

Literature Review on the Risk of Stock Price Crash

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Abstract

As an extreme phenomenon in the capital market, the stock price collapse has severely damaged the wealth of investors and has also caused a great negative impact on the steady and healthy development of the capital market. This article first clarifies the concept of stock price collapse risk, and then combs and briefly evaluates the relevant literature in this field from the perspectives of the formation mechanism of stock price collapse risk and the influencing factors of stock price collapse risk, and points out that there are still existing researches in this field. Some of the shortcomings and possible future expansion directions.

Keywords

Risk of Stock Price Crash; Information Hiding Hypothesis; Influence Factor.

1. Introduction

The boom and crash of stock prices seriously interferes with the normal order of the stock market, reduces the efficiency of resource allocation, and is not conducive to the stable and healthy development of the national economy. The collapse caused by the collapse of stock prices makes investors' wealth suddenly shrink greatly, which severely hit investors' enthusiasm for investment and hinders the function of the stock market. Therefore, the risk of stock price crash has been widely concerned by regulators and investors, and it is also a hot topic of academic discussion.

At present, the research on stock price crash risk mainly includes the formation mechanism of stock price crash risk and the influencing factors of stock price crash risk. The discussion on these issues can not only enrich the related research in the field of stock price crash risk, but also help us deepen the understanding of the phenomenon of stock price crash and prevent the occurrence of stock price crash. Based on this, this paper first clarifies the concept of stock price crash risk, and combs the domestic and foreign research on stock price crash risk from the above two perspectives.

2. The Concept of Stock Price Crash Risk

Stock price crash refers to the phenomenon that the stock is sold in a large area due to some reason, and the market index or the stock price falls sharply in the short term. The stock price crash in a broad sense includes two levels of the market and the stock. As early as the 1970s and 1980s, scholars began to pay attention to the phenomenon of stock price collapse in the overall market, and called the probability of this phenomenon as the risk of stock price collapse at the market level. During this period, scholars tried to analyze the formation mechanism of stock price crash risk at the market level from multiple perspectives, such as leverage hypothesis, volatility feedback hypothesis, Stochastic Bubble Models Hypothesis, incomplete information hypothesis, heterogeneous belief hypothesis and so on. Until the 20th century, Chen (2001) [1] turned his attention from the market to the company earlier, and defined the

risk of stock price crash at the level of individual stocks as the probability of extreme negative returns of individual stocks. Jin and Myers (2006) [2] conducted an in-depth discussion on the causes of its formation and put forward the "bad news hoard hypothesis" on the basis of agency theory and information asymmetry theory. Since then, a large number of studies have emerged on the crash risk of individual stock prices, and the discussion on the factors influencing the crash risk based on the "bad news hoard hypothesis" has become the mainstream.

3. The Formation Mechanism of Stock Price Crash Risk

The research on the formation mechanism of stock price crash risk has a long history, which can be traced back to the 1970s and 1980s. At that time, most of the research focused on the stock price crash risk at the market level. After a period of development, "five hypotheses" have been formed to explain the stock price crash risk at the market level under the two frames of "efficient market theory" and "behavioral finance". Until the beginning of the 21st century, scholars turned their attention to the level of individual stocks and proposed the widely recognized "bad news hoard hypothesis" based on the agency theory and information asymmetry theory. Therefore, this paper firstly combs the formation mechanism of stock price crash risk from two aspects of market and individual stock.

3.1. Market Level Risk of Stock Price Collapse

Efficient market theory says that people are rational. When the stock price is unreasonable, the rational investor will make the stock price return to the true value level through trading behavior. Based on this theory, Black (1976) [3] proposed the hypothesis of leverage effect. In his opinion, the decline of stock price will aggravate the financial leverage of the company, and the rise of financial leverage will lead to greater volatility of stock price and higher risk level, thus aggravating the decline of stock price. Although this theory is reasonable to some extent, it cannot explain the reason of daily data price changes with frequent transactions in the process of combining with practice. Subsequently, Pindyck (1984) and French (1987) [4-5] tried to analyze the formation mechanism of stock price crash risk from the perspective of volatility feedback hypothesis based on the efficient market theory. They argue that the increase in stock price volatility leads to an increase in the expected risk premium and increases the risk of a stock price crash. On the one hand, good news or bad news itself has a direct effect, good news will lead to the rise of the stock price, bad news will lead to the fall of the stock price; On the other hand, the large amount of information entering the market increases the volatility of stock prices, which leads to higher risk premiums and indirectly increases the risk of stock price crash. That is, when good news hits the market, the direct and indirect effects can cancel each other out; When bad news enters the market, the two effects act in the same direction, and the market's reaction to bad news will be amplified. As a result, the probability of the stock price falling is far greater than the probability of rising, and the stock returns present an asymmetrical distribution. Although this theory has been recognized by more scholars than the leverage hypothesis, it still only stays at the theoretical level without empirical data support. And in most cases, the impact on market volatility is short-lived, making it difficult to have a big impact on share prices.

Both Leverage Hypothesis and Volatility Feedback Hypothesis are proposed based on the efficient market theory. With the rise of behavioral finance, more hypotheses based on the framework of behavioral finance have emerged, including Stochastic Bubble Models Hypothesis, information incompleteness hypothesis and heterogeneous belief hypothesis. The Stochastic Bubble Models Hypothesis holds that the existence of noisy traders in the market makes the stock price deviate from the real value in noisy trading and forms the stock price bubble. When these speculative bubbles burst, share prices collapsed (Blanchard and Watson, 1982) [6]. Caplin and Leahy (1994) [7] further interpreted the hypothesis of stock price bubble and

proposed the hypothesis of information incompleteness. They argue that informed traders have more inside information, which is not reflected in the stock price in a timely manner, but negative information will emerge as the trade progresses. If negative inside information is released in a single moment, it is easy to cause a crash in the stock price. Subsequently, Hong and Stein (2003) [8] proposed the heterogeneous belief hypothesis. They assumed that on the one hand, investors with heterogeneous beliefs would have different judgments of stock value; On the other hand, there are restrictions on short selling, which prevent bearish investors' bearish expectations from being incorporated into share prices. When a bullish investor sees some bad news and wants to sell at a low price, no one picks up, the stock crashes as a result of accumulated pessimism. Therefore, the risk of stock price collapse at the market level may not only come from the sudden outbreak of negative events, but also from the concentrated release of accumulated pessimistic expectations.

3.2. Individual Level Risk of Stock Price Collapse

Previous studies, whether based on an efficient market framework or a behavioral finance framework, have looked at the risk of share price collapses at the market level. Chen (2001) [1] took the lead in turning to the level of individual stocks, defining the crash risk of individual stocks as the probability of extreme negative returns of individual stocks and providing corresponding measurement indexes. But unfortunately, he did not give a theoretical explanation for the formation of individual stock price crash.

Until 2006, Jin and Myers carried out a comprehensive study on the crash risk of individual stock prices on the basis of agency theory and information asymmetry theory, and systematically expounded the reasons for its formation, thus giving birth to the bad news cellaring hypothesis. Information hiding hypothesis, also known as the information hiding hypothesis, refers to the fact that the management of listed companies does not disclose negative information in a timely manner due to self-interested motives such as excessive compensation, performance appraisal and promotion. When the negative information hidden by the listed company accumulates to the critical value, or is suddenly revealed due to some accidents, the bad news is released into the market in a concentrated way, and investors sell their stocks in large quantities, causing a sharp drop in the stock price, leading to a crash in the stock price. In other words, management's self-interested hoarding of bad news is the root cause of stock price crash risk. Hutton et al. (2009) [9] conducted an empirical study on listed companies in the United States, and the test results further supported the theory.

The theory of bad news cellaring has exerted a profound influence on the subsequent researches on the crash risk of individual stock prices. Since then, most scholars have further explored the influence of internal and external factors on the crash risk of individual stock prices based on the theory of bad news cellaring.

Table 1 summarizes the explanations of existing studies on the formation mechanism of stock price crash risk.

Table 1. The formation mechanism of stock price crash risk

Market level		Individual level
Under the framework of "efficient market theory"	Under the framework of "behavioral finance theory"	
Leverage hypothesis Volatility Feedback Hypothesis	Stochastic Bubble Models Hypothesis	Information hiding hypothesis
	Information Incompleteness Hypothesis	
	Heterogeneous belief hypothesis	

4. The Influencing Factors of Stock Price Crash Risk

At present, most of the researches on the factors affecting the risk of stock price crash are carried out at the level of individual stocks. Therefore, this section reviews the existing researches from the perspective of individual stocks from the perspectives of internal and external factors of the company.

4.1. Internal Factors of the Company

Management characteristics. From the perspective of basic characteristics, Li Wengui (2020) [10] found that young executives have a strong demand for the rapid increase of personal income and may have more serious agency problems, which will aggravate the risk of future stock price crash of enterprises. Kim (2014) [11] found that overconfident executives tend to believe that negative information is only temporary, thus underestimate risks and conduct inefficient mergers and acquisitions, leading to a higher risk of stock price collapse. From the perspective of background experience, He Ying (2021) [12] found that academic experience has shaped executives' higher moral quality and sense of social responsibility, which makes them restrain themselves with higher moral requirements and actively reduce the concealment of negative news. Therefore, scholar-type CEOs can significantly reduce the risk of stock price crash. Cao Yanan (2020) [13] found that past military experience would restrain executives from carrying out behaviors harmful to the company and shareholders and pay more attention to their own reputation and collective public interests. Therefore, senior executives with military experience are more inclined to timely disclose bad news to the market to reduce the risk of stock price collapse.

Insider behavior. From the perspective of the reduction behavior of major shareholders, Sun Shuwei (2017) [14] found that the greater the amount of reduction by senior executives, the higher the risk of stock price crash; at the same time, the stronger the motivation and the greater the utility of reduction by senior executives, the stronger the influence of senior executives' reduction on stock price crash risk. From the perspective of controlling shareholders' pledge behavior, Yang Songling (2020) [15] found that, as equity pledge itself is a kind of borrowing and financing behavior, it will inevitably send negative signals to investors in the capital market, which may cause investors to panic, thus selling stocks in large numbers and aggravating the risk of stock price crash. The research of Xia Changyuan (2019) [16] also supports the above view. From the perspective of institutional investors' behavior, the herding behavior of institutional investors increases the risk of future stock price collapse (Xu Nian Xing, 2013) [17].

Company characteristics. From the perspective of the quality characteristics of accounting information, Zhang Duolei (2020) [18] found that the conservatism of accounting information, through asymmetric recognition of losses and gains, on the one hand restricts the management's stock buying behavior, and on the other hand avoids the severe impact on stock prices caused by the concentrated explosion of bad news. Yang Mianzhi (2016), Shi Xianwang (2014), Kim and Zhang (2015) [19-21] also proved through empirical tests that accounting conservatism can reduce the risk of stock price crash. Jin and Myers (2006), Kim and Zhang (2014) and Jiang Jie (2021) [22-24] verified the impact of information transparency on stock price crash risk from the perspective of information transparency. In addition, Kim and Zhang (2015) [11] found that the readability of annual reports can increase the difficulty for management to conceal negative information, reduce information asymmetry and thus reduce the risk of stock price crash. From the point of enterprise strategic positioning, Xu Yekun (2020) [25] research shows that diversification has increased the difficulty of the managers to collect and analyze information and cost, reduced the number of managers to communicate with external market participants and quality, increase information asymmetry between managers

and outside investors, resulting in a higher stock price crash risk. Sun Jian (2016) [26] found that compared with defensive companies, the management of offensive companies hid information in order to meet the higher financing needs of the company, which would lead to a higher risk of stock price collapse in the future.

Corporate behavior. From the perspective of tax avoidance behaviors, Kim (2011) [27] analyzed the sample of American companies from 1995 to 2008 and found that corporate tax avoidance behaviors were positively correlated with the risk of stock price crash. The study of Jiang Xuanyu (2013) [28] shows that managers are easy to use complex tax avoidance methods to cover up their profit encroachment. The more aggressive tax avoidance is, the greater the risk of stock price crash in the future. From the perspective of investment and financing behaviors, excessive investment (Jiang Xuanyu, 2015) [29], inefficient investment (Tian Kunru, 2015) [30] and unreasonable investment behaviors will aggravate management's behavior of holding stock, leading to greater risk of stock price crash.

Corporate governance. From the perspective of internal control, the research of Ye Kangtao (2015), Huang Zheng (2017) and Gong Yifei (2020) [31-33] shows that internal control can restrict the opportunistic choice behavior of management and reduce the risk of stock price crash caused by concealing bad news. That is to say, with the continuous improvement of the internal control quality of listed companies, the risk of stock price crash is significantly reduced. From the perspective of option incentives, executive option incentives may cause executives to pay excessive attention to the stock price. In order to obtain excess compensation, the management is more likely to selectively disclose the company's financial information, which aggravates the risk of stock price crash (Kim, 2011; He Xiaoxing, 2017; Fu Qi, 2017) [34-36]. Research on employee equity incentive shows that employee equity incentive can reduce the risk of stock price crash by improving the company's information environment and reducing the company's operating risk (Yu Yaping, 2020) [37].

4.2. External Factors

Macro environment. From the perspective of policy system, Fang (2010) [38] found that the risk of stock price crash was significantly reduced after the promulgation of Sarbanes-Oxley Act. DeFond (2015) [39] found that mandatory use of international financial reporting (IFRS) significantly reduced the risk of stock price collapse in industrial enterprises, but increased the risk of stock price collapse in the financial industry. Guo Yangsheng (2018) [40] showed that the "Shanghai-Hong Kong Stock Connect" mechanism can improve the information environment of companies, improve stock liquidity, and thereby reduce the risk of stock price crash. From the perspective of religious tradition, the stronger the religious tradition in the location where the company is located, the lower the risk of future stock price crash of the company is (Zeng Aimin, 2017; Callen and Fang, 2015) [41-42]. Specifically, Confucian culture can reduce the risk of stock price crash by inhibiting managers' self-interested motives, reducing managers' overconfidence, and improving the quality of information disclosure (Xu Xixiong, 2020) [43]. From the perspective of institutional environment, Luo Jinhui (2014) [44] took A-share listed companies from 2004 to 2011 as samples and found that the more imperfect the institutional environment of the city where the listed company is located, the higher the risk of future stock price collapse is significantly. Wang Huacheng (2014) [45] found that with the improvement of regional investor protection level, the risk of a company's stock price crash decreased significantly.

External stakeholders. From the perspective of institutional investors, institutional investors' holding group, information competition behavior and herd behavior will significantly increase the risk of future stock price collapse (Cao Feng, 2015; Wu Xiaohui, 2019; Kong Dongmin, 2016; Xu Nianxing, 2013) [17,46-48]. By further distinguishing the types of institutional investors, it is found that stable institutional investors can restrain the risk of stock price crash,

while trading institutional investors increase the risk of stock price crash of listed companies (An and Zhang, 2013; Callen and Fang, 2013; Shi Yong, 2018) [49-51]. From the perspective of securities analysts, the accuracy of analysts' forecasts can further alleviate the risk of stock price crash (Xiao Tusheng, 2017) [52], while the excessive attention of analysts and the optimistic bias of analysts will aggravate the risk of stock price crash of listed companies in the future (Xu, 2013; Xu Nianxing, 2012) [53-54]. From the perspective of external audit, the higher the audit fee is (Wan Dongcan, 2015; Hackenbrack, 2011) [55-56], longer audit tenure (Callen and Fang, 2012) [57], stronger audit industry expertise (Xiong Jiakai, 2015) [58], government audit experience (Chu Jian, 2017) [59], and hiring female auditors (Huang Hongbin, 2019) [60] all reduce the risk of future stock price collapse of listed companies. The auditor change will increase the risk of a company's stock price collapse (Yao Youfu, 2017) [61]. From the perspective of media supervision, Wang Chang (2017) took GEM listed companies as samples and found that media reports significantly increased the risk of stock price crash in the future [62], while the study of Huang Xinjian (2015) [63] showed that with the increase of media attention, the risk of stock price crash would be reduced. Dong Yan 'an (2020) [64] further distinguished the tone of media reports and found that positive media reports were negatively correlated with the risk of stock price crash, while negative media reports were positively correlated with the risk of stock price crash.

5. Summary

To sum up, abundant research results have been obtained in current researches on stock price crash risk, which are of great reference significance for future researches in terms of research perspectives, research contents and research methods. However, it is undeniable that the existing research on stock price crash risk still has some deficiencies, which need to be further discussed. There are three main aspects:

First, there is less literature on the economic consequences of stock price crash risk. At present, most of the literature on stock price crash risk focuses on the influencing factors of stock price crash risk. Although scholars all believe that the increased risk of stock price crash will bring adverse effects to the capital market and bring wealth loss to investors, there is a lack of empirical evidence to verify the economic consequences of stock price crash risk.

Second, in the existing literature on the factors affecting the risk of stock price crash, the research from the perspective of readability of accounting information is not rich enough. Readability is one of the important indicators to measure the quality of accounting information. Its level is related to the effectiveness of information transmission. When the readability of accounting information is poor, on the one hand, it increases the possibility that managers conceal or confuse negative information; on the other hand, it increases the cost for investors to obtain information and intensifies the information asymmetry, which may lead to a higher risk of stock price crash.

Thirdly, the research of stock price crash risk based on behavioral finance has become a new hotspot. Investors are irrational and information transmission is incomplete, so the level of investor sentiment and the heterogeneity of institutional investors will have a significant impact on the risk of stock price crash.

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