

Nonlinear Financial Payoffs to Corporate Sustainability

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This version: 1 April 2017*

Abstract

Relying on a new patent classification scheme of the European Patent Office (EPO), this study explores the nature of the capital market payoffs to corporate sustainability in a panel threshold regression framework. The sample consists of a large panel of international firms and spans the 1999-2015 period. We hypothesize a non-monotonic relationship between corporate sustainability and capital market payoffs. Our preliminary results are consistent with predictions.

Keywords: Sustainability; Green investing; Stock returns; Market valuation; Operating performance.

JEL classification: G11, G12, O30, Q56

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Extended Abstract

Firms around the globe have been facing massive consumer and activist pressure with regards to, among others, emissions to air and water, protection of bio-diversity, and stakeholder engagement. Concomitantly, we witness increased consumers' willingness-to pay for environmentally-friendly products (Brown and Dacin, 1997). Likewise, there has been an ever increasing investor demand for considering environmental, social and governance (ESG) criteria in investment and security analysis. What is more, policymakers and academics alike exhibit extensive interest in identifying policies, laws, and institutions to effectively mitigate challenges facing humanity such as climate change, and energy and resource efficiency (e.g. European Commission, 2010; Calel and Dechezlepretre, 2016). Unsurprisingly, coercive and mimetic conditions are hastening the diffusion of sustainability policies among public firms.

Notwithstanding, we know remarkably little about the nature of the payoffs to both corporate sustainability and sustainable and responsible investing (e.g. Telle, 2006). This is all the more so that theory provides ambiguous predictions for whether these processes are desirable for firm value and investors. Indeed, the “team production model” of the corporation (Blair and Stout, 1999, p. 258) associates the integration of ESG issues into corporate strategies with positive effects on firm performance (Eccles *et al.*, 2014); by contrast, agency theory posits that firms not operating under such constraints would prove more profitable in highly competitive environments (Jensen, 2010). The related empirical evidence somewhat reflects the theoretical disagreement. Does the market assign higher valuations to firms that have better sustainability reputations than those that do not? Alternatively, are those firms that go more green penalized by higher risk premiums, or do they expect to earn some benefits from a better sustainability reputation?

This study relies on a new patent classification scheme of the European Patent Office (EPO) to provide answers to these and related questions using a panel smooth threshold regression (PSTR) framework (see e.g. Gonzalez *et al.*, 2005; Fouquau *et al.*, 2008). The underlying identifying assumption is that the relationship between our measure of sustainability stems from the relationship between that measure and future realized operating performance, and market efficiency in examining this relationship. Preliminary results of portfolio tests and Fama and MacBeth (1973) regressions based on a large sample of international firms that held at least one patent approved by the EPO over the 1999-2015 period suggest that the relationship between corporate sustainability and capital market performance is by no means linear. The observed non-linearity attests to the mixed results in the existing empirical work that has predominantly imposed linearity. Capitalizing on the power of the PSTR, we are able to flexibly elucidate conditions under which firms are rewarded in the marketplace for externally negotiating a reputation of being concerned about sustainability.

This study substantively adds to the literature in two ways. First, it runs counter to the dominant assumption of linearity and coefficient stability underlying most prior studies that investigate the relationship between corporate sustainability and financial performance. To that extent, our study makes some initial progress toward disentangling the definition domains of theories put forward to explain the consequences of sustainability for firm financial performance: the “team production model” and the agency theory. Second, we focus on a specific measure of environmental processes (rather than an outcome measure such as emissions) aimed at corporate sustainability: the proportion of sustainable technologies (so-called climate change mitigation technologies; hereafter, CCMT¹) in a firm's patent

¹Climate change mitigation technologies aim at “controlling, reducing or preventing the anthropogenic emissions of greenhouse gases, as covered by the Kyoto Protocol” (EPO, 2016). URL: <https://www.epo.org/news-issues/technology/sustainable-technologies.html>

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