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The Impact of Carbon Taxes and Fossil Fuels Subsidies on the Development of Renewable Energy in Selected OECD Countries

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EXTENDED ABSTRACT

INTRODUCTION

Fossil fuels and the process of their exploitation and consumption have led to serious challenges and concerns in the field of energy and environmental issues. These challenges include; the security of supplying these fuels, the depletion of its resources and most importantly their impact on environmental pollutants and global warming. Therefore, providing practical solutions and adopting optimal policies in this field are necessary. The development of using renewable energies that are compatible with nature and the environment, producing less air pollution and are not terminate in the near future, can be the most important option to resolve this crisis. There are different tools to encourage replacing the fossil fuels with renewable energies. One of the most effective of which is to impose carbon taxes on polluting units that use these fuels. Furthermore, limiting the support and subsidies in the fossil fuel sector is another driver of this replacement. The present study is an attempt to investigate the existing relationships between the effects of these two tools among other variables on the development of renewable energy.

METHODOLOGY

The main purpose of this research is to investigate the applied policies and solutions and their results in order to develop renewable energy consumption, reduce environmental pollution and move towards sustainable development. The period of this study is from 2004 to 2014 and it covers the selected countries of the Organization for Economic Co-operation and Development (OECD) which are the leaders in the field of environmental taxation and have higher ratio of environmental taxes to GDP compared to other OECD countries. The method used to analyze the model is the vector autoregression with panel data, which captures the interactive behavior and interactions among the variables. The two important applies tools of this model are impulse response functions and analysis of variance decomposition. The GMM estimator is also used to estimate the model.

FINDINGS

The findings show that carbon tax has a positive and significant effect on the development of renewable energy and the impact of carbon tax shock on renewable energy consumption is positive among the sample countries. Thus, the increase in carbon tax has had an immediate and increasing effect on the consumption of renewable energy. Also, imposing a carbon tax which makes negative impact on fossil fuel consumption by reducing carbon emissions, has positive environmental effects. On the other hand, the impact of fossil fuel subsidies on renewable energy is negative. Increasing fossil fuel subsidies and the shock caused by it will immediately reduce the consumption of renewable energy. In contrast to the carbon tax variable, which increases the cost of fossil fuel consumption, the fossil fuel subsidies reduce the price and increase the consumption of fossil fuels. Therefore, carbon tax and fossil fuel subsidies play important roles in replacing the fossil fuels with renewable energies.

CONCLUSION

According to the estimates made in this research, the shock created by the carbon tax on the consumption of renewable energy in the studied countries was positive, so that the increase in the carbon tax had an immediate and increasing effect on the consumption of renewable energy. Carbon tax has a negative and significant impact on oil consumption as a representative of fossil fuels, because the shock caused by carbon tax causes the consumption of fossil fuels to decrease due to the increase in the cost of its use and by creating The replacement relationship with the consumption of renewable energy is effective both in reducing the consumption of fossil fuels and in the emission of carbon dioxide gas. Due to the creation of an income gap and due to the dependence of industries on fossil fuels, this shock causes a decrease in the GDP in the initial stages, but after a few periods, this effect increases and eventually causes an increase in the GDP. In contrast, subsidizing fossil fuels to consumers can create dependence on fossil fuels and prevent consumers from switching to clean energy sources.

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