

# Carbon Emissions and Agency Costs in Firm Performance

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Carbon emissions and agency costs can have an impact on firms' financial performance. Firms with higher carbon emissions experience lower performance as the market reacts negatively. Further, firms with both higher carbon emissions and higher agency costs have lower performance.

Keywords: agency costs ; carbon emissions ; firm performance

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## 1. Introduction

In recent years, climate change has become a leading issue in business and political agendas, and the focus has been placed on greenhouse gas emissions (GHGE). The Carbon Disclosure Project ([CDP 2017](#)) discloses that about 100 active fossil fuel producers account for about 71% of the global industrial GHGE. Some of the popular names associated with the highest emitting companies since 1988 are investor-owned, such as ExxonMobil, Shell, BP, Chevron, Peabody, Total, and BHP. Others are state-owned companies, such as China Coal, Saudi Aramco, Gazprom, National Iranian Oil, Coal India, Pemex, and the China National Petroleum Corporation. The Union of Concerned Scientists reports that China (28%) and the US (16%) account for about 44% of carbon emissions in the world. [Lee et al. \(2015\)](#) report that firms in the United States, Japan, China, and Korea emit carbons mostly from production activities. Whereas all of the reporting entities are expected to find ways to reduce their GHGEs, the high carbon emission-intensive firms are feeling the most pressure ([CDP 2017](#)).

The demand for GHGE-related disclosures has increased owing to increased climate change disasters in recent years. The financial impact of climate change disasters is huge for firms. For example, BP Plc's explosion, fire, and, eventually, the sinking of their Deepwater Horizon oil platform in the Gulf of Mexico became the largest marine oil spill recorded in US history. BP Plc suffered an initial dip in the share price of 2.62%, and a further decline of 6.04% two months later ([Sabet et al. 2012](#)). The consequences of the oil spill were suffered not only by BP Plc but by its four major subcontractors (Anadarko, Halliburton, Transocean and Cameron International), which also reported a decline in share prices by 1.8%, 1.61%, 3.38% and 4.01%, respectively. The problems for BP Plc and its subcontractors were not limited to the plummeting share price but included several lawsuits filed against the firm. The US government also launched several investigations into the oil spill, which resulted in environmental damage of US\$20.8 billion ([Noaa.gov 2017](#)). It is, thus, obvious that the oil spill resulted in a huge financial loss for BP Plc. These events are consistent with the argument that a firm's environmental activities are associated with the level of litigation risk ([Bui et al. 2020](#)).

It is important to understand the financial implications that firms face in reporting their carbon emissions. First, countries such as the UK have come up with a carbon tax as a compliance requirement ([CarbonTax.org n.d.](#); [Lee et al. 2015](#)). Second, the Kyoto Protocol, which includes countries, such as Australia, China, Japan, New Zealand, Singapore, the UK, and the US ([Treaties.un.org n.d.](#)), binds industrialized countries to reduce their GHGE. Third, the Paris Agreement involves GHGE mitigation ([Unfccc.int n.d.](#)). Finally, some other countries have Emissions Trading Schemes, rules, and regulations designed to reduce GHGE. For example, there is the Clean Water Act and Clean Air Act in the US ([EPA.gov n.d.](#)) and the Australian National Greenhouse and Energy Reporting (NGER) Act 2007 in Australia. There is also pressure from firms' stakeholders to increase disclosure of their GHGEs. ([Kolk et al. 2008](#)). A number of the firms, mostly from high-intensive emission industries, have taken a voluntary approach to disclose their GHGE. Some firms have also made substantial R&D investments, aimed at finding more efficient and innovative ways of operating while reducing their carbon footprint.

In addition, another factor that can have a negative influence on the financial performance of a firm is the agency costs that arise owing to differences in the interests of firms' managers and owners ([Ang et al. 2000](#); [Jensen and Meckling 1976](#)). Agency costs, in the presence of carbon emissions, may affect the financial performance of a firm. Carbon

emissions and agency costs are related since managers may shirk or behave opportunistically, and such actions and behaviors of managers may affect carbon emissions as well as the financial performance of a firm. The impact of carbon emissions may be magnified in the presence of agency costs.

## **2. Carbon Emissions and Firm Performance**

Disclosure of corporate-related carbon emissions can have either a win-lose effect or a win-win effect on firms' financial performance. A win-lose effect occurs where efforts made to reduce carbon emissions increase cost, thus, negatively affecting firms' competitiveness in the market. However, firms' climate change-related disclosures can have a win-win effect when efforts made to reduce emissions help improve market competitiveness ([Boiral et al. 2012](#)).

[Lioui and Sharma \(2012\)](#) show that environmental corporate social responsibility (ECSR) disclosures have a negative and statistically significant correlation with corporate financial performance (CFP). Using both ROA and Tobin's Q, they have shown that firms with climate change-related disclosures report a lower financial performance. Specifically, their ROA results revealed that "almost a quarter of the average ROA is absorbed by Environmental Corporate Social Responsibility (ECSR)", and thus ECSR is costly. Similarly, Tobin's Q results have revealed that environmental strengths, on their own, decrease a firm's Tobin's Q by 10%, which means that a firm loses its market growth opportunities by almost half. In terms of ECSR concerns, their result shows an almost 90% loss of market valuation of future growth opportunities. [Lioui and Sharma's \(2012\)](#) ECSR-related environmental strengths included beneficial products and services, pollution prevention, recycling, clean energy, and other strengths, whereas the environmental concerns included hazardous waste, regulatory problems, ozone-depleting chemicals, substantial emissions, agricultural chemicals, climate change, and other concerns.

Summing up, carbon emissions and emission reductions can impact firm performance. Firm value can decline with carbon emissions, and the market penalizes firms that do not disclose carbon emissions ([Ganda and Milondzo 2018](#); [Matsumura et al. 2014](#); [Nguyen 2018](#)). On the one hand, the spending and initiatives on reducing carbon emissions affect profitability negatively ([Alvarez 2012](#)). On the other hand, the reduction of carbon emissions can also increase firm performance (profitability), since customers buy, and stakeholders support, such firms ([Lee et al. 2015](#); [Ganda and Milondzo 2018](#)). Further, the stock price of the company can also rise as firms with strong market discipline imposed by stockholders/investors are more likely to reduce GHGE and, consequently, firms that reduce GHGE are more likely to have enhanced firm value ([Nishitani and Kokubu 2012](#)).

## **3. Agency Costs and Firm Performance**

Misalignment of interests between firm's managers and firm's owners results in costs to owners/shareholders, called agency costs, and such costs manifest themselves in various forms, such as on-the-job perks, shirking, and making self-interested and entrenched decisions ([Ang et al. 2000](#); [Jensen and Meckling 1976](#)). Agency costs affect firm performance and shareholders' wealth negatively. Firms design and implement various corporate governance mechanisms to reduce agency costs (e.g., board characteristics, such as board composition, size and independence may be refined; audit and remuneration committees established, and the ownership structure changed and managed ([Allam 2018](#))). Agency costs and firm performance are negatively related (e.g., [Ching et al. 2006](#); [Khan et al. 2020](#); [Khidmat and Rehman 2014](#); [Lang et al. 1995](#)) and not all governance mechanisms lead to lower agency conflicts and/or higher firm performance ([Allam 2018](#)).

## **4. Carbon Emissions, Agency Costs and Firm Performance**

Carbon emissions and agency costs are related since actions/decisions taken by managers can also influence carbon emissions. If agency costs are higher, they may amplify the impact of carbon emissions and as a result, may have a higher impact on firm value.

Firms with higher carbon emissions report lower firm financial performance. This suggests that carbon emissions have an impact on firm performance, which is significantly negative: a win-lose effect, similar to that found in [Alvarez \(2012\)](#), [Lee et al. \(2015\)](#) and [Lioui and Sharma \(2012\)](#). Further, agency costs also have a negative impact on firm performance. Lastly, carbon emissions and agency costs in combination are found to have an impact on firm performance that is significantly negative. The results for the year-on-year change in firm performance show that the relationship between carbon emissions and firm performance weakens over time. This suggests that change in carbon emissions is not significantly associated with change in firms' financial performance. The negative and significant association between the interaction

term (i.e., change in carbon emissions and agency costs) and firm performance confirms our expectations that higher agency costs exacerbate the negative impact of carbon emissions on firm performance. Overall, the market responds negatively to firms' environmental decisions, particularly where firms have high agency costs.

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