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Market valuation of greenhouse gas emissions under a mandatory reporting regime: Evidence from the UK

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ABSTRACT

This study provides evidence on the potential benefits of mandatory environmental reporting for listed firms' market valuation. It takes advantage of recent regulation that requires all listed firms in the UK to report their annual greenhouse gas (GHG) emissions in their annual reports and shows that the magnitude of the negative association between GHG emissions and the market value of listed firms decreased after the introduction of the reporting regulation. This decline is attributed to regulation forestalling shareholders' negative reflexive reaction toward firms' carbon disclosures, as proposed by the theoretical work of Unerman and O'Dwyer (2007).

1. Introduction

It is widely acknowledged that sustainability reporting plays a pivotal role in the endeavor to establish a new, sustainable economic model worldwide, which will combine desirable financial outcomes with environmental protection, among other outcomes (European Council and Parliament, 2014; IIRC, 2013). Undeniably, the reporting of greenhouse gas[1] (hereafter GHG) emissions, as a first step toward reduction of GHG emissions (DEFRA, 2010), is of paramount importance to this endeavor. This is evident both from the plethora of international and national initiatives for GHG emissions reporting[2] and from the ever-growing research on this topic.[3]

What is also evident is that capital markets have been one of the key factors in the development of GHG emissions reporting since investors integrate this information into their investment decision-making (Kauffmann et al., 2012). Indeed, recent studies have shown that there is a significant negative association between the level of a firm's GHG emissions and its market valuation (Chapple, Clarkson, & Gold, 2013; Clarkson, Li, Pinnuck, & Richardson, 2015; Matsumura, Prakash, & Vera-Muñoz, 2014), which is attributed to investors using GHG emissions as a proxy for assessing firms' unbooked future environmental liabilities (Clarkson, Li, & Richardson, 2004; Hughes, 2000; Matsumura et al., 2014).

Nevertheless, GHG emissions reporting has been – and still is in most jurisdictions and for most firms around the world – voluntary, with recent studies questioning the quality of such voluntary disclosures (Andrew & Cortese, 2011; Kolk, Levy,

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[1] In this study, the terms 'greenhouse gas' and 'carbon' are used interchangeably.

[2] Examples include the Carbon Disclosure Project, the North American Climate Registry, the Australian National Greenhouse and Energy Reporting Act and the Canadian Greenhouse Gas Emissions Reporting Program, to name a few.

[3] Ascui (2014) finds that the number of published research papers in the broad field of carbon accounting (which includes carbon reporting) tripled in 2009 compared with the previous year, and the number has continued to increase at an average of 66% per year since then.

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& Pinkse, 2008; Stanny & Ely, 2008; Sullivan & Gouldson, 2012). Unerman and O'Dwyer (2007) argue that, when a negative environmental externality of firms' activities attracts public attention, shareholders react reflexively by increasing their socially constructed perception about firms' environmental risk. In turn, this increased perception of risk leads to a reduction of shareholders' trust in firms' voluntary disclosures and, consequently, to a decline in shareholders' value. In recent years, carbon emissions have come into the spotlight as possibly the main cause of global warming (Kauffmann et al., 2012; Stern, 2007). Hence, following the rationale of Unerman and O'Dwyer (2007), voluntary carbon emissions reporting may have lost its trustworthiness, and consequently, capital market participants may impose an extra valuation penalty when they value GHG emissions.

Mandatory GHG emissions reporting has been suggested as a means for mitigating the above problem (Kolk et al., 2008; Rankin, Windsor, & Wahyuni, 2011; Sullivan & Gouldson, 2012; Unerman & O'Dwyer, 2007). If this proposition is true, then the negative association between market value and carbon emissions is expected to decline in magnitude after the introduction of a mandatory GHG emissions reporting regulation. Bewley (2005) provides some evidence of a decline in the valuation penalty imposed by investors when they value-booked environmental liabilities accruals after the introduction of reporting regulation. Nevertheless, whether investors value non-financial environmental information and specifically GHG emissions differently in a mandatory reporting context compared with a voluntary reporting regime is an open empirical question (Andrew & Cortese, 2011).

Since GHG emissions reporting has been largely voluntary, previous studies about GHG emissions have focused primarily on voluntary disclosures (Freedman & Park, 2014). This study takes advantage of the recent amendments of the UK Companies Act 2006 (Strategic Report and Directors' Reports) Regulations 2013 (hereafter the 2013 Regulation), which requires all firms listed on the London Stock Exchange (hereafter LSE) to report their annual GHG emissions in their director's report for financial years ending on or after September 30, 2013, and seeks to provide empirical evidence on whether the expected negative association between firms' market valuation and GHG emissions declined in magnitude after the introduction of a mandatory GHG emissions reporting regulation.

The UK is an interesting setting for the empirical examination of this research question because, according to DEFRA (2012), it is the first country whose listed firms are required to include carbon emissions data for their entire organization in their annual reports. Although regulations[4] related to environmental issues were in place before the introduction of the 2013 Regulation and the vast majority of large listed firms on the LSE disclosed their carbon emissions voluntarily before September 2013,[5] there are reasons to believe that the introduction of a regulation that requires firms to report their annual GHG emissions should have a significant impact on their market valuation. First, de Villiers and van Staden (2011) provide evidence that investors in the UK prefer mandatory environmental disclosures to voluntary disclosures, especially when these disclosures are provided through firms' annual reports. The increasing quantity of environmental disclosures found in annual reports of UK firms suggests that environmental issues are of growing economic concern (de Aguiar & Bebbington, 2014). Furthermore, Tauringana and Chithambo (2015) conclude that in the UK setting, only reporting regulations can make firms disclose information that is useful to stakeholders. In addition, according to DEF (2013), mandatory reporting of GHG emissions offers the reporting firms the opportunity to signal strong green credentials to the market. Similar views in favor of mandatory GHG emissions reporting have been expressed by public authorities and industry representatives. For instance, Caroline Spelman, the then-Secretary of State for the Environment, said in June 2012 that "*...the reporting of greenhouse gas emissions will give them* [A/N: the investors] *vital information as they decide where to invest their money.*" (DEFRA, 2012), whereas two months before the introduction of the then-new regulation, David Harris, the Head of the Environmental Social and Governance branch of the FTSE Russell Index, stated the following:

> *"While the new regulations are not a silver bullet, they will be an improvement for investors in companies on LSE's [A/N: London Stock Exchange's] main market, providing data that may help with their investment decisions. By making reporting compulsory, data availability and quality will improve, as voluntarily reported data can often be unreliable."* (Paddison, 2013)

By utilizing a sample of all non-financial firms listed on the LSE for which GHG emissions data are available for the four-year period of 2011–2014 and employing a linear price-level model that associates a firm's share price to GHG emissions, this study provides evidence that first, similar to other jurisdictions around the world, GHG emissions are negatively associated with firms' market value in the LSE for the whole period under examination; second, the magnitude of the negative association between firms' market price and carbon emissions decreased after the introduction of the 2013 Regulation and; third, the magnitude of the negative association between market value and GHG emissions declined only for firms that belong to energy-intensive industries.

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[4] The Companies Act 2006 requires listed firms to provide a narrative in their annual reports about their environmental issues to the extent that it is necessary for the understanding of firms' performance, but it does not require disclosure of GHG emissions. The Carbon Reduction Commitment 2010 requires firms that use more than 6000 MWh per year of energy to measure their emissions, but they must report this information to the governmental Environment Agency and not to the public [for further information about previous regulations, see Kauffmann et al. (2012) and KPMG et al. (2013)].

[5] The Carbon Disclosure Project has been publishing reports about the annual carbon emissions of FTSE 350 firms listed on the LSE since 2006. Further information can be found here: https://www.cdp.net/en-US/Results/Pages/All-Investor-Reports.aspx.