ENVIRONMENTAL TAXATION AS A BOOST MECHANISM FOR EUROPEAN UNION GREEN GROWTH: THE GREEK RESPONSE

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Abstract

Before the early negative effects of human activity on the environment and nature became apparent, there was no particular concern. The consequences of exponential population growth over the years brought a negative impact, increasing the risk and concern for the future. In recent decades, there has been an admittedly large, joint, and ambitious effort at the international and European levels to promote and implement the values and rules of green development and growth. Green growth is crucial regarding the policy implemented by the European Union (EU). Therefore, it calls on all its member states to participate in this effort concerning the environment and natural resources, having as its main tool environmental taxation. This paper primarily aims in proving that environmental taxation facilitates, through the proper implementation of European Union rules, the achievement of green growth. The research methodology followed, was the study of the environmental indexes of the European Union countries from 2002 to 2020, including Greece. They were analyzed and compared to the European Union average indexes (Eurostat, 2020). The study results highlighted that environmental taxation is crucial in enhancing green growth by increasing the revenues of state funds and reducing environmental problems at European and international levels.

Keywords: Green Growth, Environmental Taxes, European Union, Greece


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1. INTRODUCTION

The increase in the proportion of the population, the problem of urbanization, industrialization, combined with the development of technology, economic growth, and the increase in per capita income are threats to the environment. All of the above is the source of the relationship between the economy and the environment. They express the risk of depletion of natural resources. In recent decades, a great notable effort has been made, at the European and international levels to promote and implement the values and rules of green growth and the need to solve environmental problems, such as climate change and pollution. This paper addresses the following research question:

*RQ: How does environmental taxation participate and contribute substantially to the promotion of green growth?*

For the literature part, we adopt an in-depth review of the systematic literature and we analyze studies and peer-reviewed journal articles, published between 1996 and 2020 in established and quality journals. The research methodology that was followed is the statistical insight analysis of the indexes (Eurostat, 2020) during the period of 2002-2020. The countries of Liechtenstein and Switzerland were excluded due to the absence of data from the Eurostat tables for the research years period. Therefore, in this paper, we aim to examine and compare the differences between the European Union (EU) member states and will also list all the elements of the EU’s route toward green development (Eurostat, 2021).

The majority of researchers (Stavins, 2003; Ward & Cao, 2012; Faure & Weishaar, 2012; Daugbjerg & Svendsen, 2003; Parry et al., 2012) have analyzed the objectives and the strategy of green growth and how much the environmental taxes contribute or not to its main objectives, which is to protect the environment and the natural resources.

This paper aims to exfoliate light on how environmental taxation facilitates, through the proper implementation of the European Union rules, the achievement of green growth.

As far as environmental taxation is concerned, we consider a “green” tax when there is a tax base. According to the Organisation for Economic Co-operation and Development (OECD) organization and the European Union, a tax is considered an environmental one, when it has a mandatory, unilateral payment to the state based on the environmental importance assigned to it (OECD, 2006). At the same time, the designation as an environmental tax is not always clear and special attention is required to be given, due to the diversity of each state and its needs. Based on the decisions of the European Union, environmental taxation varies from state to state. But for the correct use of the statistical results, its member states are asked to follow the rules and the definitions given by the European Union and the OECD organization (European Environment Agency [EEA], 2006).

This study is the first to provide, a statistical insight analysis of how environmental taxation affects green growth in the EU. It also develops perspectives, critical reflections, and avenues for future research in this area.

The rest of the paper is organized as follows. Section 2 presents the literature review. Section 3 describes the methodology that was followed, which is the statistical insight analysis of the indexes (Eurostat data), on how environmental taxation affects green growth in the EU, during the period 2002–2020. Section 4 presents and discusses the findings while answering the research question. Section 5 provides the conclusion.

2. LITERATURE REVIEW

Through environmental taxes, the revenues of state coffers can be increased most of the time, but their main purpose is not achieved in this way. The main objective of environmental taxation is the respect, the protection of the environment and as well as the restriction of behaviors during the production and consumption of natural resources and products, as these behaviors bear negative consequences. For this reason, “green taxes” are a way of highlighting and solving the problems and weaknesses that occur in the market. As a result, the price of a product characterizes environmental costs and is an example to avoid, due to the lack of respect, proper education, about the environment, and proper exploitation of natural resources. In addition, we can classify them in relation to the environmental policy and the tax base into three categories: 1) energy taxes are taxes on energy production and goods produced and used during transport, etc. Energy taxes include taxes on stocks of energy products, biofuels, and all renewable sources. Before examining, 2) transport taxes we should mention that taxes that depend on CO2 emissions and are not related to the actual use of vehicles are included in transport taxes (Eurostat, 2013). Transport taxes are taxes, due to the use of means of transport, equipment, and transport services. For example, taxes on vehicles, airplanes, ships, etc., but also duties on flights. In addition, traffic taxes and means such as electronic cars, and means of transport that respect the environment are classified as transport taxes. 3) Pollution taxes are the taxes, which are imposed for actions that pollute the air and the water. The presence of waste, lubricating oils, and noise emissions are some of the causes of environmental pollution which lead to the imposition of pollution taxes (Eurostat, 2013).

Firstly, we should point out, that environmental taxes give the polluter the option to choose, what will be more beneficial for his activity, i.e., what will be in his best interest: i.e., choosing to pay more taxes or to reduce the environmental pollution or the pollution caused? A typical example is when the "polluter" increases the cost of reducing pollution and prefers to pay more in green taxes, than the one who chooses to reduce the cost of pollution and consequently the amount of pollution (EEA, 1996; Stavins., 2003). In addition, environmental taxes are transparent, due to the detailed analysis of why they are imposed, what are the unit costs for the polluters, which and how they can be exempted for the benefit of the environment, and which are those who serve to reduce the tax evasion. Finally, the educational purpose of these taxes is highlighted, in relation to the rules that must be met to protect the environment (Bassi, 2009).
According to De Miguel et al. (2015) with the imposition of green taxes, we have an increase in state revenues, which results in the presence of a double dividend. By increasing state revenues and extending budgets, it becomes a valuable ally in the fight against the economic crisis and in balancing the budgets of each state. The revenues therefore, in addition to strengthening and solving the environmental problems, also contribute to the strengthening of other problematic taxes and thus, lead to a double dividend (De Miguel et al., 2015). At the same time, revenues from environmental taxes will continue to grow and provide revenues to the state. This is due to certain activities that pollute the environment. For example, the green tax imposed on plastic bags has resulted in their use being limited to a very large extent on one hand while the state coffers are being filled by this tax on the other (Bassi, 2009).

On the contrary, environmental taxation since the beginning of its implementation has encountered many obstacles and continues to encounter them to this very day. But apart, from the obstacles it encounters, it seeks to find ways and solutions to be able to overcome them and focus on its goal for the environment, regardless of the existence of many opponents of its implementation.

This results in the existence of disadvantages and problems that make its implementation difficult. Next, we will list a number of drawbacks and obstacles, encountered when implementing green taxation.

Often, environmental taxes do not bring highly anticipated results. Some of them are the failure to determine the environmental and social costs but also the research, and the adaptation of the necessary data for polluting actions (Ward & Cao, 2012). On the other hand, in the short term, green taxes may increase the tax base, but in the long run, this carries risks of declining revenues when it comes to environmental benefits (Bassi, 2009).

In addition, green taxes are also classified as costly and often do not yield the promised profits and revenues expected from the tax levies. When timeframes are tight and the reactions should be immediate, regulations are replaced by green taxes to avoid their unpleasant consequences (Faure & Weishaar, 2012). Moreover, when environmental taxes do not meet the appropriate conditions for their application, they can cause additional damage mainly when: a) the refund of taxes does not effectuate revenue to businesses, b) there is no tax reduction, and c) there is a lack of environmental subsidies (Daughbjerg & Svendsen, 2003; Parry et al., 2012).

With the imposition of green taxes, there is the probability of creating a negative climate in the competitive field of products. This problem is mainly spotted in the energy sector (EEA, 1996). To optimally face this problem, the companies that are affected by environmental taxation and are lagging behind, in terms of competitive advantage and the continuously rising costs in relation to others, either in the same country or in the international market (Kosonen & Nicodème, 2009), turn their interest to countries with reduced environmental taxes (Ekins & Speck, 2000). Apart from the environmental taxes, enterprises in the energy sector in the EU have to adopt corporate social responsibility in their disclosures, showing their social, environmental, and ethical activities related to their financial performance (Fortuna et al., 2020).

Not only in the EU, but also in Australia, green growth, environmental accounting, and corporate social responsibility in general, gain more ground (Backhouse & Wickham, 2020), adopting legislation that protects the environment and trying to promote good practices from enterprises in order to be more eco-friendly.

In the last decade, research showed that corporate social responsibility has increased by the impact of board composition (Velte, 2019). This means that enterprises include practices of sustainable corporate governance, while legislation of sustainable development is introduced in order to promote green growth, fewer emissions, and natural environment protection.

The above leads to the conclusion that the EU is forcing more sustainable management of enterprises with high quality in corporate social responsibility (Velte, 2022). Within the EU, many enterprises have adopted or at least try to adopt good practices of corporate social responsibilities including environmental taxes (Lahjie et al., 2021), although there are significant steps to be made to proceed to full green growth.

3. RESEARCH METHODOLOGY

The policy that the member states of the European Union are called to follow and implement for the protection of the environment, aims to encourage and enforce green growth for a sustainable future. In order to achieve the objectives of green growth, the competent political management bodies of the European Union have developed political and economic mechanisms that seek to solve environmental problems at minimal cost, with little “distractions” from external factors. At the same time, they aim to increase revenues that enhance the environmental goal (Eurostat, 2020).

The revenues resulting from green taxation and constituting the share of all taxes and social contributions, is the indicator that leads to the green development of the tax system and is a part of the internalization of environmental burdens, in each economy separately in each state. With the result of the index, reaching 10% of taxes and social contributions in the countries of the European Union, green taxes, as we will examine below, by 2020 lead Europe on a green route (Eurostat, 2020).

For the monitoring and analysis of environmental taxes, in accordance with the decisions of the European Union, the indexes of environmental taxes are designed. First, the index "Environmental taxes as a Percentage of total revenues from taxes and social contributions" looks in route with green growth in EU countries (TSC). At the same time, it is also an index included in the scoreboard, which monitors resources and the success of their efficient use. This leads to an increase in the share of environmental taxes.

At the same time, however, it points out the different policies and enforcement of environmental taxes by each EU member state. With the index "Environmental taxes as a percentage of
Gross Domestic Product (GDP)” we will compare the taxation imposed, to protect the environment based on the differences between the economies of states.

We will analyze the indexes during the period 2002-2020, according to all Eurostat data, with some gaps in the countries of Liechtenstein and Switzerland due to the absence of data from the Eurostat tables for the intermediate years from 2002 to 2020. Based on the directives of the European Union, that we presented and analyzed in the previous chapters, in this paper we will try to examine and compare the differences between the EU member states and also list all the elements of the EU’s route toward Green development (Eurostat, 2021).

An alternative form of research would be the critical review of the systematic literature, regarding the years from 2002 to 2022, on how environmental taxation and its changes over the years affect the course of green development for the countries of the European Union.

4. RESULTS AND DISCUSSION

4.1. Statistical insights into the evolution of the environmental taxes in the EU countries

In Figure 1, the average values range from Iceland’s 3.21% to Bulgaria’s 8.78%. The 5.57% difference between the environmental tax revenues of the EU countries exists due to the diversity of the environmental tax policy implemented by each EU state. The large deviation of 5.57% is also due to the different timing of the accession of some countries to the EU. In 2004, ten new countries entered the EU, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Malta, Lithuania, Poland, Slovenia, and Slovakia. In 2007, Bulgaria and Romania joined, and, finally, in 2013, Croatia. With the entry of the new countries into the European Union, there were institutional and strategic changes in the political direction that was valid until that time period. The changes that occur, take time to be imprinted and absorbed in order to bring the desired results.

**Figure 1.** Indicator “Environmental taxes as a percentage of total revenue from taxes and social contributions” (2002–2020)

According to statistics from 2002 to 2020, EU countries had revenues in 2020 from environmental taxes of €299.9 billion. This represents 2.2% of the EU’s gross domestic product (GDP) and 5.4% of the EU’s total government revenue from taxes and social contributions (TSC).

Table 1 shows the distribution of revenues, from environmental taxation in relation to the type of tax and those who are obliged to pay.

We, therefore, conclude that 77.2% of the revenues come from taxes levied on energy consumption. The remaining taxes levied on
transport and pollution, amount to 19.1% and 3.7%, respectively, for all the EU countries. Environmental taxation varies, according to the area in which it is levied; 51.5% of businesses have to pay energy taxes in 2019 compared to the 44.0% of households, which also have to pay the respective taxes. Accordingly, 66.4% and 55.9% of the households in 2019 are obliged to pay taxes on transport and pollution (Eurostat, 2021).

**Table 1.** Total environmental tax revenue by tax type and taxpayer (the EU, 2019–2020)

<table>
<thead>
<tr>
<th></th>
<th>Million euros</th>
<th>% of total environmental taxes</th>
<th>% of GDP</th>
<th>% of total government revenue from taxes and social contributions</th>
<th>% of (specific type of) environmental tax revenue (by tax payer)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2020</td>
<td>2019</td>
<td>Corporations</td>
<td>Household</td>
<td>Non-residents</td>
</tr>
<tr>
<td>Total environmental taxes</td>
<td>299,930</td>
<td>100.0</td>
<td>2.24</td>
<td>47.7</td>
<td>48.7</td>
</tr>
<tr>
<td>Energy taxes</td>
<td>231,495</td>
<td>77.2</td>
<td>1.73</td>
<td>4.19</td>
<td>51.5</td>
</tr>
<tr>
<td>Transport taxes</td>
<td>37,278</td>
<td>19.1</td>
<td>0.43</td>
<td>1.94</td>
<td>33.1</td>
</tr>
<tr>
<td>Taxes on pollution</td>
<td>11,157</td>
<td>3.7</td>
<td>0.08</td>
<td>0.20</td>
<td>43.0</td>
</tr>
</tbody>
</table>


Through the representation of environmental revenues reflected in Figure 2 in 2020, revenues increased by 88.5 billion compared to 2002’s 2.2% of GDP. At the same time, environmental taxes as a percentage of total revenues from TSC decreased by 1.2% (from 6.6% to 5.4%) by 2020. The trajectory of environmental indexes based on GDP and taxes from social contributions, show changes in the years 2008 and 2016. In 2008, a turning point, due to the economic crisis, affected the international economic and political scene. In 2009, due to the economic crisis and the decline in nominal GDP, as well as public revenues, an increase in price levels was noted. For this reason, they remained relatively balanced for the next few years to come. It is worth mentioning that in 2017, there was a small decline (Eurostat, 2021).

**Figure 2.** Revenues from environmental taxes by type and total environmental taxes as a share of TSC and GDP (the EU, 2002–2020, %)

Source: Eurostat (2020).

**4.2. The environmental indexes of Greece from 2002 to 2020 compared to the European Union**

Greece, as a member of the European Union since 1981 and a member of the Eurozone since 2001, respects and implements its rules and policies. Green growth and environmental taxation are part of the European Union’s policy and Greece is called upon to implement them based on its own economic and political system, in order to achieve the main goal of a sustainable future. The road has not been easy and up to this day it faces many obstacles both internally and externally.

With Figure 3, we will track the revenues from environmental taxes of total revenues and social contributions (TSC) from 2002–2020 compared to the average of the member countries of the European Union. From 2002 to 2015, there is an upward trend in the environmental index of total revenues and social contributions by +3.23%. The increasing trend is based on the appearance and imposition of the three new environmental taxes that were implemented in Greece. Until the time period of 2016–2017, environmental taxes were divided only into 2 categories, energy taxes, and transport taxes. In 2017, Greece is placed in first place with a percentage of 7.6% compared to the respective 4.59% of the other member countries of the European Union. In 2018, was the beginning of the implementation of the tax imposed for the use of plastic bags which was based on the thickness of the bag (15–50mm). They were taxed at first at €0.03/piece plus €0.04 tax and within the following year the bags were taxed €0.07 €/piece plus €0.09 tax.
Figure 3. Indicator “Environmental taxes as a percentage of total revenues from taxes and social contributions” (Greece–the EU, 2002–2020)


In the following Figure 4, we compare the revenues generated from energy, transport, and pollution taxes in Greece from 2002–2020. Energy is a sector that offers a lot to the Greek State, boosting the coffers by €6 billion according to the data of the Hellenic Statistical Authority (ELSTAT) for the year 2020. Greece is strongly supported by energy imports and the minimum quantity of its own production. In 2016, we observe a reduction in energy taxes by -0.9% from 2015 and -0.07% in transport taxes that continues until 2020 due to the pandemic of 2019 (Eurostat, 2022; Greek Statistical Authority, https://www.statistics.gr/). Additionally, energy excise duties in Greece are divided between energy products such as oil, petrol, natural gas, and electricity. Energy revenues in 2015 were €3,967 million and accounted for 2.26% of GDP (European Commission, 2019).

Figure 4. Revenue from environmental taxes on energy, transport, and pollution in Greece (2002–2020)


Figure 5 shows the evolution of transfer tax revenues in Greece from 2002 to 2020, compared to the average transfer tax revenue in the EU. Due to the economic crisis that has erupted since 2007, we observe a reduction in transport tax revenues, which took at least 8 years to reach the same levels of revenues, that were generated before the financial crisis. By 2008, we have an increasing course of transfer tax revenues with the average for Greece standing at 2.51%, while from 2008 to 2020, despite the difficulties, we have a small drop of 0.50% of the respective units. Greece over the years, with an average of 2.16% is almost one percentage point above the EU average, which is 1.20% for the period 2002–2020. Another important point worth mentioning in environmental transport taxes, is the road tax. According to the provisions of the European Directive (92/61 EC, 98/69 EC), they are defined according to the type of vehicle, engine capacity, use, and technology, when it comes to carbon emissions (Eurostat, 2021). However, in 2001, with the amendments of Law 2948/2001, and in 2012, many changes were made. Since 2010, vehicles have been classified based on their carbon dioxide emissions (grams per kilometer). Furthermore, hybrid vehicles with an engine up to 1549cc, electric passenger vehicles, and those using hydrogen are exempted from road tax (https://www.lawspot.gr).
5. CONCLUSION

This study proved that environmental taxation is a valuable tool in the arsenal, when it comes to enhancing the course of green growth, increasing the revenues of state funds, and reducing environmental problems at the European and international levels.

According to the index “Environmental taxes as a percentage of total revenue from taxes and social contributions (TSC %)”, the large dispersion that exists between EU countries was reflected. The difference was estimated at 5.57%, with the higher percentage observed in Bulgaria (8.78%) and the lowest average in Iceland (3.21%). This is due to the different policies of each EU member state and the different environmental taxation.

In addition, the deviation was found to be due to the entry of 10 new countries into the EU, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Malta, Lithuania, Poland, Slovenia, and Slovakia, which joined in 2004. Bulgaria and Romania joined in 2007 and Croatia finally in 2013.

It turned out that the taxes levied on energy, with an average of 4.2% of EU countries, exceed 50% compared to the revenues of other environmental taxes such as transport tax, with an average of 1.03%, and pollution tax with an average of 0.19%, respectively.

Moreover, it was calculated that with +1.20% percentage points, Greece is well above the EU average for the period of 2002–2020. This increase is due to the imposition of three new environmental taxes applied in Greece, such as the tax on plastic bags.

It was estimated that in 2017, Greece received €376.4 million compared to the EU average of €241.76 million. The difference of €134.64 million is the result of high excise duties, such as motor fuel, and taxes on electricity and natural gas.

Finally, it was found that energy is a sector that offers a lot to the Greek State, raising the coffers by €6 billion. In 2016, we had a decrease, of -0.5% in energy taxes from 2015 and -0.07% in transport taxes, which continues until 2020 due to the pandemic of 2019. Energy revenues in 2015 totaled €3,907 million and accounted for 2.26% of GDP.

In conclusion, it was found that environmental taxation in Greece most of the time, only brings profits to the state coffers. Due to the nature of the revenues, the environmental objective is not being achieved. Thus, through the proper information and removal of the anchorages of the country’s political scene, we will be able to strengthen the green development path for the years to come.

The limitation, to which our research is subject, is the absence of available data from the Eurostat tables, for Liechtenstein and Switzerland, during the period between 2002 and 2020.

The results of our study will benefit fellow researchers, policymakers, official authorities, practitioners, and scholars since it provides an original in-depth, and comprehensive statistical insight analysis on how environmental taxation affects green growth in the EU. It also develops perspectives and critical reflections, which can open up new avenues for future research.

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