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# Standardized environmental management systems as an internal management tool<sup>☆</sup>



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## ABSTRACT

In a principal-agent model we analyze the firm's decision to adopt an informal or a standardized environmental management system (EMS). Our results are consistent with empirical evidence in several respects. A standardized EMS increases the internal control at the cost of introducing some degree of rigidity that entails an endogenous setup cost. Standardized systems are more prone to be adopted by big and well established firms and under tougher environmental policies. Firms with standardized EMS tend to devote more effort to abatement although this effort results in lower pollution only if public incentives are strong enough, suggesting a complementarity relationship between standardized EMS and public policies. Emission charges have both a marginal effect on abatement and a qualitative effect on the adoption decision that may induce a conflict between private and public interests. As a result of the combination of these two effects it can be optimal for the government to distort the tax in a specific way in order to push

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the firm to choose the socially optimal EMS. The introduction of standardized systems can result in win-win situations where firms, society and the environment get better off.

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## 1. Introduction

An environmental management system (EMS) can be defined as “the part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy” (ISO, 1996). An increasing number of firms are opting to conform their EMS to international standards such as the European Eco-management and Audit Scheme (EMAS) and especially the world-wide standard ISO 14001.

Boiral (2007) suggests two roles of a corporate EMS: first, it can be seen as a way of publicizing an organization’s legitimacy among various stakeholders –especially if it is certified according to an international standard– and second, it can be seen as an internal management tool. Instead of analyzing the publicity effect, that has already been addressed in the literature (see e.g. Johnstone and Labonne, 2009) we focus on the second effect, i.e., the role of an EMS as an internal management tool. One essential feature of an EMS is its voluntary nature, in the sense that its adoption is not imposed by the government, but is a free decision of the firm. This paper presents a theoretical analysis of the firm’s decision to adopt an EMS and the choice between a standardized EMS and an informal one, focusing on the internal organization aspects. It also explores the interactions of these decisions with environmental regulation.

The main aspect we want to emphasize is the fact that a standardized EMS improves internal control at the cost of introducing a certain degree of rigidity. We do so by building a theoretical model of a firm that needs to curb its emissions while facing an uncertain environment as well as an internal agency problem. We assume that pollution reduction can be undertaken in two polar ways: one characterized by imperfect internal control (due to information asymmetry) but higher flexibility, and other one providing a better internal control by giving up some flexibility.

The first option is to implement some ad-hoc system (labeled as Informal) by contracting an expert (the “manager”) and giving him the freedom to make the abatement decisions. The advantage of this approach is that the expert is able to make quicker decisions without being constrained by a established protocol. The drawback is that the firm loses some control and needs to trust the manager, who is more informed than the firm. We capture this idea by assuming that effort is a discretionary decision of the manager not observed by the firm. This situation entails an asymmetric information problem and, hence, an incentive scheme is required.

The second option is what we call a Standardized EMS (like EMAS or ISO 14001). As Bansal and Bogner (2002) stress “ISO 14001 does not set performance standards. Instead, ISO 14001 focuses on management processes rather than specific environmental outcomes” (p. 271). Accordingly, we associate a standardized EMS not to a specific environmental outcome, but to a certain set of practices, which in our model corresponds to a given level of abatement effort. We model the idea that a standardized EMS provides a very structured procedure that gives the firm more internal control by assuming that effort becomes observable and can be specified in the contract. The disadvantage of this option is that making changes is now more costly because any modification of the protocol must follow a more or less rigid procedure and involves a certain amount of paperwork. We simplify this fact by assuming that effort has to be decided before the uncertainty is revealed and cannot be modified afterwards.

We explore the pros and cons of each type of EMS at the organizational level and the connections with public policy. Our most important results are the following. First, those firms adopting a standardized EMS tend to make more abatement effort, which is consistent with the common belief that such firms are somewhat greener. But we also conclude that this higher abatement effort results in lower (expected) emissions only if the incentives provided by public policy are strong enough, which

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