

A Study on the Correlation between Fair Value Hierarchy and Accounting Information Risk

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Abstract: In the context of the internationalization of fair value standards, the Ministry of Finance of China issued the Accounting Standards for Business Enterprises CAS39 in 2014, which clearly requires enterprises to measure and disclose assets or liabilities measured at fair value at three levels, and stipulates the scope of application, order of use and disclosure principles to enterprises. Among the numerous accounting information disclosed by the enterprises in capital market, investors prefer to take assets or liabilities measured at fair value into consideration. However, due to differences such as information sources, application conditions, valuation techniques and disclosure scope at different levels of fair value, investors inevitably face different levels of information risk when processing three levels of asset or liability information measured at fair value. By reviewing the relevant papers, concluding the research contents and methods, this paper intends to summarize the development and connotation of the three levels of fair value and the impact path on accounting information risk: first, with information providers have the discretion to improve level by level, the space for earnings manipulation has gradually become larger; Second, the incompleteness of hierarchical disclosure increases the information processing cost of statement users and the difficulty of analyzing the company's situation. This paper aims to help information users identify and evaluate the information risks of fair value measurement so as to make appropriate investment decisions.

Keywords: Fair Value Hierarchy; Information Accounting; Information Risk; Relevance Information Transparency

1. Introduction

The Financial Accounting Standards Board of the United States and the International Accounting Standards Board successively issued relevant standards on fair value measurement in 2006 and 2011 (i.e. SFAS157 and IFRS 13). In the context of the current economic globalization, the improvement direction of accounting standards in various countries is closer to international accounting standards. In order to integrate economy into the international community and to maintain convergence with international accounting standards, the Ministry of Finance of China issued the Accounting Standards for Business Enterprises No. 39 - Fair Value Measurement (referred to as CAS39) in 2014, which clearly requires enterprises to measure and disclose assets or liabilities measured at fair value at three levels, and stipulates the scope of application, order of use, and disclosure principles. The input value of first level is from the unadjusted quotation of the same assets or liabilities obtained in the active market on the measurement date, which is considered to be the most reliable measurement standard; the input value of second level is based on market quotations of similar assets or liabilities and observable inputs other than quotations, such as interest rate and yield curve; the input value of third level is unobservable assets or liabilities, which can only be used when the first and second level estimates are unavailable.

With the gradual improvement of the accounting information measurement disclosure and reporting system in China, the reference basis for market participants to make investment decisions is no longer limited to the historical information of market securities, but also includes company information from various channels. Among them, accounting information is widely adopted by investors because of its high decision-making relevance and timely provision of relevant value information. Assets or liabilities

measured at fair value disclosed by listed companies have become a part of the focus of investors. However, due to the limits of China's unique market conditions and institutional environment, the measurement and evaluation of fair value still rely largely on the subjective judgment of accountants. This subjectivity reduces the transparency of relevant information which causes information asymmetry between enterprises and investors, reflecting in the information risk related to investors' price-making decisions (Francis, 2004). Owing to some differences include information sources, application conditions, valuation techniques and disclosure scope at different levels of fair value, investors will fundamentally face different levels of information risk when evaluating assets or liabilities measured at fair value at three levels. Therefore, by reviewing the relevant papers, concluding the research contents and methods, this paper intends to summarize the development and connotation of the three levels of fair value and the impact path on accounting information risk, and help information users identify and evaluate the information risks of fair value measurement so as to make appropriate investment decisions. Otherwise, this paper enriches the research on fair value measurement and accounting information risk, and contributes to the application of fair value measurement in China.

2. Literature review on fair value three levels hierarchy

After the financial crisis in 2008, the standard setting institutions of various countries had standardized the scientific use of fair value measurement under different market conditions. Many researchers at home and abroad have conducted extensive and profound investigations to fair value hierarchy and redefined the measurement attribute of fair value. The hierarchical theory of fair value and its application research have been carried out in an orderly manner. The following reviews will sort out the relevant literature from the perspective of value correlation and risk correlation at different levels of fair value.

Before China's CAS39 document required mandatory disclosure of the information on the stratification of fair value, some listed companies had begun to use the method of fair value stratification and voluntarily disclosed relevant information. Some researchers began to study whether the stratification of fair value has value relevance based on these public information. Hierarchical fair value information is an important part of fair value measurement. The value relevance of fair value measurement essentially depends on the impact of information at all levels on investors' pricing decisions (Lv, 2021). Ge et al. (2013) believed that the quality of financial information provided by fair value measurement was closer to the decision-making needs of investors. From the perspective of the quality of information disclosure, Kolev (2009) conducted an empirical study on the sample of American financial institutions and found that all levels of fair value net assets have value relevance, but the fair value relevance of the first and second levels is significantly better than that of the third level, which is similar to the conclusion of Song (2010) through their empirical findings on the quarterly reports of banking companies in 2008. The valuation results of the first level are directly obtained from the market without any adjustment, which is not only easy to operate, but also shows higher accuracy of analysts' earnings forecast (BarronOE, 2016), higher stock price correlation coefficient (Yin Zongcheng and Ma Mengxing, 2106), closer to the company value (Stephen G, 2002), and stronger information interpretation ability (Kolev, 2009). Bai(2011) Taking the listed companies that disclose the detailed "profit and loss from changes in fair value" as the sample, it is empirically found that the earnings information generated from the fair value measured by the active market price (i.e. the first level) has a higher decision-making relevance. From the perspective of information transmission in the capital market, Mao(2015) studies the forecast value of different levels of fair value measurement. Based on different information sources of fair value level information, it finds that the disclosure of the first level has a positive impact on the effective transmission of company specific information, thus further constraining the management's positive earnings management behavior using fair value valuation. Emerging big data technology provides new methods and ideas for fair value measurement and use. When listed companies in the financial industry adopt big data strategies, they can significantly enhance the value correlation of their fair value assets and liabilities at the first and second levels. However, the effect decreases as the measurement level decreases; and the big data strategy has no significant impact on the value correlation of fair value assets and liabilities measured at the third level, because investors The attention is not high, and it is not sensitive to whether enterprises use big data for third-level measurement.

In general, most researchers have affirmed the value relevance of the first level fair value attributes. However, for the second and third levels, some scholars have found that the value relevance of fair value information is weaker than that of the first level, and there is a downward trend (Song, 2010; Liu Baoying, 2014; Randan, 2016). The reasons are analyzed by Meng (2014), Deng and Kang (2015) from the perspective of information transparency. They believe that the transparency of the fair value hierarchy is weakened

layer by layer, leading to a decrease in value relevance and an increase in risk relevance. The value relevance of assets measured at fair value gradually decreases, but for fair value liabilities, the reduction of fair value measurement level has no significant impact on their value relevance. The exposure of fair value risk reduces the reliability of accounting information. It is because the use of discretion and the increasing complexity of determining fair value lead to greater information asymmetry between financial report users (RiedlEJ, 2011). The doubts and criticisms of the existing research on the stratified measurement of fair value are mainly concentrated in the third level. Since the valuation basis of the third level is an unobservable input value in the market, there is relatively large room for subjective judgment. Hao and Zhao (2010) believe that the value of the third level is an estimated value in essence, which is inconsistent with the definition of fair value based on the assumption of the out of hand price, Other scholars further found that the third level has certain use risks. Yin et al. (2016) found that the second and third level fair value disclosure has poor responsiveness to asset relevance. Zhang and Wang (2015) believed that the fair value of assets measured at the third level is the price that the reporting entity assumes market participants are willing to accept, and to some extent, it is more vulnerable to manipulation and control by the management. The management conducted earnings management through the discretion selected by the third level valuation technology, reducing the reliability and accuracy of fair value information (Songetal., 2010; Yang, 2013). The information risk was relatively high, and the bond interest margin was also large (Ayres, 2016). Richard (2007) stated that "financial reports and price changes" required supplementary disclosure of the impact of general inflation and continuing operating income based on current costs. However, the risks are not irreversible. High-quality corporate governance mechanism (Mao et al., 2014) and sound information environment (Ren et al., 2017) can effectively reduce the information risk of fair value assets and narrow the information risk gap between different levels

3. Literature review on risk relevance of accounting information

Information risk is also an important aspect of judging information quality. The definition of information risk commonly used in academia was proposed by Francis (2005), "a relatively risky phenomenon of information inaccuracy, hysteresis and other adverse consequences caused by information asymmetry and serious information pollution" . Yu and Wang (2007) argue that information risk is a possibility that refers to the probability and degree of deviation between investor decision-making behavior and company-specific information. Essentially, information risk is a measure of the degree of information asymmetry between information providers and information users. In the current research literature, there are two ways to measure information risk: one is indirect measurement, including bid-ask spread surrogate variables (Bagehot, 1971), DD model (Francis, 2005; Lobo, 2006), and turnover (Stoll, 2006). 1989) and internal shareholding ratio (Chiang and Venkatesh, 1988); secondly, Easley first proposed the PIN model in 1996 to directly measure information risk.

On the basis of the development of information risk measurement system, foreign and domestic relevant literature has applied measurement methods to the stock market, focusing on the influencing factors, economic consequences and market pricing of accounting information risk. Xiang and Zhang (2011) studied the relationship between corporate financial characteristics and accounting information risk, and found that corporate growth opportunities, financial leverage and financial distress have a significant positive impact on accounting information risk. The existing literature not only explains the internal and external causes of information risk, but also studies the economic consequences of information risk from the perspective of capital market. Zheng and Yang (2010) found that in the capital market under China's unique system, using the PIN model would overestimate the information risk of stocks. In order to study the impact of information risk on market pricing, Yu and Wang (2007) took the accrual quality as the proxy variable of information risk, and found that the equity capital of enterprises with poor accrual quality was high. Xu (2013) found that the higher the information risk, the higher the capital cost. With the gradual deepening of information risk research, domestic researchers began to divide information risk into manipulative information risk and inherent information risk based on the degree of maneuverability. Inherent information risk is related to the company's own size and economic characteristics, while manipulation information risk is related to the management's earnings manipulation. Wang and Xu (2011) found that corporate governance significantly affected the manipulative information risk instead of inherent information risk. Yang et al. (2011) learned from the measurement method of DD model then published a paper on the theme on studying the influence of two kinds of information risks on the proportion of creditors' loans and the duration of their claims.

4. Correlation between fair value hierarchical disclosure and accounting information risk

In a perfect capital market which assets are fairly priced, nobody can affect the trading prices of securities and stocks, so information is symmetrical and fully transparent, and resource allocation in the capital market is effective without any information risk in the company's accounting information disclosure. Although the use of fair value measurement methods is gradually standardized in China, it cannot be ignored that the input value of fair value requires a highly transparent market environment. From the current development of China's capital market, there are certain something asymmetrical and unobservable in transaction information, which result in the access to information is not free and market has not yet reached a fully active state. The basis of fair value measurement depends on the reliability of fair value estimation and the availability of market information (Zheng, 2016), and to some extent, it also includes the subjectivity of using valuation techniques to adjust the input value. In the current practice, the valuation techniques used by enterprises to measure relevant assets or liabilities at fair value mainly include three methods: market method, income method and cost method.

The valuation information adopted by the market method comes from three kinds: first, the unadjusted direct quotation from the active market; Second, the quotation without significant adjustment; Third, quotations from inactive markets or quotations requiring significant adjustment. For the first two kinds of information, researchers used to adopt the mark-to-market measurement model to evaluate the fair value of the first level. For the third information source closely related to the fair value of the second level, the mark-to-evaluation measurement model is a choice worth considering. The common valuation techniques of the income method include cash flow discount method, option pricing model, multi period excess income method and incremental cash flow method. These methods specifically value the fair values of the second and third levels fair value, making the valuation results more understandable. Therefore, these methods are often adopted in the company's practice to evaluate performance at a certain period.

For the third level fair value which is difficult to be tested by the market, the more complex cost method is adopted in practice, including replacement accounting method, market inquiry method, price index method, functional value method and comprehensive proportion method. Just like the income method, the cost method also uses mark-to-evaluation model.

It can be seen that there are significant differences in fair value measurement ,valuation techniques and input value selection methods and market environment at different levels. The first level input value is based on the quoted price in the active market, and the fair value of assets or liabilities can be directly selected from the quoted price in the active market as the basis for determining the fair value, without using valuation techniques for adjustment; The fair value information of the second level can be observed directly or indirectly and can be tested by the market; The input value of the third level needs to be determined according to the third-party price correction or the fair value determined according to the valuation model, which is difficult to be tested by the market. The current guidelines for the application of accounting standards do not make uniform provisions on the selection and application of valuation techniques, resulting in a large space for enterprises to choose valuation methods when carrying out fair value measurement by layers, which is easy to cause accounting information risks. The impact mechanism is mainly reflected in the following aspects:

On the one hand, information providers have the discretion to improve level by level, and the space for earnings manipulation has gradually become larger. In capital market transactions, there will always be information advantages and disadvantages. In the process of information transmission, investors often lack information advantages because of low-level fair value measurement input. Especially in the measurement of the third level fair value, the enterprise side has greater discretion, which is easy to cause information asymmetry between enterprises and investors. The fair value under the guidance of the principle has become a tool for the management to manipulate earnings to some extent, that is, to use the profit and loss from changes in fair value for earnings management to avoid losses (Wu, 2012), thereby reducing the disclosure quality of information related to fair value, reducing the information asymmetry between investors and enterprises, and inducing accounting information risks. Mao (2015) takes A-share listed companies in Shanghai and Shenzhen as samples. The study finds that the first and second level fair value measurement reduces the information asymmetry between enterprises and investors, while the third level fair value measurement significantly increases the information asymmetry between the two parties. When the first level takes the active market quotation as the input value, the information of investors is most observable, so it is difficult for managers to manipulate the fair value to achieve earnings management;

In contrast, the transparency in the process of fair value valuation at the second and third levels gradually decreased, and the subjectivity of professional judgment increased in turn. Li (2011) found that poor information transparency would weaken the constraints on the management. Therefore, the scope of discretionary power of enterprise earnings management was expanded, which made it possible for enterprises to manipulate the book value of financial assets and liabilities. In particular, the third layer of fair value measurement mostly uses internal information, which is difficult to be tested by the market, and is easy to be mixed with a large number of subjective estimates and opportunistic behavior of the management (Deng and Kang, 2015). The degree of information asymmetry between investors and managers is the largest, facing a strong risk of fair value information, and the friction in the operation of the capital market is also increased.

For non-financial listed companies, Mao et al. (2015) found that the financial assets measured at the first level directly take the observable market price of the same kind as the fair value, and no adjustment is allowed in the process. Therefore, the first level fair value will choose more earnings management methods of manipulation classification and derecognition. However, the valuation results of financial assets measured at the second and third levels of fair value are affected by such factors as the reliability of the input value and the applicability of the valuation model. These difficult to supervise valuation processes provide enterprises with a way to manipulate profits and can adjust the fair value of financial assets within the scope of the standards. The second level of fair value will more choose to manipulate the fair value valuation to change the fair value of financial assets, thereby affecting the profit level to achieve earnings management purposes. For financial listed companies, Wang et al. (2020) found that the higher the proportion of fair value assets and liabilities, the greater the degree of earnings management of listed companies, and compared with the fair value assets and liabilities measured at the first and second levels, the use of the third level measurement is more prone to positive or negative earnings management behavior.

On the other hand, the incompleteness of hierarchical disclosure increases the information processing cost of statement users and the difficulty of analyzing the company's situation. At present, CAS39 has made three requirements for the layered disclosure of fair value: firstly, actively disclose the amount and reasons for the conversion between different levels; secondly, determine the accounting policies for each fair value hierarchy conversion; thirdly, the conversion of each level shall be disclosed in detail (Guo, 2105). However, the Standards do not require enterprises to disclose specific items with changes in the amount at each level, and incomplete disclosure will reduce the transparency of the company's information (Wu and Yu, 2020). Robert M (2004) believes that corporate transparency is the extent to which outsiders can access corporate information, and low information transparency will bring high information acquisition costs to investors. At the same time, the use of discretion and the complexity of financial models are usually increased from the first level of fair value measurement to the second level, and from the second level to the third level. However, the degree of information asymmetry of fair value at different levels is different, and the way in which the performance noise caused by earnings management affects the management compensation contract is also different. Wang et al. (2020) found that the three levels of fair value will increase the internal agency cost; The first and second level fair value can reduce analysts' earnings forecast error and weaken the positive relationship between information asymmetry and internal agency costs; The first and second level fair value information will reduce the sensitivity of salary performance, which will lead to an increase in agency costs. In the actual application of fair value in the Chinese market, because of the obvious differences in the observability of the input values used at various levels and the subjectivity of the valuation techniques, the transparency of the layered disclosure of fair value has shown a trend of decreasing level by level (Randan, 2016), which is closely related to the high cost of investors to collect and process information. Huang (2007) has built a rational neglect model, and found that the higher the cost of information acquisition, the lower the frequency and accuracy of investors' access to company value related information, that is, increasing the risk of information asymmetry between investors and enterprises, and thus affecting the rationality of investors' decisions based on fair value information.

5. Summary

From the perspective of the capital market, the application of fair value measurement is an inevitable requirement of market development, and the measurement of fair value is particularly important for the accurate application of fair value. Through sorting out the domestic and foreign research literature related to fair value, it could be found that foreign scholars started earlier and have more mature research results on fair value. Because of obvious differences in information sources, application conditions, valuation

techniques and disclosure scope at different levels of fair value, investors will face different degrees of information risk when evaluating assets or liabilities measured at fair value at three levels, especially the information risk at the third level, which requires the attention of policy makers and investors.

With China having issued CAS39 in 2014, the promulgation of the new standard has promoted enterprises and investors to apply fair value to a greater extent in more fields, and the application scope of fair value has become more and more extensive, especially the application scope of the second and third levels. Considering China's unique institutional background and the actual development of China's market environment, policymakers should further regulate the disclosure of fair value information, supplement the definition and coverage of inactive markets, give full play to internal and external governance mechanisms, and more purposefully implement fair value standards. The management of the enterprise shall consciously disclose the valuation process in detail, so that the report users can identify the information related to the fair value, analyze its economic essence through the input value, valuation methods and other information, and fully understand the operation status of the enterprise so that it can make decisions. Accounting practitioners and appraisers should also constantly improve their professional quality and ability to make fair value measurement more accurate and reasonable so that they can make decisions.

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