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Does environmental management capability of Chinese industrial firms improve the contribution of corporate environmental performance to economic performance? Evidence from 2010 to 2015

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ABSTRACT

As a powerful industrial country, the environmental performance of Chinese industrial firms is continuously being concerned by the international community. In this paper, we select 1310 social responsibility reports of Chinese industrial firms published from 2010 to 2015 as the sample with the aim to explore whether corporate environmental management capability can improve the contribution of environmental performance to economic performance (net profit rate)? Conclusions show that the level of environmental performance and environmental management capability of Chinese industrial firms are generally low, and concerning on environment does not significantly improve economic performance as a whole. Also, the moderating effect of environmental management capability improving the economic value of environmental performance is limited at present. However, with the environmental management capability becoming stronger, the contribution of environmental performance to economic performance has gradually improved, which is embodied when this capability is stronger than samples' average, it improves the contribution of energy-saving performance and environmental management legitimacy performance to net profit rate; while when it is lower than that, no any category of environmental performance can significantly and positively contribute to net profit rate. Empirical results imply that Chinese industrial firms should actively improve the level of environmental management capability.

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1. Introduction

Through the observation, we find that almost all social responsibility reports of Chinese industrial firms have described them as the entity who actively fulfills environmental responsibility, such as strictly implementing environmental policy, reducing pollution emissions, developing the recycling economy, etc. Obviously, corporate environmental performance can improve regional environment and public identifications to firms, while as the rational economic man, almost all top managers' decisions are to create economic performance. Therefore, whether environmental management can bring economic performance is one of the most concerned issues for top managers.

In 2013, both the consumption of Chinese industrial raw materials (such as iron and coal) and total industrial waste emissions

ranked first in the world, and in the same year, the amount of Chinese CO₂ emissions has reached 10 billion tons which accounted for 30% of world's annual emissions with ranking first in the world as well, exceeding the sum of the United States and European Union (Friedlingstein et al., 2014). Industrial pollution not being effectively curbed has triggered the severe and persistent smog in industrial cities in recent years, and due to this, Chinese government is facing an ever growing international pressure. Although Chinese government encourages cleaner production, the huge scale of industrial economy and less reasonable production structure still lead to the serious environmental pollution. Therefore, improving industrial firms' environmental performance should be an important objective for national environmental governance. Meanwhile, as a country with a strong sense of international responsibility, China is actively transforming the economic growth pattern (Cai et al., 2008), and in the "Thirteen Five-Year Plan" (2016–2020), the innovation of environmental management pattern and green development have been regarded as critical approaches to achieve the objective of national environmental governance. At present,

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Chinese studies mainly focus on how to decrease the negative impact of carbon emission from national, regional and industrial perspectives (Chen, 2009; Lin and Liu, 2010; Wang et al., 2010). These studies attempt to solve the contradiction between economic growth and ecological deterioration, and conclusions also provide the factual basis to innovate macro environmental policy. However, the main body which expanding the industrial economy and producing carbon emissions are both industrial firms, and the effect of environmental policy ultimately depends on whether industrial firms can effectively implement. Currently, it still lacks the study on why Chinese environment has seriously deteriorated from the perspective of industrial firms, and how should Chinese industrial firms deal with the environmental crisis has not well demonstrated. Therefore, besides concerning on the relationship between environmental performance and economic performance of Chinese industrial firms, we will further explore the way of transforming environmental performance into economic performance, which can help Chinese industrial firms to form the habit of actively managing environment and achieve the win-win of environmental quality and economic performance.

Corporate environmental performance (CEP) can be described as the achievement of corporate environmental management. According to Kagan et al. (2003), Yang and Zhou (2004) and Delmas and Blass (2010), we define CEP as the achievement from improving natural and social environment around firms with the aid of management tools. Previous studies indicated that although CEP is correlated with economic performance, there is no unified conclusion on how they interact with each other because their relationship can be affected by many other elements, such as corporate size, ownership structure, industrial institution, etc (Clarkson et al., 2008; Scholtens, 2008; Al-Najjar and Anfimiadou, 2012). Results from Nawrocka and Parker (2009) and Clarkson et al. (2011) proved that CEP is difficult to directly determine economic performance, and this process requires the driving force from corporate internal elements. Also, results from western researchers proved that corporate sustainable performance or environmental social responsibility performance can positively affect economic performance, and some environmental management tools, such as advertising intensity, can further improve this positive impact. On the other hand, although CEP is negatively related to economic performance in some firms, improving the efficiency of R&D activities can reverse this unfavorable situation (Wagner, 2010; Lioui and Sharma, 2012). According to the resource-based view, corporate internal management capability is a core element affecting economic performance, and production activities can also reflect the effect of this capability to existing resources, which would reduce the business risk and promote existing resources to be transformed into economic performance (Barney, 1991; Teece et al., 1997; Lee et al., 2001; Yang and Zhou, 2004; Teece, 2007; Wagner, 2010; Lioui and Sharma, 2012). Some researchers defined the organizational capability in environmental management activities as the environmental management capability (EMC), and according to their demonstrations, we define EMC as the capability of firms reducing negative impacts of business activities on the environment or improving environmental performance with environmentally-friendly ways (Goodland, 1995; Klassen and Whybark, 1999; Klassen and Vachon, 2003; Lee and Klassen, 2008; Wong et al., 2012; Wong, 2013), which is a kind of control implemented in corporate environmental protection activities by the aid of management tools. Judged by this definition, the level of EMC is embodied in the desire of firms actively participating in environmental management, and the process of developing this capability is also accompanied with the investment in technology, human resource, production management, etc. Usually, corporate top managers not only concern on whether this investment can

create new environmental performance, but also on the economic value of environmental performance. Based on the above background, this paper aims to develop the contribution mechanism model of CEP to economic performance with considering the moderating effect of EMC, and examine to Chinese industrial firms, whether EMC can improve the contribution of CEP to economic performance?

Theoretically, this paper contributes to demonstrate that EMC can moderate the contribution of CEP to economic performance. Although some studies have developed the model to measure the effect of EMC (Klassen and Whybark, 1999; Klassen and Vachon, 2003; Lee and Klassen, 2008; Wong et al., 2012), most of them concerned on the supply chain process, namely, how suppliers' EMC affecting the environmental and economic performance of target firms. In fact, corporate production process can be always affected by the products and services provided by suppliers, and their EMC can determine the environmental quality and environmental management pattern of downstream firms to a large extent. While we should realize that EMC is also an important element affecting the value of environmental performance, and it should contain the green procurement agreement with suppliers. In this paper, we will mainly concern on the effect of industrial firms' own EMC, and through developing the model, we expect to theoretically reveal that effectively managing environmental elements can improve the economic value of CEP, and lack of this capability, environmental performance would be difficult to bring economic performance, which implies that besides concerning on the level of CEP, top managers of industrial firms should also manifest the value of this performance by the aid of management tools. Although industrial firms have the obligation to fulfill social responsibility, profitability is always the primary objective. Therefore, to make firms actively improve environmental performance, it is necessary to explore whether EMC can accelerate CEP to be transformed into economic performance, which provides a new idea for perfecting corporate environmental management. With regard to Chinese industrial firms, researchers have gradually concerned on their environmental performance in recent years while few studies on the EMC, and we believe that the study on environmental management of Chinese industrial firms is of great value. Therefore, we will develop the contribution mechanism model of CEP to economic performance with the moderating effect of EMC.

Practically, environmental management is the issue that almost all industrialized countries' governments concern on in the long term, and the contradiction between CEP and economic performance may decrease top managers' motivations to environmental affairs, especially in developing countries. Western countries' experience indicated that industrial firms' management on environmental elements can directly improve their position in supply chains (Lee and Klassen, 2008; Wong et al., 2012), so they attach importance to establish this management capability. While under the context of massive industrial pollution, Chinese industrial firms still concern less on the environmental management. Therefore, through exploring the moderating effect of EMC, we aim to show its real contribution to improving the economic value of environmental performance of Chinese industrial firms and expect that empirical results can provide the guidance for their future environmental management.

The remainder of this paper is organized as follows. In Section Two, we will review literature supporting the theme. In Section Three, we will describe the data, method and variables and develop the contribution mechanism model of CEP to economic performance. In Section Four, we will present the empirical results from Chinese industrial firms. In Section Five, we will summarize conclusions and further discuss managerial implications, limitations and future research.

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