



Corporate Activity to Prevent Climate Change and Shareholder Structure: How Does CDP Connect Companies with Investors?

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ABSTRACT

Climate change is the most severe global problem. Every investor with a social and long-range view intends to improve climate performances by means of its investment. Companies should appeal to investors by disclosing their environmental activities. Among many disclosure systems, CDP (the former Carbon Disclosure Project) is the pioneer of the global one. This study shows the relation between corporate activity to prevent climate change and shareholder structure, by means of the response to CDP Japan 500. This investors' activity study indicates that disclosing the climate performance affects investor's activity to hold the stock of companies preventing climate change. It is critical that the company that is requested to provide information on climate change by CDP answers it and aims at high CDP score. In particular, this study shows the relation between investors and companies and promotes corporate activity to prevent climate change.

Keywords: Climate change, shareholder structure, CDP (The Carbon Disclosure Project)

INTRODUCTION

Recently, climate change has become the most severe global problem. It is recognised that every corporate activity to reduce GHG (Green House Gas) emission is effective to

control climate change. It means that this kind of social cost becomes company's cost. Every company does not expend to control climate change without any thought of its profit. Companies want to know whether or not their activities to prevent climate change are attractive to their multi-stakeholders, especially investors. On the other hand, every investor with a social and long-range view intends to improve climate performances by means of its investment. However, this relationship is not clear

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yet. Thus, in order to change the climate problem for the better, it is necessary to show the relationship between corporate activities and investors' activities.

PREVIOUS RESEARCH AND CDP

After the Kyoto Protocol went into effect in 2005, a lot of research has been carried out to find the corporate factors that control global climate changing effects. For example, Amran *et al.* (2012) found that size, profitability, industry membership, government ownership and business network are positively and significantly related to climate change mitigation efforts in Malaysia. This research suggests a lot to green investors. However, it does not suggest a lot to companies, which do not recognise what they should act.

In relation to stock price, there is a lot of research conducted on firm value such as that by Al-Najjar and Anfimiadou, (2012). Most research on SRI (Socially Responsible Investment) also investigated GHG emission. However, every successful research is short to specify the corporate activities including what and how companies disclose their environmental activities.

From the point of corporate view, it is necessary to find the effect of its activity to prevent climate change. The main reason of the difficulty of finding is that the disclosure of corporate environmental

activities is voluntary and that it is not easy to compare them.

Nowadays, there are a lot of unified disclosure programmes to report corporate environmental activities. Among them, CDP (the former The Carbon Disclosure Project) is the pioneer of the global disclosure programme to report companies' environmental impacts and strategies for investors. CDP, an international non-for-profit organisation working with investors, asks over 5,000 of the world's largest companies to report their activities to prevent climate change. It is distinguished that anyone can access the original responses to the CDP questionnaire.

Therefore, this study adopts CDP as the disclosed information of corporate activity to prevent climate change. CDP is recognised as one of the most useful programmes for investors. On the other hand, is it useful for every company to pay to have its activities disclosed? The objective of this study is to clear the guideline on what and how companies should disclose their environmental activities on CDP. In particular, it will indicate that CDP connects companies and investors and is useful for both companies and investors.

The CDP 2013 consists of three sections; climate change management, risks and opportunities and emissions. This study focuses specifically on climate change management, which is a fundamental activity.

TABLE 1
Country CDP Climate Change Reports 2013

Country reports in alphabet order		
Asia ex-Japan	DACH 350	Italy 100
Australia and New Zealand	France	Japan 500
Benelux 150	FTSE* 350	Korea 250
Brazil 100	Global 500	Nordic 260
Canada 200	Iberia 125	S&P 500
Central and Eastern Europe	India 200	South Africa 100
China	Ireland	Turkey 100

*: UK companies selected in Financial Times Stock Exchange

CDP disclosed several climate change reports in 2013 (see Table 1). To apply time-series analysis, this study investigated CDP Japan 500 which consisted of the largest number of companies.

CDP Japan 500 has asked 500 Japanese largest companies to report from February to September every year since 2006. The results are published in November. The companies' environmental activities are evaluated by two scores. The first one is the disclosure score. It shows the evaluation of integrity and quality of the answers. Another is the performance score. It shows the evaluation of the actual efforts of companies.

RESEARCH APPROACH

To investigate investors' activities, this study focused on holding stocks. The shareholder structure is examined because every company wants investors to hold its stock for a long time. The objective of the analyses is to find the relation between corporate activity to prevent climate

change and shareholder structure by means of the response to CDP Japan 500.

This study investigated environmental management and environmental performance of companies relating climate change, however, it did not examine their reducing amount of emissions directly. Though the reducing amount is disclosed in CDP reports, the numerical value of the amount is not considered. This is because the efficiency of corporate activity to its environmental emission reduction depends on the stage of environmental management of each company (Tsuboi & Takahashi, 2012a, 2012b). The historical comparison of the amounts of emission reduction of a company is significant. However, the simple comparison of the amounts of emission reduction among the companies on the different stages of environmental management will hide the difference of their past efforts. Then, this study investigated only the reduction target and management system to execute the reduction. In specific, this study is divided into three parts.

First part: Shareholder Structure 2014 – CDP 2013

The first part shows how companies attract investors through their disclosure of activities to prevent climate change. The relation between shareholder structure in February 2014 and CDP Japan 500 in

2013 was analysed. The first part puts its focus on what information investors pay attention in CDP. The CDP information is divided into four steps as information criteria of investors. The four steps can be defined as Table 2.

TABLE 2
Definition of the four steps

Step	Step A CDP response	Step B CDP score	Step C Reduction target	Step D Standard of target
CDP information	CDP response	Disclosure score Performance score Comparison with non-answering company	Absolute target Intensity target	Original setting Kyoto Protocol Laws and regulations Industry goal Production base goal Domestic goal Overseas goal

Step A discusses about whether or not companies answer CDP. Step B discusses about disclosure score and performance score. In addition to these, through comparison between getting low score company and non-answering company, this study defines the standard score which companies should get at least. Step C discusses about absolute target and intensity target. Absolute target objects to reduce GHG that companies discharge in total. Intensity target objects to reduce GHG that companies discharge per activity

such as per production volume. In Step D, standard of target is discussed.

Second part: Shareholder Structure 2014 – CDP 2012 & CDP 2013

The second part considers the effectiveness of the past disclosure. CDP Japan 500 in 2012 was added into the analysis. It discusses about CDP response, CDP answer newly and the change of scores. In this part, response score is taken into consideration, and the response score is defined in Table 3.

TABLE 3
Definition of response score

CDP2012 response	CDP2013 response	Response score
Answered	Answered	2
Not answered	Answered	1
Not answered	Not answered	0
Answered	Not answered	-1

Final part: CDP 2013 & CDP 2014 – Shareholder Structure 2013

The final part examines whether or not investors and shareholders improve corporate activities to prevent climate change. The relation between the change of CDP Japan 500 in 2014 from 2013 and shareholder structure in February 2014 was analysed. The change of scores in the

CDP information is discussed in this part. CDP is organised working with investors to motivate companies to disclose their GHG emissions. The effects of investors and shareholders to corporate activity to prevent climate change are related to the original objective of CDP. Table 4 shows the object of each analysis and Table 5 shows variables in this study.

TABLE 4
Object of each analysis

Part	Analysis	Object	Number of companies
First part	Step A	Companies asked to report by CDP 2013	462
	Step B	Companies answering CDP 2013	216
	Step C	Companies setting reduction target	139
	Step D		
Second part	CDP response	Companies asked to report by CDP 2012 and CDP 2013	418
	CDP answer newly	Companies not answering CDP 2012	224
	Change of scores	Companies answering CDP 2012 and CDP 2013	183
Last part	Change of scores	Companies answering CDP 2013 and CDP 2014	187

TABLE 5
Variables

Index	Variables	Source
Investor activities	Institutional investor's shareholding ratio	Nikkei NEEDS database
	Foreign shareholding ratio	
	Stable holder's shareholding ratio	
CDP answer	Answer	CDP Japan 500
	Disclosure score	
	Performance score	
GHG reduce target	Absolute target	CDP Japan 500
	Intensity target	
	Original setting	
	Kyoto Protocol	
	Laws and regulations	
	Industry goal	
	Production base goal	
Domestic goal		
Overseas goal		

TABLE 5 (continue)

Control variables	Market capitalisation	Nikkei NEEDS database
	Overseas sales ratio	
	Financial leverage	
	Tobin's Q	
	Stock returns 3-year average	
	ROA 3-year average	
	Stock price fluctuations 3 years	
	Specific strain concentration	
	Small shareholders' shareholding ratio	
Industry dummies †		

†: Industry dummies are defined as 10 industries that are classified taking into account the GHG emissions.

The multiple regression models are applied to each analysis. In the first and second parts, the objective variable is the shareholder structure, which is the shareholding ratio of institutional investor, foreign investor and stable holders¹. The independent variables in the first part are CDP

responses, disclosure scores, performance scores and targets reduction of GHG. The independent variables in the second part are changes of CDP response, disclosure score and performance score. In the last part, the variables are reversed in the second part. Table 6 shows the indices of each analysis.

TABLE 6
The indices of each analysis

Part	analysis	Objective variable	Independent variables	Control variables
First part	Step A	Ratio of shareholdings 2014/02	CDP answer 2013	2013/03
	Step B		CDP answer 2013	
	Step C		GHG reduce target 2013	
	Step D			
Second part	CDP response	CDP answer 2013-2013	CDP answer 2012-2013	2014/03
	CDP answer newly		CDP answer 2013	
	Change of scores		CDP answer 2012-2013	
Last part	Change of scores	CDP answer 2013-2014	Ratio of shareholdings 2014/02	2014/03

¹ In this study, stable holder's shareholdings are defined the shareholdings owned by cross-shareholdings; insurance companies, banks or credit unions excluding special accounts and trust accounts; open affiliate companies; officer and directors; an employee stock ownership plan; treasury stock; and the financial institutions' share owned by open corporations, and other large shareholdings by corporations.

To eliminate spurious correlation, this study makes the default model constructed from control variables, size, profitability, financial position, stock price and industry. When an analysis model is better than the default model, its statistical significance is investigated.

RESULTS AND DISCUSSIONS

First part: Shareholder Structure 2014 – CDP 2013

Step A: CDP Response

The results from Step A indicated that the company answering CDP has high institutional investor’s shareholding

ratio and high foreign shareholding ratio (Table 7). Therefore, the company which is requested to provide its information on climate change by CDP should answer CDP. Its response affects its shareholder structure. On the other hand, it is not seen as strong effect on stable holder’s shareholding ratio.

TABLE 7
Results of the CDP response

	Institutional investor	Foreigner investor	Stable holder
Number of companies	462	462	462
Adjusted R ²	0.418	0.383	0.6654
Adjusted R ² (default)	0.410	0.377	0.6648
CDP answer	3.09	*** 2.30	** -0.72

Significant levels are *:10%, **:5%, ***:1%

Step B: CDP score

Table 8 shows that the company getting high score on disclosure score has high institutional investor’s shareholding ratio and high foreign shareholding ratio. Table 9 indicates that the company getting high score on performance score has a high foreign shareholding ratio. In

specific, the company getting an “A” on its performance score is closely related to foreign shareholding ratio. In addition, on both scores, the company getting low score has a low evaluation of institutional investor and foreign investor. Stable holder has a reverse trend of institutional investor and foreign investor.

TABLE 8
Results of the disclosure score

	Institutional investor		Foreigner investor		Stable holder	
	Adjusted R ²	Coefficient	Adjusted R ²	Coefficient	Adjusted R ²	Coefficient
Default	0.510		0.461		0.783	
100~96	0.508	0.57	0.468	4.46 *	0.782	-0.56
100~90	0.520	3.77 **	0.480	4.28 ***	0.787	-2.75 **
100~85	0.517	2.82 *	0.472	2.94 **	0.790	-3.00 ***
100~80	0.514	2.13	0.473	2.82 **	0.788	-2.62 **
100~75	0.511	1.61	0.467	2.26 *	0.786	-2.17 **
100~70	0.508	0.21	0.459	0.55	0.783	-1.32
100~65	0.514	2.39	0.468	2.62 *	0.787	-2.63 **
100~60	0.513	2.41	0.463	1.95	0.783	-1.40
100~55	0.514	2.91	0.464	2.37	0.783	-1.69
100~50	0.519	4.23 **	0.467	3.15 *	0.786	-2.95 *

TABLE 9
Result of the performance score

	Institutional investor		Foreign investor		Stable holder				
	Adjusted R ²	Coefficient	Adjusted R ²	Coefficient	Adjusted R ²	Coefficient			
Default	0.510		0.461		0.783				
A	0.513	3.87	0.483	7.32	***	0.782	0.76		
A~B	0.512	1.73	0.467	2.19	*	0.788	-2.53	**	
A~C	0.514	2.28	0.471	2.81	**	0.788	-2.60	**	
A~D	0.516	3.49	*	0.465	2.65	0.785	-2.61	*	
A~E	0.519	4.23	**	0.467	3.15	*	0.786	-2.95	*

In comparison with the company getting low disclosure score, the difference is not seen in the company not answering CDP (see Table 10). Raising the score for the comparison, it has seen the difference between the answering companies with

“60” ~ “69” on their disclosure score and the non-answering companies (Table 11). Therefore, if companies answer CDP, the companies need to get at least a “60” on disclosure score.

TABLE 10
Result of comparison's score under 50

	Institutional investor	Foreign investor	Stable holder
Number of companies	281	281	281
Adjusted R ²	0.383	0.380	0.6057
Adjusted R ² (default)	0.385	0.382	0.6055
CDP answer	0.06	0.42	1.98

TABLE 11
Result of comparison's score 60~6

	Institutional investor	Foreign investor	Stable holder
Number of companies	276	276	276
Adjusted R ²	0.427	0.406	0.571
Adjusted R ² (default)	0.419	0.405	0.572
CDP answer	6.44	*	3.84
			-2.54

Step C: Reduction target

Table 13 shows that the company setting intensity target has low institutional investor's shareholding ratio. Based on

the result from Step C, it is concluded that companies should set absolute target, not intensity target.

TABLE 12
Result of the absolute target

	Institutional investor	Foreign investor	Stable holder
Number of companies	139	139	139
Adjusted R ²	0.434	0.337	0.714
Adjusted R ² (default)	0.438	0.34	0.715
Absolute target	0.82	1.41	-1.21

TABLE 13
Result of the intensity target

	Institutional investor	Foreign investor	Stable holder
Number of companies	139	139	139
Adjusted R ²	0.456	0.342	0.713
Adjusted R ² (default)	0.438	0.34	0.715
Intensity target	-4.00	**	-2.03
			0.37

Step D: Standard of target

The relevance does not appear in setting the original targets for climate change and the shareholder structure. However, there is relevance between setting targets based

on the Kyoto Protocol or the industry goal and the shareholder structure (Table 14). Therefore, it can be presumed that companies should set the target investors understand easily.

TABLE 14
Result of the target's standard

	Institutional investor	Foreigner investor	Stable holder
Number of companies	139	139	139
Adjusted R2	0.466	0.366	0.725
Adjusted R2 (default)	0.438	0.340	0.715
Original setting			
Kyoto Protocol	7.41		
Laws and regulations	4.52		-3.55
Industry goal	16.10	* 16.35	* -11.10
Production base goal		3.70	2.56
Domestic goal		-6.18	*
Overseas goal	2.21	3.50	**

Second Part: Shareholder Structure 2014 – CDP 2012 & CDP 2013

As Table 15 indicates, institutional investor's shareholding ratio and foreign shareholding ratio are as high as companies

answered CDP. In addition, Table 16 shows that the company answering CDP newly can increase the institutional investor's shareholding ratio and high foreign shareholding ratio largely.

TABLE 15
Result of the response score

	Institutional investor	Foreign investor	Stable holder
Number of companies	418	418	418
Adjusted R ²	0.457	0.403	0.642
Adjusted R ² (default)	0.450	0.392	0.643
Response score	1.50	*** 1.53	*** -0.30

TABLE 16
Result of the CDP answer newly

	Institutional investor	Foreign investor	Stable holder
Number of companies	224	224	224
Adjusted R ²	0.427	0.409	0.528
Adjusted R ² (default)	0.425	0.404	0.530
CDP answer newly	5.56	6.02	-1.76

As shown in Table 17 and Table 18, although the scores are meaningful, the change of scores is not so important. However, the change of performance score

is related to foreign shareholding ratio. Therefore, companies should answer CDP aggressively without worrying about the past answering and scores.

TABLE 17
Result of the disclosure score change (2012-2013)

	Institutional investor	Foreign investor		Stable holder	
Number of companies	183	183		183	
Adjusted R ²	0.507	0.404		0.739	
Adjusted R ² (default)	0.505	0.396		0.731	
Disclosure score (2012)	0.07	0.09	**	-0.10	***
Disclosure score change (2012-2013)	0.05	0.04		-0.06	

TABLE 18
Result of performance score change (2012-2013)

	Institutional investor	Foreign investor		Stable holder	
Number of companies	183	183		183	
Adjusted R ²	0.511	0.418		0.744	
Adjusted R ² (default)	0.505	0.396		0.731	
Performance score (2012)	1.35	*** 1.81	***	-1.69	***
Performance score change (2012-2013)	0.84	1.61	**	-0.98	

Final Part: CDP 2013 & CDP 2014 – Shareholder Structure 2013

The result from the final part indicates that the relevance between the shareholder structure and the change of scores is not seen. Therefore, it is considered that the shareholder structure does not have enough effect on company's attitudes to CDP in a short time.

The recognition for CDP was shown to have increased from 2013 through 2014. In addition to that, the number of companies answering continually also increased. Therefore, it is considered that the difference of CDP information between companies decreased.

TABLE 19
Result of disclosure score change (2013-2014)

	Disclosure score change (2013-2014)	
Number of companies	187	187
Adjusted R ²	-0.020	-0.023
Adjusted R ² (default)	-0.023	-0.023
Institutional investor	0.09	
Foreign investor	0.12	
Stable holder		-0.11

TABLE 20
Result of performance score change (2013-2014)

	Performance score change (2013-2014)		
Number of companies	187	187	187
Adjusted R ²	-0.035	-0.035	-0.034
Adjusted R ² (default)	-0.029	-0.029	-0.029
Institutional investor	-0.002		
Foreign investor		0.002	
Stable holder			0.004

CONCLUDING REMARKS

Using CDP Japan 500, the relationship was found between corporate activity to prevent climate change and its shareholder structure. Disclosing the climate performance would affect the investor’s activity to hold the share of the company preventing climate change.

CDP’s questionnaire is based on the investors’ requests that support CDP. The information obtained through CDP has already been used effectively in SRI [FTSE (2010), RobecoSAM (2013)]. Moreover, this study also found that companies also could use CDP effectively to change their shareholder structure. Therefore, considering the information disclosure of climate change and the shareholder ratio, these facts indicate that CDP is a useful disclosure programme not only for investors but also for companies.

Therefore, companies should improve the amount and quality of information they disclose on their climate change

prevention activities. The results of the analyses specified that the company that is requested to provide its information on climate change by CDP should answer it and aim at CDP high score. In addition, it is necessary for the company to get at least a “60” on the disclosure score. In fact, it is important that every company sets absolute target and also targets that investors understand its appropriateness easily. Regardless of the continuity of answer and its score, answering the CDP questionnaire itself is meaningful. In other words, it is considered that the company which has not disclosed information can bring about a positive change in its shareholder structure by doing so.

Among Japan’s major corporations, the influence of the shareholders on information providing to CDP is not significant. As the number of investors who are concerned about climate change has increased, while the recognition of investors on CDP has widely been recognised in stock market.

Then, it is expected that the influence from the company's shareholder on its disclosure through CDP programme can be significant. Although this study subject is CDP Japan 500, it is hoped that activities for climate change progress around the world by carrying out an analysis for other countries.

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