The impact of corporate social responsibility performance on systematic risk and its deferral effect- Take listed companies in China's financial industry as an example

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ABSTRACT : This study takes quantile regression and ordinary least square method to explore the impact of corporate social responsibility performance,progress of corporate social responsibility performance and information disclosure on systematic risk. The empirical results show that：1 Information disclosure can reduce the impact of systematic risk,especially for high-risk companies. 2. Corporate social responsibility has a deferred effect on resisting systematic risk for low-risk companies. Moreover,as long as the performance of corporate social responsibility can be maintained above the level of the previous period,the effect of resisting systematic risk is more obvious. Therefore,this paper puts forward three suggestions for enterprises：1.Disclosing sustainable development report actively is an effective way to promote the formation of benign interaction between enterprises and stakeholders,then to achieve the purpose of reducing the impact of systematic risk. All the payment will become the additional operating cost of the enterprise if the stakeholders cannot realize the situation of the enterprise,and the enterprise will not get any benefit. 2. Information disclosure needs to be carried out regularly and continuously,because different contents of disclosure in each period will continuously affect the cognition of stakeholders,so there will be no deferred effect. 3. As long as the performance of corporate social responsibility can be maintained above the performance level of the previous period,the impact of the next period of system risk can be effectively reduced.

KEYWORDS -Corporate Social Responsibility; Information disclosure; Systematic Risk

I. INTRODUCTION

The financial industry is the core of the modern economy, and the stable development of the financial industry plays a very important role in economic stability. Events such as the 1997 Asian financial crisis, the 2008 US subprime mortgage crisis and the 2011 European sovereign debt crisis have made people deeply aware that systemic risks have a huge impact on financial stability and the real economy. How can the financial industry reduce the impact of systemic risks? Many scholars study the problem. Because systematic risks are affected by multiple external factors and cannot be avoided in a decentralized manner like non-systematic risks, companies can reduce the impact of systemic risks from the perspective of reducing their own business risks. As my country's requirements for economic growth have turned into high-quality economic growth, the development of enterprises not only considers the role of economic growth, but also considers the assumption of corporate social responsibility. The social responsibility of the financial industry plays a very important role in the people's livelihood. As of 2020, various financial institutions will gradually incorporate the concept of corporate social responsibility into their strategic transformation. For the financial industry that undertakes the important responsibility of fulfilling corporate social responsibility in social and public affairs, can the performance of its corporate social responsibility and the improvement of the situation reduce the impact of systemic risks? Can the continuously improved social responsibility report further reduce the impact of the financial industry on systemic risks?

II. Literature review

2.1 The significance of corporate social responsibility and the role of information disclosure

The promotion of corporate social responsibility has been popularized all over the world, and this topic has become a very enthusiastic research object in academia. It integrates the definition of corporate social responsibility from relevant academics such as SA8000, the Global Compact, and the OECD Guidelines for Multinational Enterprises. It summarized as: "The business behavior of an enterprise must be ethical for all stakeholders." Its behaviour mainly covers economics, law, human rights, environmental protection, and social care. The measurement methods and standards of corporate social responsibility performance are based on the different cultural environments of countries (regions), so the level of emphasis is also different, so there is no global unified measurement model.

However, due to the improvement of the concept of corporate social responsibility, many investment indicators believe that companies that value and undertake corporate social responsibility have the concept of sustainable operation. Therefore, the ESG investment law came into being. Although ESG investment started late in China, in recent years, ESG The size of the fund is growing very fast. According to Wind database statistics, as of the third quarter of 2020, the net worth of domestic pan-ESG funds has reached 131.7 billion yuan, with an average yield of 45.18%. However, related studies claim that social investment is an additional operating cost. In fact, it not only does not help the operation of the enterprise, but also wastes corporate resources and damages the equity of shareholders (Ng &Rezaee, 2013[1]; Auer &Schuhmacher, 2016[2] ; Zhao et. al., 2018[3]). Another scholar's research pointed out that in addition to corporate social responsibility, the role of information disclosure in sustainability reports is very important, mainly because if companies can actively disclose sustainability reports, it will be easier to gain the trust of consumers, which will help. Enhance competitiveness and respond to potential system risks (Lian et al., 2011[4]). At present, there is no mandatory disclosure of sustainability reports of listed companies in China, but the company decides whether to disclose it or not.

2.2 Research on system risk

Systematic Risk is called as well as market risk. It is mainly due to the influence and changes of various factors such as the political economy outside the enterprise, which increase the investment risk, and the enterprise itself cannot fully control it, so the degree of influence will be relatively large. Beaver et al. (1970) [5] first proposed the research on the relationship between corporate accounting information and corporate system risk, and found that β coefficient, asset size, dividend pay-out rate, and profitability change rate are significantly related to corporate system risk. Subsequent scholars from various countries have also successively published relevant studies to further explore the correlation between system risk and other accounting information. As for the discussion on the relationship between systemic risk and unique risks within the enterprise, Mandelker et al. (1984)[6] linked operating leverage, financial leverage and system risk, and found that both financial leverage and operating leverage amplify the enterprise system in the form of a multiplier. Risk, this research reveals the true source of systemic risk. Another scholar has studied the relationship between systemic risk and corporate governance characteristics. The research found that certain corporate governance behaviors would increase its information transparency, and therefore help reduce the information asymmetry between the company and its stakeholders to a certain extent. Degree (Beasley, 1996 [7]; Botosan and Plumlee, 2002 [8]); Huang Bingyi and Li Yang (2010) [9] research found that there is a significant correlation between the governance level of listed companies in my country and system risk.

This study mainly focuses on the research of the financial industry system, mainly because the correlation between the financial industry and system risk is much more important than other industries. Jia et al. (2020) [10] research conclusions on the relationship between China's financial system and the real economy It shows that resolving systemic risks requires focusing on the financial system. Yuan and Zou (2005) [11] in the study of the systematic risk supervision methods of financial holding companies. It mentioned that systematic risks are harmful to the financial industry for two reasons: the first one is the financial resources controlled by financial holding companies; it occupies the vast majority of financial and economic activities, so it may expose the overall economy to risks. The second is that financial holding companies enable closer ties between banks and industries, which may make risk spread more easily.

2.3 Literature on the relationship of social responsibility, information disclosure and system risk

Li (2020)[12] found that the fulfilment of corporate social responsibility can effectively reduce system risk. The higher the fulfilment of corporate social responsibility, the more obvious the reduction of corporate system risk. The research findings of Zeng et al. (2018) [13] show that water resources information disclosure is negatively related to corporate system risks. Research by Zhao et al. (2018) [14] shows that high-quality corporate social responsibility reports disclosed by companies can effectively deal with the occurrence of corporate system risks, and the higher the quality of corporate social responsibility reports disclosed by companies, the more significant the response to corporate system risks. The study of Hui and Du (2009)[15] argued that there is a reverse relationship between the quality of information disclosure and systematic risk in China. The quality and quantity of information disclosure together affect systematic risk, and only when the quantity or quality of information disclosure reaches. After a certain degree, the system risk can be reduced by improving the quality or quantity of information disclosure.

After summarizing the above researches of many domestic and foreign scholars, this study proposes the following research hypothesis: Is it possible to have only one hypothesis?

H: The performance of corporate social responsibility and whether to actively disclose social responsibility reports has a negative correlation with the level of system risk. That is, under the condition those other objective conditions remain unchanged, the better the company's performance in implementing social responsibility and the proactive disclosure of social responsibility reports, the more effectively the impact of systemic risks on the company can be reduced.

III.   Research Method

This study uses the 2018 and 2019 Shanghai and Shenzhen Stock Exchange Economic and Social Investment Alliance's ESG-rated financial industry listed companies as a research sample to explore the impact of their corporate social responsibility performance on systemic risks. Sample data sources include WIND database and CSMR database. After downloading all sample data, delete those with incomplete data first, and then use Winsorize to delete extreme values. From 2018 to 2019, we get 54. With 62 samples.

The research method in this study adopts the Ordinary Least Square method. Taking into account the effects of the deferred effect and progress effect of corporate social responsibility, two regression models are used. Both of which use the systematic risk in 2019 as the explained number, and the corporate social responsibility performance and progress of the current year, the previous year, and the previous two years were used to explore its impact on systematic risks. The following is the regression model of the least squares method and a detailed description of the variables:

3.1 The models of ordinary least square regression and quantile regression：

3.1.1 The impact of corporate social responsibility on system risk in 2019：

$$SR_{it} = \alpha_0 + \alpha_1 ESG_{it} + \alpha_2 GRI_{it} + \alpha_3 ESG * GRI_{it} + \alpha_4 STATE_{it} + \alpha_5 ROA_{it} + \alpha_6 SCALE_{it} + \alpha_7 AGE_{it} + \varepsilon_0 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

3.1.2 The impact of social responsibility and progress in 2018 on systemic risks in 2019：

$$SR_{it} = \alpha_0 + \alpha_1 ESG_{it-1} + \alpha_2 GRI_{it-1} + \alpha_3 ESG * GRI_{it-1} + \alpha_4 PROG_{it} + \alpha_5 PSCORE_{it} + \alpha_6 STATE_{it-1} + \alpha_7 ROA_{it-1} + \alpha_8 SCALE_{it-1} + \alpha_9 AGE_{it-1} + \varepsilon_0 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

3.2 The variable description is as follows: the variable description in the model is listed in the following table:

Table 1 The definition and explanation of variables

Variable nature	Variable name	Definition and explanation
Independent variable	SR	Systematic risk: This study adopts the systematic risk factor β value as a substitute variable for systematic risk, and β value is used to measure the relationship between the volatility of securities prices and the average change in the market. This study is to obtain the β value data of the sample company from the Guotaian database, and the calculation formula is： $\beta_a = \frac{COV(r_a,\ r_m)}{\sigma_m^2}$
Dependent variable	ESG	ESG rating: This study adopts the ESG rating results of the CSI 300 component stocks conducted by the Social Investment Alliance (Shenzhen) as a substitute variable for corporate social responsibility. The agency's rating has 10 major ratings, namely AAA, AA, and AA. A, BBB, BB, B, CCC, CC, C and D. Among them, AA to B grades are fine-tuned with "+" and "-" signs, a total of 20 sub-grades, so this study converts the rating result from low to high to 1 to 20 points.
	GRI	Whether to actively disclose social responsibility reports in accordance with the GRI guidelines: This variable is a dummy variable. If the report is actively disclosed, it is set to "1", otherwise it is set to "0".
	ESG*GRI	Intersection of Corporate Social Responsibility and Information Disclosure: The two variables ESG and GRI are decentralized and multiplied to indicate the interaction between the two.
	PROG	Whether there is no regression in the corporate social responsibility rating: This variable is a dummy variable. If there is no regression compared to the previous year, it is set to "1", otherwise it is set to "0".
	PSCORE	Corporate Social Responsibility Rating Progress Score: It is the social responsibility rating progress score from the test year to 2019.
Control variable	STATE	Nature of property rights: Refer to Liu et al. (2015) [16] in the research that pointed out that Chinese state-owned enterprises and non-state-owned enterprises will have different effects on the company's operating performance. This paper sets the nature of property rights as a dummy variable. When the company is a state-owned enterprise, it is set to 1, otherwise it is 0.
	ROA	Return on total assets: A company with a higher return on total assets means that it will have better asset utilization and efficiency in the

Variable nature	Variable name	Definition and explanation
	SCALE	future, better management physique, and higher resistance to external risks. The calculation formula is: net profit/ Average total assets. Company size: Choi and Wang (2009) [17] believe that large companies have economies of scale and more risks, so they may have an impact on corporate performance and brand equity. This study uses the natural logarithm to measure the total assets at the end of the period.
	AGE	Company age: Consider that the profitability or development status of the company will vary with the life cycle. Therefore, this study uses company age as one of the control variables.

IV. Results

First, all samples are reviewed by descriptive statistical analysis. The descriptive statistics of all samples in this study are listed in the table below.

Table 2 Descriptive statistics

	Year 2018 (N=54)				Year 2019 (N=62)			
	Min.	Max.	Ave.	Sdv.	Min.	Max.	Ave.	Sdv.
SR	0.45	1.91	1.21	0.45	0.45	1.91	1.24	0.43
ESG	1.00	25.00	13.94	7.87	1.00	25.00	17.74	4.36
PROG	0.00	1.00	0.74	0.44	-	-	-	-
PSCORE	-4.00	23.00	3.96	7.79	-	-	-	-
GRI	0.00	1.00	0.46	0.50	0.00	1.00	0.45	0.50
ESG*GRI	-6.95	5.99	-0.01	4.03	-8.65	4.64	0.53	2.35
STATE	0.00	1.00	0.46	0.50	0.00	1.00	0.40	0.49
SCALE	24.17	30.95	27.24	1.86	23.53	31.04	27.12	1.91
ROA	-6.47	2.31	0.91	1.12	-15.27	3.11	1.17	2.22
AGE	9.96	35.19	22.99	6.26	7.52	36.19	23.47	6.26

Note：SR means systematic risk. ESG means corporate social responsibility. PROG means whether there is no regression compared to the previous year. PSCORE means the progression or backward score compared to the previous year,GRI means whether the social responsibility report is disclosed in accordance with the GRI Sustainability Reporting Guidelines. ESG*GRI means the intersection of ESG and GRI；STATE means the nature of property rights of the company.SCALE means the scale of the company.ROA means return on assets.AGE means the age of the company.

It can be seen from Table 2 that not all samples present a normal distribution, so the method of handling extreme values in this paper should be reasonable.

Next are the empirical results of quantile regression and ordinary least squares method, which are listed in Table 3 and Table 4, respectively.

Table 3 The empirical results of least squares method and quantile regression---model (1) (N=62)

	25%	50%	75%	OLS
CON_	6.4224***	6.9129***	7.5107***	6.9881***
ESG	0.0022	0.0181	0.0375***	0.0185*
GRI	-0.0021	0.0413	0.0985	0.0850
ESG*GRI	-0.0101	-0.0394	-0.0628***	-0.0368*
STATE	-0.0115	-0.0898	-0.0570	-0.0522
SCALE	-0.2042***	-0.2154***	-0.2456***	-0.2227***
ROA	0.0026	0.0044	0.0073	0.0128
AGE	0.0062	-0.0037	-0.0043	-0.0019
Adj-R^2.	0.5761	0.5498	0.4735	0.7406

Note 1：p<0.01 shows ***，0.01<p<=0.05 shows **，0.05<p<=0.1shows *.

Note 2：refer to table 1.

Table 3 shows the empirical results of the impact of corporate social responsibility performance and information disclosure in 2019 on the system risk of the current year. The results in the ordinary least squares

method show that corporate social responsibility performance is better, and the interactive effect of actively disclosing social responsibility reports Downloading will significantly reduce the impact of system risks. Deeply discussion the empirical results of quantile regression, it is found that the social responsibility performance of companies at the middle and low level of systemic risk has no significant impact on system risk, but the role of companies at the high-risk level is obvious.

Table 4 The empirical results of least squares method and quantile regression---model (2) (N=54)

	25%	50%	75%	OLS
CON_	6.8610***	7.8349***	7.2059***	7.1840***
ESG	-0.0178*	-0.0057	0.0026	-0.0069
PROG	-0.2370**	-0.1361	0.0169	-0.0365
PSCORE	-0.0055	0.0041	0.0031	-0.0011
GRI	-0.0207	0.1268	0.0879	0.0204
ESG*GRI	0.0134	0.0117	0.0123	0.0106
STATE	-0.0878	-0.0572	-0.0510	-0.0963
SCALE	-0.1967***	-0.2342***	-0.2175***	-0.2106***
ROA	0.0846**	0.0232	0.0287	0.0373
AGE	-0.0021	-0.0065	-0.0017	-0.0048
Adj-R^2.	0.6303	0.6088	0.5432	0.7809

Note 1：p<0.01 shows ***，0.01<p<=0.05 shows **，0.05<p<=0.1 shows *.

Note 2：refer to table 1.

Table 4 shows the empirical results of the impact of corporate social responsibility performance, whether continuous progress and information disclosure situation on the next year's system risk in 2018. The results in the least squares method show that social responsibility performance, whether continuous progress and information disclosure situation are relevant for the next year. The annual systemic risk has no obvious impact, but the empirical results in the quantile regression show that for companies at a low risk level, corporate social responsibility has a deferred effect on the systemic risk resistance of the next year. This also shows that the implementation of the company After a period of social responsibility, it can produce the effect of transforming the enterprise from a high-risk business environment to a low-risk business. Moreover, if social responsibility improves over the previous year, it can also play a significant role in reducing the impact of system risk.

V.   CONCLUSION

5.1 Findings

This study takes the China's financial industry listed companies from 2018 to 2019 as a sample, and uses quantile regression supplemented by the ordinary least square method to explore the impact of corporate social responsibility performance on systematic risk and its deferral effect. The empirical results are as follows:

5.1.1 Corporate social responsibility affect positively and significantly on the current systematic risk, but if corporate performs social responsibility well and information disclosure is done, the systematic risk can be reduced, and the effect is especially significant for high-risk companies.

5.1.2 The continuous improvement of the company's ability to assume social responsibility has a deferred effect for companies with low risk levels to further reduce the impact of systemic risks. And even if the improvement in corporate social responsibility performance is small, it will significantly reduce the impact of systemic risks.

The above research results echo some of the previous research results of domestic and foreign scholars, that is, the disclosure of social responsibility reports can effectively resist external system risks (Zhao et al., 2018; Zeng et al., 2018; Li, 2020).

5.2 Recommends

The financial industry is an industry with high-risk characteristics, which is greatly affected by external factors, such as changes in interest rates, exchange rates, politics, and economic conditions. Therefore, the management of systematic risks is very important. The findings of this study provide practical advice on the following points in the financial industry:

5.2.1 The significance of the disclosure of the sustainability report is to convey the corporate social responsibility information to all internal and external stakeholders, so that stakeholders can better understand the operation of the company, and change or strengthen their understanding of the company. Form a benign interaction with people and things in the external environment, such as the government, creditors, debtors, investors, etc., and ultimately achieve the goal of reducing the impact of system risks. If only oneself bears corporate social responsibility and the stakeholders cannot understand the situation, then such a payment can only become an additional operating cost of the enterprise and will not bring any benefit to the operation of the enterprise.

5.2.2 Information disclosure needs to be carried out on a regular and continuous basis. The impact of such

information on stakeholders is immediate, and the different disclosure content in each period will continue to affect the perception of stakeholders, so there will be no delay effect.

5.2.3 Since the objective operating conditions and capital conditions of each enterprise are different, it is not mandatory to require the enterprise to implement the degree of social responsibility. The empirical results also show that as long as the performance of the enterprise in implementing social responsibility is higher than or maintained at the previous period's performance level The above can reduce the impact of system risk in the next period.

REFERENCES

[1]   Ng Anthony C. RezaeeZabihollah. Business sustainability performance and cost of equity capital[J]. Journal of Corporate Finance；34. 2015；128-149.

[2]   Auer Benjamin R. Schuhmacher Frank. Do socially (ir) responsible investments pay? New evidence from international ESG data[J]. Quarterly Review of Economics and Finance；2016；59：51-62.

[3]   Zhao Changhong Guo Yu Yuan Jiahai Wu Mengya Li Daiyu Zhou Yiou KangJiangang. ESG and Corporate Financial Performance： Empirical Evidence from China's Listed Power Generation Companies[J]. Sustainability；2018；10(8).

[4]   Lian Yi, Li Tao, Yue Wen. Corporate social responsibility and consumer behaviorintention［J］. Commercial Research，2011(2)：13-17.

[5]   BEAVER W. KETTLER P. SCHOLES M．The association between market determined and accounting determined risk measures[J]．The Acoounting Review，1970，45(4)：654-682.

[6]   MANDELKER G. N RHEE S G．The impact of the degrees of operating and financial leverage on systematic risk of common stock[J]．The Journal of Financial and Quantitative Analysis，1984，19(1)：45-57.

[7]   BEASLEY M S．An empirical analysis of the relation between the board of director composition and financial statement fraud[J]．The Accounting Review，1996，71(4)：443-465.

[8]   BOTOSAN C. PLUMLEE M．A re-examination of disclosure level and expected cost of equity capital[J]．Journal of Accounting Research，2002，40(1)：21-40.

[9]   HUA NG Bing-yi, , LI Yang. Empirical Study on the Relation between Corporate Governance and Systematic Risk:Evidence from Chinese Listed Firms［J］．The Theory and Practice of Finance and Economics，2010(2)：54-58.

[10]   JIA Yanyan，FANGYi，JINGZhongbo. Does China's Financial System Amplify Risks in the Real Economy? [J]. Finance & Trade Economics，2020，41(10)：111-128.

[11]   Yuan Wei, Zou Jian Feng. Research on the system risk of financial holding company and its supervision [J]. Modern Finance & Economics，2005(09)：12-17.

[12]   Li Ling. Social responsibility fulfillment and system risk response of tourism enterprises -- Based on the moderating effect of economic level [J]. Tourist Economy，2020，39(07)：108-115.

[13]   Zeng Hui Xiang，Li Shi Hui，ZhouZhiFang，Xiao Xu. Water Disclosure, Media Coverage, and Firm Risk. [J].Friends of Accounting，2018(04)：89-96.

[14]   ZHAO Zhenyang，ZHAOLina，YANGJianping. Can High Quality Social Responsibility Report Respond Effectively to Corporate Systematic Risk? [J]. Journal of Nanjing Audit University，2018，15(01)：79-86.

[15]   Hui Xiao Feng, Du Chang Chun. Effects of information disclosure on beta.Journal of Harbin Engineering University，2009，30(09)：1077-1081.

[16]   Liu Y. Miletkov M. K. Wei Z. Yang T., Board independence and firm performance in China[J]. Journal of Corporate Finance，2015,30：223-244.

[17]   Choi J. Wang H., Stakeholder relations and the persistence of corporate financial performance[J]. Strategic management journal，2009,30(8)：895-907.

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