment. When exit opportunities appear, actively guide investors to exit and lock in profits. In a word, the platform should improve the professionalism of investors or weaken the impact of investors' lack of professionalism and reduce investors' irrational behaviors.

4.1.6 Different Risk Diversification Abilities and Corresponding Risk Control Measures

Traditional venture capital first raises funds and then invests, so it will naturally form a portfolio to spread the investment risk. In practice, due to the high profitability of venture capital, as long as there are a few very successful investments in a fund, it is enough to ensure that the entire fund can achieve a good return, even if there are several failed projects. This also leads investors to focus on the average return of the entire fund as a whole, rather than the success rate of single projects.

Equity crowdfunding is not the case. Generally, a platform first releases the project, and then the investors invest. The projects are independent of each other,

so the equity crowdfunding itself has no concept of portfolio. Investors can only diversify their risk by investing in multiple equity crowdfunding projects or other financial products. Through the questionnaire, it is found that although 90% of the testees who have participated in equity crowdfunding have considered risk diversification when investing in equity crowdfunding projects and 70% of them said they built equity portfolio to diversify, 74% of them invested no more than five projects (see appendix I and appendix II). Thus, it can be seen that the equity portfolio constructed by investors themselves can hardly achieve risk diversification, which means the success rate of a single crowdfunding project is more important.

In view of different risk diversification abilities, the platform can monitor the investment situation of investors, and promptly advise investors who have invested in high-risk projects to diversify. In addition, the personal minimum investment amount of a single project should be low enough to make it possible for investors to build a more diversified portfolio, thus weaken the issue of the risk of equity investment itself is so high.

Table 3 Corresponding Risk Control Measures of Equity Crowdfunding Platform Based on the Similarities and Differences between Equity Crowdfunding and Traditional Venture Capital

Similarities and Differences between Equity Crowdfunding and Traditional Venture Capital			Corresponding Risk Control Measures
Similarities	The essence is equity investment, both face similar types of project risk (of course, the degree of risks is different).		Learn from the risk control measures of traditional venture capital institutions to reduce the pre-investment information asymmetry and the post-investment principal-agent conflicts. Set up due diligence, risk control checklist, and investment committee mechanism; draft investment agreement through contract mechanism, comprehensive use of convertible bonds and other financial instruments, make joint investment and multi-phase investment where conditions permit, and conduct active post-investment management.
Differences	Equity Crowdfunding	Traditional Venture Capital	
Different Business Mode	Platforms that only conduct transaction matching charge the financing parties commission	Raise funds, charge investors management fee based on the fund size, and receive	"Platform service" mode. The platform is mainly responsible for project selection, due diligence, and post-investment management. The platform should

	fee based on the financing amount. Platforms that are responsible for due diligence pay the cost of project research in advance, and collect management fee from investors after successful investment according to the investment amount. In the "lead and follow" mode, the leading investor will receive remuneration according to investment return.	performance remuneration according to investment return.	not take financing matchmaking as the orientation or charge commission from the financing parties based on the financing amount, but collects management fee from investors based on the investment amount, and receives performance remuneration if the investment earns excessive return. The proportion of performance remuneration may be increased to better bind the interest of the platform and the investors. If the lead and follow" mode is adopted at the same time where the platform charges management fee and the leading investor receives performance remuneration, the platform should strictly control the quality of the leading investor, and set up effective incentive and constraint mechanism to ensure that the leading investor is responsible.
Different Positioning	Support early projects more, let common people enter the field of equity investment, and pursue continuous dividends and relatively stable asset appreciation.	Provide funds to high-tech enterprises, service high-net-worth people, and pursue high return.	Formulate project selecting standards, such as 1) projects with moderate single investment amount, good cash flow, and predictable earnings; 2) projects with clear exit channel, or continuous dividends without the need to exit; 3) projects with low volatility and high success rate. In sum up, emphasize cash flow, lean on projects that are easy to understand, and be conservative on high-tech projects

			with long payback periods.
Different Risk Tolerance of Investors	Investors are the general public, of whom mainly are middle-class people, thus have weak risk tolerance.	Investors are qualified investors and have relatively strong risk tolerance.	Make investor suitability management, evaluate investors according to their financial status, income level, investment objectives, risk identification ability, risk tolerance and other indicators. Only those meeting the requirements of investor suitability will be allowed to invest in equity crowdfunding. Meanwhile, set investment cap based on the situation of specific project and investor. Exclude investors with risk preference and tolerance lower than required, and ensure the investment loss or contingent loss within the scope of investor's tolerance.
Different Investment Specialties	Investment decisions are made by individual investors themselves, relying on the information disclosed on the platform and investment behaviors made by other investors. Investors lack the ability to conduct independent due diligence and are prone to	Investment decisions are made by institutions with professional investment process.	Choose projects that are related to the life of investors and are easy to understand. Projects that the platform or its internal personnel has interests in should not be launched. Strengthen the communication between itself/financing parties and investors, fully explain the project without any inducement Give additional risk warnings regarding large

	the herd effect.		investment; set investment cooling period. Strengthen investor education, ensure investors understand the characteristics and risks of crowdfunding; for investors lacking investment experience, a buffer period may be set, during which investment shall be restricted and investment education shall be emphasized; set up a simulated trading platform to familiarize investors with the modes and risks of crowdfunding investment; educate investors with actual investment cases through community operation, empower investors and help them improve the ability of equity investment. When exit opportunities appear, actively guide investors to exit and lock in profits.
Different Risk Diversification Abilities	The projects are independent of each other. Equity crowdfunding itself has no concept of portfolio, has no attribute of diversification. The portfolio constructed by investors themselves do not cover enough projects, and are	Raise fund first and then invest. Portfolio will be formed to diversify risk. The average return of the fund is more important.	Monitor the investment situation of investors, and promptly advise investors who have invested in high-risk projects to diversify. In addition, the personal minimum investment of a single project should be low enough to make it possible for investors to build a more diversified portfolio, thus weaken the issue that the risk of equity investment itself is so high.

	difficult to achieve the effect of diversification. Thus, the success of individual project is more important.		

4.2 Construction of the Risk Control System of China's Equity Crowdfunding Platforms

Based on analysis of the similarities and differences between equity crowdfunding and traditional venture capital, the corresponding risk control measures are proposed above. However, a complete risk control system needs to organically cover the entire investment process. Thus, according to the logic of the investment process and the risk control measures proposed above, this section will construct a complete set of risk control system, including risk control before the launch of project, risk control in fund raising, risk control of post-investment management, and investor management and education.

4.2.1 Risk Control before the Launch of Project

（1）Develop the Standards for Selecting Equity Crowdfunding Project Types

The focus of the risk control system construction lies in the pre-investment process., where the project selection is of particular importance. The selection of projects should protect the interests of investors to the maximum extent, while taking into account the cost and efficiency of the platform. Projects suitable for equity crowdfunding include：1) projects related to the life of investors and are easy to understand; 2) projects with moderate single investment amount, good cash flow, and predictable earnings; 3) projects with clear exit channel, or continuous dividends without the need to exit; 4) projects with low volatility and high success rate; 5) projects that can be copied, easily

quantified, and can be quickly promoted.[42] For equity crowdfunding, high-risk projects should be avoided to the largest extent even there is possibility of high return.

（2） Strictly Review and Screen Projects to Improve the Threshold of Project Release

At present, most of China's equity crowdfunding platforms have too low a threshold for projects to go online. The platform does not do or merely conduct formalized review of projects, then the projects are handed over to investors who lack experience and expertise to make their own judgments, which makes the investors suffer a lot of wealth loss. The questionnaire of this research suggests that the most significant cause of project investment failure is the false statement or publicity made by financing parties (see Appendix I and Appendix II).This paper argues that the domestic platforms should first require financing parties to disclose necessary information, then conduct due diligence, screen projects through risk control checklist, further review the projects through the investment committee, and finally launch the projects passed all the selection mechanism. To raise the threshold of the project launch, and provide investors with high-quality projects as much as possible is to protect the interests of investors essentially. In addition, the platform should prohibit the release of projects that the platform or its internal personnel has interests in.

[42] For example, for franchised chain stores with a unified brand, equity crowdfunding can use a set of strategies and schemes to invest in multiple stores.

（3）Control the Valuation and Investment Amount of Individual Projects within a Reasonable Range

At present, the valuation of unlisted companies in China's domestic equity investment market is relatively subjective, and there is no effective quantitative method. When selecting projects and negotiating valuations, the platform should comprehensively use a variety of mature valuation methods, such as PE and PS, and make a horizontal comparison with listed companies in the same industry, so as to control project valuation within a reasonable range. At the same time, invest less in high valuation projects and more in low valuation projects, to balance the valuation and potential risks and control the investment amount, thus to ensure the minimum investment amount of an individual investor is moderate and avoid the concentration of investment of any individual investor.

（4）Project Assessment and Risk Classification

On the basis of the strict review of projects, the platform can evaluate all the projects according to their risks and complexities, and then classifies the risk level of each project. On the basis of the calculated risk level and the project’s potential return, the project will be judged by its risk adjusted return. Only projects which have reasonable risk-benefit ratios can go online, and only investors who are compatible with the corresponding risk level can invest in those projects. As a scientific risk control method that matches projects and investors, such threshold mechanism can effectively control the risk of

investors (Wang Xingqi, 2017). Chapter V will further discuss the specific method of project risk assessment and classification.

4.2.2 Risk Control in Fundraising

（1）Adequate Information Disclosure and Explanation

Full disclosure of project information is one of the most important measures to protect equity crowdfunding investors, and it is also the top priority in foreign regulatory practices. In addition, as equity crowdfunding projects involve various industries, non-professional investors generally lack the necessary ability and time to independently study a project and the industry it belongs to. Therefore, on the basis of substantive due diligence of the project, the platform should fully disclose relevant information of the project and the due diligence result in the fundraising process. The platform/leading investor and the financing party should fully explain the project. The questionnaire of this study also shows that information disclosure and project explanation are the risk control measures most concerned by investors. It should be pointed out that in the course of explanation, the platform should set up communication rules, keep neutrality and independence, prohibit any behavior of inducing investment, fully disclose potential risks to investors, and fully explain the important terms that may be involved in the investment agreement. The project presentation can be conducted by the project manager/leading investor and the founder of the project successively. All participants in the presentation are free to speak, among whom investors are especially encouraged to raise questions.

（2）Set Investment Cooling Period

In order to avoid irrational investment, the platform can set a 24-hour investment cooling period, during which investors can withdraw funds unconditionally. In addition, when investors make large investments, the platform should give additional risk warnings to prevent impulsive investment. After the cooling period, if the subscribed amount reaches the target investment amount, the next process can be entered into.

（3）Investment

The platform shall explain the investment process and legal texts in detail before subscribed investors make actual capital contribution. If the investor objects to the legal text, the investor shall be allowed to revoke the subscription. After investors' contribution, the platform shall not keep the funds directly, but shall adopt third-party depository or other similar mechanism. After the paid-in amount reaches the minimum financing amount, the platform should make the investment after the investee company has fulfilled all the pre-investment requirements according to the investment agreement.

4.2.3 Risk Control of Post-Investment Management

（1）Regular Report after Investment

After the completion of investment, the platform shall closely track the development of the investee enterprise, review the enterprise's financial reports (such as monthly) and operation data regularly, and report the enterprise's financial and operational situation to investors at least once every six months.

For enterprises with abnormal operation, the platform shall intervene in time and safeguard the rights and interests of investors through lawful means.

（2）Exit Design

Non-professional investors in equity crowdfunding are prone to irrational behavior and miss the opportunity to lock in profits and losses. The questionnaire of this study shows that investors do not require a particularly high annual rate of return (see Appendix I and Appendix II). Thus, in the high-risk equity investment, the platform should pay attention to exit design in the project selection process, so as to reduce uncertainty, weaken the illiquidity, and actively guide investors to exit when proper opportunities appear.

（3）Post-investment Supervision

Since the investment amount of a single investor in equity crowdfunding is relatively small, the cost for investor to exercise shareholder rights is relatively high, and the willingness and ability to exercise such rights are relatively low, investors generally jointly establish limited partnerships as investment entities to invest in enterprises. Therefore, the platform should strengthen the supervision over the investee enterprise, exercise the shareholder rights on behalf of the investment entity within the agreed scope, and prudently perform the duties of director and supervisor (if any).

4.2.4 Investor Management and Education

（1）Investor Suitability Management

Investor suitability refers to the degree of match between a financial

product or service provided by a financial intermediary and the client's financial status, investment objectives, risk tolerance level, financial needs, knowledge and experience.[43] The platform should evaluate investors according to their financial status and income level, investment objectives, risk identification capabilities, risk tolerance and other indicators, and only allow investors who meet the suitability of investors to invest. Equity crowdfunding itself is a high-risk investment activity. Know Your Customer ("KYC") is one of the primary tasks of the platform. On the basis of KYC, the platform should actively exclude investors with lower risk tolerance than required. Currently, common standard of equity crowdfunding qualified investors on domestic platforms is individual with personal annual income of no less than RMB300,000 or financial assets of no less than RMB1 million.[44] That is, as long as any one of the above two requirements is met, investors can make investment in all kinds of equity crowdfunding projects. However, using annual income or financial assets only to decide whether an investor can invest in one specific equity crowdfunding project is too narrow, while other factors that may affect and determine investor risk preference and tolerance may be ignored. Therefore, this paper believes that the consideration factors of investor suitability management should be adjusted and added, and the most important influencing factors can be found

[43] See the definition of investor suitability in the *Customer appropriateness of financial products and services retail sector* jointly issued by the Bank for International Settlements, the International Securities Regulatory Commission, and the International Association of Insurance Regulators in 2008.

[44] See the crowdfunding standard of Jingdong.

through regression analysis which will be discussed in Chapter VI.

（2）Match Investors and Projects

On the basis of investor suitability management including KYC, according to the project risk level calculated in the stage of risk control before the launch of the project, the platform should comprehensively consider the project risk level and the investor risk preference and tolerance and actively match investors and projects. Chapter VI will further illustrate this point later.

（3）Set Investment Cap

Setting the annual investment cap is a common method used by foreign regulations, and the purpose is to control the possible losses of investors within the range that investors can bear. China's platforms should learn from this measure and set an annual investment cap for each investor based on investor registration information and investor tolerance obtained through investor suitability management. In addition, based on the risk level of a specific project, it is possible to set an upper limit for a specific investor.

（4）Strengthen Investor Education

Investors in equity crowdfunding are mostly non-professional common people. Investor education is therefore particularly important, but there are few platforms providing effective investor education in China. First, at the most basic level, the platform should require investors to read relevant materials, fill in questionnaires, ensure that they understand the characteristics and risks of equity crowdfunding, and confirm that their assets can bear the negative impact

of investment failure (Zhang Jihong & Wu Tao, 2015). Secondly, the platform can further set up a certain screening mechanism and set a buffer period for investors who lack investment experience, limit these investors' investment during this period, and provide them additional investment education (Jia Jinan, Wu Jichen & Li Haoran, 2018). In addition, capable platforms can also consider setting up a simulated trading platform. After the investor completes the registration, the investor will first conduct the simulated trading. After the investor is familiar with the mode and rules of crowdfunding and basically understand how to avoid the risk, the investor is permitted to invest (Jia Jinan et al., 2018).

In addition to educating investors to better understand the risks of equity crowdfunding, the platform should also empower investors to improve their equity investment abilities, such as educate investors through explanation of actual investment cases.

（5）Risk Diversification

Because equity crowdfunding projects are independent of each other, it is difficult for the platform to design a risk diversification mechanism. However, the platform can strengthen education of investors regarding the theories, principles and methods of risk diversification, so that investors can correctly understand them, and reduce personal minimum investment amount of an individual project to make it possible for investors to diversify their investments. Besides, the platform can monitor investors' investment situations and timely

advise investor to diversify. For instance, advise investor who has invested in high-risk projects to moderately reduce investment in high-risk projects and increase investment in low- and medium-risk projects; advise investor who has invested projects in a specific industry to moderately reduce investment in this or similar industry and increase investment in projects in other industries. Therefore, the platform can help investors reduce the correlations between investment projects and diversify risks as much as possible.

4.2.5 Platform Team Building and Incentives

The selection of equity crowdfunding projects and the operation of the platform rely on professional and responsible personnel. Therefore, the platform should build a professional team and establish a scientific organization structure, especially an independent risk control department. At the same time, a reasonable incentive mechanism should be set up. The incentives obtained by personnel should not be related to the matching of transactions, but are tied to the returns obtained by investors, so as to achieve the maximum binding of interests between the team and investors.

Chapter V Project Risk Assessment and Classification of China's Equity Crowdfunding Platform

This paper proposes to evaluate and classify project risks in the risk control before the launch of the project. This chapter here will introduce the specific evaluation methods and model.

Empirical studies show that the traditional venture capital institutions will evaluate a number of indicators of returns and risks in investment decision-making process, and establish a decision-making model (Tyebjee & Bruno, 1984). Equity crowdfunding platform can learn from the idea and method to select indicators suitable for equity crowdfunding projects and establish a project risk assessment and classification model. It should be pointed out that traditional venture capital institutions, especially domestic institutions, generally use qualitative methods in modeling. This paper suggests to combine qualitative and quantitative methods through AHP and FCE. The first step is to determine the weight of each indicator through AHP, and then to evaluate each indicator through FCE, so as to establish a more scientific decision-making model.

5.1 AHP

5.3.1 Introduction to AHP

Multi-indicator decision-making process often encounters systems with many variables, complex structures and significant effect of uncertain factors. The decision-making of these complex systems needs to make correct

estimation of the relative importance of indicators, that is, to determine the weight. The weight is the objective reflection of the physical attribute of the indicator and the result of subjective and objective measurement. AHP in systematic engineering theory can divide each factor in complex problems into related ordered levels, which is an effective method combining quantitative analysis and qualitative analysis.

AHP first places the problem to be decided in a large system, in which there are many factors influencing each other, and forms a multi-layer analysis structure model through the layering of these factors. After that, combine mathematical methods and qualitative analysis, use layer-by-layer ranking to gain the weight of each indicator calculated according to each plan, thus to assist decision-making.

AHP first constructs the judgment matrix. Use A for the goal, u_i,u_j ($_{i,j}$ = 1, 2... n) represents the factor. u_{ij} represents the relative importance value of u_i to u_j, and Constitutes A-U judgment matrix P.

$$P = \begin{bmatrix} u_{11} & u_{12} & \dots & u_{1n} \\ u_{21} & u_{22} & \dots & u_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ u_{n1} & u_{n2} & \dots & u_{nn} \end{bmatrix}$$

Then calculate the order of importance. According to the judgment matrix, get eigenvector w corresponding to the maximum eigenvalue λmax by calculating function $P_w = \lambda_{max} \cdot w$. Normalize eigenvector w to get the importance rank of each factor, that is the weight allocation.

Whether the weight distribution obtained above is reasonable, we need to

use formula $CR = \frac{CI}{RI}$ to test the consistency of the judgment matrix. CR is the random consistency ratio of the judgment matrix; CI is the general consistency ratio of the judgment matrix given by $CI = \frac{\lambda_{max}-n}{n-1}$; RI is the average random consistency indicator of the judgment matrix. The RI values of the judgment matrix of order 1 to 9 are shown in the following table. When judgment matrix P has CR <0.1 or λmax = n and CI=0, P is considered to have a satisfactory consistency; otherwise, elements in P need to be adjusted to achieve a satisfactory consistency.

n	1	2	3	4	5	6	7	8	9
RI	0	0	0.52	0.89	1.12	1.26	1.36	1.41	1.46

5.3.2 Particle Swarm Optimization（PSO）

Due to the strong subjectivity of experts who give scores in AHP, the scoring matrix is prone to inconsistence or omission. In this case, particle swarm optimization algorithm can be used to modify the scoring matrix.

PSO was proposed by Dr. Eberhart and Dr. Kennedy in 1995. The basic idea is to make the movement of the whole group evolving from disorder to order in the problem-solving process through the sharing of information among individuals, so as to obtain the optimal solution of the problem.

PSO is initialized to a group of random particles (random solutions) and then iterated to find the optimal solution. In each iteration, the particle updates itself by tracking two "extremes" value (pbest, gbest). After finding these two optimal values, the particle updates its velocity and position using the following formula $V_{i+1} = V_i + c_1 \times rand(0\sim1) \times (pbest_i - x_i) + c_2 \times rand(0\sim1) \times$

$(gbest_i - x_i)$

$x_{i+1} = x_i + V_i$（i＝1，2，…，M）.

M is the total number of particles in the population, V_i is the velocity of the particle, pbest is the individual optimal value, gbest is the global optimal value, rand (0-1) is the random number between (0, 1), X_i is the current position of the particle, c_1 and c_2 is the learning factor, usually c_1=c_2=2. In each dimension, the particle has a maximum velocity V_{max}. If the velocity in one dimension exceeds V_{max}, the velocity in that dimensional is limited to V_{max}.

5.3.3 Overall Ranking

The overall ranking of AHP is the process of calculating the combined weight of elements in a certain layer by using the result of single ranking of all layers, in order to obtain the combined weight of elements in one layer on the overall target and the interaction with the upper layer elements. The overall ranking needs to be sorted from the top, and finally the elements in the bottom layer, that is the relative weight of the priority order of the decision scheme.

The overall ranking is given on the basis of the single ranking, and the process of the two are basically same. Use formula $CR = \frac{wi_1 CI_1 + wi_2 CI_2 + \Lambda + wi_m CI_m}{wi_1 RI_1 + wi_2 RI_2 + \Lambda + wi_m RI_m}$ to calculate the value of CR. If the overall ranking consistency CR<0.1, the overall consistency test is passed; otherwise, it needs to reconsider the model or reconstruct a judgement matrix with a larger CR.

5.3.4 Group Decision Conclusion

The final value of each weight of expert group decision is equal to the

average value of each corresponding weight value of all experts. If the influencing factors of each expert are different, the above average should be the weighted average of each expert. The group decision conclusion can also be obtained by matrix method, that is, to obtain the group decision matrix by calculating the geometric average of the corresponding position of each expert and then get the final group conclusion based on the group matrix.

5.2 FCE

FCE is a comprehensive evaluation method based on fuzzy mathematics. According to the membership theory of fuzzy mathematics, FCE transforms qualitative evaluation into quantitative evaluation, that is, use fuzzy mathematics to make an overall evaluation of things or objects restricted by many factors. It is characterized by clear results and strong systematisms, and can well solve problems that are fuzzy and difficult to quantify. It is suitable for solving various non-deterministic problems.

FCE is a comprehensive evaluation of the considered things by applying the principle of fuzzy transformation. It is mainly divided into two steps: the first step is to judge according to a single factor; the second step is to judge comprehensively according to all factors. Firstly, an evaluation indicator project is established. Factor set (U) is a variety of factors that affect the evaluation object (u_i)：$U = \{u_1, u_2, \ldots u_n\}$. Then establish the evaluation indicator weight. In general, the importance of each factor is different. In order to reflect the importance of each factor, corresponding weights ω_i should be given to each

factor u_i. The weight set W_i can be expressed as: $W = (\omega_1, \omega_2, \ldots, \omega_n)$. Then establish the evaluation conclusion set (V). The elements of V are the various total evaluation results that the evaluator may make to the evaluation object. $V = \{v_1, v_2, \ldots v_m\}$. Then make a single factor fuzzy judgment. Single factor fuzzy evaluation is to evaluate object starting from a single factor in factor set U and determine the membership degree of the object to each element in set V. Suppose evaluating the object based on factor u_i, the degree of membership to v_j is r_{ij}. The evaluation result according to factor u_i can be expressed as $R_i = \frac{r_{i1}}{v_1} + \frac{r_{i2}}{v_2} + \cdots + \frac{r_{im}}{v_m}$. R_i represents a single factor evaluation set, which can be simply expressed as $R_i = (r_{i1}, r_{i2}, \ldots, r_{im})$. Then conduct FCE.

The single factor fuzzy evaluation reflects only the influence of a single factor on the object. In order to accurately evaluate an object, it is necessary to comprehensively consider the influence of every factor according to the weight set. Therefore, when the weight set W and the single factor evaluation matrix R are known, the comprehensive evaluation can be carried out through fuzzy transformation:

$$B = W \cdot R = (\omega_1, \omega_2, \ldots, \omega_n) \cdot \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1m} \\ r_{21} & r_{22} & \cdots & r_{2m} \\ \vdots & \vdots & \vdots & \vdots \\ r_{n1} & r_{n2} & \cdots & r_{nm} \end{bmatrix} = b_1, b_2, \ldots, b_m.$$

B is the fuzzy comprehensive evaluation set; b_j（j = 1, 2, …, m）is the fuzzy comprehensive evaluation indicator, where $b_j = \bigvee_{i=1}^{n}(w_i \wedge r_{ij})$.

Finally, the indicator is evaluated. Take b_j as the weight, calculate $v = \sum_{j=1}^{m} b_j v_j \div \sum_{j=1}^{m} b_j$ for each v_j, to obtain the result of FCE.

5.3 Case Analysis

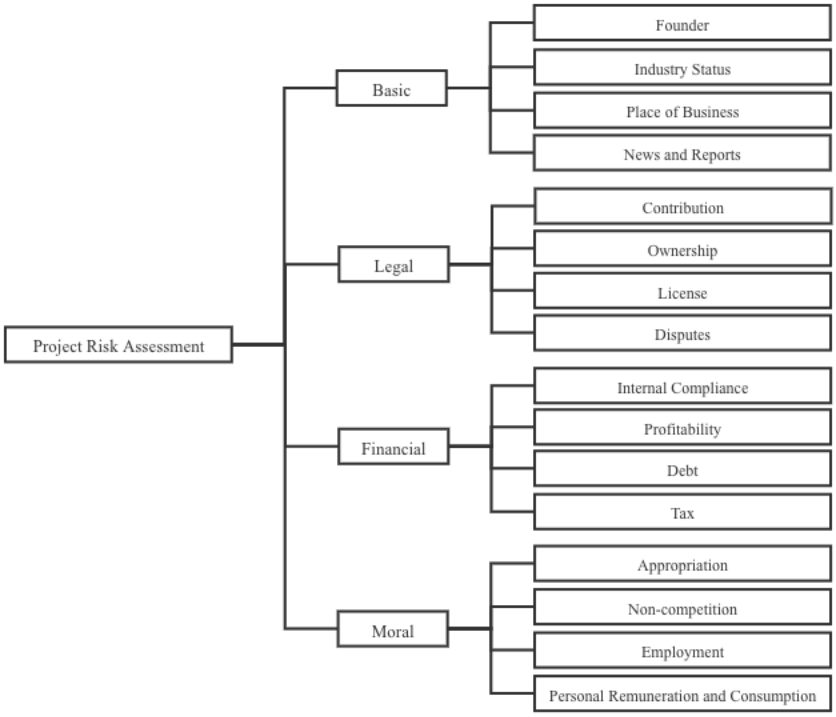
In the project risk assessment and classification, the platform can first obtain the weight of evaluation indicators through AHP, then score each indicator through FCE, and finally obtain the project risk level. If the project types on the platform are relatively similar, the weight of the overall project evaluation indicator can be obtained through AHP, that is, the same set of weight can be used for each project. If there are obvious differences in the project types, the weight should be calculated according to the specific type or specific project.

5.3.1 A Baking Project

Here takes the baking project on platform Q in Section 7.2 as an example to explain the specific application of AHP and FCE in the risk assessment of equity crowdfunding projects. We use domestic Marsh soft to conduct the AHP and FCE.

First of all, we take the indicators used by traditional venture capital to make qualitative judgments on this baking project as the benchmark. For the convenience of discussion, the indicators are summarized and simplified here, and the evaluation is completed by one expert. The evaluation indicators can be divided into four categories: basic, legal, financial and moral. Each category is further subdivided into four indicators, as shown in Figure 1.

Figure 1 Indicators of Project Risk Assessment



The expert first compares the four categories of indicators in pairs and rank them according to their relative importance. Then, compare and rank the four sub-indicators in each category. The principle of matrix modification and consistency test is described in section 5.1, and the process can be run by the software automatically, which will not be discussed here. If the project is assessed by more than one expert, the result can be obtained by calculating weighted average value based on the influencing factors of the experts. The conclusion of the weight of decision is shown in Table 4.

Table 4 Conclusion of the Weight of AHP Decision

Indicator	Total Weight	Sub-indicator	Weight in the Category	Total Weight
Basic	0.0968	Founder	0.7102	0.0688
		Industry Status	0.2029	0.0196
		Place of Business	0.0419	0.0041

		News and Reports	0.045	0.0044
Legal	0.2144	Contribution	0.3702	0.0794
		Ownership	0.0733	0.0157
		License	0.0223	0.0048
		Disputes	0.5342	0.1145
Financial	0.2144	Internal Compliance	0.0553	0.0119
		Profitability	0.3178	0.0681
		Debt	0.5767	0.1236
		Tax	0.0501	0.0107
Moral	0.4744	Appropriation	0.5913	0.2805
		Personal Remuneration and Consumption	0.1183	0.0561
		Employment	0.2476	0.1175
		Non-competition	0.0429	0.0203

After obtaining the weight of each indicator through AHP, FCE can be used to evaluate each indicator of the baking project. The assessment of high risk is assigned 5 points, the medium risk is assigned 3 points, and the low risk is assigned 1 point, as shown in Table 5.

Table 5 FCE Evaluation Chart

Indicator	Weight	High Risk (5 points)	Medium Risk (3 points)	Low Risk (1 point)
Founder	0.0688	√		
Industry Status	0.0196		√	
Place of Business	0.0041		√	
News and Reports	0.0044			√
Contribution	0.0794		√	

Ownership	0.0157		√	
License	0.0048			√
Disputes	0.1145	√		
Internal Compliance	0.0119	√		
Profitability	0.0681	√		
Debt	0.1236	√		
Tax	0.0107		√	
Appropriation	0.2805		√	
Personal Remuneration and Consumption	0.0561	√		
Employment	0.1175	√		
Non-competition	0.0203			√

The principle of FCE is described in section 5.2 and the process can be run automatically by the software, which will not be discussed here. The final membership matrix is shown in Table 6, and the final score is 4.06199, which means the risk level of the baking project is medium to high.

Table 6 Conclusion

Conclusion	Membership
High Risk	0.560479
Medium Risk	0.410035
Low Risk	0.0294853

5.3.2 An Education Project

An education project is also taken for project risk assessment which adopts the indicators shown in Figure 1. Three experts give their evaluations regarding this project. The averaged result is the conclusion of the weight of decision shown in Table 7.

Table 7 Conclusion of the Weight of AHP Decision

Indicator	Total Weight	Sub-indicator	Weight in the Category	Total Weight
Basic	0.0968	Founder	0.4434	0.0333
		Industry Status	0.2463	0.0185
		Place of Business	0.1101	0.0083
		News and Reports	0.2002	0.015
Legal	0.2144	Contribution	0.1575	0.036
		Ownership	0.5187	0.1185
		License	0.1894	0.0432
		Disputes	0.1345	0.0307
Financial	0.2144	Internal Compliance	0.3597	0.0529
		Profitability	0.3049	0.0448
		Debt	0.1631	0.024
		Tax	0.1723	0.0253
Moral	0.4744	Appropriation	0.2912	0.16
		Personal Remuneration and Consumption	0.1916	0.1053
		Employment	0.1919	0.1055
		Non-competition	0.3253	0.1788

After obtaining the weight of each indicator through AHP, FCE can be used to evaluate each indicator of the baking project. The assessment of high risk is assigned 5 points, the medium risk is assigned 3 points, and the low risk is

assigned 1 point, as shown in Table 8. Since there were three experts conduction the evaluation, each risk evaluation option (high risk, medium risk, low risk) is labeled with a number which represents the number of experts who choose this risk evaluation option. For example, regarding the Founder indicator, the number under high risk option is 2, the number under medium risk option is 0, and the number under low risk option is 1. This means, in this education project, two experts believe the Founder indicator represents high risk, one expert believes the Founder indicator represents medium risk, and none chooses low risk.

Table 8 FCE Evaluation Chart

Indicator	Weight	High Risk (5 points)	Medium Risk (3 points)	Low Risk (1 point)
Founder	0.0333	2	0	1
Industry Status	0.0185	0	2	1
Place of Business	0.0083	0	0	3
News and Reports	0.015	1	1	1
Contribution	0.036	1	0	2
Ownership	0.1185	2	0	1
License	0.0432	0	2	1
Disputes	0.0307	0	1	2
Internal Compliance	0.0529	2	0	1
Profitability	0.0448	1	2	0

Debt	0.1236	√		
Tax	0.0107		√	
Appropriation	0.2805		√	
Personal Remuneration and Consumption	0.0561	√		
Employment	0.1175	√		
Non-competition	0.0203			√

The final membership matrix is shown in Table 9, and the final score is 2.3371, which means the risk level of the education project is low to medium, more biased towards medium risk.

Table 9 Conclusion

Conclusion	Membership
High Risk	0.00186055
Medium Risk	0.664827
Low Risk	0.333312

During the study, we have not found any domestic equity crowdfunding platform has adopted any similar risk assessment method combing qualitative and quantitative evaluation as suggested in this study. Few platforms provide a general qualitative evaluation of the project risk. For example, for the baking project analyzed above, the risk evaluation given by the platform is "cash flow project, traditional industry field, medium risk". Such qualitative evaluation is often relatively subjective and fuzzy. Risks appeared soon after the baking

project was invested, and its cash flow was broken, which is inconsistent with the description of "cash flow project" (for more analysis of this project, see section 7.1). In contrast, the "medium to high level of risk" obtained in this study is more accurate for this project. As stated in section 4.2.1, the project risk assessment and classification is to ensure that only investors who are appropriate for the level of risk can invest in corresponding projects. The baking project has a risk level of medium to high, so the platform should match the project to investors whose risk preference and tolerance level are "relatively high" and "high" (for the classification of risk preference and tolerance, see section 6.2). For investors whose risk preference and tolerance level are lower than the level of "relatively high", platform should clearly inform them the project is beyond their risk preference and tolerance level, and they are not recommended to invest. For the education project, the risk evaluation given by the platform is "rapid development, good cash flow, clear plan to conduct overseas IPO in 2020, repurchase clause, medium risk". The risk evaluation result is basically the same with the one given by the AHP+FCE method. However, the method recommended here has much richer perspective on project risk considerations and provides better support for the risk evaluation result.

5.4 Inclusion of Return Indicator

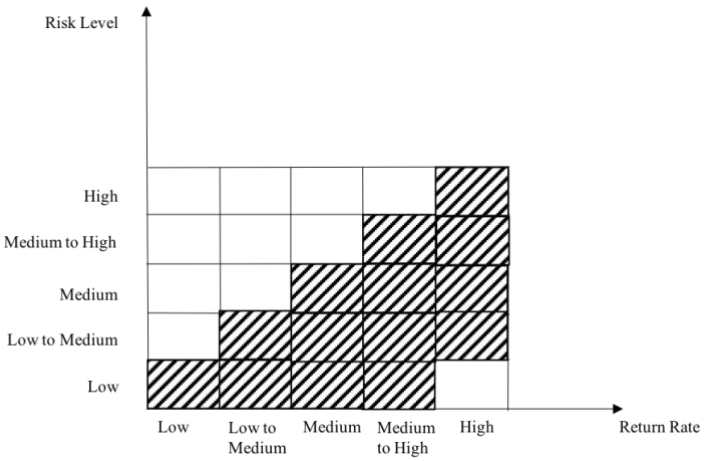
The risk assessment and classification above evaluates projects according to absolute risk only, without considering potential return. While, in actual

investment activities, the risk-return ratio is equally important. Therefore, after completing the project risk assessment and classification, this paper suggests to further consider the project's potential return and to conduct a further evaluation by comparing the risk and return. Here, the concept of "risk adjusted return" is used for reference to build a quadrant chart as shown in Figure 2.[45] The X-axis represents the project's return rate estimated by the platform,[46] and the return rate increases along the X-axis; the Y-axis represents the project's risk level given by the AHP+FCE method, and the risk level increases along the Y-axis. Theoretically, return is proportional to risk. Equity crowdfunding basically has no projects which has a low risk level but a high return rate. For projects with risk level of medium to low, medium, medium to high, and high, if the corresponding return rate is merely low, medium to low, medium, and medium to high, the risk-return ratio is not good and the project is not suitable for equity crowdfunding investors to invest. Therefore, the platform should choose not to launch such projects. This paper suggests that after comparing the project's risk level and potential return rate, the platform should select projects with better risk-return ratio for online release (as shown by the diagonal line in Figure 2).

Figure 2 Project Risk-Return Evaluation

[45] The risk adjusted return refers to the return after removing risk factors. Among them, the Sharpe ratio, Treynor index and Jensen index are three classic risk adjusted return indicators.

[46] Each equity crowdfunding platform generally has its corresponding project return evaluation method, and the calculation of the return rate is beyond the scope of this paper, and will not be repeated here.


Risk Level
High
Medium to High
Medium
Low to Medium
Low
Low
Low to Medium
Medium
Medium to High
High
Return Rate

Chapter VI Evaluation of Investor Risk Preference and Tolerance

This paper puts forward the investor management and education in the proposed risk control system, especially the investor suitability management and the investor-project matching. The prerequisite for implementing these measures is an understanding of investor risk preference and tolerance. This chapter here will propose specific evaluation methods and model.

The most basic and important work of investor management in equity crowdfunding is KYC, especially the risk preference and tolerance of investors. In terms of evaluating investor risk preference and tolerance, "questionnaire-grade-evaluation" is widely used by domestic financial industry, including banks, securities companies and private equity. We draw on this method and expand relevant questions in the questionnaire of this paper. On such basis, this paper constructs a regression analysis in an attempt to find out the factors that significantly affect investor risk preference and tolerance, so as to guide the risk control work.

6.1 Overview of the Questionnaire Survey

In this study, a total of 333 questionnaires are issued, including 301 valid ones. The testees are mainly members of an equity crowdfunding platform that is analyzed in this paper. It should be pointed out that the sample size of this questionnaire survey is relatively small and the groups are relatively concentrated, so the result of the survey and analysis may not necessarily represents the situation of a broader group.

Among the testees, 63% are males and 37% are Females. The age is concentrated in the range of 30 to 50, and 75% of the testees are married. The testees show an obvious trend of high education background, of whom 43.2% have bachelor degree, 48.5% have postgraduate degree or above. The testees' resident places are concentrated in Guangdong, Beijing, Shanghai and other economically developed areas in China. The family of the testees is mainly composed of 3-4 members, and the family annual disposable income is concentrated in the range of RMB300,000 to 1 million. The distribution of the testees' family net assets is relatively scattered among available options. After combining some options, it can be seen that the testees generally have strong asset strength. 40.9% of them have net asset more than RMB5 million. The proportion of various assets is ranked as follows: 1) real estate; 2) stocks, stock funds, corporate bonds, bond funds, trusts, etc.; 3) bank deposits, financial products, long-term treasury bonds, etc.; 4) cash; 5) venture capital investment, private equity investment, futures, financial derivatives, digital currency and other alternative investments. In terms of investment knowledge, testees with basic and limited knowledge account for about half (46.5%). 88% of the testees have participated in the trading of stocks, funds and other products, and the vast majority have more than 2 years of investment experience.

In terms of risk preference and tolerance, 47.2% of the testees believe their risk preference is on the average level, and 39.2% are more willing to bear financial risks. 70% of the testees show they took and are prepared to take a

medium level of risk, and nearly than two-thirds chose to make most investment in a low-return and low-risk portfolio. Nearly half of them plan to invest for 1-3 years, and 68.1% of them are willing to bear a limited principal loss to seek higher returns and growth of capital. When investments are in bad situations, more than half of the testees say they are not sure whether they will be upset, 34.6% say they will be somewhat upset, and a very small proportion of them will be either not upset at all or very upset. In another question, 77.4% of the testees say they will not feel uneasy until they have lost more than 20 percent of their principal. When faced with an important financial decision, half of the testees focused on potential gains, while 43.2% focused on possible losses. After making the financial decision, 88.7% will be optimistic, and most people are confident that they can make good investment decisions. When facing the question of whether to borrow money to invest, the two attitudes account half and half. Nearly half of the testees understand financial risk as uncertainty, while 29.2% take it as the risk of principal loss. In the question of calculating annualized return rate, about half choose the correct answer, and nearly half choose the simple interest rate.

115 people have participated in equity crowdfunding, accounting for 38.2% of the testees. Considering that the testees are mainly members of the equity crowdfunding platform, the proportion may be higher than that of the actual population. Among the reasons of participating in crowdfunding, to find projects with better return-to-risk ratio is ranked first. The other two more

selected options are that they can choose their favorite projects and can feel engaged in entrepreneurship. More than half of them have participated in 2-5 equity crowdfunding projects. As for the risk control measures of the platform, investors pay more attention to post-investment management, information disclosure, project explanation, investment terms and risk warnings.

For those who have not participated in equity crowdfunding, the most prominent characteristics of equity crowdfunding in their eyes are high risk, high return and information asymmetry. In terms of the choice of the platform's risk control measures, they have basically similar choices with those who have participated in equity crowdfunding (the ranking is slightly different). For people who have not participated in equity crowdfunding, the appropriate minimum investment amount, the annual amount invested in equity crowdfunding, and the satisfactory annualized return are all lower.

Further cross-analysis of the questionnaires shows that the age of investors in equity crowdfunding is concentrated between 30 and 50 years old, and the proportion of investors participating in equity crowdfunding is higher for testees aged between 40 and 60 years old. Male and married investors are more likely to participate in equity crowdfunding. People with higher family annual disposable income and net assets have a higher proportion of participating in equity crowdfunding, but higher educated investors have a lower proportion. The number of family members has no significant influence. People with relatively rich investment knowledge and experience are more likely to

participate in equity crowdfunding; while, financial professionals has the lowest proportion of participation (see Figure 3-12).

Figure 3 Age and Participation in Equity Crowdfunding

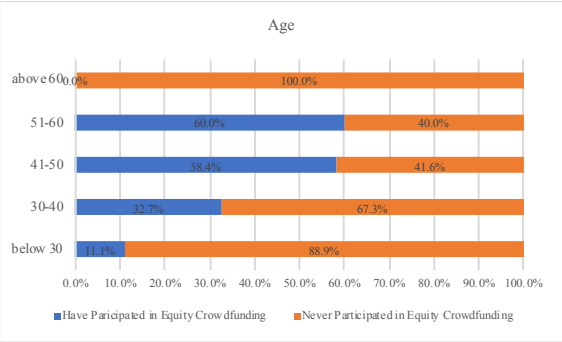


Figure 4 Gender and Participation in Equity Crowdfunding

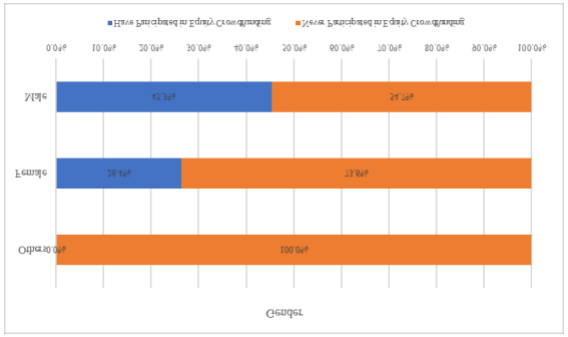


Figure 5 Marriage and Participation in Equity Crowdfunding

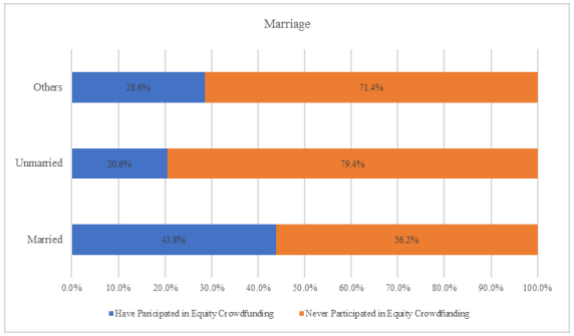


Figure 6 Education and Participation in Equity Crowdfunding

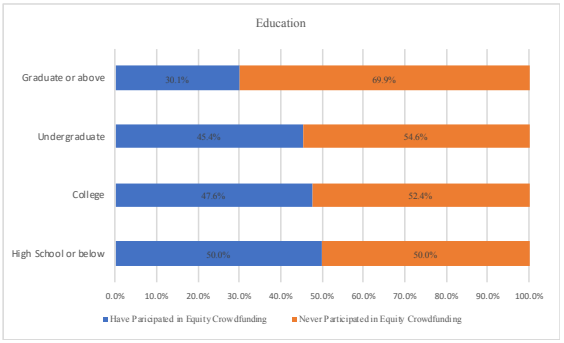


Figure 7 Annual Disposal Income and Participation in Equity Crowdfunding

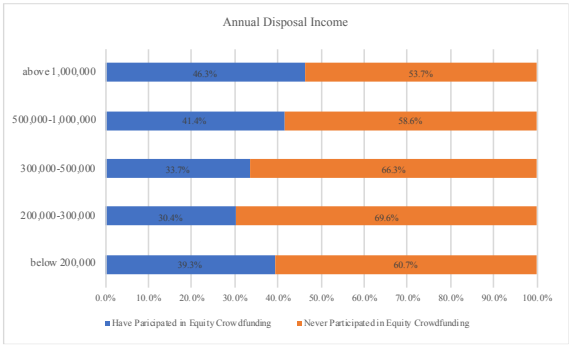


Figure 8 Net Assets and Participation in Equity Crowdfunding

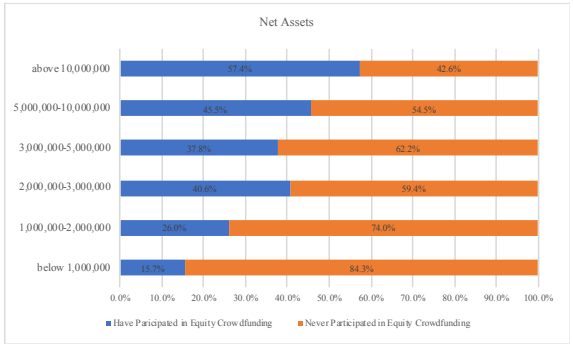


Figure 9 No. of Family Members and Participation in Equity Crowdfunding

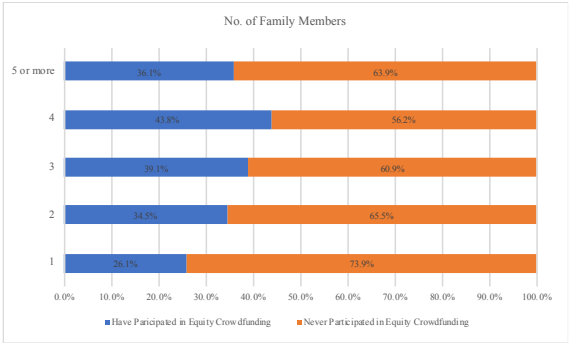


Figure 10 Investment Knowledge and Participation in Equity Crowdfunding

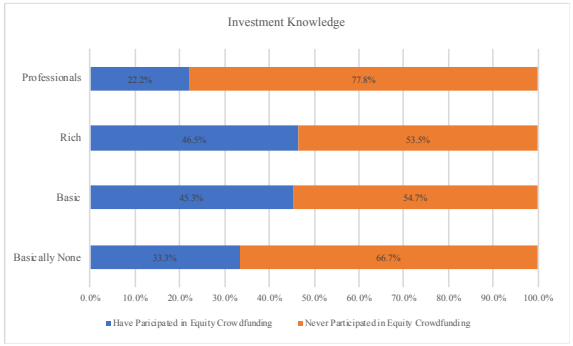


Figure 11 Investment Experience and Participation in Equity Crowdfunding

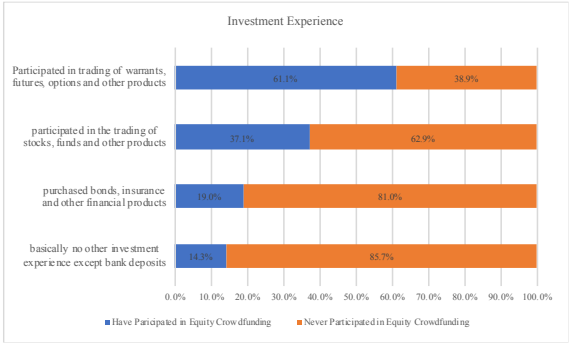
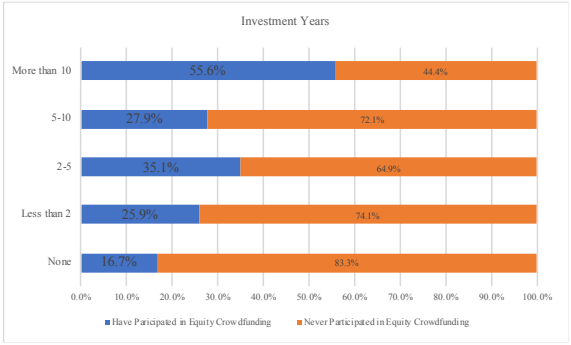


Figure 12 Investment Years and Participation in Equity Crowdfunding



6.2 Investor Risk Preference and Tolerance Model

On the basis of the preliminary analysis, in order to better control the risk of investors, we carried out a regression analysis of investor risk preference and tolerance. Risk preference and tolerance are highly correlated with investors' financial investment (Garman & Forgue, 2003). A platform with better understanding of the factors affecting investor risk preference and tolerance, and can match more suitable investment projects for investors. In the field of financial supervision, China has formulated relevant laws and regulations, requiring banks, securities companies, asset management companies, private equity companies and other financial institutions to correctly evaluate the risk tolerance and investment attributes of investors in order to provide appropriate products. Therefore, effective assessment and analysis of investor risk preference and tolerance is an important part of the risk control system construction of equity crowdfunding platforms.

6.2.1 Theoretical Analysis and Research Hypotheses

Building a regression model first need to determine the hypotheses. Researches show that age, gender, marriage, education, number of family members, family income, investment knowledge and experience may have a significant impact on investor risk preference and tolerance.

（1）Age

Most empirical studies have proved that age has a significant impact on risk preference and tolerance. For example, Bakshi and Chen (1994) verified

that people's risk preference and tolerance decreased with age. Riley and Chow (1992) point out that there is a positive correlation between age and risk preference and tolerance before 65, but a negative correlation after 65. Of course, there are other studies that have not found a significant relationship between age and risk preference and tolerance.[47]

Generally speaking, with the growth of age, there is less time for investors to make up for losses. Therefore, with the growth of age, people's risk preference and tolerance will decrease continuously (Grable & Lytton, 1998). Therefore, this study proposes hypothesis H_1: Age is significantly correlated with risk preference and tolerance.

（2）Gender

As for the studies on the relationship between gender and risk preference and tolerance, most of them confirm that males are more willing to bear the risk of financial assets than Females (Grable & Joo, 2000; Hawley & Fujii, 1993-1994; Sung & Hanna, 1996; Schooley & Worden, 1996). Therefore, this study proposes hypothesis H_2: Gender is significantly correlated with risk preference and tolerance.

（3）Marriage

In previous studies, Bertocchi, Brunetti and Torricelli (2011) believes that married people have a higher risk tolerance for financial assets. However, some literatures find that marriage does not significantly affect the risk preference

[47] Such as the empirical research conducted using the 1992 US consumer finance survey data.

and tolerance of families (Grable, 1997; Palsson, 1996). Therefore, this study proposes hypothesis H_3: Marriage is significantly correlated with risk preference and risk tolerance.

（4）Education

Grable and Joo (2000) show that education level represents investors' ability to accept risks, and most studies confirm that people with higher education are more likely to take financial risks (Cohn, Lewellen, Lease & Schlarbaum, 1975; Hawley & Fujii, 1993-1994; Riley & Chow, 1992). Therefore, this study proposes hypothesis H_4: Education is significantly correlated with risk preference and tolerance.

（5）Number of Family Members

There is no consensus on the effect of the number of family members on risk preference and tolerance. Jianakoplos and Bernasek (1998) believe that with the increase of number of family members, the risky assets hold by married couples increase significantly. However, some domestic studies believe that families with a large number of family members are more risk-averse (Ma Lili & Li Quan, 2011). According to the family development and expectation theory (Kahneman & Tversky, 1979), the number of family members will change the structure of the family. With the increase of family expenses, the loss of investment may seriously affect the quality of life of the family. Therefore, this study proposes hypothesis H_5: The number of family members is significantly correlated with risk preference and tolerance.

（6）Family Income

For the issue of family income and risk preference, most empirical studies have confirmed that the higher the income, the higher the possibility of risk seeking (Riley & Chow, 1992; Hawley & Fujii, 1993-1994). Therefore, this study proposes hypothesis H_6: Family annual disposable income is significantly correlated with risk preference and tolerance; H_7: family net assets are significantly correlated with risk preference and tolerance.

（7）Investment Knowledge and Experience

Investment knowledge and experience to a certain extent, show the investors' understanding of the underlying investments, the cognition of the market, the ability of information acquisition and analysis, etc. While the empirical researches have not yet come to an agreement. Some scholars hold that people with more investment knowledge and experience have higher risk preference and tolerance (Team of investors and investor management of Securities Institute of Huaxi Securities Co., Ltd., 2013). Therefore, this study proposes hypothesis H_8: Investment knowledge is significantly correlated with risk preference and tolerance. H_9: Investment experience is significantly correlated with risk preference and tolerance. H_{10}: Years of investment is significantly correlated with risk preference and tolerance.

This study proposes 10 hypotheses as summarized in Table 10.

Table10 Summary of Hypotheses

H_1	Age is significantly correlated with risk preference and tolerance.

H_2	Gender is significantly correlated with risk preference and tolerance.
H_3	Marriage is significantly correlated with risk preference and tolerance.
H_4	Education is significantly correlated with risk preference and tolerance.
H_5	Number of family members is significantly correlated with risk preference and tolerance.
H_6	Family annual disposal income is significantly correlated with risk preference and tolerance.
H_7	Family net asset is significantly correlated with risk preference and tolerance.
H_8	Investment knowledge is significantly correlated with risk preference and tolerance.
H_9	Investment experience is significantly correlated with risk preference and tolerance.
H_{10}	Years of investment is significantly correlated with risk preference and tolerance.

6.2.2 Design of Study

（1）Selection of Model

Since the dependent variable “the degree of risk preference and tolerance” is an ordinal variable, the optimal scale regression method is selected in this study. Optimal scale regression analysis is an application developed by DTSS research group of Leiden University in the Netherlands and added after SPSS11.0. This method is different from general regression analysis, in which it allows the dependent/independent variables to be various types of categorical

variables. The basic idea of optimal scale regression is to convert categorical variables into quantitative variables by quantitative transformation based on certain optimization principle, and then process them with the general linear regression method. The so-called optimization principle is, on the basis of analysis of the influence of each value of categorical variables (i.e., each category) on dependent variables, to use certain nonlinear transformation method to iterate repeatedly, assign a best quantitative value to each value of the original problem, and ensure the relationship between variables after the transformation is linear. The purpose is to get an optimal regression function. It has unique advantages in processing data with categorical variables. In particular, the processing of regression analysis of ordered dependent variables is more in line with the actual situation than logistic regression (Deng Fuzhong & Zhao Qiong, 2010).

（2）Variable Description

This study firstly selects question 13, 14, 15, 17, 19, 20, 21, 23, 24, and 26 of the questionnaire to measure investor risk preference and tolerance. for questions obviously involving choice of risk preference and tolerance, each option is assigned -4/-2/0/2/4 points respectively; for questions not directly asking about choice of risk preference and tolerance, each option is assigned -2/-1/1/2 points respectively. The range of score from -32 to 32 is divided into 5 levels, as shown in Table 11. The risk preference and tolerance level determined by the final score are taken as dependent variables.

Table 11 Risk Preference and Tolerance Level

Option	No.13	No.14	No.15	No.17	No.19	No.20	No.21	No.23	No.24	No.25
A	-4	-2	-2	-2-	-4	-4	-2	-4	-4	-4
B	-2	-1	-1	-1	-2	-2	-1	-2	-2	-2
C	0	1	1	1	0	0	1	2	2	2
D	2	2	2	2	2	2	2	4	4	4
E	4	-	-	-	4	4	-	-	-	-

Range of Scores	Risk Preference and Tolerance Level	Number of Testees	Proportion
-32 -- -20	Low	4	1.33%
-19 -- -7	Low to Medium	32	10.63%
-6 -- 6	Medium	155	51.49%
7 – 19	Medium to High	103	34.22%
20 -- 32	High	7	2.33%

Then, according to the proposed hypotheses, choose gender, age, marriage, education, number of family members, family annual disposal income, family net assets, investment knowledge, investment experience, and years of investment as independent variables. The independent variables, as categorical variables, are then coded and assigned certain value. For convenience of discussion, the variables and corresponding explanations to be discussed are summarized in Table 12.

Table 12 Variable Explanation

Variable	Explanation
Risk Preference and Tolerance Level	1：Low 2：Relatively Low 3：Medium 4：Relatively High 5：High
Gender	1： Non-male (Only 1 testee chooses option “others”. So options “Female” and “others” are merged into non-male) 2：Male
Age	1：Below 30 2：30-40 3：41-50 4：51-60 5：Above 60
Marriage	1：Married 2：Not Married (7 testees choose option “others”. So, options “unmarried” and “others” are merged into not married)
Education	1：High School or below 2：College 3：Undergraduate 4：Graduate or above
number of family members	1：1 2：2 3：3 4：4 5：5 or above
family annual disposal income	1：≤ RMB200,000 2：RMB200,000<annual disposable income≤RMB300,000 3：RMB300,000<annual disposable income≤RMB500,000 4：RMB500,000<annual disposable income≤RMB1,000,000 5：>RMB1,000,000

family net assets	1：≤RMB1,000,000 2：RMB1,000,000< net assets≤RMB2,000,000 3：RMB2,000,000< net assets≤RMB3,000,000 4：RMB3,000,000< net assets≤RMB5,000,000 5：RMB5,000,000< net assets≤RMB10,000,000 6：>RMB10,000,000
Investment Knowledge	1：Limited 2：Basic 3：Rich 4：Professional
Investment Experience	1：Bank Deposits 2：Financial Products 3：Stocks, Fund, etc. 4：Warrants, Futures, Options, etc.
Years of Investment	1：None 2：Less than 2 3：2-5 4：5-10 5：more than 10

（3）Regression Result and Discussion

By using the optimal scale model in software SPSS v.26, we obtain a regression model that can explain 31.2% of investor risk preference and tolerance. The F value of the model is 7.181 and the P value is 0.000<0.05. Therefore, the optimal scale regression function is significant. From the table of coefficients, it can be seen that the P value of gender, marriage, number of family members, family net asset, investment knowledge, investment experience and years of investment are >0 0.05, which are not statistically significant. The P value of age, education and family annual disposable income are <0.05, which are statistically significant (see Table 13 for details). Accordingly, the regression function is: $\text{Risk Level} = -0.384 \times \text{Age} -$

$0.182 \times \text{Education} + 0.180 \times \text{Annual Disposal Income}$. Among the independent variables, age, education and annual family annual disposable income significantly correlated with investor risk preference and tolerance, and age and family annual disposable income are more important. Specifically, age and education are negatively correlated with investor risk preference and tolerance, and family annual disposable income is positively correlated with investor risk preference and tolerance. The independent variables such as gender, marriage, number of family members, investment knowledge, investment experience and years of investment do not have statistically significant relationship with investor risk preference and tolerance. This result is consistent with the current situation that empirical researches have not reach consensus on certain variables. For the independent variable “family net asset”, it is found in the questionnaire survey that the vast majority of investors, real estate accounts for the largest proportion of their family net assets. Although family net assets belong to the category of family income, considering the composition of the assets and the extreme illiquidity of real estate, the result that family net assets and investors risk preference and tolerance do not present a significant relationship is reasonable. In summary, according to the result of the optimal scale regression, in the view of investor management, the platform should pay special attention to the age, the family annual disposal income, and the education level of each investor.

Table 13 Regression Result

Summary			
Multiple R	R^2	Adjusted R^2	Apparent Prediction Error
.602	.362	.312	.638

ANOVA					
	Sum of Squares	df	Mean Square	F	Sig.
Regression	109.068	22	4.958	7.181	.000
Residual	191.932	278	.690		
Total	301.000	300			

Coefficients					
	Standardized Coefficients				
	Beta	Bootstrap (1000) Estimate of Std. Error	df	F	Sig.
Gender	.028	.056	1	.242	.623
Marriage	.043	.038	1	1.305	.254
Age	-.384	.221	3	3.012	.031
Education	-.182	.107	3	2.918	.035
No. of Family Member	-.030	.079	3	.145	.933
Annual Disposable Income	.180	.097	3	3.453	.017
Family Net	.063	.098	2	.412	.663

Assets					
Investment Knowledge	.057	.102	2	.308	.735
Investment Experience	.164	.151	2	1.177	.310
Years of Investment	.153	.099	2	2.392	.093

Correlations and Tolerance

	Correlations			Importance	Tolerance	
	Zero-Order	Partial	Part		After Transformation	Before Transformation
Gender	.056	.034	.027	.004	.966	.944
Marriage	-.005	.045	.036	-.001	.677	.624
Age	-.482	-.397	-.345	.511	.809	.611
Education	-.032	-.205	-.167	.016	.842	.809
No. of Family Number	.044	-.032	-.025	-.004	.703	.771
Annual Disposable Income	.262	.203	.166	.130	.844	.580
Family Net Assets	.115	.072	.057	.020	.829	.513
Investment Knowledge	.156	.062	.050	.024	.767	.692
Investment Experience	.385	.179	.146	.174	.786	.734

Years of Investment	.292	.165	.134	.124	.763	.550

For investor management, the platform can make a two-step investor evaluation. First step is the qualified investor threshold assessment. China's laws and regulations require qualified investors participating in private equity, trust and other financial products should be institutional investor with net assets no less than RMB10 million, individual investor with financial assets no less than RMB3 million or average personal annual income in the recent three years no less than RMB500,000. Domestic platforms that set up the qualified investor mechanism generally refer to this requirement and reduce the required amount of assets or income to adapt to equity crowdfunding. Common criteria include personal income no less than RMB300,000 in the past year or financial assets no less than RMB1 million.[48] Taking income or financial assets as the qualified investor requirement for equity crowdfunding can exclude investors whose objective risk tolerance is too low due to low income or assets. Therefore, the platforms can initiate or continue to use this threshold requirement. In addition, considering the high risk of equity crowdfunding, the requirement of age can be added to the standard of equity crowdfunding qualified investors. For example, set the age upper limit to 60 at which the majority of Chinese people will retire, which means investors beyond 60 will not be admitted as qualified investors for equity crowdfunding. At the same time, according to the overall

[48] Such as JD crowdfunding, and Qunfengshe.

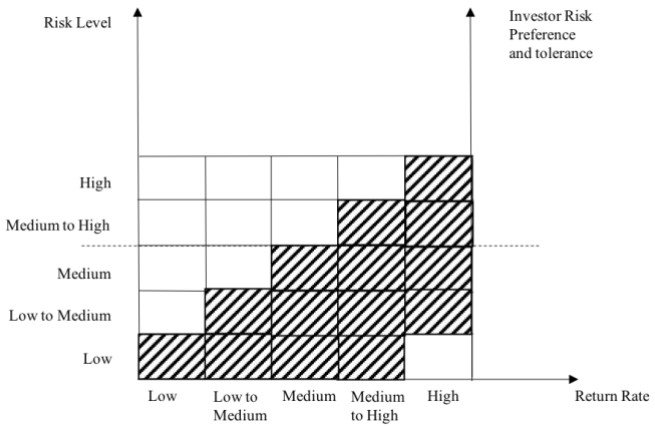
complexity of the projects launched on the platform, consider whether to include education into the qualified investor requirements. If most of the projects launched on the platform are relatively professional and difficult to understand, the education of qualified investors should be above "college or undergraduate". If the projects on the platform are relatively easy to understand, it is not necessary to include education in the qualified investors requirements, but to take education as one of the indicators to measure the investor risk preference and tolerance.

Although personal annual income and financial assets are the most important indicators for judging qualified investors, both indicators have their drawbacks. For example, considering the current living cost in China, personal disposable income may be far less than his income, and financial assets may not be able to be turned into cash at any time. Therefore, for investors who meet the qualified investor requirements, the platform should continue to evaluate the investor's specific risk preference and tolerance. The regression function obtained by this paper $\text{Risk Level} = -0.384 \times \text{Age} - 0.182 \times \text{Education} + 0.180 \times \text{Annual Disposal Income}$ has guiding significance for evaluating investor risk preference and tolerance. At present, real estate accounts too much in the family assets of domestic investors and real estate mortgage payment is relatively high. Compared with asset indicators, the family annual disposable income indicator can more reasonably reflect the investor’s risk preference and tolerance, especially for families that need to raise children and support the

elderly. Besides, this paper find that age and education both significantly affect investor risk preference and tolerance level. Therefore, on the basis of the qualified investor system, the investor risk preference and tolerance evaluation should at least include family annual disposable income, age, and education elements.

On the basis of the two-step investor evaluation, the matching of investor risk preference and tolerance with the project risk level should also be emphasized. The evaluation model established in this paper divides investor risk preference and tolerance into 5 levels, namely low, low to medium, medium, medium to high, and high. Chapter V project risk assessment and classification model divides the project risk into five levels, namely low, low to medium, medium, medium to high, and high. Investor risk preference and tolerance should be downward compatible with the project risk level, that is, investors with high risk preference and tolerance level can invest in projects with any risk levels; investors with medium-to-high risk preference and tolerance level can invest in projects with risk levels no higher than medium-to-high, and so on. For example, the dotted line in Figure 13 indicates that an investor's risk preference and tolerance level is medium, so he can invest in all the projects below the dotted line, that is, all projects whose risk level does not exceed the medium level.

Figure 13 Matching Investors and Projects



Of course, since the sample size of this questionnaire is small and the population is relatively concentrated, the data may not be able to represent a broader group. Different platforms still need to responsibly perform investor protection according to the specific situation of investors.

Chapter VII Case Study of the Risk Control System Construction of China's Equity Crowdfunding Platforms

7.1 Introduction of Platform Q

Platform Q is a crowdfunding-alike equity investment platform in China. It started operation at the end of 2015 and is one of several platforms that have been successfully operating in China. By the end of 2019, platform Q has 8,390 registered members, among which 3,363 are certified qualified investors and 636 have invested on the platform.[49] Since the operation of the platform, the cumulative number of investors is 1,781, and the cumulative paid-in amount is nearly RMB400 million. In 2019, the subscribed amount is nearly RMB170 million, and the paid-in amount is more than RMB100 million. There is an obvious 20/80 effect that the total investment amount of top 23% investors (about 150 people) accounts for 80% of the total investment amount. By the end of 2019, 41 projects have been launched on platform Q, among which 10 have been exited, 5 are in normal operation with paper profits, 17 are in normal operation, 3 have failed, and 6 have been cancelled (see Table 14 for an overview of exited projects and failed projects). The cycle of exit ranges from 1 to 3 years, and all exits are made through shareholder repurchase and/or acquisitions by other investment institutions.[50]

[49] Among them, 300 people invested in only one project, 122 people invested in 2 projects, 62 people invested in 3 projects, 40 people invested in 4 projects, and 114 people invested in 5 projects or more.

[50] The data is from the internal report of platform Q.

Table 14 Overview of Exited Projects and Failed Projects on Platform Q

No.	Name	Date of Launch	Target Amount (RMB 10 thousand)	Number of Investors	Minimum Investment (RMB)	Return
1	An O2O Project	201510	5M	47	50,000	IRR≈40%
2	A Housing Project	201512	10M	86	50,000	IRR≈15%
3	A Catering Project	201603	10M	21	400,000	Failed
4	A Game Distribution Platform Project	201605	5M	5	1 million	IPO
5	A Smart Lock Project	201605	5.3M	46	50,000	IRR≈120%
6	A UAV Project	201607	3M	38	50,000	Failed
7	A VR Project	201607	0.88M	39	0	0
8	An IP Project	201607	3.18M	28	50,000	IRR≈36%
9	A Medical Project	201608	6M	47	100,000	IRR≈10%
10	A Hotel Project	201611	5M	58	50,000	0
11	A Platform Tool Project	201612	10M	49	100,000	IRR≈115%
12	A SaaS Project	201708	7.36M	50	100,000	IRR≈140%

13	A Baking Project	201808	10M	100	50,000	Failed, has been reconstructed

Platform Q adopts the "platform service model" proposed in this paper. The platform is responsible for project selection, due diligence, and post-investment management. It charges investors management fee based on the amount of investment and receives performance remuneration according to the investment return. In its early stage, platform Q has various types of projects. Now it tends to focus on projects with "good cash flow, strong predictability of income and clear exit channel". In terms of investor management, platform Q requires its members to be certified as "qualified investors" of the platform before any investment.[51] It has no requirement on investment cap. With regard to the information disclosure and project explanation, platform Q sets up investor chart group on social media where the project managers and/or founders of the financing parties make explanation and risk disclosure for investors. After investors subscribe, platform Q will explain the investment process and legal documents, and assist investors to establish investment entities (generally limited partnerships). The funds will be directly transferred to the account of the investment entity and paid to the investee enterprises. It can be seen that platform Q has established a number of risk control measures, but has not yet

[51] The requirements of qualified investors include: 1) investors who have participated in traditional private equity funds; 2) average personal income in the last three years is more than RMB300,000; 3) financial assets of the individual or the family are more than RMB1 million; 4) investors representing investment institutions; or 5) investors who are or were professionals, such as accountants, lawyers, and or professional investors.

built a complete risk control system. During the process of conducting research on platform Q, we put forward a number of suggestions for it, such as screening projects with the risk control checklist and further reviewing the projects through the investment committee, etc. Platform Q has adopted some of them preliminarily and put them in trial.

7.2 Investment Case Analysis

Platform Q adopted the mode of "lead and follow" in its early stage of development, and made substantial due diligence on most of the investment projects. A total of 2 risk projects appeared under the "lead and follow" mode. One was a catering project, a star project favored by the investment institutions at that time, that platform Q conducted due diligence. The minimum investment amount on was RMB400,000, and 21 investors participated. The other one is a UAV project, the project that platform Q did not conduct due diligence. After the exposure of risk, in the process of safeguarding investors' rights, platform Q found the leading investor did not disclose the development of the project truthfully and timely. Without informing platform Q and its investors, the leading investor participated in the meeting of shareholders and board of directors many times where important decisions were made. The failures of these two projects, to some extent, confirms the viewpoints of this study: Equity crowdfunding should choose appropriate project types instead of pursuing hot spots in the market which tend to be overvalued and not suitable for equity crowdfunding investors to participate. In addition, the minimum investment

amount of equity crowdfunding should not be too high. Once risk occurs, high minimum investment amount is likely to cause losses beyond investor tolerance and is not convenient for investors with limited capital to diversify. Besides, the "lead and follow" mode heavily rely on the role and moral standards of the leading investors, while the reality may not be ideal if the platform cannot effectively supervise.

After platform Q adopted the platform service mode, it also encountered a failed investment project, the baking project listed in Table 14. The investment of this project reached RMB10 million with minimum investment amount RMB50,000 and 100 investors participating. When the project was found going wrong, platform Q immediately stepped in and restructured the investee enterprise. After 2-month reconstruction, the enterprise has survived the bankruptcy crisis and is gradually recovering. However, it is still uncertain whether the investment can be recovered. This paper will compare the risk control measures of the baking project with the proposed risk control measures one by one, hoping to test the research conclusions through this investment case.

Type of project. The baking project belongs to projects that are related to investors' life, easy for investors to understand and make decisions, and have relatively predictable income. However, for baking project, the investment of RMB10 million is slightly high. From the perspective of risk control, the project should control the amount of investment.

Project review and screening. Platform Q conducted substantial due

diligence on this project. But at that time, platform Q had not set up the risk control committee and other screening measures. When using the risk control checklist proposed by this study to review this project, it can be seen several warnings are raised (see Table 15). In such circumstance, platform Q should continue to carry out in-depth investigation and not put the project online.

Reasonable valuation. The valuation of the project is RMB120 million before investment, twice of the registered capital. It is not a common method to value a start-up company by its registered capital. For early projects in the baking industry, the valuation is slightly higher.

Risk assessment and classification. Platform Q did not use the risk assessment method proposed in this study, but gives a general qualitative evaluation as "cash flow project, traditional field, medium risk". Platform Q does not have the mechanism of matching investors and projects according to investor risk preferences and tolerance and project risk level. The risk level of the baking project obtained by using the risk assessment suggested in this study is medium to high.[52] Platform Q should actively exclude investors with risk preference and tolerance than required.

Information disclosure and project explanation. Platform Q treats this baking project no differently from other projects, requiring the information disclosure of the financing party, disclosing due diligence result to investors, and explaining the project in detail through a chat group on the social media.

[52] See the assessment result in section 6.3.

Cooling period. Platform Q has not adopted the measure of cooling period of investment. However, investors who subscribe to any project on platform Q have not assumed the obligation of payment, so they are free to choose whether to eventually invest or not.

Investment. Platform Q explained in detail the investment process and legal text of the baking project as normally. It also assisted investors to set up a partnership as the investment entity, to which investors' funds are directly transferred. The investment entity then invested in the project.

Regular report after investment. This baking project requires formal report to investors at least once every six months in the first two years after investment and at least once every year from the third year. At other times, report to investors when important issues occur. Reports should include financial statements and operations statements. The risk of the baking project was exposed just around the time of the second report, and platform Q was able to intervene in time to restructure the project.

Exit. The baking project aims to exit through IPO, and entered a shareholder repurchase term in the event of IPO failure. For baking projects, IPO exit is highly uncertain, thus such exit design is not suitable for equity crowdfunding investors.

Investor suitability and investment cap. Platform Q has not yet begun investor suitability management or set investment cap. In the baking project, investors invested RMB50,000 to 200,000. Due to the lack of relevant

information on the suitability of investors, it is difficult to judge whether the potential losses are within the tolerance of investors.

In summary, by comparing the risk control measures proposed in this paper with the actual risk control measures of this baking project, we find that the risk control measures proposed in this paper better indicate the risk of this project and better protect the interests of investors.

Table 15 Risk Control Checklist

Category	Subclass	Specific Matters	One Baking Project	
Basic	Founder	Whether the founder/team of the non-overseas project and its immediate family have settled overseas	No	\
		Whether there is a kinship relationship between the key personnel of the target company	Yes	Attention
		Have you verified the authenticity and credibility of the key information of the founder/team's, e.g. qualifications, work experience, and resources, that are sufficient to be the highlight of the financing	No	Attention
		Did you find that the founder/team has extremely strong personal hobbies that cost too much money, time or effort to maintain	No	\
	Upstream and Downstream Enterprises	Have you reviewed the upstream and downstream companies of the target company	N/A	\
	Place of Business	Whether the target company’s main place of business is consistent with the registration information	No	Attention
	Negative Reports	Query the information of the founder/team, the target company through the public channel, whether there is negative reports	No	\
Legal	Contribution	Before this investment, whether the capital contribution of the target company is fully paid in place	No	Risk alert
	Ownership	Whether the target company has the situation that someone holds shares on behalf of others	Yes	Attention
	License	Whether the target company obtains the qualification and/or license related to its business	Yes	\

	Related Party Transaction	Whether the target company has a large number of unreasonable related party transactions	N/A	\
	Disputes	Whether the founder/team and the target company involves in breach of contract, litigation, arbitration, and/or administrative penalty	Yes	Risk alert
	Previous Ownership Changes	Have you checked the background, contracts, and articles of association of the target company regarding previous capital increase and equity transfer? If there are special terms such as milestone events, valuation adjustment, repurchase, etc., please explain	No	Attention
		Whether there is any delay in payment of capital increase and equity transfer	Yes	Risk alert
Financial	Internal Compliance	Is the financial system of the target company in compliance with the requirements of relevant laws and regulations	Unknown	\
	Profitability	Have you obtained the recent financial report of the target company	Yes	\
		Have you checked the drivers of operating income growth and future profit forecasts	Yes	\
		Has the gross profit margin of each segment product/service/project of the target company been compared with similar companies	No	Attention
		Has the net income rate of the target company been compared with similar companies	No	Attention
	Assets	Have you obtained the list of assets of the target company and verified the ownership	No	Attention
	Business dependence	Have you paid attention to the concentration of customers and suppliers in terms of the proportion of transactions	N/A	\
	Debt	Have you paid attention to the debt repayment pressure and external guarantee of the founder and the target company	No	Attention
	Tax	Have you understood the main tax categories, tax rates, and tax incentives of the target company	No	Attention
		Have you verified the tax payment certificate of the main tax category	No	Attention

		Whether the target company's tax payment status matches the income/profit level	Unknown	Attention
Moral	Appropriation	Whether the founder has occupied a large amount of funds of the target company and has not returned for a long time	Unknown	Attention
	Personal Remuneration	Does the founder receive a fixed salary that is significantly higher than the market average	Unknown	Attention
	Personal Consumption	Whether the consumption of the founder's individual/family is reimbursed at the target company	Unknown	Attention
	Employment	Is the founder/team full-time in the target company without any other part-time job or employment in other industry	No	Risk Alert
	Non-competition	Is there a violation of the non-competition by the founder/team	No	\

Chapter VIII Conclusion and Prospect

8.1 Conclusion

Equity crowdfunding, as a new type of equity investment and financing method, greatly solves the equity investment problem of middle-class people and the difficulties of SMEs in financing and customers obtaining, promotes the construction of multi-level capital market, and the healthy development of national financial system. Due to the advantages of equity crowdfunding, the global equity crowdfunding market has developed rapidly in recent years. However, due to the excessive pursuit of short-term benefits and the absence of external legal supervision, most of China's equity crowdfunding platforms have been developing in a brutal way, with no effective risk control system established and frequent occurrence of risk projects. Investors suffered huge losses. Equity crowdfunding and traditional venture capital are both equity investments in terms of the nature of investment. Based on the comparison between equity crowdfunding and traditional venture capital, this paper proposes a risk control system for equity crowdfunding platforms to deal with the investment loss risk caused by non-systematic factors. The risk control system includes not only the risk control in the narrow sense of project risk, but also the risk control in all aspects of the business process of the platform.

Because of the similar types but different degrees of project risk between equity crowdfunding and traditional venture capital, this paper proposes that China’s equity crowdfunding platforms can learn from the risk control

measures of traditional venture capital to control the pre-investment information asymmetry and the post-investment principal-agent conflicts.

Based on the differences in business models of equity crowdfunding and traditional venture capital, this paper proposes a platform service model to strengthen the interest binding between the platform and its investors.

Based on the different positioning of equity crowdfunding and traditional venture capital, this paper proposes that the platform should formulate appropriate standards to select projects suitable for equity crowdfunding. For example，1) projects with moderate single investment amount, good cash flow, and predictable earnings; 2) projects with clear exit channels, or with continuous dividends without the need to exit; 3) projects with low volatility and high success rate.

Based on the differences of investor risk preference and tolerance between equity crowdfunding and traditional venture capital, this paper proposes that the platform should manage investors suitability and set the investment cap.

Based on the different specialties of equity crowdfunding investors and the traditional venture capital institutions, in order to improve the professionalism of the investors or weaken the influence of the lack of specialty, and reduce the irrational behavior of investors, this paper puts forward that the platform should choose projects related to investors' life and are easy to understand, fully explain the projects, strengthen investor education, and actively guide investors to exit to lock in benefits.

In view of the differences in risk diversification of equity crowdfunding and traditional venture capital, this paper proposes that the platform should timely advise investors to carry out risk diversification, reduce personal minimum investment amount of individual projects to make it possible for investors to build a more diversified portfolio, and weaken the problem of equity investment having too much risk.

On this basis, according to the investment logic of equity crowdfunding platform, this paper proposes a set of relatively complete risk control system, including 1) risk control before the launch of projects, 2) risk control in fund raising, 3) risk control of post-investment management, 4) investor management and education, and 5) platform team building and incentives.

The implementation of the risk control system constructed in Chapter IV is inseparable from the quantitative assessment of the project risk and investor risk preference and tolerance. Therefore, this paper designs and builds project risk evaluation model and investor risk preference and tolerance evaluation model in Chapter V and Chapter VI, respectively. Chapter V puts forward the specific method of using AHP and FCE to assess and classify the project risk; Chapter VI puts forward the investor risk preference and tolerance evaluation model based on the investor questionnaire survey. Through the introduction of specific models and methods in Chapter V and Chapter VI, the implementation of the risk control system is more feasible. Finally, this paper conducts a case analysis of actual investments on one domestic platform to preliminarily verify

the effectiveness of the risk control system proposed.

8.2 Prospect

Equity crowdfunding is a high-risk industry. Its premise of healthy and sustainable development is to protect of investors' interests. Therefore, it is of great significance to actively explore the construction of risk control system for investor protection and the development of the whole industry. Based on this, this paper hopes to combine theories with practices, theories first and practice followed, to puts forward a set of practical risk control system. In the research process, this paper has proposed many innovative ideas from both theoretical and empirical aspects. However, since there is no public way to obtain the information and data of specific projects in the equity crowdfunding industry in a broader scope, it is difficult to conduct a large-scale quantitative analysis of project risks. In addition, since the sample of the questionnaire is relatively small and the population is relatively concentrated, the results of the questionnaire may deviate from the actual data of the broader investor population. In view of the lack of data, continuous follow-up investigations are needed in the future, so as to better verify the effectiveness of the risk control system proposed in this paper.

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Appendix I Questionnaire

1. Your gender is

- □ Male
- □ Female
- □ Others

2. Your age is

- □ Below 30
- □ 30-40
- □ 41-50
- □ 51-60
- □ Above 60

3. Your marital status is

- □ Married
- □ Unmarried
- □ Others

4. Your highest education is

- □ High school or below
- □ College
- □ Undergraduate
- □ Graduate or above

5. The number of your family members is

- □ 1
- □ 2
- □ 3
- □ 4
- □ 5 or above

6. Which province in China is your permanent residence?

7. The annual disposable income of your family is

- □ ≤RMB200,000
- □ RMB200,000<annual disposable income≤RMB300,000
- □ RMB300,000<annual disposable income≤RMB500,000
- □ RMB500,000<annual disposable income≤RMB1,000,000
- □ Annual disposable income>RMB1,000,000

8. Your family's net assets are

- □ ≤RMB1,000,000
- □ RMB1,000,000< net assets≤RMB2,000,000
- □ RMB2,000,000< net assets≤RMB3,000,000
- □ RMB3,000,000< net assets≤RMB5,000,000
- □ RMB5,000,000< net assets≤RMB10,000,000
- □ Net assets > RMB10,000,000

9. Please rank the proportion of various assets in your family

- □ Cash
- □ Bank deposits, bank financial products, long-term treasury bonds, etc.

- □ Stocks, stock funds, corporate bonds, bond funds, trusts, etc.
- □ Real estate
- □ Venture capital, private fund, futures, financial derivatives, digital currency and other alternative investment

10. Your investment knowledge can be described as

- □ Basically no knowledge of financial products
- □ Basic knowledge of financial products and related risks
- □ Rich knowledge of financial products and related risks
- □ Have obtained bachelor's degree or above in finance, economy or accounting and other related majors regarding financial product investment, or have obtained one or more of securities industry qualification, futures industry qualification, CPA certificate or CFA certificate, or have been engaged in financial product investment related work for more than two years

11. Your investment experience can be described as

- □ Basically no other investment experience except bank deposits
- □ Purchased bonds, insurance and other financial products
- □ Participated in the trading of stocks, funds and other products
- □ Participated in trading of warrants, futures, options and other products

12. How many years of experience do you have in financial products such as mutual funds, stocks, trusts, private funds or financial derivatives

- □ None
- □ Less than 2 years
- □ 2-5 years
- □ 5-10 years
- □ More than 10 years

13. Compared with other people, you think you are

- □ Very reluctant to take financial risks
- □ Less willing to take financial risks
- □ General willingness to take financial risks
- □ More willing to take financial risks
- □ Very willing to take financial risks

14. When the financial products invested are in poor condition, you will be

- □ Very upset
- □ A little upset
- □ Not sure, may be upset, may be not
- □ Not upset at all

15. When you think about financial risks, the first thing you think about is

- □ Danger of loss of principal
- □ Uncertainty
- □ Opportunity
- □ Excitement

16. Suppose you invest RMB100,000 and get RMB160,000 in three years, the annual return rate of your investment is about

□ 60%
□ 20%
□ 17%
□ 10%
□ Not sure

17. When faced with major financial decisions, do you pay more attention to potential profits or potential losses?

□ Always losses
□ Usually losses
□ Usually profit
□ Always profit

18. After you have made a financial decision, you usually feel

□ Very pessimistic
□ Relatively pessimistic
□ Relatively optimistic
□ Very optimistic

19. In your past financial decisions, the risk level you took is

□ Very low
□ Low
□ Medium
□ High
□ Very high

20. The risk level you are going to take is

□ Very low
□ Low
□ Medium
□ High
□ Very high

21. If there is an investment opportunity that seems almost certain to generate considerable income, but you are short of funds, will you borrow money to invest?

□ Basically not
□ Probably not
□ Probably
□ Highly likely

22. Do you have confidence that you can make good investment decisions?

□ No confidence at all
□ A little confidence
□ Relatively more confidence
□ Very much
□ Full confidence

23. If the total value of your investment falls, when will you start to feel upset

□ Any decline happens
□ A certain decline in earnings

- □ Slight loss of principal
- □ Loss of more than 20% of principal

24. Suppose there are two kinds of investment: Investment A is expected to obtain 10% of the income, and the possible losses are very small; investment B is expected to obtain 30% of the income, but may bear a large loss. How will you make your investment?

- □ Fully invest in A with less return and less risk
- □ Invest in A and B at the same time, but most of the funds are invested in A with less return and less risk
- □ Invest in A and B at the same time, but most of the funds are invested in B with more return and more risk
- □ Fully invest in B with more return and more risk

25. Your planned investment duration is

- □ Less than 1 year
- □ 1-3 years
- □ 3-5 years
- □ More than 5 years

26. Which of the following statements best suits your investment attitude

- □ Risk averse, no loss of principal, stable return
- □ Conservative investment, no loss of principal, willing to bear a certain range of earning fluctuation
- □ Seeking higher return and growth of funds, willing to bear limited principal loss for this purpose
- □ Hope to earn high return and be willing to bear large principal loss for this purpose

27. Have you ever participated in equity crowdfunding？

- □ Yes
- □ No

28. Why do you choose equity crowdfunding? (you may choose multiple answers)

- □ No other equity investment channel
- □ Can choose preferred projects
- □ Have entrepreneurial participation
- □ Can find projects with better return risk ratio
- □ Others

29. What is the number of equity crowdfunding projects you have participated in?

- □ 1
- □ 2-5
- □ 6-10
- □ More than 10

30. What is the overall return of the equity crowdfunding projects you have participated in？?

- □ No return, and principal loss
- □ No return, no principal loss
- □ Has return, with IRR no more than 10%

- □ Has return, with IRR 10%-50%
- □ Has return, with IRR more than 50%

31. How much annualized rate of return is the rate of return for an equity crowdfunding project that you are satisfied with?

- □ Any return
- □ 10%
- □ 20%
- □ 20%-50%
- □ 50%-100%
- □ More than 100%

32. What are the characteristics of the equity crowdfunding project that you are most willing to participate in? (you may choose multiple answers)

- □ Continuous dividend
- □ High-tech industry
- □ Projects related to life, such as food, clothing, housing, and transportation, etc.
- □ Projects with low minimum investment
- □ Others

33. In your opinion, the appropriate minimum investment for a single equity crowdfunding project is?

- □ RMB10,000
- □ RMB30,000
- □ RMB50,000
- □ RMB10,000
- □ Whatever

34. In your opinion, the reasonable amount of equity crowdfunding investment within one year is?

- □ No more than RMB100,000
- □ RMB100,000- RMB200,000
- □ RMB200,000- RMB300,000
- □ RMB300,000- RMB500,000
- □ More than RMB500,000

35. For the most successful equity crowdfunding you have participated in, what is the successful aspect of it? (you may choose multiple answers)

- □ Yield is higher than expected
- □ Exit time is shorter than expected
- □ Continuous dividend
- □ Have a strong sense of entrepreneurial participation
- □ Other investment interests, such as consumer discounts, membership services, etc.
- □ Others

36. For the most successful equity crowdfunding you have participated in, what is the reason for its success? (you may choose multiple answers)

- □ Equity crowdfunding platform due diligence
- □ Leading investor due diligence

- □ Personal deep understanding of the investment field
- □ Luck

37. For the most terrible equity crowdfunding you have participated in, what is the terrible aspect of it? (you may choose multiple answers)

- □ Principal loss
- □ Return is lower than expected
- □ Exit time is longer than expected
- □ No dividend or little dividend
- □ No sense of entrepreneurial participation
- □ Lack of other investment interests, such as consumer discounts, membership services, etc.
- □ Others

38. For the most terrible equity crowdfunding you have participated in, what is the reason for its failure? (you may choose multiple answers)

- □ Equity crowdfunding platform is not responsible
- □ Leading investor is not responsible
- □ Financing party makes false statement or publicity
- □ Unfamiliar investment field
- □ Impulse investment
- □ Others

39. Among the following measures of equity crowdfunding platform, please select the 5 most important ones

- □ Clear risk warnings
- □ Publish projects that are easy for ordinary investors to understand and make decisions
- □ Provide effective investor education
- □ Require financing party to make sufficient information disclosure
- □ Platform/financing party provides detailed project explanation
- □ Provide necessary post investment management
- □ Set a 24-48-hour investment cooling period (investors can withdraw their investment at any time during the cooling period)
- □ Set an annual investment cap based on the investor's annual income level
- □ Design investor protection clauses (e.g. Valuation adjustments, repurchase, etc.)
- □ The total investment amount of the proposed investment project is moderate, such as a single project investment of no more than 10 million
- □ The amount of minimum investment is moderate, such as no more than 50,000

40. Do you consider risk diversification when investing in equity crowdfunding projects?

- □ Yes
- □ No
- □ Not sure

41. How do you spread the risk? (you may choose multiple answers)

- □ Build my own equity investment portfolio
- □ Invest in stocks, bonds and other products

- □ Never consider it
- □ Others

42. Your impression of equity crowdfunding is?

- □ High risk, high return
- □ Very high failure rate
- □ Similar to P2P
- □ Many false financing
- □ Unreliable, asymmetric information
- □ Lack of security

43. In your opinion, the key to the success of equity crowdfunding is

- □ High quality projects
- □ Professional leading investors
- □ Responsible platforms
- □ Investors have enough judgment themselves
- □ Luck

44. Among the following measures of equity crowdfunding platform, please select the 5 most important ones

- □ Clear risk warnings
- □ Publish projects that are easy for ordinary investors to understand and make decisions
- □ Provide effective investor education
- □ Require financing party to make sufficient information disclosure
- □ Platform/financing party provides detailed project explanation
- □ Provide necessary post investment management
- □ Set a 24-48-hour investment cooling period (investors can withdraw their investment at any time during the cooling period)
- □ Set an annual investment cap based on the investor's annual income level
- □ Design investor protection clauses (e.g. Valuation adjustments, repurchase, etc.)
- □ The total investment amount of the proposed investment project is moderate, such as a single project investment of no more than 10 million
- □ The amount of minimum investment is moderate, such as no more than 50,000

45. In your opinion, the appropriate minimum investment for a single equity crowdfunding project is?

- □ RMB10,000
- □ RMB30,000
- □ RMB50,000
- □ RMB10,000
- □ Whatever

46. In your opinion, the reasonable amount of equity crowdfunding investment within one year is?

- □ No more than RMB100,000
- □ RMB100,000- RMB200,000
- □ RMB200,000- RMB300,000
- □ RMB300,000- RMB500,000

- More than RMB500,000

47. How much annualized rate of return is the rate of return for an equity crowdfunding project that you are satisfied with?

- Any return
- 10%
- 20%
- 20%-50%
- 50%-100%
- More than 100%

48. Do you have any plan to participate in equity crowdfunding?

- Yes
- No

49. What kind of equity crowdfunding project will you consider participating in?

- Projects related to life, such as food, clothing, housing, and transportation, etc.
- Within personal professional area
- Projects provide stable and continuous dividends
- Prove other investment interests, such as consumer discounts, membership services, etc.
- High-tech projects or projects have the potential to be unicorn company
- Will not participate anyway

Appendix II Questionnaire Result

Questions		Frequency	Percentage	Cumulative Percentage
No.1	Male	190	63.12%	63.10%
	Female	110	36.54%	99.67%
	Others	1	0.33%	100.00%
	In total	301	100%	
No.2	<30	45	15.00%	15.00%
	30-40	153	50.80%	65.80%
	41-50	77	25.60%	91.40%
	51-60	25	8.30%	99.70%
	>60	1	0.30%	100.00%
	In total	301	100%	
No.3	Married	226	75.10%	75.10%
	Unmarried	68	22.60%	97.70%
	Others	7	2.30%	100.00%
	In total	301	100%	
No.4	High school or below	4	1.30%	1.30%
	College	21	7.00%	8.30%

	Undergraduate	130	43.20%	51.50%
	Graduate or above	146	48.50%	100.00%
	In total	301	100%	
No.5	1	23	7.60%	7.60%
	2	29	9.60%	17.20%
	3	115	38.20%	55.40%
	4	73	24.30%	79.70%
	≥5	61	20.30%	100.00%
	In total	301	100%	
No.6	Guandong	153	50.80%	50.80%
	Beijing	35	11.60%	62.40%
	Shanghai	25	8.30%	70.70%
	Jiangsu	15	5.00%	75.70%
	Zhejiang	11	3.70%	79.40%
	Hebei	10	3.30%	82.70%
	Henan	7	2.30%	85.00%
	Shandong	6	2.00%	87.00%
	Subtotal	262	87.00%	
No.7	≤RMB200,000	28	9.30%	9.30%
	RMB200,000<annual disposable income≤RMB300,000	46	15.30%	24.60%

	RMB300,000<annual disposable income≤RMB500,000	86	28.60%	53.20%
	RMB500,000<annual disposable income≤RMB1,000,000	87	28.90%	82.10%
	>RMB1,000,000	54	17.90%	100.00%
	In total	301	100%	
No.8	≤RMB1,000,000	51	16.90%	16.90%
	RMB1,000,000< net assets≤RMB2,000,000	50	16.60%	33.50%
	RMB2,000,000< net assets≤RMB3,000,000	32	10.60%	44.10%
	RMB3,000,000< net assets≤RMB5,000,000	45	15.00%	59.10%
	RMB5,000,000< net assets≤RMB10,000,000	55	18.30%	77.40%
	> RMB10,000,000	68	22.60%	100.00%
	In total	301	100%	

No.9	Order				
	1	2	3	4	5
	Real estate	Stocks, stock funds, corporate bonds, bond funds, trusts, etc.	Bank deposits, bank financial products, long-term treasury bonds, etc.	Cash	Venture capital, private fund, futures, financial derivatives, digital currency and other alternative investment

Questions		Frequency	Percentage	Cumulative Percentage
No.10	Limited	12	4.00%	4.00%
	Basic	128	42.50%	46.50%
	Rick	71	23.60%	70.10%
	Professionals	90	29.90%	100.00%
	In total	301	100.00%	
No.11	Basically no other investment experience except bank deposits	7	2.30%	2.30%
	Purchased bonds, insurance and other financial products	21	7.00%	9.30%
	Participated in the trading of stocks, funds and other products	237	78.70%	88.00%
	Participated in trading of warrants, futures, options and other products	36	12.00%	100.00%
	In total	301	100%	
No.12	None	12	3.99%	3.99%
	<2	27	8.97%	12.96%
	2-5	77	25.58%	38.54%
	5-10	86	28.57%	67.11%
	≥10	99	32.89%	100.00%
	In total	301	100%	
No.13	Very reluctant to take financial risks	4	1.30%	1.30%
	Less willing to take financial risks	25	8.30%	9.60%

	General willingness to take financial risks	142	47.20%	56.80%
	More willing to take financial risks	118	39.20%	96.00%
	Very willing to take financial risks	12	4.00%	100.00%
	In total	301	100%	
No.14	Very upset	4	1.30%	1.30%
	A little upset	104	34.60%	35.90%
	Not sure, may be upset, may be not	165	54.80%	90.70%
	Not upset at all	28	9.30%	100.00%
	In total	301	100%	
No.15	Danger of loss of principal	88	29.20%	29.20%
	Uncertainty	142	47.20%	76.40%
	Opportunity	69	22.90%	99.30%
	Excitement	2	0.70%	100.00%
	In total	301	100%	
No.16	60%	6	1.99%	1.99%
	20%	129	42.86%	44.85%
	17%	148	49.17%	94.02%
	10%	2	0.66%	94.68%
	Not sure	16	5.32%	100.00%
	In total	301	100%	

No.17	Always losses	15	5.00%	5.00%
	Usually losses	130	43.20%	48.20%
	Usually profits	150	49.80%	98.00%
	Always profits	6	2.00%	100.00%
	In total	301	100%	
No.18	Very pessimistic	3	1.00%	1.00%
	Relatively pessimistic	23	7.60%	8.60%
	Relatively optimistic	267	88.70%	97.30%
	Very optimistic	8	2.70%	100.00%
	In total	301	100%	
No.19	Very low	6	2.00%	2.00%
	Low	34	11.30%	13.30%
	Medium	209	69.40%	82.70%
	High	46	15.30%	98.00%
	Very high	6	2.00%	100.00%
	In total	301	100%	
No.20	Very low	5	1.66%	1.66%
	Low	46	15.28%	16.94%
	Medium	210	69.77%	86.71%

	High	37	12.29%	99.00%
	Very high	3	1.00%	100.00%
	In total	301	100%	
No.21	Basically not	79	26.20%	26.20%
	Probably not	78	25.90%	52.10%
	Probably	105	34.90%	87.00%
	Highly likely	39	13.00%	100.00%
	In total	301	100%	
No.22	No confidence at all	6	2.00%	2.00%
	A little confidence	85	28.20%	30.20%
	Relatively more confidence	165	54.80%	85.00%
	Very much	36	12.00%	97.00%
	Full confidence	9	3.00%	100.00%
	In total	301	100%	
No.23	Any decline happens	5	1.70%	1.70%
	A certain decline in earnings	9	3.00%	4.70%
	Slight loss of principal	54	17.90%	22.60%
	Loss of more than 20% of principal	233	77.40%	100.00%
	In total	301	100%	

No.24	Fully invest in A with less return and less risk	13	4.30%	4.30%
	Invest in A and B at the same time, but most of the funds are invested in A with less return and less risk	189	62.80%	67.10%
	Invest in A and B at the same time, but most of the funds are invested in B with more return and more risk	88	29.20%	96.30%
	Fully invest in B with more return and more risk	11	3.70%	100.00%
	In total	301	100%	
No.25	<1	16	5.30%	5.30%
	1-3	136	45.20%	50.50%
	3-5	101	33.60%	84.10%
	≥5	48	15.90%	100.00%
	In total	301	100%	
No.26	Risk averse, no loss of principal, stable return	9	3.00%	3.00%
	Conservative investment, no loss of principal, willing to bear a certain range of earning fluctuation	72	23.90%	26.90%
	Seeking higher return and growth of funds, willing to bear limited principal loss for this purpose	205	68.10%	95.00%
	Hope to earn high return and be willing to bear large principal loss for this purpose	15	5.00%	100.00%
	In total	301	100%	
No.27	Yes	115	38.20%	38.20%
	No	186	61.80%	100.00%
	In total	301	100%	

参与过股权众筹的答题者 115 人				
No.28	No other equity investment channel	12	10.40%	多选题不适用
	Can choose preferred projects	64	55.70%	
	Have entrepreneurial participation	59	51.30%	
	Can find projects with better return risk ratio	71	61.70%	
	Others	9	7.80%	
	In total	115		
No.29	1	24	20.90%	20.90%
	2-5	61	53.00%	73.90%
	6-10	20	17.40%	91.30%
	≥10	10	8.70%	100.00%
	In total	115	100%	
No.30	No return, and principal loss	20	17.39%	17.39%
	No return, no principal loss	21	18.26%	35.65%
	Has return, with IRR no more than 10%	31	26.96%	62.61%
	Has return, with IRR 10%-50%	42	36.52%	99.13%
	Has return, with IRR more than 50%	1	0.87%	100.00%
	In total	115	100%	
No.31	Any return	3	2.60%	2.60%

	10%	12	10.40%	13.00%
	20%	44	38.30%	51.30%
	20%-50%	43	37.40%	88.70%
	50%-100%	10	8.70%	97.40%
	≥100%	3	2.60%	100.00%
	In total	115	100%	
No.32	Continuous dividend	75	65.20%	多选题不适用
	High-tech industry	80	69.60%	
	Projects related to life, such as food, clothing, housing, and transportation, etc.	50	43.50%	
	Projects with low minimum investment	43	37.40%	
	Others	9	7.80%	
	In total	115		
No.33	RMB10,000	8	6.96%	6.96%
	RMB30,000	11	9.57%	16.52%
	RMB50,000	49	42.61%	59.13%
	RMB100,000	31	26.96%	86.09%
	Whatever	16	13.91%	100.00%
	In total	115	100%	
No.34	≤RMB100,000	15	13.04%	13.04%
	RMB100,000-200,000	39	33.91%	46.96%

	RMB200,000-300,000	28	24.35%	71.30%
	RMB300,000-500,000	17	14.78%	86.09%
	>RMB500,000	16	13.91%	100.00%
	In total	115	100%	
No.35	Yield is higher than expected	69	60.00%	N/A
	Exit time is shorter than expected	49	42.60%	
	Continuous dividend	35	30.40%	
	Have a strong sense of entrepreneurial participation	42	36.50%	
	Other investment interests, such as consumer discounts, membership services, etc.	14	12.20%	
	Others	17	14.80%	
	In total	115		
No.36	Equity crowdfunding platform due diligence	90	78.30%	N/A
	Leading investor due diligence	77	67.00%	
	Personal deep understanding of the investment field	44	38.30%	
	Luck	43	37.40%	
	In total	115		
No.37	Principal loss	75	65.20%	N/A
	Return is lower than expected	39	33.90%	
	Exit time is longer than expected	42	36.50%	
	No dividend or little dividend	17	14.80%	

	No sense of entrepreneurial participation	24	20.90%	
	Lack of other investment interests, such as consumer discounts, membership services, etc.	5	4.30%	
	Others	25	21.70%	
	In total	115		
No.38	Equity crowdfunding platform is not responsible	50	43.50%	N/A
	Leading investor is not responsible	55	47.80%	
	Financing party makes false statement or publicity	71	61.70%	
	Unfamiliar investment field	48	41.70%	
	Impulse investment	43	37.40%	
	Others	25	21.70%	
	In total	115		
No.39	Clear risk warnings	45	39.10%	N/A
	Publish projects that are easy for ordinary investors to understand and make decisions	33	28.70%	
	Provide effective investor education	27	23.50%	
	Require financing party to make sufficient information disclosure	94	81.70%	
	Platform/financing party provides detailed project explanation	87	75.70%	
	Provide necessary post investment management	101	87.80%	
	Set a 24-48-hour investment cooling period (investors can withdraw their investment at any time during the cooling period)	29	25.20%	
	Set an annual investment cap based on the investor's annual income level	13	11.30%	
	Design investor protection clauses (e.g. Valuation adjustments, repurchase, etc.)	82	71.30%	

	The total investment amount of the proposed investment project is moderate, such as a single project investment of no more than 10 million	12	10.40%	
	The amount of minimum investment is moderate, such as no more than 50,000	33	28.70%	
	In total	115		
No.40	Yes	104	90.40%	90.40%
	No	3	2.60%	93.00%
	Not sure	8	7.00%	100.00%
	In total	115	100%	
No.41	Build my own equity investment portfolio	73	70.20%	N/A
	Invest in stocks, bonds and other products	70	67.30%	
	Never consider it	20	19.20%	
	In total	104		
186 testees did not participated in equity crowdfunding				
No.42	High risk, high return	104	55.90%	N/A
	Very high failure rate	70	37.60%	
	Similar to P2P	49	26.30%	
	Many false financing	82	44.10%	
	Unreliable, asymmetric information	96	51.60%	
	Lack of security	78	41.90%	
	In total	186		

No.43	High quality projects	146	78.50%	N/A
	Professional leading investors	139	74.70%	
	Responsible platforms	133	71.50%	
	Investors have enough judgment themselves	96	51.60%	
	Luck	54	29.00%	
	In total	186		
No.44	Clear risk warnings	80	43.00%	N/A
	Publish projects that are easy for ordinary investors to understand and make decisions	62	33.30%	
	Provide effective investor education	52	28.00%	
	Require financing party to make sufficient information disclosure	139	74.70%	
	Platform/financing party provides detailed project explanation	117	62.90%	
	Provide necessary post investment management	138	74.20%	
	Set a 24-48-hour investment cooling period (investors can withdraw their investment at any time during the cooling period)	74	39.80%	
	Set an annual investment cap based on the investor's annual income level	35	18.80%	
	Design investor protection clauses (e.g. Valuation adjustments, repurchase, etc.)	123	66.10%	
	The total investment amount of the proposed investment project is moderate, such as a single project investment of no more than 10 million	26	14.00%	
	The amount of minimum investment is moderate, such as no more than 50,000	38	20.40%	
	In total	186		

No.45	RMB10,000	41	22.00%	22.00%
	RMB30,000	22	11.80%	33.80%
	RMB50,000	66	35.50%	69.30%
	RMB100,000	28	15.10%	84.40%
	Whatever	29	15.60%	100.00%
	In total	186	100%	
No.46	≤RMB100,000	81	43.50%	43.50%
	RMB100,000-200,000	55	29.60%	73.10%
	RMB200,000-300,000	25	13.40%	86.50%
	RMB300,000-500,000	15	8.10%	94.60%
	>RMB500,000	10	5.40%	100.00%
	In total	186	100%	
No.47	Any return	4	2.20%	2.20%
	10%	31	16.70%	18.90%
	20%	77	41.40%	60.30%
	20%-50%	54	29.00%	89.30%
	50%-100%	11	5.90%	95.20%
	≥100%	9	4.80%	100.00%
	In total	186	100%	
No.48	Yes	24	12.90%	12.90%

	No	162	87.10%	100.00%
	In total	186	100%	
No.49	Projects related to life, such as food, clothing, housing, and transportation, etc.	49	26.30%	N/A
	Within personal professional area	127	68.30%	
	Projects provide stable and continuous dividends	114	61.30%	
	Prove other investment interests, such as consumer discounts, membership services, etc.	25	13.40%	
	High-tech projects or projects have the potential to be unicorn company	99	53.20%	
	Will not participate anyway	18	9.70%	
	In total	186		