ISSN : 0974 - 7435 Volume 10 Issue 9

2014

BioTechnology

An Indian Journal

FULL PAPER

BTAIJ, 10(9), 2014 [3795-3801]

Does environmental investment really contribute to firm performance?—Evidence from Chinese biological and other firms

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ABSTRACT

This study uses stakeholder theory to analyze the impact of environmental investment on firm value and make some reasonable hypotheses. With the deep analysis of empirical models, it analyzes the data of 2004-2009 listed biological and other companies in China to test the hypotheses. The findings are concluded that corporate environmental protection investment intensity has an inverse relationship with corporate short-term financial performance and firm value in Chinese listed biological and other companies.

KEYWORDS

Environmental investment; Corporate value; Stakeholder.

INTRODUCTION

According to Modern theory, enterprise is the sum of the multilateral contractual relationship. Each party has their own interests and they constitute the enterprise benefit balance mechanism. Enterprise value is only consistent with the interests of all stakeholders by following the law of value and implementing management which core is value so that firm value can be reflected and increased. Because all stakeholders are able to obtain a satisfactory. It can be seen that the firms to fulfill their environmental responsibilities will improve stakeholders' satisfaction, thereby increasing corporate ability to return to stakeholders and firm value will be increased. However, the nature of the enterprise is to pursue and maximize profits. Increase investment in environmental protection will inevitably lead to the increasing of operation cost. The simplest example is that firms need to spend huge amounts of investment in energy and waste management to reduce the environmental contamination. The contradiction between environmental protection investment and profits will be presented. In this context, this paper focuses on discussing and solving following issues: the impact of corporate environmental investment oncorporate short-term performance and long-term value under the background of present system in China.

THE IMPACT OF ENVIRONMENTAL INVESTMENT ON CORPORATE SHORT-TERM FINANCIAL PERFORMANCE

Because of the lag of corporate financial reporting, Jaggi and Freedman (1992)believe that stakeholders cannot get the enterprise operational performance at the end of the fiscal year. Thus, in the short term, corporate environmental performance may not be immediately reflected in the financial performance. In other words, although long-term capital expenditures in environmental protection equipment and waste recycling will bring corporate identity in line with environmental legitimacy, it also will form costs that cannot be recovery. It will influence the current financial performance of the enterprise. Based on the analysis above, we believe that corporate environmental investment would have a negative impact of corporate short-term financial performance. As a result, this paper puts forward hypothesis 1.

Hypothesis 1: Environmental investment has a negative impact on corporate short-term financial performance.

THE IMPACT OF ENVIRONMENTAL INVESTMENT ON FIRM VALUE

Although environmental investment will make enterprise deviate from the target of profit maximization in the short term, once the behavior of corporate environmental investment was recognized by stakeholders, environmental investment can bring more benefits for the enterprise, thereby maximizing corporate value and achieve sustainable development. Thurs the core issue of environmental investment is to balance "short-term interests" and "long-term interests". We will analyze the impact of stakeholders' recognition of corporate environmental investment legality on firm value from theaspects of product and capital markets.

Value creation of product market

Stakeholders in product market mainly include suppliers, distributors and consumers. Corporate environmental investment behavior will influence the recognition of stakeholders in product market, thus affecting the ability of enterprise to create cash flow.

Conducive to increasing sales

Consumers' recognition of corporate environmental investment legality can bring an increase in sales, which will directly increase the future net cash flows into the firm and increase firm value. Armigtage& Conner (2001) found consumers' environmental awareness will directly affect their buying

behavior. Thus, there is reason to believe that corporate environmental investment behavior will be recognized by consumers. As a result, enterprises' sales performance will increase.

Conducive to the establishment and maintenance of customer assets

Enterprises get consumers' legitimacy recognition through the behavior of investment in environmental protection. It helps establish and maintain customer assets and increase future sales, which will help increase the company's future cash flows and enhance firm value. Customer asset has a positive effect on corporate competitive advantage by building a model of customer assets competitive strategy. Repeat purchaseincreases company'sincome. The longer the time old customers are keeping, the larger amount they will buy. Old customer loyalty is conducive to enhancing corporate reputation and bring added value to the enterprise.

Conducive to enhancing the ability of premium

Enterprises get consumers' legitimacy recognition through the behavior of investment in environmental protection. It helps improve customers' loyalty and improve brand premium abilityand form phenomenon that consumers purchaseat a premium. Consequentlyit enhancesfirm value. Bradley T. Gale (1994) has found that, from the perspective of customer value, through corporate green behavior, consistent with the formation of the customer value proposition and ideas, can effectively build customer brand loyalty. Thus, the behavior of corporate environmental investment caused the following value reaction chain: environmental investment behavior - consumer'slegitimacy recognition - to improve brand loyalty - high premium capacity - enhancing firm value.

Conducive to the formation of corporate reputation spillovers

The spillover effect refers to the economic effects on consumers or other stakeholders in the supply chain caused by corporate environmental investment behavior. Yu & Lester (2008) have found that companies with good reputation spillover effects help enhance firm value. Corporate environmental responsibility is an important dimension of corporate reputation. It also has a good spillover effects. From resource-based theory, good corporate reputation is rare, unique and valuable competitive advantage. The reputation spillover effects could contribute to spread this competitive advantage in product market among the stakeholders, which helps to get the recognition of stakeholders to enhance firm value.

Value creation of capital market

The creation process of corporate environmental investment behavior value in the capital marketis mainly achieved by affecting the corporate environmental legitimacy recognition of investors, creditors and other stakeholders, thus affecting investors and creditors'expected judgment of company's future risk.

Corporate environmental investment will help reduce financing costs

Investors, banks etc. pay close attention to corporate environmental risk. A report of UNEP based on global bank (UNEP, 1995) found that 70 % of the Banks believe that environmental issues have a substantial impact on their business. 80 % ofthe banks evaluate corporate environmental risks at different level when loan to the enterprises. It means that enterprisestaking the initiative to be responsible for environment are able to face fewer environmental risks and get more loans from banks. Banks'constant concerned on environmental issues can be regarded as a new kind of risk for loan enterprises. It is believed that companies taking environmentally friendly operations and cleaner production are easier to get financing and investment. On the contrary, if enterprises don't consider clean production, it will be difficult for them to get financing, and they will bear more high financing costs. AnAmerica Bank surveyshows that 62.5% of U.S. banks take into account the possibility of environmental liabilities and reject loan applications and 88.1% of the banks stop the loan because of

guarding the environmental liabilities. Therefore,corporate environmental protection investment helps companies to reduce financing costs and enhance firmvalue.

Corporate environmental investment help get more investment opportunities

With the strengthening of environmental awareness, more and more ethical investors emerge in the capital market. In the late 1990s, a growing number of green investors (toinvest in energy-efficient, cleaner production companies) began to emerge and the GEF has taken control of 50 billion dollars. A survey shows that the stock price of enterprises joining inthe environmental facility fell lesswhen stock market is slumping. Andrew (1998) considered both creditors and investors are more inclined to put money into enterprises taking the initiative to be responsible for environment because they believe enterprises to implement environmental management and increase investment in environmental protection indicates in the future companies will reduce environmental risks. A survey of KPMG in 2005 showed that about 75% of U.S. investors will take corporate social responsibility fulfillment as a standard when selecting investment object. Therefore, fulfilling corporate environmental responsibilityhelps companies get more investment opportunities.

Through the analysis of product market and capital market, we believe that the behavior of environmental protection will help enhance firm value. Thus this paper puts forward hypothesis 2.
Hypothesis 2: Corporate environmental investment intensity positively correlates with firm value.

EMPIRICAL TEST

Samples and data selection

This paper selects annual reports and social responsibility reports from all A-share companies listed on Shanghai and Shenzhen exchanges from 2004 to 2009 as samples. All environmental inputs intensity data are collected from annual reports and social responsibility reports. In order to ensure the accuracy of the data, the data of every year are collected separately by two people at the same time. Taking the negative impact of extreme value on statistical results, we exclude ST companies and other research companies with incomplete data. Finally we got 1118 sample observations, accounting for 21.6% of the total.

Test model

According to hypothesis 1-7, we build two models to test the hypotheses:
Model 1-1:

$$ROA = \beta_0 + \beta_1 \times EIS + \beta_2 \times FIRST + \beta_3 \times SIZE + \beta_4 \times TURNOVER + \beta_5 \times INDRATIO +$$
$$\beta_6 \times LEV + \alpha_i \times \sum_{i=1}^{5} Year + \delta_j \times \sum_{i=1}^{12} Industry + \varepsilon$$

Model 1-2:

$$TOBIN'SQ = \beta_0 + \beta_1 \times EIS + \beta_2 \times FIRST + \beta_3 \times SIZE + \beta_4 \times TURNOVER + \beta_5 \times INDRATIO +$$
$$\beta_6 \times LEV + \alpha_i \times \sum_{i=1}^{5} Year + \delta_j \times \sum_{i=1}^{12} Industry + \varepsilon$$

The research variables are expressed as follows:

This paper selected ROA as a short-term corporate financial performance profitability proxy variables and Tobin's Q as a proxy variable for firm value.

Environmental investment strength (EIS) =all environmental investment that enterprise uses for environmental improvement in current period / enterprise’s current operating cost.

Control variables include: ownership concentration (FIRST), the company size (SIZE), asset turnover (TURNOVER), independent directors ratio (INDRATIO), capital structure (LEV).

Empirical test

This study test on model 1-1 and model 1-2. The empirical test results are listed in TABLE 1.

TABLE 1 : Theregression results of ROA

roa	Coef.	t	P>t
EIS	-0.0298***	-3.01	0.003
size	0.0145***	8.69	0.000
leverage	-0.1782***	-19.54	0.000
first	-0.0002*	-1.7	0.09
indratio	-0.0709**	-2.07	0.039
turnover1	0.0283***	7.41	0.000
Year	yes		
industry	yes		
Adj R-Square	0.381		
N	1081		

Note: * p< 0.1 significance level, * * p< 0.05 significance level, * * * p< 0.01 significance level.

TABLE 2 : The regression results of tobin's q

tobinq1	Coef.	t	P>t
EIS	-0.1894*	-1.71	0.087
size	-0.1751***	-9.48	0
leverage	-0.3730***	-3.7	0
first	-0.0037***	-3.12	0.002
indratio	0.6786*	1.77	0.076
turnover1	0.1812***	4.26	0
Year	Yes		
Industry	yes		
Adj R-Square	0.48		
N	1076		

Note : * p< 0.1 significance level, * * p<0.05 significance level, * * * p<0.01 significance level.

Through empirical results, we found that environmental investment strength has a significant impact on firm value (either ROA or Tobin's q). But the impact is opposite to our expectation: with the increasing of environmental investment strength, the firm value is diminishing. This result indicates that, in the context of our system, the marginal cost of corporate environmental management practices will be greater than the marginal benefit they obtained. In other words, Chinese companies' environmental behavior under the pressure of legitimacy cannot get stakeholders' recognition and market rewards, so it cannot add firm value.

Sector test

According to"*environmental inspection of listed biological and other companies Industry Classification Catalogue*"(Central Office letter [2008] No. 373) which was published by National

Environmental Protection Agency in 2008, such as thermal power, steel, cement, coal, metallurgy, building materials, mining, chemical, petrochemical, pharmaceutical, light industry, textile and leather,14 big categories, 48 small categories is identified as heavily polluting enterprises. We set up dummy variable PLUT. If PLUT = 1 then the industry is heavily polluted industry. If PLUT = 0 the industry belongs to others. Then the model 1-1 and model 1-2 were grouped regression to judge whether a company belongs to heavily polluting industries. The regression results are showed in TABLE3:

TABLE 3 : PLUT grouping regression results:

	ROA		TOBIN 'S Q	
	PLUT=1	**PLUT=0**	**PLUT=1**	**PLUT=0**
Constant	-0.19	-0.198	0.443	0.544
	0.000	0.006	0.000	0.000
EIS	-0.02**	0-.046	-0.221*	-0.201
	0.035	0.3	0.082	0.389
Size	0.014***	0.013***	-0.165***	-0.196***
	0.000	0.000	0.000	0.000
First	-0.028**	0.018	-0.033**	-0.058**
	0.019	0.415	0.016	0.018
Turnover	0.026***	0.034***	0.241***	0.024
	0.000	0.000	0.000	0.998
indratio	-0.068*	-0.072	0.645	0.728
	0.081	0.296	0.149	0.333
Lev	-0.161***	-0.204***	-0.432***	-0.176
	0.000	0.000	0.001	0.3
year	Yes	Yes	Yes	Yes
industry	Yes	Yes	Yes	Yes
Adj R-Square	0.34	0.47	0.47	0.482
N	800	281	797	279

From TABLE 3, we can conclude that heavy polluting industries' environmental behavior still has a significant negative correlation with its enterprise value. But in other industries, corporate environmental behavior did not significantly affect its value. This shows that the nature of the industry has a significant impact on the relationship between corporate environmental investment intensity and firm value.

CONCLUSION

In Chineselisted biological and other companies, corporate environmental inputs have a negative impact on corporate short-term financial performance. This is mainly due to Chinese environmental protection is still in its infancy. It requires a large amount of money while the economies benefits brought by environmental investment remains to be seen. Huge investment in environmental protection will has a negative impact on corporate short-term financial performance. The nature of the industry has a long term and greater impact on firm value. Environmental behavior of heavily polluting industries has a significantly negative correlation with its firm value. But in other industries, corporate environmental behavior did not significantly affect its value.

ACKNOWLEDGMENTS

This research is supported by National Natural Science Funds (71002072 and 71272063) and Youth Project (12YJC630187) of Humanities and Social Science of The Ministry of Education.

REFERENCES

[1] M.Freedman, B.Jaggi; Pollution disclosures, pollution performance and economic performance. Omega, **10(3)**, 167-176 **(1982)**.
[2] J.A.Aragón-Correa; Strategic proactivity and firm approach to the natural environment. Academy of Management Journal, **41**, 556-567 **(1998)**.
[3] Andrew Dobson; Justice and the environment: conceptions of environmental sustainability and dimensions of social justice. London: Oxford University Press, **(1998)**.
[4] Bradley T.Gale; Managing customer value: creating quality and service that customers can see. NY: Simon & Schuster, **(1994)**.
[5] T.Yu, R.H.Lester, M.Sengul; Reputation spillovers: how changes in corporate reputation affect competitive action. Academy of Management Best Paper Proceedings, Denver, CO, **(2002)**.