Determinants of Internal Carbon Pricing and of Corporate Climate Change Strategy

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Extended abstract

The adoption of carbon pricing instruments has increased significantly in recent years. The World Bank (2016) estimates that carbon pricing mechanisms have been implemented by countries which collectively represent a quarter of the world's total greenhouse gas (GHG) emissions in 2016—although carbon pricing only covered an half of the emissions in those economies. Still this percentage needs to expand in order to deliver on the long-term goals of the Paris Agreement (Aldy et al., 2016; du Pont, 2017). To reach this goal firms are expected to progressively internalize the social costs of carbon emissions (Popp et al., 2010; Kolstad et al., 2014; Nordhaus, 2014; Weitzman, 2016). In addition, equity markets, along with financial regulators, are increasingly calling companies to disclose the effects of climate change in order to show their exposure to global warming risks (Bianchini and Gianfrate, 2017).

In this framework, an increasing number of global companies has adopted internal carbon pricing (also referred to as "shadow carbon pricing" or "internal carbon tax pricing"). Internal carbon pricing is a voluntary method for companies to internalize the implicit (actual or expected) cost of carbon under various policies and regulations even when all or part of their operations are not currently subject to external carbon regulations (WBCSD, 2015). According to the large database collected by the Carbon Disclosure Project (CDP, 2016), over 1200 companies in the world currently use internal carbon pricing or plan to implement one by 2018.

Companies adopt internal carbon prices for multiple reasons (I4CE, 2016; CDP, 2016). First, the internal pricing of carbon is used for risk management purposes: as companies are increasingly exposed to regulatory and financial risks attached to the implementation of governmental carbon pricing regimes, they seek to measure, model, and manage such risks. Second, internally defined

prices of carbon are featured in strategic planning activities as carbon price is an important input in the definition of the long term business model, including the identification of new strategic risks and opportunities. Third, internal carbon prices can be factored into the decisions about capital investments in relation to projects involving increases in GHG emissions, changes in the portfolio of energy sources, and reductions in emissions via energy efficiency schemes. Hence they enter as an input into scenario planning, forecasting, sensitivity analyses, and net present values estimations (WBCSD, 2015). They also allow investors to assess the extent to which companies' activities (especially from high polluting sectors) are vulnerable to increasing carbon costs. In addition to these arguments, internal carbon pricing may serve to influence how the government designs future policy. It may signal to the government that additional regulatory action is unnecessary, as well as "greenwashing."

Despite the growing importance of internal carbon pricing, the determinants of such prices are still unexplored. An extensive literature analyzes the voluntary disclosure of environmental information (see Chrun et al., 2016 for a recent review), particularly in the context of carbon practices (Lee et al., 2015; Amran et al., 2014; Mastumura et al, 2014; Kim and Lyon, 2011; Reid and Toffel, 2009; Tagesson et al., 2009; Stanny and Ely, 2008). In addition, the literature has documented the heterogeneity of countries, sectors and firms strategies concerning climate change issues (Backman et al., 2017; Pinkse and Kolk, 2010; Weinhofer and Hoffmann, 2010; Okereke, 2007). However, so far to our knowledge no study has investigated the factors underpinning the internal adoption of higher or lower carbon prices, which could shed light on the way firms prepare the transition to a low-carbon economy.

Therefore this study seeks to answer to the following research questions: What are the determinants influencing the choice of internal carbon prices of companies? What factors drive the utilization of internal carbon prices to pursue environmental and corporate strategies? What drives the decision of companies to price carbon?

The paper aims to fill the void in the literature about how carbon risks are quantified internally and factored in the decision making process. With the help of quantitative econometric models, it explores the national policies, industry effects and firm characteristics that determine the magnitude of internal carbon prices. Secondly, the analysis looks at the conditions influencing the decisions of firms to adopt and factor internal carbon prices in their corporate strategies.

We discusses the implications of the findings for the adoption of environmental instruments and corporate environmentalism, as well as for policy makers aiming to generalize the implementation of carbon prices in society.

Keywords: climate change; internal carbon price; environmental economics; corporate strategy; energy.

Thematic fields: (1) Innovation and Labour; (2) Cross-cutting thematic lines

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