Research on the Impact of Financial Policy on Environmental, Social and Governance Performance of Enterprises under the Green and Low-carbon Development Goals

Evidence from the pilot project of "Comprehensive Demonstration City of Energy Conservation and Emission Reduction Fiscal Policy"

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Abstract. The fiscal policy under the goal of green and low-carbon development is of great significance for promoting the environmental, social and governance development of enterprises. Taking A-share listed companies from 2009 to 2017 as samples, this paper analyzes the influence of the pilot policy of "comprehensive demonstration city of energy conservation and emission reduction fiscal policy" on the environmental, social and governance performance of enterprises by using multi-period double difference method. The results show that the pilot policy of demonstration cities can significantly improve the environmental, social and governance performance. The research in this paper provides decision-making reference for promoting green economic transformation and high-quality development.

Keywords: green and low-carbon development; fiscal policy; environmental, social and governance performance

1 Introduction

The ESG (environmental, social and governance) performance of an enterprise is an important measure of its high-quality development and represents its comprehensive performance in the market. [1] With the goal of green and low-carbon development gradually permeating all aspects of economic and social development, the concept of sustainable development advocated by ESG has gradually been widely accepted and advocated. [2] Enterprise is the cell of economy, and the ESG performance of enterprise is easily affected by the efficiency of relevant policy formulation and implementation.[3] In order to achieve the goal of green and low-carbon development and promote the

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green transformation of the economy, since 2011, the Ministry of Finance and the National Development and Reform Commission have carried out the work of "a comprehensive demonstration city with financial policies for energy conservation and emission reduction" in three batches.[4] Analyzing the governance effect and action path of the pilot policy of demonstration cities on ESG performance of enterprises will help the government to better play the vanguard and exemplary role of demonstration cities[5], and provide certain decision-making reference for how to accurately implement policies to promote the green transformation of enterprises under the goal of green development.

The research contribution of this paper lies in the following aspects: First, the governance effect of the pilot project of "comprehensive demonstration city with financial policy of energy saving and emission reduction" is discussed from the perspectives of environment, society and governance for the first time. Secondly, this paper introduces the fiscal and taxation policies exogenous to enterprises into the study of enterprise ESG, which enriches the study of influencing factors of enterprise ESG performance.

2 Literature review and research assumptions

In terms of environmental protection, the pilot policy of demonstration cities has targeted constraints on enterprises by setting energy-saving and emission-reduction targets, and actively guides enterprises to carry out industrial upgrading and environmental protection[6]; In terms of social responsibility, cities selected as pilot demonstration cities can enjoy subsidies from the central government for a certain period of time, and by giving full play to the positive guiding role of special financial funds, more green employment opportunities will be created, which will provide a good opportunity for enterprises to fulfill their social responsibilities[7]; In terms of corporate governance, the pilot demonstration cities can effectively guide enterprises to carry out green production and make them take into account social benefits, which is helpful to improve the corporate governance level of enterprises and provide strong support for enterprises to carry out ESG practice.[8]

Based on the above analysis, this paper proposes:

Hypothesis 1: Pilot policies in demonstration cities can significantly improve ESG performance of enterprises.

3 Research and design

3.1 Model Setting

In order to test the impact of pilot policies in demonstration cities on ESG performance of enterprises, this paper constructs the following multi-period double difference model for empirical research:

$$ESG_{it} = \alpha + \beta Policy_{ct} + \gamma Control_{it} + \delta_i + \mu_t + \varepsilon_{it} \quad (1)$$

ESG represents the comprehensive score of enterprise environmental, social and governance. The subscripts i, c and t represent the enterprise, region and year respectively. $Policy_{ct}$ is a virtual variable that represents "comprehensive demonstration city of energy-saving and emission-reduction fiscal policies". If the city where the enterprise is located has carried out the pilot of the demonstration city in the current year, the Policy will be 1, otherwise 0. $Control_{it}$ represents a collection of related control variables.

3.2 Definition of key variables

Environmental, Social and Governance Performance of the Enterprise.

At present, ESG rating of Huazheng has been widely accepted and applied by business and academic circles. This paper selects ESG rating of Huazheng to measure environmental, social and governance performance of enterprises.

"Comprehensive Demonstration City of Energy Conservation and Emission Reduction Fiscal Policy" Pilot Policy Variable (Policy).

The pilot policy for demonstration cities covers a total of 30 cities. As Haidong withdrew from the city in 2012, 29 demonstration cities except Haidong were selected as the treatment group and the rest as the control group. Time for setting up pilot demonstration cities and time for enjoying the financial comprehensive awards refer to Table 1.

Table 1. Time for Setting up Pilot Demonstration Cities and Time for Enjoying Financial Comprehensive Awards

Pilot batch	Pilot cities	Establishment time	Enjoy central financial consolidation Incentive funding window
First batch	Beijing, Shenzhen, Chongqing, Hangzhou, Changsha, Guiyang, Jilin and Xinyu	2011	2012-2014
Second batch	Shijiazhuang, Tangshan, Tieling, Qiqihar, Tongling, Nanping, Jingmen, Shaoguan, Dongguan and Tongchuan	2013	2014-2016
Third instalment	Tianjin, Linfen, Baotou, Xuzhou, Liaocheng, Hebi, Meizhou, Nanning, Deyang, Lanzhou and Urumqi	2014	2015-2017

Control variables.

In order to accurately identify the policy effect, this paper controls some characteristic variables at the enterprise level. Refer to Table 2 for the definition of control variables.

Table 2. Definition of Variables

	Variable name	Variable symbol	Measurement method
Interpreted variable	Environmental, social and governance performance	ESG	Measured by China Securities environmental, social and governance Rating Index
Explanatory variable	Pilot Policy Variables of "Comprehensive Demonstration City of Energy Conservation and Emission Reduction Fiscal Policy"	Policy	If the enterprise is located in a region where a pilot demonstration city was conducted in the current year, the Policy is 1, otherwise the Policy is 0
Control variable	Scale	Size	Natural logarithm of year-end total assets
	Debt level	Lev	Total liabilities/total assets
	Profitability	ROA	Net profit/total assets
	Flows	Cashflow	Net cash flows/total assets at year end
	Operating income growth rate	Growth	Current year's operating income/previous year's operating income-1
	Management shareholding	Mshare	Number of Management Shares/Total Equity
	Institutional investors' shareholding ratio	Inst	Total institutional investor holdings/circulating share capital

3.3 Sample selection and data description

This study is based on the sample of A-share listed companies from 2009 to 2017. ESG rating data comes from Wind information finance terminal, and financial data of listed companies comes from CSMAR database. The data processing is as follows: the first batch and the second batch of demonstration cities enjoyed financial subsidies in 2012-2014 and 2014-2016, respectively. In order to prevent the bias of DID estimation in many time points, this paper deleted the samples of the first batch of demonstration cities in 2015-2017 and the second batch of demonstration cities in 2017; Delete samples of financial industries and financial anomalies; Eliminate samples with missing observed values of variables. In this study, 14777 observations were finally obtained.

4 Empirical analysis

In order to study the relationship between the pilot policies of demonstration cities and ESG performance of enterprises, this part carries out regression analysis of multi-period DID. According to the regression results of Table 3, the estimation coefficients of the model city pilot Policy are all significantly positive at the level of 1%. Under the condition of controlling relevant variables and fixed effects, the estimation coefficient of the model city pilot Policy is 0.1346, indicating that the model city pilot policy can effectively promote the development of enterprise ESG. The benchmark regression results show that the pilot policies of the demonstration cities can give full play to the governance efficiency and significantly improve the ESG performance of the enterprises. The research results are consistent with the description of hypothesis 1 in this paper.

Table 3. Benchmark Regression Analysis

Variables	(1) ESG	(2) ESG
Policy	0.1180***	0.1346***
	(3.0079)	(3.5033)
Control variable	YES	YES
Firm effect	YES	YES
Year effect	YES	YES
Observations	14777	14777
R-squared	0.0173	0.0411

In order to ensure the accuracy of the experiment, parallel trend test, placebo test, change of ESG measurement, deletion of samples of listed companies in 2011 and subsequent years for regression analysis were adopted in this paper, and all of them passed the robustness test.

5 Research conclusions and implications

The research results show that the pilot policy of demonstration cities can play a significant governance effect and improve the ESG performance of enterprises. Based on the above conclusions, this paper puts forward the following suggestions:

First, we should attach importance to the governance effect of green fiscal policy and promote the transformation and upgrading of enterprises. [9] In the process of environmental governance, the government should attach importance to the use of fiscal policy to promote the green transformation of enterprises and provide strong support for the high-quality development of economy and society. Second, enterprises should actively promote green technology innovation and provide appropriate financial support for green development.[10] Third, the government should actively guide enterprises to innovate production technology, and enterprises should take the initiative to set up

technology research and development teams to achieve the goal of energy conservation and emission reduction by improving their own green innovation level.

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