### **Accepted Manuscript**

Beyond the question "Does it pay to be green?": How much green? and when?

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PII: S0959-6526(16)31380-4

DOI: 10.1016/j.jclepro.2016.09.039

Reference: JCLP 7999

To appear in: Journal of Cleaner Production

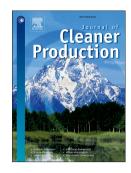
Received Date: 17 September 2015

Revised Date: 3 August 2016

Accepted Date: 6 September 2016

Please cite this article as: Fabio Riillo CA, Beyond the question "Does it pay to be green?": *How much green? and when?*, *Journal of Cleaner Production* (2016), doi: 10.1016/j.jclepro.2016.09.039.

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## Beyond the question "Does it Pay to be Green?": How much green? and when?

Abstract: This research investigates the relationship between green management and performance in Italian firms. The analysis compares innovation and productivity of firms with similar features but different environmental activities. Firms are matched on a rich set of covariates extending the Coarsened Exact Matching to survey data. Matched data are analysed with parametric and non-parametric tests and endogenous treatment regression. The analysis shows that the relationship between green management and performance is U-shaped. Green firms are performing no better than firms with no environmental activity, especially in energy intensive sectors. Among green firms, more advanced environmental management is associated with higher performance. Overall, the results suggest that green management has strong sectoral patterns and no linear relationship with performance. Findings suggest that green managers should pursue a comprehensive environmental management system. Sectoral-specific policies to promote environmentally friendly activities are needed when green activities are not paying off.

**Keywords:** Environmental Management, Labour productivity; Innovation, Coarsened Exact Matching; Survey, Italian Firms. **JEL**: O3; L2, L5, D2.

#### 1 Introduction

Environmental issues are often top priorities on the agenda of policy makers. The 2012 United Nations Conference on Environment and Development (also known as Rio+20) emphasizes the importance of sustainable development and promotes the implementation of proper policies to achieve environmental goals (e.g. reduction of CO2 emissions). In Europe, the green economy is expected to increase employment and growth, supporting economic recovery after the financial crisis of recent years (Eco-Innovation Observatory, 2013).

Policy makers concerned with environmental issues have different tools to pursue environmental objectives. They can enforce environmental legislation and/or promote voluntary adoption of environmentally friendly practices (e.g. ISO 14000 standards family) to reduce environmental impact<sup>1</sup>. Policy makers consider voluntary practices an increasingly important component of environmental policy. Understanding whether green management has any financial benefit can have important implications. If green strategies are profitable, firms are encouraged to adopt voluntary environmental practices reducing the need of regulation to achieve environmental goals. Theoretically, both positive and negative relationships between green management and business performance are plausible. On one hand, improving environmental performance increases production costs and detriments business performance (Ambec and Lanoie, 2008; Porter and Linde, 1995). Firms may incur in large costs to improve environmental performance and these costs may exceed the financial benefits gained from the environmental activities. If the primary

<sup>&</sup>lt;sup>1</sup> ISO 14000 standards are published by International Organization for Standardization -ISO- and provide integrated guidelines for developing an effective environmental management system.

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