



Innovation and Society 2013 Conference, IES 2013

# A methodological approach for assessing policies: the case of the Environmental Tax Reform at European level

Arbolino R.<sup>a</sup>, Romano O.<sup>a\*</sup>

<sup>a</sup>*Department of Human and Social Sciences, University of Naples "L'Orientale", L.go San Giovanni Maggiore 30, Naples 80134, Italy*

## Abstract

The paper aims at illustrating a methodological approach for evaluating the consequences of adopting an Environmental Tax Reform (ETR) in European countries. The evaluation will be structured in three integrated steps: i) Pre-post comparison and with-without comparison; ii) Hierarchical Cluster Analysis; iii) Quantitative SWOT analysis. Results will show differences among countries before and after the introduction of the reform on three macro areas, environment, employment and innovation, as well as between adopting and no-adopting countries; will highlight heterogeneous paths and common challenges and will suggest future policies within the framework of the environmental tax system. The paper aims at contributing to the debate on the *ex post* evaluation of the ETR as well as illustrating the use of the multivariate analysis for providing insights to the SWOT analysis.

© 2014 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/3.0/>).

Selection and peer-review under responsibility of the Organizing Committee of IES 2013.

*Keywords: Evaluation; multivariate analysis; SWOT analysis; Environmental Tax Reform; development policies*

## 1. Introduction

The Environmental Tax Reform (ETR) is based on a “revenue recycling system”, that allows at using revenues from environmental taxes for reducing those on labour or capital (EEA, 2011). As a result ETR can deliver five dividends: increased resource productivity and eco-innovation; increased employment; improved health of environments and people; a more efficient tax system; and a better sharing of the financial burdens of an ageing population (Anderson et al 2010, pag.2). In the current austerity contest, using efficiently the taxation framework, rather than measures based on the expenditure side of the budget (Eurostat, 2011), allows at “induce behavioural

\*Corresponding author. Roberta Arbolino Tel.: +39-081-690-9482; fax: +39-081-690-9482.  
E-mail address: [rarbolino@unior.it](mailto:rarbolino@unior.it)

changes and serve both fiscal and environmental purposes” (European Commission, 2011, p.111). The concept of ETR rose after the Jacques Delors White Paper on Growth, Competitiveness and Employment in 1993 (Eurostat, 2011). Since then 6 countries in Europe have implemented it: namely, Denmark, Finland, Sweden, Germany, The Netherlands and the United Kingdom, shifting revenues from environmental taxes (on energy, transport, resources and polluting activities) to labour, capital, Personal Income tax (PIT), Social security contribution (SSC) of employers and employees (Ekins and Speck, 2011). Estonia and Czech Republic joined the mentioned ETR’s countries respectively in 2005 and 2008, giving rise to the second phase of the ETR’s implementation in 2012 and 2013( Ercolano et. al 2014).

The *ex post* evaluation of ETRs (Barker et al., 2009; Ekins. et al., 2011; Green Fiscal Commission, 2009) offers the opportunity to policy makers to learn from tax reforms that have been implemented in the past, thereby increasing the probability of better reforms in the future (Brys, B. , 2011). However, from a methodological point of view it can be highlighted that: 1) *ex post* evaluations of the ETRs implemented are scarce; 2) they do not always isolate specific (i.e. employment) effects from more general macroeconomic effects; 3) it can be difficult or impossible to isolate the effect of the tax by itself, as environmental taxes are often introduced as part of a ‘package’ of several environmental policies (Green Fiscal Commission, 2009); 4) results are shown mostly *within* countries.

The paper aims at contributing to this debate by providing a multiple steps approach, through which to investigate and compare the performance of European countries. First, the *pre-post* and *with-without* comparison will be carried out. Based on a careful choice of a wide set of indicators, the analyses will show how the achievement of pre-defined objectives has changed over a relevant time span and across countries, distinguishing between those who have implemented the ETR and those who have not.

Secondly, the clusters analysis will group the countries along homogeneous characteristics, maximising differences between clusters, according to a set of indicators belonging to three macro areas, namely environment, employment and innovation. This will lead to the final step of the approach, consisting in a quantitative SWOT analysis, based on the results of the previous steps. Conversely to the typical approach for which the SWOT analysis is employed as an *ex- ante* evaluation method, in this case it will represent a support “after” the implementation of the reform on which to rely for necessary changes for overcoming specific issues investigated in the cluster analysis and “prior” to the implementation of the reform for envisaging possible developments strategies.

## 2. Data and methodology

The analysis has been carried out on 26 European member states<sup>†</sup>, drawing data from EUROSTAT. Two categories of indicators have been used: *activity indicators*- concerning activities carried out in terms of fiscal tools adopted in the countries- and *result indicators*, as outcomes of the ETRs. Following the literature on the *ex post* evaluation of the ETRs, results indicators have been grouped in three macro areas: environment, employment and innovation. While indicators of environmental quality and employment can be straightforward and their selection depends mainly on the availability of data, in measuring “innovation” we embraced the EEA (2011) approach, which distinguishes between *input* and *output* indicators. The most common *input indicator* devoted to the innovation process is *R&D expenditure*, while *output indicators* such as *patent applications* are likely to provide a method to measure eco-innovation and accounting for the outputs from the process. In order to obtain a compelling picture of the countries we included also demographic and economic variables. In total 33 variables have been employed (See Appendix 1) over the years 2000 and 2008.

Our methodological approach is based on a three integrated steps: i) Pre-post comparison and with-without comparison; ii) Hierarchical Cluster Analysis; iii) Quantitative SWOT analysis.

- The first step aims at measuring the effectiveness of the ETRs through a spatial comparison and two periods time comparison. The *pre-post and with-without comparison* approach (Heckman, 2001) identifies changes that would

---

<sup>†</sup> According to the availability of data, countries are: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Sweden, Poland, Portugal, Slovakia, , Slovenia, Spain, Romania, The Netherlands, United Kingdom.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات