Finance & Management Engineering Journal of Africa (https://damaacademia.com/fmeja/)
Volume 1, Issue 5, pp.77-81, MaY 2019
Published by: Dama Academic Scholarly & Scientific Research Society (www.damaacademia.com)

Carbon Exposure and Shareholder Value

[1]Erik Salz | [2]Marieke van der Poel | [3]Bettina Wittneben
RSM Erasmus University, Department of Financial Management
erik.salz@gmail.com | mpoel@rsm.nl | Bwittneben@rsm.nl

Abstract
Nowadays, climate change is considered an important issue in many of society's domains. The Stern Review recently concluded that climate change presents a serious global risk and demands urgent global response (Stern, 2007). Corporations have an important stake in this issue. As some businesses are among the biggest emitters of carbon -or greenhouse gases-, companies across all industries are demanded to reduce their emission levels. Carbon pricing by trading or taxation is, or will be initiated to stimulate corporations to reduce their emissions. These measures will initially increase the costs for doing business. The more corporations are required to drive down their carbon emissions the more important a firm's carbon exposure becomes as a management problem. Corporate managers have to align carbon reducing activities with their objective to create shareholder value. This thesis attempts to describe the effects of carbon exposure from a shareholder value perspective. Do investors care for active carbon management? This research aims to examine if corporations who actively manage their carbon exposure and disclose related information to the public, are more appreciated by investors than corporations who do less or do nothing. This research is relevant for today's business studies. By reviewing the position of the investor, this thesis contributes to the public debate on climate change and the role of business. A debate in which many participants have conflicting interests. Politicians, public opinion makers, 'experts', non-governmental organizations, business leaders and so on, all have their own opinions and interests regarding climate change. Overall it seems that most stakeholders in the discussion agree that a response to climate change is needed. However, the way in which responsibility should be taken differs. Fact is that businesses are increasingly demanded to pay for the negative external effects that their operations have on the environment. Depending on the country specific policies, companies have to acquire emissions rights in a trading system or face particular taxations due to their emissions. The internalization of emission costs affects a business's financial performance. Increasing expenses reduce the amount of money which is left for a company's financiers. The investor is the residual claimant of a corporation. This means that after all other financial claimants are paid (e.g. debt holders) and internal investments are completed, investors obtain their share in the company's return; the free cash flow. Investors always decide if they expect to obtain enough return on a certain investment. The investor's expectations of the return on investment of a particular company can be seen as an assessment of all aspects of a certain business and its implications for the future. Including the carbon and environmental strategies of the company. Implicitly, investors hereby decide on the intensity of carbon and/or environmental policies of corporations. From the investors perspective these policies should be in line with shareholder value creation. The investors' interest in the return on investment is a key aspect when evaluating climate change policies for business. Solid understanding of the investor's position is important for understanding the climate change debate.

Keywords: *Carbon Exposure, Shareholder Value*

1.0 INTRODUCTION

Form an academic point of view this thesis contributes to the theoretical knowledge about environmental management in relation to corporate performance and valuation. How does the market values careful environmental management. Although investors communicate their concerns about climate change, do they appreciate corporations more who have active carbon exposure management in place. Even if investors indicate potential financial risks from climate change related issues, do they actually take these risks into account in their investment decisions. Do, and if so how, do the indicated risks differ in importance. Many aspects of investor decision making about carbon exposure in relation to shareholder value and valuation are addressed in this research.

Carbon emitting businesses are subject to increasing levels of legislation set up by regulators and policymakers who demand that companies take their responsibility for climate change. It seems now that the reduction of carbon emissions is widely regarded as a key objective for businesses. Companies across all sectors demonstrate their initiatives and signal to the market the intentions to cooperate in driving down carbon emission levels. In addition, companies more and more disclose information about climate change related issues like their emissions of greenhouse gasses, energy consumption and costs and possible risks they deal with as a result of legislation initiated to protect the environment (CDP Report, 2006). Overall, it seems that companies feel the need to inform the public and investors

on their position in the climate change issue. However the level of cooperation in reducing carbon emissions and the level of disclosure of relevant information differs across companies.

Global initiatives like the Carbon Disclosure Project (CDP) illustrate that investors increasingly require information from companies about potential risks related to climate change. The disclosure of a company's carbon emissions and climate change policies are highly demanded by investors. The growing number of companies complying with these investor demands point out that corporate directors and entrepreneurs are taken this matter serious. The question whether or not active management of carbon exposure and information disclosure about climate change related issues pays off remains an important one. This thesis aims to examine the effects of active carbon management on shareholder value. Do corporations who actively manage their carbon exposure are appreciated more by investors than corporations who do not or do less. In addition this thesis will address how corporations can deal with their carbon exposure in their valuation models and how they can thereby create shareholder value.

First of all the thesis will lay-out the theoretical foundations of this topic by reviewing relevant literature. Shareholder value creation as the firm's main objective and the stakeholder view of the firm will be main themes of theoretical discussion. Furthermore, literature regarding corporate social responsibility and social responsible investment will be evaluated. Moreover in relation to corporate performance. Literature on environmental management with regard to corporations will be assessed as well. Pollution prevention and waste minimization were the first environmental issues studied in relation to business. Today companies are seen as a part of the environment and hold extensive responsibilities in that respect. Information disclosure is an important aspect for investors evaluating investment opportunities. Theory on disclosure practices is taken into account, especially were it concerns environmental issues. Based on the theoretical foundation, a conceptual framework will be provided about the relation between carbon exposure and shareholder value.

The empirical research assesses if companies who actively manage their carbon exposure are appreciated more by investors than companies who do not. Data provided by the Carbon Disclosure Project 2006 enables this research to investigate the position of the 500 largest corporations by market capitalization (FT500) in their position regarding climate change issues. Furthermore financial data presented by Thomson One Banker Analytics will be used to analyze how investors value these corporations. The statements of the FT500 corporations are evaluated by their individual Tobin's Q measure. The Tobin's Q measure will be created during this research. The number indicates if investors over or undervalue a particular company. After a discussion of the empirical results this thesis will conclude if or/and how carbon exposure affects shareholder value.

2.0 THEORETICAL PROBLEM DEFINITION

The basic theory behind corporate finance economics argues that the maximization of shareholder value is the most important goal of the corporation. According to this theory, only those investments that benefit the firms' shareholders financially should be undertaken (Friedman 1970; Malkiel and Quandt 1971). Corporations create value as long as the value of the inputs is less than the value of the output. Consistent with the basics of corporate finance, companies should try to minimize the costs of the supplies needed for their business and maximize the price of their products and/or services. If managers would pursue such a strategy, shareholders value creation will be optimal (Koller et al, 2005). This reasoning is in line with economic theory which implies that in the absence of externalities and monopoly (and when all goods are priced), social welfare is maximized when each firm in an economy maximizes its total market value. Taking into account that shareholders are residual claimants is yet another argument to accept long term shareholder value creation as the main corporate objective (Ross, 2001).

Opposed to shareholder value maximization, stakeholder theory implies that managers must satisfy the competing demands of all stakeholders (Cornell and Shapiro 1987). Stakeholder theory suggests that companies should pursue not only the interest of shareholders but of everyone affected and involved in the company's business. For example suppliers, employees and political or social groups (Wartick et al, 1985). The importance of a stakeholder to the firm's overall strategy should be the crucial factor for management's response to the needs of a particular group.

However, two fundamental assumptions are made in order to obtain value creation as the single objective for the corporation, the absence of externalities and monopolies. Theoretically these assumptions can exist but in reality they cannot. No firm can maximize value if it ignores the interest of its stakeholders. Managers must accept long run firm value maximization as the criterion for making the necessary tradeoffs among its stakeholders. An enlightened vision on shareholder and stakeholder theory specifies long-term value maximization as the firm's main objective and therefore solves the problems that arise from the multiple objectives that corporations face (Jensen 2001). In this respect corporations can pursue an active environmentally friendly strategy, but they must consider the long run implications. An 'environmentally friendly' company that is not economically successful will sooner or later disappear from the market, and also its beneficial activities for the environment (Schaltegger et al, 2000).

The increasing costs for emitting carbon are meant to be stimulation for environmentally friendly business processes. Shareholders will have to deal with this reality. More and more investors demand that companies define their carbon exposure and the risks they face due to associated regulations. These regulations come with uncertainty. The role of business in the climate change issue is addressed in different ways worldwide. Without universal standards for carbon emissions policymakers at all levels are coming up with their own regulations. In this sense businesses are affected different worldwide. There seems to be increasing consensus among shareholders that the way in which a company manages its carbon exposure can create or destroy shareholder value (CDP Report, 2006). Regarding this management problem the following main research question seems relevant:

What is the affect of carbon exposure on shareholder value?

In order to answer this question the following research questions should be considered:

- Do companies who actively manage their carbon exposure are appreciated more by investors than companies who do not?
- How can companies deal with carbon exposure in their valuations?
- Can companies create shareholder value while dealing with carbon regulations?
- Should companies be transparent about their carbon exposure?
- Why should investors care about the carbon exposure management by corporations?

3.0 METHODOLOGY

This research aims to examine the effect of carbon exposure on shareholder value. Do companies who actively manage their carbon exposure and disclose related information to the public, are appreciated more by investors than companies who do less or do nothing. In order to investigate this question the 500 largest corporations in the year 2006 measured by market capitalization will be subject of analysis. Market capitalization is the share price multiplied by the number of shares issued (Ross et al, 2005). Annually the Financial Times (FT) provides a snapshot of the world's largest companies. The companies are ranked by market capitalization - the greater the stock market value of a company, the higher it's ranking (FT.com). The corporations which are under investigation were listed in the FT500 Global Index in the year 2006.

The FT500 corporations will be evaluated alongside their specific carbon management decisions. The Carbon Disclosure Project (CDP) publicly informs investors on how FT500 companies engage in climate change issues. The project also informs investors as well as management on concerns regarding the impact of climate change. The project was launched in December 2000 by institutional investors and politicians. Since then it has published 5 reports. In 2006, 225 investment institutions, representing over $31,5 trillion of assets under management signed the request to the FT500 Global Index companies to disclose investment relevant information with regard to climate change. 360 of the FT500 companies responded to the related questionnaire. The questionnaire examines a range of 10 factors including strategic awareness, management accountability/responsibility, emissions management and reporting, emissions trading, programs in place, and the establishment of targets. The report provides a database indicating how the FT500 companies consider the following climate change related issues (CDP Report 2006). Do the FT500 corporations:

- See climate change as a commercial risk
- Consider regulations as a potential financial risk
- Recognize climate change as a Physical risk
- Have developed products or services in response to climate change
- Have allocated responsibility for climate change related issues at board level
- Disclose emissions data
- Disclose emissions data related to the supply chain
- Have implemented an emissions reduction program
- Consider emissions trading relevant to their operations
- Disclose total energy costs

4.0 CONCLUSION

The CDP data provides an indication for these management actions concerning carbon. As was mentioned earlier, there are strong differences in the way in which corporations actively manage their carbon emissions and/ or disclose relevant information. There are distinctions across companies and sectors. All sectors include active as well as passive companies. Some of the FT500 corporations with active carbon management have already disclosed this information in corporate (sustainability) reports.

On the basis of financial data provided by Thomson One Banker this study will measure Tobin's Q for all the FT500 Corporations. Tobin's Q divides the market value of all the firms' debt and equity (the market capitalization) by the replacements value of the firm's assets (Lindenberg and Ross, 1981). A Tobin's Q ratio above 1 indicates higher shareholder appreciation than a Q ratio below 1. Firms with high Tobin's Q ratio's tend to be those firms with attractive investment opportunities or a significant competitive advantage (Ross, 2002). In order to obtain a relevant figure for the market capitalization, the average number for 2006 of all the individual companies will be used.

By evaluating the management actions indicated by the Carbon Disclosure project with the Tobin's Q ratio, this research will enable its readers to see which actions are best appreciated by investors. The research will look for significant differences in Tobin's Q ratios between firms complying and not complying with particular actions. The research will investigate over the whole sample as well as over specific sectors. Main attention will be given to high emitting sectors like energy production.

The CDP data and the Tobins Q measure will be accurate information to assess the question whether companies who actively manage their carbon exposure and disclose related information to the public, are appreciated more by investors than companies who do not.

Reference

Belkaoui A. 1976. The impact of the disclosures of the environmental effects of organizational behaviour on the market. *Financial Management* Winter: 26–31.

Bodie, Z., Kane, A. & Marcus, A.J. (2005). Investments. Boston: McGraw-Hill.

Bushee, B.J. and Noe, C.F. (2000). Corporate Disclosure Practices, Institutional Investors, and Stock Return Volatility. *Journal of Accounting Research*, Vol. 38,
pp. 171-202.

CDP (Carbon Disclosure Project) Report (2002): Carbon Finance and Global Equity Markets. London.

CDP (Carbon Disclosure Project) Report (2004): Climate Change and Shareholder Value. London.

CDP (Carbon Disclosure Project) Report (2005): Carbon Disclosure Project 2005. London.

CDP (Carbon Disclosure Project) Report (2006): Carbon Disclosure Project 2006. London.

Cornell, B. and Shapiro, A. C. March 1987. Corporate stakeholders and corporate finance. *Financial Management* 16(1):5-14.

Daskalakis, G. and Markellos, R.N. (2003) *Are the European Carbon Markets Efficient?* Unpublished working paper, Athens University of Economics and Business, Athens, Greece.

Energy Journal. 1999. "Special Issue: The Costs of the Kyoto Protocol: A Multi-Model Evaluation." May, 3.

Friedman, M. 13 September 1970. The social responsibility of business is to increase its profits. *New York Times Magazine* .

Jensen, M.C.; Meckling, W., 1976. Theory of the firm: managerial behavior, agency costs, and ownership structure. *Journal of Financial Economics 3*, 360–395.

Jensen, M.C., 2001. Value Maximization, Stakeholder Theory, and the Corporate Objective Function. *Journal of Applied Corporate Finance, Fall 2001.*

Graves, S.B. and Waddock, S.A. (1994) Institutional owners and corporate social performance. *The Academy of Management Journal*, Vol. 37, No. 4. (Aug., 1994), pp. 1034-1046.

Grobbel, C. Maly, J. Molitor, M. (2004) Preparing for a low-carbon future. *The McKinsey Quarterly Vol….No.4*: 79-87.

Koller, T., Goedhart, M. and Wessels, D., 2005. Valuation: Measuring and Managing the Value of Companies. McKinsey and Company, Inc. 4th ed., NY Wiley & Sons, Inc.

Lindenberg, E. B., S. A. Ross. 1981. Tobin's q ratio and industrialorganization. *J. Bus.* 54 (January) 1-32.

Malkiel, B. G. and Quandt, R. E. 1971. Moral issues in investment policy, *Harvard Business Review* 49(2):37-47.

McKibbin, W.J.; Wilcoxen, P.J. (2002) The Role of Economics in Climate Change Policy. *The Journal of Economic Perspectives, Vol. 16, No. 2*: pp. 107-129.

Nordhaus, W.D. 1993. "Reflections onthe Economics of Climate Change." *Journal of Economic Perspectives. Fall, 7:4*, pp. 11-25.

Ross, S. A., Westerfield, R. W. & Jaffe, J. (2005). Corporate Finance. New York: McGraw-Hill.

Schaltegger, S. and Figge, F. “Environmental Shareholder Value :Economic Success with Corporate Environmental Management**”** *Eco-Management and Auditing.* Volume 7, 29–42 (2000)

Spicer B. 1978. Investors, corporate social performance and information disclosure: an empirical study. *The Accounting Review* 53(4): 781–796.

Stern, N. (2007). The economics of climate change: the Stern review. Cambridge: Cambridge University Press.

Wartik, S.L. and Cochran, P.L. 1985. “The evolution of the corporate social performance model.” *Academy of Management Review* 4, 758-769.

Wartik, S.L. and Wood, D.J. (2001). International Business and Society. Oxford: Balckwell Publishers.

White, M.A. 1996. “Corporate Environmental Performance and Shareholder Value” University of Virginia Online Scholarship Initiative Online Scholarship Initiative Alderman Library, University of Virginia Charlottesville