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A Financial Analysis of the Low-Carbon Projects in the China (PRC)

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Abstract

The purpose of this study is to determine the financial impacts of applying low-carbon projects stemming from the Kyoto Protocols on a sample of firms in the People's Republic of China (PRC). By financial impacts we refer to the usual impacts on firms reflected in the financial reports of firms. The projects referred to as CDM aimed at reducing the demand and use of inefficient methods or producing and operating power generation resulting in high carbon emissions having negative effects on the ecology of the planet. We studied financial aspects of the projects to determine whether the sampled firms were harmed in a financial way by the implementation and results of the Kyoto sponsored projects. We do not cover all projects but a sample of those started and implemented in the PRC.

Keywords: Kyoto protocols; Financial impacts; Clean development mechanisms; Certification emission reduction; Mean asset-liability ratio

Introduction

With the development of human civilization, humankind are increasingly willing to use natural resources for economic development and often without regard to the waste of natural resources and the damage to the ecology of the planet [1]. Since the industrial revolution, the process of abusing resources continued with carbon dioxide emissions causing the changes in weather fluctuations and, in turn, natural disasters, floods, drought, tsunamis and other extreme weather events.

Fortunately, most nations reached a consensus to improve these harsh consequences. WMO (World Meteorological Organization) and UNEP (United Nations Environment Program) jointly established IPCC (the Intergovernmental Panel on Climate Change) in 1988, which organized more than 3,000scientists for scientific assessments of global climate change [2]. A series of meetings to confront climate change began in December 1990. The 45th session of the UN General Assembly resulted in the United Nations Framework Convention on Climate Change. In February 1991, this convention officially launched the negotiations for the adoption of the United Nations Framework Convention on Climate Change and the meetings put into effect the United Nations Framework Convention on Climate Change called the Kyoto Protocol. This protocol provided for the obligation of developing nation to reduce emission under the law from 2008 to 2012. On February 16, 2005, the Kyoto Protocols came into effect [3].

The Kyoto Protocols includes the development mechanism and joint implementation to encourage the reduction of carbon emissions. The Protocol encourages also the coordination of International Climate Change and Clean Development Mechanisms (CDM) in developing nations such as renewable energy, energy efficiency and improvement projects [4]. In turn, these projects generate the CER (Certification Emission Reduction) which was the response to carbon emissions. Economic benefits would result from the "CER"s which would benefit all.

The Chinese government signed the Kyoto Protocol in 1998 and approved it in 2002 [5]. The People Republic of China (PRC) approved 2232 CDM projects, of which 663 received the successful production registration of the UN's CDM Executive Board, and the registration number and annual reductions ranks were the first for all participating nations [6].

Our purpose is to compare financial data of firms that introduce CDM projects with firms of similar size which do not implement CDM projects. The similar firms will come from the same industry such as chemical, energy, power generation, and materials. Before and after implementation of the projects permit us to establish whether financial aspects of the firms benefit or not from the CDM's. From many research reports on social effect on the local economy as well as environmental effects, we clarify whether the ecology of the production environment improved or not. Finally, we find the impact of financial performance of the firms in the sample. We ascertain whether the advance of 'low cabin" technology affect firms in a positive or negative manner. The remaining portions of this manuscript divide in the following parts.

We illustrate the necessity of a 'low carbon" economy for industrial development. The CDM projects permit the low carbon economy to advance and include social, environmental and economic benefits. Second, we present empirical evidence of the effects of CDM projects on the financial performance of a selected sample of firms. Last, we summarize the main conclusions emanating from the analysis and give suggestions for improvement and more study.

Appeal of low-carbon economy

"Green appeal" refers to a low carbon economy where the purpose is to minimize the consumption of fossil fuels by technology innovation, industry transformation, and new energy development. To minimize means to reduce carbon gas emissions and achieve economic development as well as social development and ecological environmental protection. The low carbon economy relates to differences between developed and developing nations in their goals. The low carbon economy may stymy developing nations whereas developed nations no longer have the great desire to develop fossil fuels without positive consequences.

Low energy consumption and low carbon emissions may result in

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net economic development because the low carbon economy depletes natural resources in a small scale. Thus, the Kyoto Protocol provides a good opportunity for the developing nations to evolve and grow and benefit technology transfer and foreign investment. This is a goal of the "sustainable supply chain."

The remaining portions of this study include the empirical financial analysis of firms that participated in the CDM programs to determine the effectiveness of low carbon projects. A large amount of data collected, organized and tabulated from the financial data of twenty-one participating firms. These data are financial indicators of profitability, solvency, growth capacity and market performance. Further, we also predict the CER earnings of the twenty-one firms included in the study.

Last, we analyze financial indicators derived from financial statements and determine whether CDM projects had financial impact. Later we find explanations for and inherent deficiencies of the analysis. Finally, summary, conclusions and implications for further study are at the end of study will discuss the evidence of the effects of CDM projects on the financial performance of the selected sample of firms.

Green appeal and CDM projects

Green appeal refers to a "low carbon" economy. The purpose is to minimize the energy consumption of coal, carbon, oil, such as: technology innovation, industry transformation, new energy development, which reduces greenhouse gas emissions and achieves both economic and social development with ecological implications.

The low carbon economy is relates differences between the developed and developing nations in their goals. The low carbon economy may stymy developing nations whereas the developed nations no longer have the great desire to develop fossil fuels without positive consequences.

In June, 2007 China (PRC) launched the China National Change Program. First China became responsible for environmental protection resulting in energy savings. Second, low energy consumption and low carbon emissions resulted in net economic development because fewer natural resources were utilized. Thus, the Kyoto Protocols provide a good opportunity for developing nations to grow economically benefit from technological transfer and foreign investment.

The Kyoto protocol is the first international treaty aimed at coordinating work on climate change, industrial power except for the United States to reduce the greenhouse gas emissions. The CDM as part of this agreement allows developed nations to invest and develop energy efficient projects (CDM's) in developing countries, such as renewable energy generation, energy efficiency or improvement projects, and obtain CER certificates resulting from these projects. These actions may reduce energy consumptions and more efficiently utilize available energy resources. Developing nations gain investment capital and advanced technology from CDM project and substantial economic benefits from the sale of CERs [7].

The analysis

Our purpose is to examine and analyze financial statements to determine the impact of CDM projects on those firms that initiate these projects. We wish to suggest that CDM projects have impact and whether these projects produce positive impacts. In China, many firms responded to the "green appeal" through the adoption of CDM projects in response to the Kyoto Protocols. CDM impacts can be measured and have practical cost-effective consequences that explain the necessity of low carbon promotions. January, 2005, the first CDM domestic projects were approved and implemented. Chinese CDM projects are implemented in economically underdeveloped regions such as Yunnan, Sichuan, Gansu and Inner Mongolia. The CDM projects for these regions brought revenue-generating opportunities and great benefits to the local economy [8].

CDM projects

There are many companies have responded the green economy in domestic, and the most popular is the CDM project. They consist promotional items which can be measured and have practical cost-effective outcomes. In addition, they explain the availability and necessity of a low carbon, green economy. The empirical analysis of CDM projects is evidence that green appeal should be promoted through promoting its benefits to both the economy and ecology. Since January 25, 2005 the first CDM projects approved in the domestic economy of the PRC provided for the promotion of the green appeal projects. The PRC CDM projects were implemented largely in economically underdeveloped and often distressed regions, such as Yunnan, Sichuan, Gansu, Inner Mongolia provinces. The CDM projects for these regions are actually bringing revenue generating opportunities and great benefits to the local economy.

CDM projects go through an approval process including a CDM project sponsor, a project design and required materials for the NDRC. The NDRC receives the application and commits relevant agencies to audit the project and, in turn, a registration. Meanwhile the audited projects need to go through an operating entity of validation to ensure that the project conforms to stated requirements; such as: participators, reasonability of baseline methodology and monitoring plan [9]. The CDM projects are beneficial when we have greenhouse gas emission reduction. Besides governmental agencies, other institutions and individuals do not participate in the transfer transaction reductions. According to the PRC CDM Fund Management Methods directed by the PRC CDM Fund Management Center, the CDM projects collect funds from the transfer transaction reductions and the economy and ecology benefit from the positive impacts of the program.

International regulations require four operating modes to operate the CDM project. First, the unilateral mode permits independent functioning of the CDM project. The emission reductions can be sold to developed nations or not. Second, the bilateral mode (the most popular method) permits both developing and developed nations to sign agreements to cooperate in the developing of the CDM project. Developed nations would provide investment, technology and support while the developing nation must sell the CER to the interests in the developed nation. Third, the multilateral mode jointly establishes the "Carbon Fund" by a number of developed nations who signed an agreement with developing nations, i.e. PRC. The resulting CER is sold to interests in the developed nations in proportion to their investment. Fourth, the mixed mode is a combination of modes 1, 2 and 3. This cooperative approach is suitable for large scale projects requiring very large financial commitments. All four modes apply in the PRC and the choice is usually based on the particular financial situation of the Chinese firm engaged in the project. Although the choice of the mode depends the firm, each decision should generate the positive impacts on the economy, society and the ecology.

The sample selection criteria

A large number of CDM projects approved in the PRC for implementation provide the sampling frame for which we can choose

for the sample to study. Our problem was to explore and research which requires collecting financial statements of listed firms' CDM projects data. By researching, we determine the most representative twenty-one firms as the experimental group. The data collected included more than three years of valid financial statements. The twenty-firms with CDM projects are denoted below and identified in the Appendix.

This study reflects profitability, solvency, market performance and growth of four financial indicators. According to the analysis required, we collected the return on equity (ROE), asset-liability ratio, price-earnings ratio and the main business revenue data of four aspects of the firm that introduced CDM projects. We compare the performance of financial data before and after the introduction of the CDM. The growth rate is related to analyzing trends or the change in trend associated with green appeals exemplified on financial statements.

We compare before and after samples of firm data that implemented CDM projects., For comparison, the year of introduction of the CDM projects is the first year for the event, denoted by (0).The first year after the introduction is denoted by (+), and the year before the introduction is denoted by (-). Table 1 is the financial data of the twenty-one listed firms. We edited the before and after the CDM introduction data to find how this introduction affected the financial data of the firms. Next, we conduct a detailed analysis ascertain whether or not these financial data reflect economic benefits of CDM projects. In this study, we define profitability as the firm's ability to earn profits and in turn the profitability analysis is the analysis of the corporate profit margins.

Return on net assets is the ratio of average net income and net assets of the firm which reflect the firm's income level. The belief that the greater the return on net assets, the greater the likelihood that the firm earn positive returns on assets. All this leads to greater operating efficiency, higher profits and high returns to shareholders.

We calculate the changes in net assets rate before and after implementation CDM project. Data Table 2 embodies the influence on the growth rate of net assets return to the company implementation CDM before and after the project.

From Table 2, observe increasing return on net assets for eleven firms and the other ten firm's data having negative growth of various magnitudes. The total positive growth however is greater than the total negative growth. By analyzing firms having slightly negative growth, we observe that these firms tend to be very large ones in terms of assets. Since the CDM projects tend to be small for these firms, the effects of the CDM projects become muted. In other words, one cannot ascertain the positive effects of CDM in firms of very large size. The positive growth firms are smaller in size and less diversified, thus, their financial statements embody the positive impacts of CDM projects.

Financial solvency refers to a firm's ability to repay debt and interest. The asset-liability ratio is the ratio of total debt to total assets of the company. From the position of creditors, smaller ratios are preferred. From the point of view of shareholders, higher ratios indicate greater use of financial leverage which is usually beneficial. For operators, moderate asset-liability ratio is more conducive to the maintaining firm's cash flow. Often financial analysts compare the asset-liability ratio to the mean (average) ratio for the industry in which the firm competes. Our interest in this study is to determine positive effects from the 'green appeal." We concern ourselves with the influence on the firm's financial statement and observe the change in this ratio not its position as exemplified with its relationship to the mean or whether it is very high or very low.

Table 3 shows the calculated asset-liability ratio of the mean growth rate according to the data provided above.

According to Tables 2-4, Juhua Co., conch cement, Sinoma cement and *ST Tianhong have a little decrease in the assets-liabilities rate. In addition to the Teda shares remain unchanged, the rest of the 16 companies have a definite range of growth. And the growing rate of the asset-liability ratio is larger than relatively decreasing rate.

According to CDM project features: large prophase operation cost, long revenue cycle, the early stage of the company's investment is bigger, so most of the rate of assets-liabilities of the company will have a certain range of ascension. But they all in the moderate range, they will not be bad impact on company's solvency.

Good market performance measures the shareholders benefits from the changes share prices of firms listed on well-known equity exchanges and markets. The price to earnings ratio (P/E) ratio refers to the ratio of stock price to earnings per share in a period (usually 12 months). P/E ratio reflects the investors' confidence in a firm's equity. A firm having a very high P/E ratio often reflect the investment market's belief that rapidly growing earning will occur in the future. Hence, investors have positive views on the firm's ability to generate the increased profits generated from the projects and products produced by it. Table 4 contains an analysis of the ratio and the growth rate before and after introduction of CDM projects.

From the data in Table 4, nine firms exhibit a modest increase in the P/E ratio after the CDM project implementation. The other 11 companies have a modestly decreasing P/E ratio. We observe no drastically increasing or decreasing growth in the ratio. Hence, the projects appear to have little effect on this ratio and basically do not have great impact on the firm's ability to generate economic rewards to shareholders

The ability to grow for an enterprise refers to assets, profitability and continued rise in the value of its market shares. These indicators reflect the prospects for future development. As exemplified by the main business (revenue) growth rate, gross and net profit growth. Based on the change of main business profit, the growth of the CDM projects have impact on the company growth ability. Main business profit growth is reflected by the difference in current main business profits and previous main business profit, divided by the ratio of main business profit to the previous period's profit. If main business profits grow steadily, this may relate to the positive influence brought by the CDM project, especially for small and medium-sized firms. Table 5 is the mean (average) growth rate of main business profit of the firm calculated by the ratio defined before.

From Table 5, we observe that nine firms exhibit a small increase in profit growth after the introduction of CDM projects. In addition, there are 11 firms having declines in growth rate after the CDM implementation. There are two possible explanations for this phenomenon. Explanation 1 would be the effect of firm size. Small and medium-sized firms have a single project which are more likely to reflect the benefits of the CDM project and less influenced by other products and services produced by the firm. For large firms, there are numerous business activities which generate revenues and profits and the single CDM does not have much influence. Explanation 2 refers to the relative size of the CDM with respect to other activities of the firm. Large CDM projects do not create immediate growth in revenues and profits especially since the large set-up and immediate costs tend to dampen the positive effects of the CDM. The CDM benefit process is slow without any rapid increase in measurable gains.

Company	Financial indicator	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
Juhua co	Return on net assets		0.08	0.1	0.12	0.09	0.11	0.04	0.05	0.24	0.29	29	
	Asset liability ratio		0.48	0.51	0.52	0.52	0.52	0.52	0.5	0.45	0.21		
	P/E ratio		15.2	16.47	32.1	32.1	36.42	17.89	48.03	74.28	25.65		
	business profit ratio		0.08	0.07	0.05	0.05	0.05	0.02	0.01	0.12	0.3		
Sanai fu	Return on net assets	0.18	0.1	0.07	0.17	0.17	0.15	0.11	-0.1	0.12	0.3		
	Asset liability ratio	0.48	0.43	0.48	0.58	0.55	0.56	0.59	0.66	0.6	0.65	0.44	
	P/E ratio		37.91	43.71	23.72	18.39	30	14.04		293.4	157.2		
	business profit ratio	0.13	0.09	0.07	0.09	0.08	0.06	0.04	-0.02	0.01	0.02	0.21	
GD	Return on net assets		0.12	0.13	0.12	0.11	0.13	0.01	0.1	0.1	0.08		
	Asset liability ratio		0.66	0.68	0.69	0.68	0.67	0.72	0.73	0.76	0.77		
	P/E ratio			16.84	15.31	36.21	10.15	228.6	15.44	17.31			
	business profit ratio		0.16	0.13	0.1	0.09	0.13	0.01	0.1	0.07	0.07		
Qilian mountains	Return on net assets		0.06	0.03	0.01	0.01	0.01	0.17	0.19	0.19	0.12		
	Asset liability ratio		0.51	0.5	0.55	0.59	0.6	0.64	0.5	0.57	0.65		
	P/E ratio			31.14	283.8	444.1	617.8	30.26	18.91	14.95			
	business profit ratio		0.11	0.06	0.01	0.01	0.01	0.12	0.2	0.19	0.12		
Tianfu thermolectric	Return on net assets	0.21	0.08	0.09	0.09	0.09	0.05	0.04	0.04	0.04	0.07	0.18	
	Asset liability ratio	0.68	0.58	0.65	0.72	0.77	0.79	0.64	0.7	0.7	0.73		
	P/E ratio		29.46	24.94	17.6	24.41	207.8	46.05	87.65	83.37	46.06		
	business profit ratio	0.15	0.11	0.12	0.1	0.07	0.04	0.08	0.07	0.07	0.1		
Conch cement	Return on net assets	0.06	0.05	0.16	0.18	0.07	0.2	0.23	0.11	0.12	0.18	0.21	
	Asset liability ratio	0.5	0.55	0.57	0.59	0.64	0.62	0.63	0.41	0.38	0.41	0.45	
	P/E ratio		67.37	20.57	94.34	54.13	54.45	22.9	28.73	14	14.45		
	business profit ratio	0.09	0.11	0.22	0.18	0.06	0.14	0.17	0.13	0.17	0.23	0.34	
Liu shares	Return on net assets	0.21	0.22	0.07	0.11	0.13	0.14	0.11	0.07	0.01	0.04	0.03	
	Asset liability ratio	0.55	0.63	0.34	0.37	0.48	0.59	0.55	0.6	0.64	0.67	0.66	
	P/E ratio		18.88	34.62	19.05	17.84	34.21	21.12	31.85	133.2	60.88		
	business profit ratio	0.09	0.09	0.11	0.13	0.12	0.14	0.13	0.07	0.02	0.03		
Tongli cement	Return on net assets		0.14	-0.87	-1.19	0.13	0.22	0.2	0.1	0.11	0.16		
	Asset liability ratio		0.53	0.67	0.83	0.81	0.7	0.64	0.63	0.63	0.6		
	P/E ratio		25.28			233.4	34.02	37.2	26.56	26.88			
	business profit ratio		0.15	-0.64	-0.52	0.06	0.08	0.12	0.07	0.07	0.09		
Jinshan shares	Return on net assets	0.05	0.08	0.11	0.1	0.09	0.08	0.11	0.01	0.04	0.01	0.07	
	Asset liability ratio	0.28	0.45	0.33	0.42	0.73	0.72	0.72	0.75	0.78	0.83	0.87	
	P/E ratio		44.16	21.33	23.65	30.25	77.39	22.58	278.1	74.17	395.3		
	business profit ratio	0.23	0.16	0.56	0.39	0.21	0.2	0.13	0.01	0.03	0	0.03	
Nanjing iron and steel	Return on net assets	0.13	0.14	0.22	0.2	0.12	0.11	0.24	0.03	0.03	0.09	0.07	
	Asset liability ratio	0.38	0.46	0.55	0.66	0.57	0.62	0.6	0.61	0.65	0.71	0.72	
	P/E ratio		16.29	8.96=5	3.83	8.49	37.14	6.2	74	50.25	14.91		
	business profit ratio	0.06	0.08	0.11	0.07	0.04	0.04	0.06	0.01	0.01	0.04	0.03	
Jingneng thermolectric	Return on net assets	0.14	0.07	0.06	0.09	0.1	0.09	0.09	0.12	0.09	0.09	0.1	0.09
	Asset liability ratio	0.61		0.37	0.27	0.22	0.19	0.19	0.42	0.63	0.71	0.64	0.68
	P/E ratio		42.61	57.37	34.36	20.16	21.7	59.64	26.04	35.92	33.01	20.74	
	business profit ratio	0.09	0.16	0.12	0.15	0.15	0.13	0.13	0.15	0.11	0.12	0.12	0.12
ST Tianhong	Return on net assets			-0.51	0	-0.3	0.07	-0.21	0.07	-0.03			
	Asset liability ratio			0.63	0.63	0.68	0.71	0.72	0.54	0.6			
	P/E ratio				807.3		66.73		88.85				
	business profit ratio			-0.34	0	-0.11	0.02	-0.07	0.03	-0.01			
Sinama international	Return on net assets		0.22	0.25	0.12	0.16	0.26	0.3	0.35	0.43	0.27		
	Asset liability ratio		0.83	0.85	0.81	0.86	0.85	0.92	0.87	0.8	0.78		
	P/E ratio			23.98	44.54	68.15	32.4	19.8	18.52	14.67			
	business profit ratio		0.04	0.04	0.03	0.03	0.04	0.03	0.06	0.07	0.07		
Teda shares	Return on net assets		0.06	0.06	0.06	0.06	0.18	0.07	0.14	0.12	0.03		
	Asset liability ratio		0.73	0.62	0.63	0.63	0.57	0.61	0.63	0.67	0.74		
	P/E ratio		29.2	37.6	50.27	31.36	63.22	238.4	23.26	82.47	39	23.89	
	business profit ratio			0.3	0.31	0.2	0.11	0.28	0.08	0.09	0.06	0.02	

Jinnan iron and steel	Return on net assets			0.33	0.23	0.21	0.19	0.25	0.11	0.01	0.01	0.01	
	Asset liability ratio			0.74	0.67	0.72	0.71	0.68	0.74	0.75	0.78	0.76	
	P/E ratio			7.51	6.08	6.09	22.2	8.91	12.05	202.4	128.2		
	business profit ratio			0.08	0.07	0.05	0.05	0.06	0.02	0.01	0	0	
Shangneng shares	Return on net assets			0.07	0.03	0.04	0.03	0.03	-0.03	0.01	0.03	0.04	
	Asset liability ratio			0.45	0.49	0.57	0.62	0.59	0.62	0.63	0.62	0.6	
	P/E ratio			54.69	14.5		54.69	38.7		131.3	53.75		
	business profit ratio			0.19	0.09	0.09	0.07	0.07	-0.3	0.03	0.06	0.1	
0.	Return on net assets		0.2	0.29	0.11	0.16	0.22	0.22	0.15	0.31	0.31	0.28	0.2
	Asset liability ratio		0.6	0.60	0.41	0.46	0.52	0.45	0.48	0.53	0.63	0.55	0.51
	P/E ratio			19.72	28.2	13.57	10.68	30.58	24.85	22.01	12.66	22.39	
	business profit ratio		0.19	0.17	0.12	0.09	0.12	0.1	0.07	0.11	0.12	0.12	0.08
Datang power generation	Return on net assets					0.12	0.03	0.05	0.08	0.03			
	Asset liability ratio					0.72	0.81	0.82	0.82	0.8			
	P/E ratio					32.18	117.8	58.77	26.64				
	business profit ratio					0.15	0.02	0.04	0.06	0.03			
Inner Mongalia power	Return on net assets		0.06	0.06	0.08	0.07	0.02	0.05	0.05	-0.24	0.12	0.16	0.14
	Asset liability ratio		0.11	0.44	0.55	0.63	68.71	0.73	0.77	0.75	0.73	0.71	
	P/E ratio		37.68	28.94	30.68	22.15	94	63.89	40.13		41.11	26.38	
	business profit ratio		0.18	0.14	0.12	0.08	0.02	0.04	0.03	-0.1	0.07	0.11	0.17
Baotou steel shares	Return on net assets			0.14	0.18	0.16	0.08	0.12	0.06	-0.13	0.02	0.04	
	Asset liability ratio			0.57	0.62	0.48	0.44	0.58	0.67	0.71	0.7	0.74	
	P/E ratio			10.41	5.35	7.11	39.54	14.84	28.64		212.6		
	business profit ratio			0.08	0.06	0.06	0.04	0.07	0.02	-0.06	0.01	0.02	
Chongqing iron and steel	Return on net assets				0.31	0.22	0.07	0.08	0.09	0.22	0.02	0	0
	Asset liability ratio				0.46	0.47	0.52	0.55	0.52	0.55	0.65	0.75	0.77
	P/E ratio							34.78	18.51	15.02	84.65	361	
	business profit ratio				0.17	0.1	0.03	0.03	0.04	0.01	0	0	

Table 1: Financial data of listed firms.

	Before introduction	After Introduction
Juhua Co.	0.11	0.91
Sanaifu	0.11	0.84
GD	0.03	1.97
Qilian Mountains	(0.43)	2.95
Tianfu Thermoelectric	(0.19)	0.42
Conch Cement	0.68	0.08
Liu Co.	0.04	0.26
Tongli Cement	(1.82)	(0.01)
Jinshan Shares	0.13	1.54
Nanjing IronandSteel	0.01	0.42
Jingneng Thermoelectric	(0.03)	0.02
ST Tianhong	(1.12)	(2.25)
Sinoma International	1.14	0.04
TEDA Shares	0.25	(0.13)
Jinnan IronandSteel	(0.04)	(0.37)
Shaoneng Shares	(0.12)	(0.25)
Guoyang New Energy	0.13	(0.06)
Datang Power Generation	(0.04)	(0.01)
Inner Mongalia Power	0.2	(1.42)
Baotou Steel Shares	0.04	(0.96)
Chongqing IronandSteel	(0.28)	(0.37)

Source: Hexun Net

Table 2: Return on net assets before and after introduction.

	Before introduction	After Introduction
Juhua Co.	0.51	0.44
Sanaifu	0.51	0.58
GD	0.68	0.73
Qilian Mountains	0.55	0.59
Tianfu Thermoelectric	0.70	0.71
Conch Cement	0.58	0.48
Liu Co.	0.49	0.62
Tongli Cement	0.71	0.64
Jinshan Shares	0.49	0.78
Nanjing IronandSteel	0.54	0.65
Jingneng Thermoelectric	0.33	0.49
ST Tianhong	0.66	0.64
Sinoma International	0.84	0.85
TEDA Shares	0.64	0.64
Jinnan IronandSteel	0.70	0.74
Shaoneng Shares	0.54	0.61
Guoyang New Energy	0.51	0.53
Datang Power Generation	0.78	0.81
Inner Mongolia Power	0.52	0.73
Baotou Steel Shares	0.54	0.68
Chongqing IronandSteel	0.50	0.63

From: Hexun Net

Table 3: Mean asset-liability ratio before and after the introduction of project.

	Before introduction	After Introduction
Juhua Co.	0.06	0.09
Sanaifu	(0.03)	(0.02)
GD	0.04	(0.07)
Qilian Mountains	0.04	0.00
Tianfu Thermoelectric	(0.03)	(0.03)
Conch Cement	0.12	0.01
Liu Co.	0.01	(0.03)
Tongli Cement	(0.23)	(0.05)
Jinshan Shares	(0.07)	(0.04)
Nanjing IronandSteel	(0.05)	0.00
Jingneng Thermoelectric	(0.07)	0.01
ST Tianhong	0.09	0.03
Sinoma International	0.12	(0.07)
TEDA Shares	(0.03)	(0.01)
Jinnan IronandSteel	0.12	(0.12)
Shaoneng Shares	0.01	(0.04)
Guoyang New Energy	0.08	0.14
Datang Power Generation	(0.07)	(0.07)
Inner Mongolia Power	(0.05)	(0.02)
Baotou Steel Shares	0.01	(0.11)

From: Hexun Net

Table 4: P/E ratio of the average growth rate before and after the introduction of CDM.

	Before introduction	After Introduction
Juhua Co.	(0.10)	2.85
Sanaifu	(0.12)	1.43
GD	(0.02)	1.94
Qilian Mountains	(0.32)	2.81
Tianfu Thermoelectric	0.10	0.10
Conch Cement	0.34	0.22
Liu Co.	0.10	(0.15)
Tongli Cement	(1.56)	0.09
Jinshan Shares	0.28	(0.07)
Nanjing IronandSteel	(0.02)	0.48
Jingneng Thermoelectric	0.13	0.00
ST Tianhong	(1.09)	(2.42)
Sinoma International	0.02	0.23
TEDA Shares	0.19	(0.40)
Jinnan IronandSteel	(0.05)	(0.72)
Shaoneng Shares	(0.19)	(0.44)
Guoyang New Energy	0.01	(0.10)
Datang Power Generation	0.07	0.00
Inner Mongolia Power	(0.09)	(1.03)
Baotou Steel Shares	0.04	(1.22)
Juhua Co.	(0.37)	(0.35)

Table 5: Average (Mean) growth rate of main business profit before and after the CDM implementation.

Financial analysis of firms not implementing a CDM project

For purposes of comparison, we collect and analyze financial from a group of firms having similar characteristics in our previous except that they have not implemented a CDM project. These characteristics are that the control group come from the same or very similar industries, contain similar characteristics and have similar scale sizes. Twenty-one similar firms comprise the control group. In turn, we compare the experimental and control groups by examining the same four characteristic studied before; profitability, solvency, market performance and growth. To gin, observe Table 6: Return on net assets.

The second column of Table 6 is the data on return on net assets for the control group firm comparable with the firm in the CDM group. They are in the same industry bit did not implement CDM projects from 2002 to 2011. One can see that the growth rates do not differ in any appreciable manner. Stated differently, the CDM project or lack of project does not have significant influence the growth rate of sample firms. Table 7 contains the asset-liability ratio for the two grouping of firms.

From Table 7, we observe the growth rate of the assets-liabilities ratio of each firm during the period from 2002 to 2011. There is only a slight variation in the growth rate data over the ten year period which indicates that firm solvency maintains a stable level over the ten year period. For the group adopting CDM, we observe a sizable growth of the asset-liabilities ratio. Combining this observation with that of Table 2, one may conclude that the introduction of a CDM project increases the asset-liability ratio. Comparative analysis of the two tables indicates that the introduction of CDM does not reduce the solvency of a firm.

Observe in Table 8 is the control group's average P/E ratio and that for the CDM group. The growth rates in either group are not large. The introduction of CDM projects does not attract the greater attention from investors. The stable market performance can explain investors' confidence in the firms and the firm's operations appear fine. Perhaps, one may explain this phenomenon in that CDM projects are not designed to accomplish greater profitability but to better a firm's reputation by their attempts to improve the environment and follow the Kyoto Protocols

Table 9 contains information on the P/E growth rate for both the control and CDM groups. The growth rate for the CDM group is for

Control Group	The average growth rate	Experimental (CDM) Group	After introduction
Shanxi Coking	(0.06)	Juhua Co.	0.91
Chang Aluminum	0.45	Sanaifu	0.84
Panjiang Shares	0.34	GD	1.97
Sichuan Nitrocell	(0.10)	Qilian Mountains	2.95
Xichang power	(15.65)	Tianfu Thermoelectric	0.42
Leshan electric power	0.38	Conch Cement	0.08
Guizhou Power	(0.01)	Liu Co.	0.26
Star power	(1.31)	Tongli Cement	(0.01)
Jidong Cement	0.16	Jinshan Shares	1.54
Xingye Mining	(0.63)	Nanjing Iron and Steel	0.42
Dayou Energy	1.29	Jingneng Thermoelectric	0.02
Hengyi petrochemical	5.11	ST Tianhong	(2.25)
Salt Lake Shares	0.20	Sinoma International	0.04
ST Shengda	(3.76)	TEDA Shares	(0.13)
Baotai Shares	(0.01)	Jinnan IronandSteel	(0.37)
Mountain coal international	2.33	Shaoneng Shares	(0.25)
Kadi Power	0.44	Guoyang New Energy	(0.06)
Ningbo Thermoelectric	0.02	Datang Power Generation	(0.01)
Fuling Power	(0.32)	Inner Mongolia Power	(1.42)
Red Sun Power	(1.50)	Baotou Steel Shares	(0.96)
Longest River Power	0.15	Juhua Co.	(0.37)

Table 6: Return on net assets.

Control Group	The average growth rate	Experimental (CDM) Group	After introduction
Shanxi Coking	0.05	Juhua Co.	0.44
Chang Aluminum	(0.02)	Sanaifu	0.58
Panjiang Shares	0.13	GD	0.73
Sichuan Nitrocell	0.13	Qilian Mountains	0.59
Xichang power	0.01	Tianfu Thermoelectric	0.71
Leshan electric power	0.03	Conch Cement	0.48
Guizhou Power	(0.01)	Liu Co.	0.62
Star power	0.08	Tongli Cement	0.64
Jidong Cement	0.04	Jinshan Shares	0.78
Xingye Mining	(0.02)	Nanjing Iron and Steel	0.65
Dayou Energy	0.42	Jingneng Thermoelectric	0.49
Hengyi petrochemical	0.05	ST Tianhong	0.64
Salt Lake Shares	0.14	Sinoma International	0.85
ST Shengda	0.03	TEDA Shares	0.64
Baotai Shares	0.02	Jinnan IronandSteel	0.74
Mountain coal international	0.03	Shaoneng Shares	0.61
Kadi Power	0.03	Guoyang New Energy	0.53
Ningbo Thermoelectric	0.01	Datang Power Generation	0.81
Fuling Power	0.13	Inner Mongolia Power	0.73
Red Sun Power	(0.06)	Baotou Steel Shares	0.68
Longest River Power	0.24	Juhua Co.	0.63

From: Hexun Net

Table 7: Asset-liability ratios analysis.

Control Group	The average growth rate	Experimental (CDM) Group	After introduction
Shanxi Coking	0.12	Juhua Co.	0.09
Chang Aluminum	0.53	Sanaifu	(0.02)
Panjiang Shares	0.05	GD	(0.07)
Sichuan Nitrocell	0.24	Qilian Mountains	0.00
Xichang power	(0.03)	Tianfu Thermoelectric	(0.03)
Leshan electric power	(0.10)	Conch Cement	0.01
Guizhou Power	0.07	Liu Co.	(0.03)
Star power	0.10	Tongli Cement	(0.05)
Jidong Cement	0.02	Jinshan Shares	(0.04)
Xingye Mining	0.16	Nanjing Iron and Steel	0.00
Dayou Energy	0.22	Jingneng Thermoelectric	0.01
Hengyi petrochemical	0.84	ST Tianhong	0.03
Salt Lake Shares	0.06	Sinoma International	(0.07)
ST Shengda	2.01	TEDA Shares	(0.01)
Baotai Shares	0.55	Jinnan IronandSteel	(0.12)
Mountain coal international	0.66	Shaoneng Shares	(0.04)
Kadi Power	0.39	Guoyang New Energy	0.14
Ningbo Thermoelectric	0.02	Datang Power Generation	(0.07)
Fuling Power	0.08	Inner Mongolia Power	(0.02)
Red Sun Power	(0.04)	Baotou Steel Shares	(0.11)
Longest River Power	(0.04)	Juhua Co.	

From: Hexun Net

Table 8: P/E ratio for both groups.

after introduction of the CDM project. The main business profitability of the control groups (21 listed companies) is on the left hand side of the table. Seven firms attained a modest positive growth in the P/E ratio, and 14 of the control group attained a negative growth in the P/E ratio. The right half of the table contains the data for the CDM group. Ten firms attained a small negative growth, and eleven firms attained positive growth. For the CDM group, positive growth is greater than for the control group firms exhibiting firm growth. We may infer that firms introducing the CDM projects experienced increased business growth which, in turn, leads to other positive benefits.

Some limitations of financial statement analysis

Tables 1-9 report historical data. For some factors such as inflation or commodity prices, cannot be reflected by analysis of historical data. Hence, the analysis cannot completely reflect all results, and may not reflect the management functions of decision-makers. Finally, the financial data will also be influenced by estimating and accounting policy choices which may deter from the ability to compare different firms reporting data.

The denominator calculation of the return on net asset is the mean of the final and initial net assets, but the real enterprise net asset changes from period to period. In addition, the Stockholders surplus dividends already include the negation of the Stockholders surplus dividends, which varies from firm to firm. The usefulness of the asset-liability ratio is related to the economic factors of the industry to which the firm belongs. Industries possess varying standards; hence the notion of an increasing asset-liability ratio may result in different assessments as to whether corporate policy is good or bad depending on the state of the economy, industry characteristics and the firm's dividend policy.

The P/E ratio calculation includes the value for earnings per share (EPS). EPS includes the notion of net profit which varies from period to period based on conditions including the state of the economy and other factors far more important in determining the influence of the EPS values. The number of shares in determining the EPS ratio will vary from industry to industry and within firms depending on corporate policy concerning the desire for the firm to trade at low versus high prices. Often these policies are promoted for reasons including making

Control Group	The average growth rate	Experimental (CDM) Group	After introduction
Shanxi Coking	(0.18)	Juhua Co.	2.85
Chang Aluminum	(0.08)	Sanaifu	1.43
Panjiang Shares	0.28	GD	1.94
Sichuan Nitrocell	(0.15)	Qilian Mountains	2.81
Xichang power	(1.23)	Tianfu Thermoelectric	0.10
Leshan electric power	0.24	Conch Cement	0.22
Guizhou Power	(0.44)	Liu Co.	(0.15)
Star power	(0.65)	Tongli Cement	0.09
Jidong Cement	0.05	Jinshan Shares	(0.07)
Xingye Mining	(2.09)	Nanjing Iron and Steel	0.48
Dayou Energy	0.22	Jingneng Thermoelectric	0.00
Hengyi petrochemical	(0.01)	ST Tianhong	(2.42)
Salt Lake Shares	0.13	Sinoma International	0.23
ST Shengda	(4.53)	TEDA Shares	(0.40)
Baotai Shares	(0.19)	Jinnan IronandSteel	(0.72)
Mountain coal international	(0.33)	Shaoneng Shares	(0.44)
Kadi Power	0.33	Guoyang New Energy	(0.10)
Ningbo Thermoelectric	0.01	Datang Power Generation	0.00
Fuling Power	(1.93)	Inner Mongolia Power	(1.03)
Red Sun Power	(3.75)	Baotou Steel Shares	(1.22)
Longest River Power	0.03	Juhua Co.	(0.35)

From: Hexun Net

Table 9: P/E ratio of main business of the two groups.

the shares look more or less attractive to individual buyers of equities. Stock splits, stock dividends, stock buybacks and combining shares to reduce the number of outstanding shares are the result of a new or change in policy to make the share price more or less attractive. All of these strategies affect the EPS and, in turn, the P/E ratio.

The main business profit margins reflect the ability of the sustainable development of a firm or enterprise. Firms studied in our sample often are competing in several industries and these and they differ in the number of employees, sales revenue, value of assets and the maintenance of cash flow. Hence, conclusions concerning the index measured may have little or no relation to the CDM project or lack thereof a project. In addition to the defects of the index itself, analysts may cause problems by emphasizing or misinterpreting the meaning of indexes, index change and the like by not looking into the economic causes of the change. Deeper analyses of index change can aid one in interpreting the meaning and impacts of changing index values.

To sum up, we examined four aspects of profitability and solvency for the firms' studied. We sorted out comparisons of financial data to make conclusions concerning the impacts of CDM projects on the financial status of firms undergoing these projects. By the longitudinal comparison, we concluded that many firms had positive impacts from CDM projects and may have had some positive relation to growing profits. However, the short term analysis performed would have to be reevaluated in the future to see if long-term effects are also positive. While the effect on the asset-liability ratio is not obvious, there are signs of improvement, related to the upfront expenses made. The effects are disparate in that they are related to the industry effects, size of firm and the particular nature of the firm. Long-term effects will have to be examined in the future to see if the CDM projects were successful in introducing "green" behavior among firms, customers and producers.

Limitations of the research method include the reliance on financial statements, shortcoming of financial indexes and their relationship to the goal of the Kyoto Protocols. Above all, we find evidence that the CDM projects are good for the development of enterprises, in addition to economic benefits directly from selling CERs and comprehensive benefits to individual firms. Promoting "green appeal" makes a firm lf promote technological innovation which is conducive to the sustainable development of the firm. The "Low carbon" economy benefits both firms and society which is both macroeconomic efficient and reduces ecological losses due to excess carbon emissions

Conclusions and Future Research

With the development of human civilization which resulted in a great magnitude of energy consumption, green appeal calls for society to pay attention and reduce the negative effects of inefficient energy consumption in global economic development. The developed nations have the duty to reduce carbon emissions because their development speed is greater than developing countries. From another perspective, the developed nations guided the developing nations into a new plan. By the formulation of the United Nations framework convention on climate change, there are new plans that have political and economic significance. However, the developing nation's development of the low carbon economy establishes widespread praise and obtains a development fund to promote the growth of CDM projects. These projects are very helpful for technical progress in developing nations and the promotion of a low carbon economy.

From the view of environment, the main characteristics of a low carbon economy are low energy consumption, small emissions and limited pollution. Promotion of the low carbon economy is actually a protection to the environment. Global climate change is disorder; greenhouse gases are one of the largest environmental pollution problems, and low carbon economy is implemented by a series of projects. The industrial civilization nation should have into an ecological environment, and the promotion technology to reduce carbon emissions will keep global ecology and development in balance.

The implementation of any new system must have corresponding constraint rules to maintain sustainable development which related law concerning the promotion of low-carbon emissions. In addition to the government's policy support, corresponding laws and regulations can help and protect the practice of environmental projects, which is the long-lasting development support of sustained low carbon emissions.

The social impact of law relating to sustaining low carbon emissions from one point reflect the social impact of cleansing our planet from the wasteful and destructive consequences of uncontrolled industry. The clean development mechanism (CDM) and the manager of the individual projects are the individual enterprises. The performance of the individual enterprises is the only way to ascertain the benefits of project implementation. The promotion and implementation of a CDM project is not only to benefit humans, but also benefit the individual firm's development in the economy. At the same time, the project promotion will drive the local employment, which is fully staffed. To advocate and encourage the development of CDM projects, and it's better to reflect the project actual benefits by the firm's financial statements rather than the corresponding social responsibility reports. Hence, the analysis of financial statements shows the CDM project practical benefits to the firm.

Financial statement is an access to judge the company operation consequence; through it we can see the CDM actual operation of a variety of effects in the process.

This paper based on the principle of financial statement analysis, comprehensive analyze the data collection and sorting out. Longitudinal comparison on company own research object and compared with the other comparison sample companies to find the problem. In this paper, taking the financial metrics into compared, such as return on equity, asset-liability ratio, P/E ratio and profit rate of main business, respectively analysis from the profit ability, debt paying ability, market performance and growth ability, to analyze the economic impact of the firm's CDM projects.

By examining and analyzing a large amount of data, we found that within the sample period firm's financial statements do not reflect any major changes and the CDM to promote the role of the company is often not affected. From the perspective of the financial statements data, besides there is good profit performance, the solvency effects are not obvious, the market was changed little, and the signs of growth were not affected in any measurable way. Considering the long period of project construction, the effect on earnings require a longer time period of study. Although the CDM projects in the PRC are very popular' most investors have a wait-and-see attitude. In addition, the limitations of financial statements and financial index analysis influence the analysis and we believe that the CDM projects to not have a major impact of the performance analysis discussed in this study.

As a result, the effectiveness of CDM projects on the information in found in financial statements and other disclosures may be muted. First, it is particularly urgent to use legislation to induce better analysis of the relative effectiveness of carbon saving programs on the information found in financial statements. Perhaps, we need to revise

financial statements to ease the problem of measuring the benefits of low carbon emission projects. Green development needs the joint efforts of enterprises and the role of government in the promotion of low carbon industrial growth. They should strengthen disclosure in financial statements to promote the information concept of the CDM projects [10,11].

Suggested that to add the CDM projects cost details in financial statement or in the appendix, which have special subsidiary column to reflect its operations. For the listed company, the situation of production and operation will be different, so there are different required expenses and responsibility. Start-up capital is actually quite a sum of money, and different operating conditions of company will produce different effects. Recommended to disclose the data according to the own situation. By quantifying costs is far better than the slogans advocating. And the quantitative data is more objective and intuitive, which can give people the most effective reference value to read the report with.

In short, if you want to give full disclosure and reflect of specific project to the financial statements, you must establish a complete set of CDM project information disclosure mechanism which suits the disclosure standards of the listed companies in China to ensure the reliability financial sources.

Above all, low-carbon economy is a new mode of economic development, particularly as a developing countries china need to develop the new economy mode. Take this opportunity to adjust industrial structure, and nip in the bud. Take on the responsibility of world powers; keep up with the world trend; reduce the pressure of world opinion. Look for the trend and get the opportunity to create China's own low carbon economy development mode. In the near future, innovate the advanced technology is the right thing to do.

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