Empirical Test the Province and Industry Differences of Financial Restatement in China

Bing Zhou and Qian Zhang

Abstract This paper focuses on the industry contagion effect of financial restatement and the factors that impact such effect by statistically analyzing the differences in the financial restatement among regions and industries in China. With the method of building models and panel regression analysis, the industry contagion effect aroused by the financial restatement among regions and industries is tested via building panel threshold regression model, the test results confirms that the industry contagion effect of the financial restatement exists significant differences among regions and industries. Firstly, industry contagion effect of financial restatement of listed companies exist provincial difference in our country. Industry contagion effect of financial restatement of eastern is most significant, and the central slightly take second place, western province is least significant. In the eastern region, in addition to Guangdong and Hubei, the rest provinces are significant, industry contagion effect of the financial restatement of listed companies is especially significant in Beijing, Tianjin, Shanghai, Jiangsu and Fujian. Only Hunan, Hubei, Henan and Anhui four provinces in the central region are more significant, other provinces are not. And industry contagion effect of financial restatement is the least significant in the western area on the whole, only Guangxi, Chongqing, Qinghai three provinces and cities are significant, and industry contagion effect of financial restatement in other western provinces is not obvious. Secondly, industry contagion effect of financial restatement of listed companies exists industry differences in China. Industry contagion effect of financial restatement on capital material is significant more than consumption material industry and other industries.

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1 Measurement Model

To test the financial report of listed companies in our country caused by reproducing the industry contagion effect area and industry difference influence and the intrinsic threshold effect factors, this paper hereby establish three basic models:

$$\text{ICARit} = \text{C0} + \text{C1 CAR it} + \text{C2 CARit}^{*}\text{RESP} + \text{Cj X it} + \varepsilon\text{it} \quad (1)$$

Among them, the ICARit for accumulated excess earnings of companies in the industry; CAR for reproducing company accumulated excess earnings, CAR * RESP for reproducing type and accumulated excess reward cross variables, the classification of restatement type for influence profit restatements and does not affect the profit restatements [1]. Xit for a group of control variables, including industry company's performance, industry the company's capital structure, companies in the industry; funds operation ability, the scale of companies in the industry, the stock right of industry structure, the equity properties of companies in the industry, the characteristic factors of company's board directors.

2 Index Setting

In the choice of index, based on the reference related to the research literature at home and abroad, we select the following variables which show the financial restatement affecting listed companies in the same industry in China.

Industry cumulative Average Return (ICAR): on the market reaction measurement [2], the domestic and foreign scholars roughly use two typical methods: accounting approach and market (events) approach. Accounting approach is using the key financial data or establishing a financial index system to evaluate the company's operating performance, that is comparing the financial performance changes before and after the company restate financial statement, to study the financial restatement events impact on the company [3]. Market (events) approach is mainly compute CAR (Cumulative Average Return) which as the proxy variable quantity to market response, through inspecting ICAR before and after a certain event to show market reaction. In this paper, the financial restatement of the market reaction using event study method, that is computing the cumulative Average return (CAR), as a measurement of financial restatement of the market reaction. ICAR represents the sum of average AR (abnormal return) of window period of industry company. And AR (abnormal Return) is the difference between the actual rate of Return and the abnormal rate of Return. The so-called event window, it is a certain

period which tests a particular event impact. We suppose that as the day of particular event, as the day of financial restatement (If the announcement not disclose in the trading day, we take the first trading day after the day of announcement as disclosure day) [4]. Our paper mainly study 5 day's stock returns, liquidity and volatility change around the day of financial restatement [5]. The windows of particular event are −5 and 5 [6].

Communicative Average Return (CAR) of restatement company: CAR means earning rate which surpass normal earning rate of restatement company, the sum of average AR (abnormal return) of window period of restatement company [7]. And AR (abnormal Return) is the difference between the actual rate of Return and abnormal rate of Return. Window of particular event and particular event are the same above.

Restatement company's restatement properties (RESP): namely restatement involved in income, costs and operating expenses, etc. [8]. If the restatement involved in income, costs and operating expenses, it is a core restatement, take 1, otherwise it is a non-core restatement, take 0.

Industry company's achievement (IROA): financial index and market index are commonly used to measure achievement. Considering the tobin Q in the measurement of non-tradable share value is not unified, still has large dispute, our paper use ROE (Rate of Return on Common Stockholders' Equity) index as the measurement of the achievement of industry company.

Industry company's capital structure (CAPS): Capital structure refers to all kinds of capital structure and the proportional relation in a company. In theory, capital structure has generalized and special types: generalized capital structure refers to all the capital structure, namely equity capital and debt capital contrast relationship; special capital structure refers to equity capital and long-term debt capital contrast relationship, and short-term debt capital as operating capital management. The capital structure of enterprise is a systematic, comprehensive result of expected return, capital cost and financing risk and property distribution etc. Thus, capital structure reasonable or not to a great extent determine enterprise's sinking and refunding ability and future profitability [5]. Capital structure in general is the problem of liability proportion issue that is liability proportion in total capital. Our paper uses debt-to-assets ratio as the measurement of company structure.

The size of the industry company (SCAL) [9]: generally speaking, measure the company size can choose number, asset scale and sales, etc. Considering the assets index relative to the use of the index can reduce some of the labor-intensive industry characteristics to estimate the influence of the results, our paper choose the natural logarithm of year-end total assets of company to measure company scale.

Equity structure of industry company (EQUS): using equity concentration ration of share to measure [10]. Concentration ration of share refers to the concentration or dispersion of the quantification index of equity according to the difference in shareholding ratio, namely equity is concentration or dispersion, share quantity and the mount of shareholding ratio of each shareholder. It is a main index to measure share distribution in a company, also an important index to measure the strength of

the company stability, it contains the core problem that who control share right. Commonly measurement of equity concentration contains the following several main indexes.

Industry company's equity property (EQUP) [11]: refers to the first big shareholder ownership property of the listed company [12]. Different equity properties will impact corporate governance mechanism, the management goal have a profound influence on decision, and eventually affect the company's profitability and market performance, so the first big shareholder ownership property is different, its management efficiency and the company performance are different. Research has shown that the first big shareholder is a non-state shareholder of the company, then the company management will be more efficiency, and has higher enterprise value and stronger profitability. Therefore, this paper defines as follows: the first big shareholder for state-owned shares, then take 1, the first big shareholder for non-state-owned share, take 0 [13].

Industry company's board of directors characteristics (BOAP) [14]: as the company internal highest supervision institutions, the board of directors through supervising the management to ensure the improvement of the quality of financial statements, and protect the interests of investors. Therefore, the board of directors is the central part in the corporate governance, ensuring the quality of accounting information is the basic responsibility of the board of directors. The efficiency of the board of director depends on independence and professional competence of its members. The composition of the members of the board of directors can be subdivided into internal directors, related outside directors and independent directors. Independent directors are considered to be less association with enterprise management, can fair comment and supervise the company's current managers. The independent directors take their own popularity and reputation into consideration, generally won't collusion with management. The independent directors' rich experience and professional skill helping each item of company governance mechanism can better operate. The audit committee is a special institution set by the board of director, aims to ensure the transparency of company.

Financial, supervises company's financial information, discloses and reviews the company's internal control system, etc. Therefore, the establishment of the audit committee also helps to improve the quality of accounting information. Using the proportion of independent directors and audit committee to measure the board of director's characteristics is more appropriate. In this paper, the proportion of independent directors more than 50 % and setting audit committee of the company takes 1. Variable meaning and index explanation as Table 1.

3 Measurement Result

Because listed companies in different parts, in different industries and each company's capital operation ability are great different, industry contagion effect arose by financial restatement consequences may also be different. Therefore, firstly

Table 1 Variable meaning and index explanation

Index classification	Symbol	Index definition	Index explanation	Expected sign
Explained variable and explanatory variable	ICAR	Industry cumulative Average Return	Industry company actual rate of return minus the sum of the normal expected rate of return in Window period	
	CAR	Communicative Average Return	Restatement company actual rate of return minus the sum of the normal expected rate of return in Window period	+
The main control variable	RESP	Restatement company's restatement property, namely whether restatement affect profit	If the manipulation influence profit, take 1, otherwise take 0	+
	IROE	Industry company's performance	Use return on equity index measure industry company performance, namely after-tax profit divided Stockholders' equity	−
	CAPS	Industry company's capital structure	Use asset-liability ratio to measure the company's capital structure, namely total liabilities divided the ratio of the end of year total assets	+
	SCAL	The size of the industry company	The natural logarithm of year-end total assets of company to measure company scale	+
	EQUS	Industry company's equity structure, mainly focus on equity concentration	The sum of the ratio of former three big shareholders shareholding	+
	EQUP	Industry company's equity property, mainly refers to the first big shareholder ownership property of the listed company	The first big shareholder for state-owned shares, then take 1, the first big shareholder for non-state-owned share, take 0	+
	BOAP	Industry company's board of directors characteristics, mainly refers to the board of directors structure, whether set up the audit committee, etc.	Focus on independent director in the board of directors proportion, whether set up the audit committee, if the proportion of independent directors large and set up audit committee, then take 1, otherwise take	−

inspecting the different contagion effect caused by financial restatement among different areas and industries in our country. This paper using model 1 to test the difference contagion effect arose by financial restatement in different areas and industries, the empirical results see Tables 2 and 3.

4 Conclusion

From the result of regression in Tables 2 and 3, we can find that R2 all around 0.7 after adjustment in this two model, indicates that multiple regression model is good. DW are 1.79 and 1.87, closes to 2.0,variable and not existing sequence correlation on the whole, indicates that contagion effect of financial restatement of listed companies in our country impacting on industry company has different characteristics in regional and industry. From the empirical results of Table 2 can be found, financial restatement's provincial difference of industry contagion effect is obvious. Contagion effect of financial restatement of industry company is most significant in the eastern province, and the central slightly take second place, the west is less significant. The eastern region, in addition to Guangdong and Hebei, the rest of the provinces are significant, the contagion effect of the financial restatement of listed companies are especially obvious in Beijing, Tianjin, Shanghai, Jiangsu and Fujian. Quotient β1 are positive and large. Only Hunan, Hubei, Henan and Anhui four provinces in the central region are more significant, other provinces are not significant. And the western area industry contagion effect caused by the financial restatement on the whole is not significant, only Chongqing, Yunnan are significant, and contagion effect in other provincials are not obvious. This empirical indicates that contagion effect caused by financial restatement is more obvious in developed areas reaction than in less developed areas.

In model of Table 2, from the quotient β1 and T-values of restatement company's restatement property (RESP) (whether a core restatement), industry company's performance (IROE) [15], industry company's capital structure (CAPS) [16], the size of the industry company (SCAL) [17], industry company's equity structure (EQUS), Industry company's equity property (EQUP), Industry company's board of directors characteristics (BOAP) [18], we can find that other variables will be significant or not significant arise industry contagion effect except that Industry company's performance (IROE) and industry company's board of directors characteristics (BOAP) have opposite effect. Especially restatement company's restatement properties (RESP) variable significant positive influence Industry cumulative Average Return (ICAR) [19], If financial restatement involves income or cost which are core restatements, to the industry company's contagion effect influence coefficient is 0.0046. And industry company's capital structure (CAPS) to company's contagion effect influence coefficient is 0.051 [6].

We can find the difference of industry contagion effect in different industry by Table 3. If company financial restatement is the core restatement, industry company's contagion effect influence coefficient is 0.0024.In other control variables,

Table 2 Results of variable coefficient model test of difference contagion effect arose by financial restatement in different between 2003 and 2011

East province			Middle province			West province		
Province	Quotient C_i	T-values	Province	Quotient C_i	T-values	Province	Quotient C_i	T-values
BeiJing	0.002	3.01*	ShanXi	0.019	1.80	GuangXi	0.044	1.79
TianJin	0.001	2.13**	AnHui	0.032	2.17**	SiChuan	0.065	1.32
ShangHai	0.013	2.07**	HeNan	0.022	1.05	ChongQing	0.040	2.10***
GuangDong	0.001	0.89	JiangXi	0.017	1.09	GuiZhou	0.004	1.04
HeBei	0.006	1.56	HeNan	0.003	2.23**	YunNan	0.071	1.91***
JiangSu	0.071	2.36**	HuBei	0.064	1.95**	QingHai	0.011	1.07
ZheJiang	0.033	1.98***	HuNan	0.075	2.27**	ShaanXi	0.005	1.77
FuJian	0.002	2.33**	JiLin	0.027	1.64	GanSu	0.002	1.22
ShanDong	0.036	3.09*	HeiLongJiang	0.007	1.34	NingXia	0.055	1.72
LiaoNing	0.005	2.03**	NeiMengGu	0.026	2.73*	XinJiang	0.044	1.50
RESP		0.0046 (3.63*)			IROE		−0.0031 (2.75*)	
CAPS		0.0045 (1.72)			SCAL		0.051 (2.30**)	
EQUS		0.009 (1.67)			EQUP		0.0011 (1.17)	
BOAP		−0.0327 (2.67**)						
Adjustment R^2		0.73			F-statistics		67.33	
D.W.		1.79						

Notes:
(1) In this paper the measurement results completed by Eviews5.1 package, numbers in bracket refers to t test value of the Parameters. *, * *, * * * respectively represent significance level in 1 %, 5 %, 10 %
(2) The result of regression omitted constant term

Table 3 Results of variable coefficient model test of difference contagion effect arose by financial restatement in different industry

Industry	Quotient C_i (T-values)		Quotient C_i (T-values)
Primary industry	0.086 (1.85)	Agriculture, Forestry, Husbandry and Fishery	0.086 (1.85)
Secondary industry	0.026 (2.04***)	Mining industry	0.01 (1.49)
		Manufacturing industry	0.07 (2.68**)
		Real Estate Industry	0.03 (1.99***)
		Energy industry	0.007 (1.52)
Tertiary industry	0.034 (1.87)	Transportation storage and postal service	0.002 (1.55)
		Information industry	0.004 (1.13)
		Wholesale and Retail	0.014 (1.97***)
		Tourism industry	0.001 (1.28)
		Synthesise industry	0.006 (1.84)
RESP	0.0024 (2.33***)	SCAL	0.007 (2.01***)
IROE	0.0025 (1.29)	EQUS	0.004 (1.39)
CAPS	−0.006 (1.97***)	EQUP	0.0009 (1.29)
BOAP		0.002 (1.80)	
Adjustment R^2		0.68	
D.W.		1.87	
F-statistics		49.84	

Notes:
(1) In this paper the measurement results completed by Eviews5.1 package, numbers in bracket refers to t test value of the Parameters. *, * *, * * * respectively represent significance level in 1 %, 5 %, 10 %
(2) The result of regression omitted constant term

only industry company size variable is a significant positive influence as a industry company contagion effect, influence coefficient is 0.007, and industry company's capital structure is a more significant negative influence as a industry company contagion effect, influence coefficient is negative 0.0065. The empirical results also show that company financial restatement make a positive influence to the second industry company, and influence coefficient is 0.026, specifically, announcement company's financial restatement make a remarkable influence on the listed company of manufacturing and real estate industry, and the influence coefficient are 0.07 and 0.03, financial restatement a significant positive effect, influence coefficient is 0.014, indicating that financial restatements of listed companies of our country cause different industry contagion effect in different industry.

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