

Study of the Impact of Environmental Regulation on the Comprehensive Performance of Coal Enterprises

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Abstract

Coal is China's basic energy, is an important lifeline for China's economic and social development, but also one of the heavy pollution industry. How to face the problem of pollution control and what measures can be taken to minimize the emission of pollutants has become the concern of the whole society, and the rough development mode of the coal industry makes it become the key area for the implementation of environmental regulation. This paper explores the mechanism of different types of environmental regulations on the comprehensive performance of coal enterprises, and puts forward corresponding countermeasures for the impact of environmental regulations on the comprehensive performance of coal enterprises.

Keywords

Environmental Regulation; Coal Companies; Integrated Performance.

1. Introduction

Coal is China's basic energy source and an important lifeline for China's economic and social development, but also one of the heavily polluting industries. Against the background of serious environmental pollution, the green transformation of the coal industry is imperative. Strict environmental laws and regulations restrictions can urge coal enterprises to reduce pollution and meet environmental standards. Do different environmental regulation policies have the same impact on the comprehensive performance of coal enterprises? How should coal enterprises, as highly polluting enterprises, transform and find a new way out in the face of environmental regulation policies? These ensuing questions have seriously constrained the green transformation process of coal enterprises, and it is particularly important to study the impact of environmental regulations on the performance of coal enterprises.

2. Relevant Literature

2.1. Research on Environmental Regulation

Ding Rui (2019) defines environmental regulation as the effective intervention of the government on the behavior of enterprises in the discharge of pollutants, through various interventions to force enterprises to reduce the pollution of the environment [16]. The English expression for regulation is "regulation", which is explained by economists as the government's efforts to regulate the lack of competition in the market through the development of a legal system to maintain the performance of market players (Kahn A. E., 1970) [1]. Japanese economist Uekusa Ikki (1992) considers regulation as intervention in the production and marketing activities of enterprises, and suggests that the implementers of regulation include not only the government, but also private individuals, and that government-imposed regulation is also known as public regulation, which can be categorized into economic and social

regulation, and that social regulation, including environmental regulation, focuses more on the protection of the interests of disadvantaged groups [2]. Further, environmental regulation is considered to be the means implemented by governmental departments to specifically intervene in adverse environmental impacts (Stavins R., 2005) [3], which can not only combat pollution and protect the environment, but also promote green technological innovation in enterprises (Frondel M, 2007) [4], and in the current period when the whole society is demanding a green transformation, environmental regulation has gone beyond the traditional role of tools and become an important means to improve the environmental performance of enterprises (Wang Z., 2016)[5].

2.2. Research Related to Enterprise Performance

The comprehensive performance of a company refers to the comprehensive response to the business conditions and benefits of the company in a certain period of time, and most of the companies attach the most importance to the economic benefits, so the comprehensive performance pays more attention to the relationship between the input costs and the output benefits in the daily production process. In the case of constant production capacity, the higher the revenue, the higher the comprehensive performance of the company (Zhang Rui, 2001)[25]. Gu Ye (2019) believes that in the process of enterprises tend to diversify their business, enterprises should pay more attention to the comprehensive performance, and non-financial indicators should receive more attention [26]. With the popularization of low-carbon economy, the non-financial indicators of enterprises should focus more on the environmental responsibility aspect, and determine the comprehensive performance of enterprises through the responsibility of enterprises to the environment and consumers and other different roles (Luo Wenting, 2019)[27]. Although there are certain difficulties in the acquisition of indicators as well as measurement, the comprehensive performance covering indicators from multiple perspectives is more scientific and comprehensive (Shi Xunhua, 2020)[28]. Therefore, referring to the research of Wu Anfeng (2019), the comprehensive performance is divided into economic performance, environmental performance and social performance [29], economic performance is the performance that enterprises attach the most importance to, and the level of economic performance determines the ultimate business development goals of the enterprise; environmental performance is the result of the enterprise's emission reduction and pollution control, and it reflects the enterprise's attention to environmental protection; social performance can measure the enterprise's efforts to return to society, and the social performance of enterprises with a strong sense of responsibility is also more comprehensive. The social performance of an enterprise with a strong sense of responsibility will also be high.

3. Mechanism Analysis of the Impact of Environmental Regulation on the Comprehensive Performance of Coal Enterprises

Currently, the theoretical community will be divided into command-and-control, market incentive, voluntary environmental regulation, the different environmental regulatory policies will have different effects on the comprehensive performance, only for the different environmental regulatory tools, respectively, analyze its impact on the comprehensive performance of coal enterprises, which will help us to grasp the overall impact of environmental regulation on the overall performance of the coal enterprises, so that coal enterprises to make the right strategic It will help us to grasp the overall mechanism of environmental regulation on the comprehensive performance of coal enterprises, so that coal enterprises can make the right strategic choices and improve environmental quality as soon as possible. In the following, we analyze the influence mechanism of command-and-control environmental regulation, market incentive environmental regulation and voluntary environmental regulation on the comprehensive performance of coal enterprises.

3.1. Mechanisms of Command-and-Control Environmental Regulation on the Comprehensive Performance of Coal Enterprises

Command-and-control environmental regulation manages and supervises the discharge behavior of enterprises through the formulation of performance standards, emission standards, and technical standards; the government is the supervisor of the enterprises' fulfillment of their environmental responsibilities, and the enterprises passively accept the government's restrictions and limitations. This paper argues that the impact of command-and-control environmental regulation on the comprehensive performance of coal enterprises is categorized into the following five situations.

3.1.1. Increased Costs and Reduced Overall Performance

Command-and-control environmental regulation will increase the cost of coal enterprises in all aspects. Firstly, strict standards require enterprises to use green and energy-saving production equipment in the mining process, improve pollution control technology, and reduce the total amount of pollutant emissions and emission concentrations, and coal enterprises have to purchase energy-saving and environmentally friendly equipment for mining on the basis of their original equipment in order to meet government standards. Secondly, in the emission link, coal enterprises in the past, the rough way of development can directly discharge pollutants, but after the implementation of environmental regulations, China's emissions of all kinds of pollutants are strictly regulated, so that coal enterprises in the final emission link also have to incur a large amount of expenditure. It can be said that the current high attention to environmental protection has affected the whole process of coal enterprises from mining to production, and the strict command-and-control environmental regulation system makes coal enterprises increase a lot of costs, which will cause the financial performance of coal enterprises to decline in the short term, while environmental improvement and social responsibility enhancement have always been a slow process, so the introduction of environmental regulation makes the comprehensive performance of coal enterprises decline .

3.1.2. Crowding Out Operating Funds and Reducing Consolidated Performance

The implementation of environmental regulations breaks the established strategic planning of coal enterprises, increases the cost of environmental protection, is bound to correspondingly reduce the expenditure in other R & D investment, operation and sales, which will cause the enterprise capital gap, reduce the enterprise's productive day-to-day investment, so that the links that should be invested in the funds are not invested in the funds, and ultimately reduces the enterprise's profitability, affects the competitiveness of coal enterprises, and has a negative impact on the comprehensive performance of the coal enterprise. negatively affect the comprehensive performance of coal enterprises.

3.1.3. Promoting Enterprise Innovation and Improving Overall Performance

Porter's hypothesis suggests that stringent emission standards and huge sewage costs will cause great pressure on enterprises, and this pressure drives enterprise innovation, and the benefits generated by innovative activities will be higher than the costs of fulfilling environmental regulation standards, which ultimately promotes enterprise performance improvement. At present, China is in a period of rapid economic development, the coal industry has shown unprecedented enthusiasm for technological innovation, the introduction of command-and-control environmental regulations, coal enterprises have put forward higher requirements, in the face of these regulations, to improve the level of innovation is a rational behavior, but also a necessary requirement for the sustainable development of coal enterprises. Improvement of innovation level not only enhances the production efficiency of coal enterprises, but also makes coal cleaner and greener to meet the demand of consumers for green products, which coal enterprises can be the first to produce such products, which enterprises can be the earliest to gain market competitiveness. At this point, environmental

regulation realizes the improvement of comprehensive performance by stimulating the innovation ability of enterprises.

3.1.4. Improvement of Productivity, Equipment Utilization, and Overall Performance

According to the theory of externalities and stakeholder theory, coal enterprises have caused irreversible damage to the surrounding environment throughout the whole process of coal production, and this negative external behavior did not pay any cost before, which is why the coal enterprises have exploited the coal resources more freely. At this stage, in addition to the shareholders of coal enterprises, employees and other direct stakeholders, customers, the public, these indirect stakeholders have also begun to pay attention to the requirements of environmental quality, they do not allow the coal enterprises to continue the past mining and production methods, environmental regulations have also made the coal enterprises to pay for their own negative externalities behavior. In this case, if coal enterprises want to realize the triple win of economic, environmental and social benefits, they must incorporate the relevant management methods into their strategic plans. With clear strategic planning, coal enterprises can take the initiative to improve all aspects of production and sales, so as to ensure that the internal links are more scientific and environmentally friendly, and ultimately to promote the enterprises to enhance market competitiveness, expand market share and realize the comprehensive performance. The comprehensive performance of the enterprise will be improved in all aspects.

3.1.5. Hindering Entry of Potential Firms and Improving Overall Performance

The creation of environmental regulations raises barriers to the coal industry and indirectly impacts overall performance. For the coal industry, strict command-and-control environmental regulations require that coal companies must be able to treat discharged pollutants in a timely manner, and need to have a certain scale of pollution control equipment and green and energy-efficient production technologies. These changes require coal enterprises to have sufficient capital reserves to be able to survive until the transformation is completed, discouraging potential enterprises that want to enter the coal industry but do not have sufficient capital, and those already in place will thus be protected and maintain their current revenue and competitiveness, thus creating a monopoly in the coal industry and further improving overall performance.

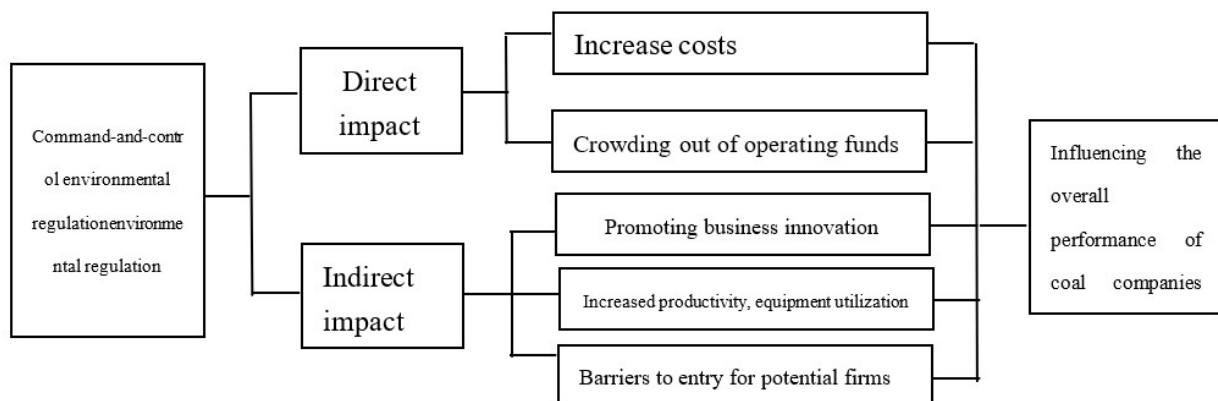


Figure 1. Path of command-and-control environmental regulation on the comprehensive performance of coal companies

3.2. Analysis of the Impact of Market Incentive-based Environmental Regulation on the Comprehensive Performance of Coal Companies

Market incentive-based environmental regulation is the use of market regulation, through the collection of taxes or subsidies to enterprises, so as to allow enterprises to independently

choose the production technology and the amount of emissions. This paper explores the impacts of the two approaches on the comprehensive performance of coal enterprises through different incentive directions, taking subsidies to encourage enterprises to purchase green equipment, etc., as positive market incentive-based environmental regulation, and environmental taxes to internalize the polluting behavior of enterprises as negative market incentive-based environmental regulation, respectively.

First, we explore the impact of positive incentive-based environmental regulation on the aggregate performance of coal companies.

3.2.1. Reduced Costs and Improved Overall Performance

Positive incentive-based environmental regulation is direct blood transfusion assistance from the government to coal enterprises. Various costs incurred by enterprises in the process of reducing pollutant emissions, such as research and development costs, human resource costs, and green equipment acquisition costs, are subsidized by the government accordingly, so that the cost burden of enterprises is reduced and the pressure on their costs is alleviated, which is a measure that can do no harm to the comprehensive performance of enterprises.

3.2.2. Promoting Business Improvement and Enhancing Overall Performance

Government subsidies include subsidies for environmental protection equipment, sewage technology, etc. In order to obtain as much subsidy as possible, enterprises should keep the amount of sewage discharged as low as possible compared with the standard sewage discharged set by the government, which requires enterprises to take active actions in the process of green transformation, and make the amount of sewage discharged decrease by improving the sewage discharging technology or equipment, or by improving the production process, which also helps to improve the efficiency of other parts of the enterprise, and has a positive impact on the comprehensive performance of the enterprise. This will also help improve the efficiency of other parts of the enterprise and have a positive impact on the overall performance of the enterprise.

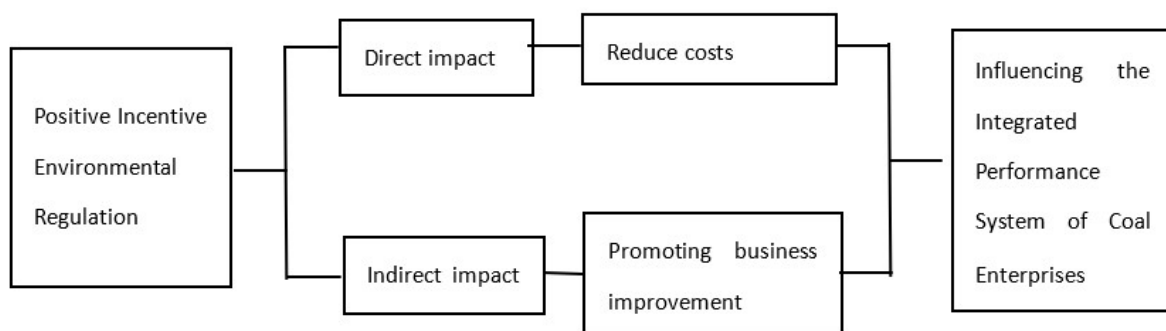


Figure 2. Impact path of positive incentive environmental regulation on comprehensive performance of coal enterprises

The second explores the impact of negative incentive-based environmental regulation on the aggregate performance of coal companies.

3.2.3. Increased Costs and Reduced Overall Performance

When the government uses negative incentive environmental regulation, it has roughly the same impact on coal companies as command-and-control environmental regulation; an increase in the tax burden on pollutant emissions and an increase in the cost of products

produced by the company will directly lead to a decrease in the ability of coal companies to make profits, which will have a negative impact on overall performance, which is obvious.

3.2.4. Increase in Product Prices and Reduction in Overall Performance

Negative incentive-based environmental regulation generally occurs after coal mining is completed and the company has no chance to undo it, at which point, in order to compensate for the externality costs of environmental pollution, the company may transfer the increased costs to consumers and increase the price of coal to ensure profit levels. As a basic energy source, coal will not reduce demand due to higher prices, and enterprises will secure financial performance in the short term. However, in the long run, the price increase of coal products will prompt the public to find other alternative products, and new energy sources will gradually increase market competitiveness by virtue of the advantages of environmental protection, cleanliness and low price, which will make coal products lose their status as a basic energy source, and ultimately seriously affect the financial performance of enterprises. Negative incentive-based environmental regulations do not give enterprises a strong incentive to green reform, and the ultimate result will be a decline in the overall performance of coal enterprises.

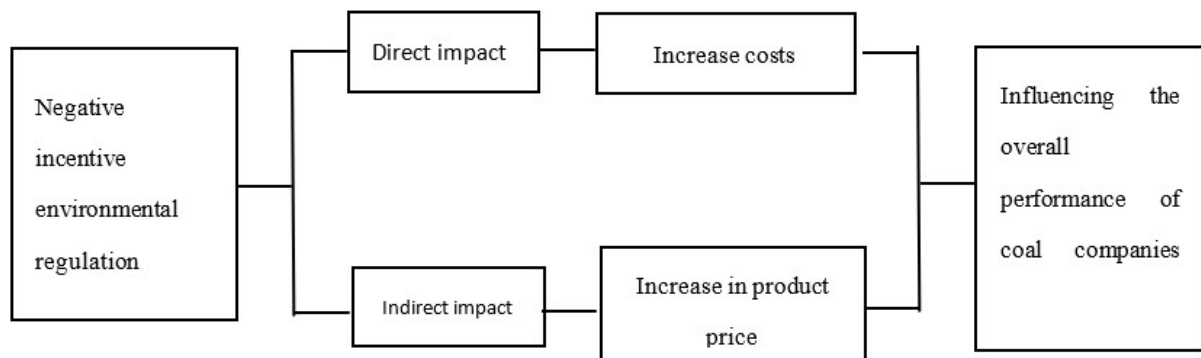


Figure 3. Path of negative incentive-based environmental regulation on the aggregate performance of coal companies

3.3. Analysis of the Impact of Voluntary Environmental Regulation on the Overall Performance of Coal Enterprises

Voluntary environmental regulation lies entirely in the subjective initiative of enterprises themselves, the government guides and persuades enterprises to actively participate, and enterprises can choose whether to participate or not on their own, which mainly includes environmental certification, resource agreements and so on. The impact of voluntary environmental regulation on the comprehensive performance of coal enterprises can be categorized into the following two situations.

3.3.1. Facilitating Business Transformation and Improving Overall Performance

When a coal enterprise adopts voluntary environmental regulation, whether it is joining an environmental certification system or signing a relevant resource agreement, it needs to improve all aspects from top to bottom before it can pass, and this behavior causes an increase in the enterprise's current environmental costs. However, after the whole process has been improved, the enterprise's cost in reducing pollutant emissions will gradually make up for the increase in environmental costs, forming a virtuous cycle within the enterprise and promoting the overall performance of the enterprise.

3.3.2. Building a Good Social Image and Improving Overall Performance

When enterprise-related information is made public, the coal company's voluntary environmental regulation will convey to the public its positive actions in environmental protection. Shaping a good image in society and gaining the trust of the public can substantially

increase the recognition of coal products and enhance market competitiveness, fulfilling its social and environmental responsibilities and improving its financial performance, achieving a win-win situation.

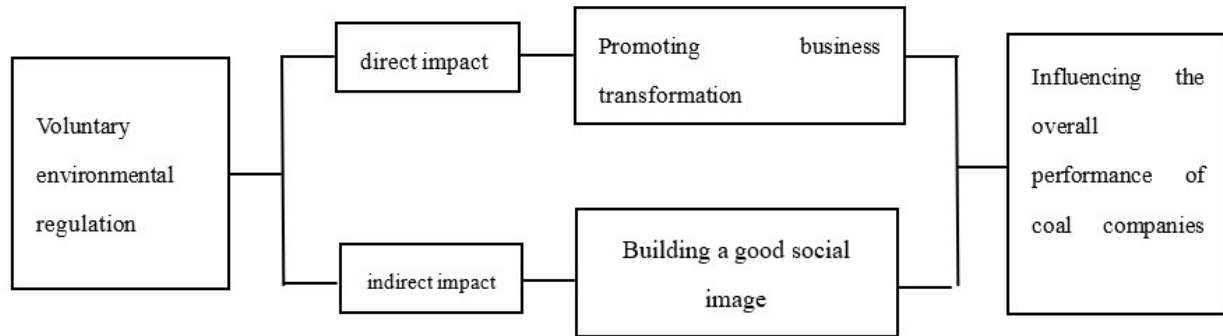


Figure 4. Impact path of voluntary environmental regulation on comprehensive performance of coal enterprises

4. Suggestions Related to the Impact of Environmental Regulation on the Comprehensive Performance of Coal Enterprises

Exploring the impact of environmental regulation on the comprehensive performance of coal enterprises plays an important role in accelerating the green transformation of coal enterprises and realizing sustainable development. To sum up, the impacts of command-and-control environmental regulation, market-based environmental regulation (classified into negative market incentive environmental regulation and positive market incentive environmental regulation) and voluntary environmental regulation on the comprehensive performance of coal enterprises are different, with their own characteristics and focuses. To improve the environmental performance of enterprises, it is necessary for enterprises to make corresponding countermeasures to each type of environmental regulation in the light of their own actual situation, so as to adapt to the requirements of environmental regulation on the environmental performance of enterprises; on the other hand, the government should pay more attention to each type of environmental regulation, and actively improve it, so as to make it really work. Specific recommendations are as follows:

4.1. Government

Firstly, the government should strengthen the supervision and management of environmental regulation, and on this basis, innovate the environmental regulation policy, taking the command-and-control and negative market incentive environmental regulation as the basic policy, combining a variety of specific policies, forming a complete regulatory system from production to sales, and giving full play to the optimal utility of 1+1>2. Secondly, the government needs to improve the subsidy to coal enterprises, encourage coal enterprises to purchase green energy-saving equipment, increase green innovation investment, promote the efficiency of pollutant treatment in coal enterprises, and improve the comprehensive performance of the enterprises through partial return of tax and reduction of tax rate. Finally, the government should scientifically promote the process of environmental regulation and governance, taking into account the different characteristics of coal enterprises as comprehensively as possible, so as to truly realize the win-win situation of improving the performance of coal enterprises and improving the environment.

4.2. Business

First of all, coal enterprises should pay attention to the protection of the environment, in order to realize sustainable development, it is necessary to consciously improve the awareness of environmental protection, actively undertake social responsibility, fulfill the policy requirements of environmental regulation, and make a change in the ideological concept first, in order to promote the green transformation of coal enterprises as soon as possible. Secondly, coal enterprises need to combine their own conditions and adopt appropriate environmental regulation policies. Coal enterprises should not regard the environmental regulation policy as a flood and reject all of them, they should consider their own conditions, correctly measure and predict the impact of realizing different environmental policies, and choose the environmental regulation policy that can really be adapted to the implementation of the policy. Finally, coal enterprises should actively communicate with the government, strengthen the two-way communication with the government, put forward the difficulties encountered in improving the transition and their own ideas, which will help the government to improve the environmental regulatory policies, but also help the government to help enterprises to solve the difficulties, the government and enterprises to work together, to improve the environment and social benefits of work will be twice the result with half the effort.

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