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Green Fiscal Reforms, Environment and Sustainable Development

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Abstract

This paper aims to analyze the impact of the green fiscal reform policies on environment to achieve the sustainable development. To achieve this target, we discussed the possible fiscal reforms and analyzed its potential impacts on the environment and sustainable development. The paper presented several green fiscal policies which have been used in the developed countries such as carbon taxes, solid wastes and congestion taxes. We argued that green fiscal policies have positive impacts on the environment and sustainable development in the European countries. The policy makers in the developing countries should use the green fiscal policies to achieve the sustainable development. We recommend to use carbon tax policy and congestion tax as both of these policies are so effective in the developed countries.

1. Introduction

A green economy seeks to drive growth, jobs and environmental improvement by shifting investments towards clean and suitable technologies, natural capital and social infrastructure (Tatyana, 2004). The public expenditure and policy reforms should support the investments. Many countries these days such as G20 adopted 'green economy' as a key "voluntary" tool for sustainable development.

Fiscal policies are important in a green economy transition and governments have many of fiscal instruments at their disposal such as taxing fossil fuel use or emissions in different sectors; reforming energy subsidies that promote wasteful and environmentally harmful economic activity; and supporting clean technology and sustainable production with the help of fiscal incentives. The government should consider the social impact of the fiscal policy when they design it to achieve a green and inclusive growth, for example, low income households as well as economic and environmental impacts.

This paper aims to discuss the impact of the green fiscal reform policies on environment to achieve the sustainable development. For this purpose, we will analyze the possible fiscal reforms and discuss its potential impacts on the environment and sustainable development.

The organization of this paper will be as follows; section 2 presents the concept of sustainable development. Section 3 introduces the green fiscal policies. The impact of green fiscal policies and sustainable development will be presented in section 4. Section 5 shows the conclusions.

2. Sustainable Development

Sustainable development is always used by politicians all over the world, but the definition of it is still new and lacks a specific interpretation. The concept of sustainable development is still being developed and the definition of the term is being revised.

According to the common definition given by the United Nations World Commission on Environment and Development in 1987, sustainable development should "meet the needs of the present without compromising the ability of future generations to meet their own needs."

It is very obvious that this "intergenerational" equity would be not possible to achieve without having present-day social equity (Tatyana, 2004).

On the other hand, sustainable development could probably be called equitable and balanced, meaning that, in order for development to continue forever, it should balance the interests of different groups of people, within the same generation and among generations, and do so at the same time in three major interrelated areas of economic, social, and environment (Olivier, 2010).

Sustainable development is about equity, defined as equality of opportunities for well-being, as well as about extensiveness of objectives (Tatyana, 2004). Obviously, balancing so many different objectives of development is a big challenge for any country. For example, how could you compare the positive value of higher national security with the negative value of lower economic growth (loss of jobs and income) and probably irreversible, environmental damage? There is no specific scientific method of conducting such valuations and comparisons.

However, governments have to make these kinds of decisions regularly. If these decisions are to reflect the interests of the majority, they must be taken in democratic and participatory way. But even in this case, there is a high risk that interests of our children and grandchildren end up unaccounted for, because future generations cannot vote for themselves. Thus, to ensure that future generations inherit the necessary conditions to provide for their own welfare, our present day values must be educated enough to reflect their interests as well (Tatyana, 2004).

3. Green Fiscal Reforms

The term green fiscal reform(sometimes referred to as environmental fiscal reform, or ecological fiscal reform) is defined by the Organization for Economic Co-Operation and Development(OECD) as Hewett and Ekins (2014) a range of taxation and pricing measures which can raise fiscal revenues while furthering environmental goals".

A more general definition adds government spending on enhancing green investment to the scope of green fiscal reforms . In this part we would like to discuss the green fiscal reforms instruments and its advantages then we show some obstacles to implementation and how to overcome them as follows:

3.1. Green Fiscal Reforms Instruments

The instruments of green fiscal reforms may be divided into the following groups (Chaturvedi, Saluja, Banerjee, & Arora, 2014; Metcalf, 2015).

3.1.1. Pricing of Publically Provided Goods with Externalities

Governments often provide energy, water supply, collecting of solid waste and collecting water waste at prices below the marginal cost of production. Subsidizing these goods and services leads to overconsumption and environmental degradation. Subsidized energy and water supply threat the economy with natural recourse depletion. Furthermore, the overconsumption of energy raises the level of pollution. In addition to putting high pressure on public budgets, subsidies create significant economic distortions. Governments should try to raise the prices of these goods and services to be closer to the actual cost of providing them as a starting point of their green fiscal reforms.

3.1.2. Environmental Subsidies

Environmental subsidies are the direct and indirect financial support made by the government institutions to promote innovation or facilitate adaptation of green technology. They include supporting households to replace their old appliances (such as refrigerators and air conditions) with energy-efficient models. These subsidies are strong instrument to influence investment and purchase behaviors in a short period of time. But in the same time, they put pressure on government budgets.

3.1.3. Taxes on Pollutants

The main policy objective of energy tax(as an example of taxes on pollutant) is to raise the price of goods and services based on their energy content and so, provide the market with price signals and incentives to reduce pollution by replacing less polluting alternatives or by energy conservation. In determining the tax rate on energy we must try to ensure that, energy prices adequately reflect carbon dioxide emissions, air pollution, road congestion, and other major externalities associated with energy use (Heindl & Löschel, 2015).

3.2. The Advantages of Green Fiscal Reforms

Green fiscal reforms, if well designed, may achieve a number of goals which are important for both politicians and economists. We discuss some of them as follows:

3.2.1. The Environmental Imperative

The initial goal of any green fiscal reform starts with its environmental purpose, it may be the need to reduce excessive energy consumption, waste and greenhouse gases, congestion and accident, promoting renewable energy, to prevent dangerous climate change, urban air pollution or chemical inputs to soil and rivers. Over the years, climate change has become the most important of these issues, but green fiscal reforms have also been used to address many other environmental problems. Scientific evidence about the potential harm of polluting emissions to human health or the wider environment, including ecosystem services and the climate system itself, has been used to derive targets for emission levels at national and international level (Heindl & Löschel, 2015).

3.2.2. Double Dividend

Additional tax revenues will increase when the government imposes taxes on pollution produces. These revenues could also be used to compensate citizens who are disproportionately hit by pollution charges, to pay for needed environmental programs, to reduce government deficits, or to reduce taxes on labor and capital. If the new revenues are used in the later usage, it will achieve double dividend in the form of improving

environmental quality and alleviating unemployment (Koskela & Schöb, 1999). It means that we should shift some of the tax burden from activities we want to encourage (like working and investing) onto activities we want to discourage (like pollution). We should shift more from taxing "goods" to taxing "bads" (Repetto, Dower, Jenkins, & Geoghegan, 1992).

3.2.3. Reducing the Size of Informal Economy

Reducing the size of informal economy is an important objective in itself (Markandya, González-Eguino, & Escapa, 2013) as the informal or hidden economy creates big economic problems such as efficiency distortions (allocation is determined not by productivity but by "fiscally effective" productivity), competition distortions (firms that pay taxes face higher costs and more regulation) and equity distortions(incomes not declared result in a loss of revenue for the public sector and a higher tax burden for those who pay taxes).

Since the informal sector is not taxed, the green tax makes it to pay implicit taxes because it leads to an increase in the price of energy and other energy based products. Thus, via the green tax, the government should manage to shift from a system where only the formal sector pays taxes to a system where both the formal and the informal sectors pay such taxes. This reduces the incentive to be in the informal sector through raising the costs it to be closer to the formal sector costs.

3.2.4. Internalizing External Costs

Resource consumption and pollution create costs in the economy due to impacts on health and welfare . Such costs resulting from polluting or natural resource extracting activities, tend not to be included in the price of these activities. Private producer takes his decisions of determining the price and the quantity produced depending on only his private cost. If the economy operates without internalizing these external costs, then it will produce more than the socially optimal size of production. It means that there undesirable amount of pollution or depletion of resources and inefficient outcomes for society. If the externality can be measured accurately and internalized into prices with a tax measure (Pigouvian Tax), then society will gain. If the price of a polluting activity to individuals is 'corrected' first by the removal of any subsidy and then by imposing a tax to reflect the external costs, then there will be an incentive on them to change their behavior and reduce the associated pollution. On the other hand, the Pigouvian Tax revenue may be used to cure the negative effects of pollution on the society.

3.2.5. Stimulating Green Innovation and Growth

Imposing taxes on pollutants may push the producers to adapt a cleaner technology to reduce the amount of taxes he pays. In the same time the proceeds of this tax may be used by governments to encourage researches in green technology.

3.3. Some Obstacles to Implementation and How to Overcome Them

Some problems arise at the implementation of green fiscal reform. The following are some of these problems and a quick analysis for how to overcome them.

3.3.1. Impacts of Unilateral Energy Tax on the International Competitiveness of the Implementing Country

Countries which have higher demands for environmental quality, tend to impose taxes pollution. These taxes represent extra costs on domestic producers and affect international competitiveness.

In order to eliminate this negative effect on international competitiveness, pollution should be considered as a byproduct of consumption and study the effects of a unilateral green tax on consumption (Marconi, 2010). A tax on local consumption of polluting goods by changing the incidence of tax on consumers, would affect the demand curve for goods according to their pollution intensity, regardless of where those goods are produced. As a result world consumption and production of polluting goods are reduced unless technological change compensates.

In practice, Hill (1998) argued that unilateral environmental taxes are often used in connection with several tax exemptions. These exemptions most often apply to energy intensive industries.

3.3.2. Distributional Effects

Some studies such as Heindl and Löschel (2015) find that green tax reform tends to be regressive. Regressive effects occur mostly with respect to taxation of electricity and water particularly comparing them to income tax. For example, Parry (2014) argued that the loss in consumer surplus relative to annual income from a US carbon tax (prior to recycling) is about four times larger for the bottom income decile as for the top income decile But , on the other hand, some environmental taxes are progressive, like taxes related to car ownership and driving. This must be taken into account in designing green fiscal reform packages to compensate for regressive effects.

3.3.3. Tax Base Erosion

If the objective is to reduce emissions, then if the fiscal reform is successful it will undermine the tax base. The final effect here depends on elasticity. Many environmentally relevant products, such as fossil fuels or vehicles, have a relatively low price elasticity of demand. When such products are the bases for green taxes, then revenues from tax increases on these bases will increase even while emissions are reduced.

4. The Impact of Green Fiscal Policies on Sustainable Development

European Union countries have the longest experience with the implementation of green fiscal reforms, with revenue from environmentally taxes between 4.3% and 9.2% of total tax revenue in these countries in 2013 (OECD, 2015). Some of green fiscal reforms in deferent sectors especially in these countries and its impacts are summarized as follows:

4.1. Carbon or CO_2 Taxes

European Union countries agreed on reducing greenhouse gas (GHG) emissions by 80% to 95 % by 2050 compared to 1990 (Speck, 2015) Denmark, Finland, Italy, the Netherlands, Norway, and Sweden (and followed by other countries) have levied "carbon taxes" or "CO_2 taxes" that, reflect the varying carbon content of different fuels. However, governments introduced many exemptions due to concerns about competitiveness including for electricity generation, aviation fuel, and production of cement. In many countries, the proceeds from these taxes have been used to decrease the overall tax burden to achieve revenue-neutrality.

During the years between 1990 and 2012 (OECD, 2015) the biggest reduction in GHG emissions (about 30% of their levels at 1990) occurred in Denmark, Sweden, Germany, Belgium and United Kingdom. A reduction of about 20% in Finland, Netherland, Ireland, France and Italy. A modest reduction and sometimes increase in (GHG) emissions happened in the other countries.

In the debate of using green fiscal reforms or non-revenue-raising instruments (quantity regulations); Hill (1998) assesses the cost of reducing pollution using environmental taxes relative to using quantity regulations. Using a computable general equilibrium model of the Swedish economy, the study finds that the reduction of CO2 emissions between 5 and 25 percent could be achieved at a cost around 9 percent lower if taxes are used instead of quantity regulations. However, governments should not rely heavily on this green taxes because, reducing GHG emissions by 80% to 95% by 2050 (if accomplished) would dramatically shrink the tax base for energy taxes.

4.2. Solid Waste

Every year, about 11.2 billion tons of solid waste are collected worldwide, and decay of the organic proportion of solid waste is contributing to about 5% of global GHG emissions. The global yearly formal waste market is estimated at $410 billion (Benson, 2014).

The most popular green policy in this context is levying a tax on landfill. The UK landfill tax was introduced in 1996 causing a reduction in the quantity of inert waste disposed by 35% between 1997 and 2004 (Chaturvedi et al., 2014). Some countries such as Norway has also a tax on waste incineration. Several countries, particularly in the European Union, also impose taxes on certain consumer products that are environmental harm like taxes on batteries based on size and type.

On the other hand, there is often a lack in comprehensive solid waste management systems in developing countries. Many developing countries depend on informal waste pickers where work is dirty and hazardous. Workers generally lack sanitary services, health care or social benefits.

There are some experiences in formalizing waste picker communities. In Brazil (Chaturvedi et al., 2014) there is a legal recognition of the waste picker profession and a strong government lead in inclusion through guaranteed access to waste materials from federal buildings and financial assistance programs for waste pickers that organize into membership- based organizations. In some other countries, community-based organizations supported informal waste workers by extending micro- credit and arranging for external funding or by introducing health and education programs to raise standards in waste picker groups without forcing formalization.

4.3. Congestion Charge

A famous experience is the London congestion charge. A congestion charge zone of about 22 km 2 (a circle with a radius of 2.7 km) has been defined in downtown London (Prud'homme & Bocarejo, 2005). Since February 2003, vehicles driven in this zone between 7:30 am and 6: 30 pm on week-days must pay a charge of 5 pounds (increased to be 8 pounds now) per day. The zone traffic reduction objectives have been reached. The number of vehicle km in the zone declined by about 15%, and their speed increased by about 17%.

A number of factors have led to the political acceptability (Metcalf, 2015) First, London suffered from severe traffic congestion in the inner city. Second there was a comprehensive and well functioning public transport system in place that could serve as an alternative mode of transportation into the congestion charging zone. Third, the geography of roads in and Around London, including the InnerRing Road, helped to create a natural boundary for the charging zone. The idea behind congestion charge is that users of roads

should pay for the additional cost they impose on other users of the road like a time cost and the increasing probability for accidents. In spite of its technical success, some studies discussed that, including the change in rents in the cost/ benefit analysis can increase the social cost by up to 200% and decrease the optimal road usage by 40% (Rouhani, Knittel, & Niemeier, 2014).

5. Conclusion

This paper aims to discuss the impact of the green fiscal reform policies on environment to achieve the sustainable development. For this purpose, we will analyze the possible fiscal reforms and discuss its potential impacts on the environment and sustainable development.

The paper argued that European Union countries have the longest experience with the implementation of green fiscal reforms, with revenue from environmentally related taxes ranges between 4.3% and 9.2% of total tax revenue in these countries in 2013 (OECD, 2015).

The policy makers in the developing countries should use the green fiscal policies to achieve the sustainable development. We recommend initially eliminate energy subsides gradually to reduce price distortions which is a very important element to achieve sustainable development. After that the policy makers will be able to use carbon tax policy and congestion tax as both of these policies are so effective in the developed countries.

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