Land Use Policy 69 (2017) 386–391

Contents lists available at ScienceDirect

Land Use Policy

journal homepage: www.elsevier.com/locate/landusepol

Population and industrial pressure on local environmental expenditure in the Italian regions

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ARTICLE INFO

JEL classification:
C23
Q58
R1

Keywords:
Environmental expenditure
Regional public spending determinants

ABSTRACT

The objective of this paper is to test for the presence of pressure by industrial groups and population on the local environmental expenditure of Italian regions in the period between 2001 and 2014, and evaluate their effects. Blundell and Bond system estimators are used to estimate the econometric model. Results evidence the presence of population pressure on government environmental services supply, and a decrease in the demand for local environmental public services in higher-wages industries for the whole sample. In the Northern and Central regions both population and industrial pressure are present, and all the regressors have the expected effect on regional environmental expenditure. Policy-makers' decision-making seems not to be driven either by population or by local industries in Southern Italy.

1. Background

In recent decades, environmental issues have frequently been the focus of studies in the economic literature. However, analyses of the determinants of public environmental expenditure have been less common, especially at a regional level. Public expenditure to protect the environment produces benefits for the entire population, with such goods being non-excludable (Pearce and Palmer, 2001). Environmental protection, in terms of public expenditure, is therefore the classic public good. Furthermore, environmental management involves different government levels, and may spill over from one level to another (Oates, 2001). For example, if air pollution control is considered, the role of the State becomes important also at the local level. Environmental quality may be dissimilar in different regions, but also depends on the aggregate emissions level. As a consequence, some environmental measures (setting emission standards, for example) are determined by central government (Oates, 2001) but, also in this case, local governments are responsible for implementing and maintaining regulations.

The economic literature has, from time to time, identified different factors influencing environmental expenditure. Economic variables, such as resource availability and wealth of a region, affect environmental expenditure, as well as other sectoral expenditures (Case et al., 1993; Costa-Font and Moscone, 2008, amongst others). Another strand of the literature shows that social capital (Pretty and Ward, 2001, Pretty 2003), social relations and legal norms (Bilz and Nadler, 2014) may induce pro-environmental behaviour (Torgler and Garcia-Valiñas, 2007), which may indirectly affect public expenditure. Incumbent parties in regional government may also influence regional expenditure. In the health sector, the literature (Henrekson, 1988; Costa-Font and Moscone, 2008) predicts that left-wing governments increase public expenditure more than those on the right. Yet it is also argued (Tavares, 2004) that left-wing parties may gain credibility by cutting public expenditure while the right generally raise tax revenues. Starting from Grossman and Helpman's (1994) common agency theory, the main goal of governments should be social welfare maximisation, but policy-makers' choices may also be driven by other factors such as pressure from local economic groups (Stigler, 1971; Keohane et al., 1998, among others). This last factor is particularly relevant at the local level, where governments aim to improve the well-being of residents and may thus be subject to pressure from industrial groups and the population for service provision.

As mentioned above, environmental policy is the result of joint action by central and local governments (Oates, 2001). Local policies may have the same goals as their central counterparts, such as protecting residents and taking care of the environment. However, because stricter environmental standards increase costs for firms which may decide to migrate elsewhere, local government may have an incentive to reduce emission standards or ease pollution control in order to give local entrepreneurs an advantage (Oates and Schwab, 1991; Wilson, 1996). Furthermore, the influence of residents in driving local policy makers' decisions on the environment may be twofold, and depends additionally on the inter-temporal preferences of individuals. If residents do not care about the health of future generations, they will not pressure local government to make environmental expenditures, whereas the opposite will happen if they are less short-sighted. In an inter-temporal context, in a two-period model, Oates and Schwab

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http://dx.doi.org/10.1016/j.landusepol.2017.09.032
Received 13 July 2017; Received in revised form 15 September 2017; Accepted 21 September 2017
Available online 28 September 2017

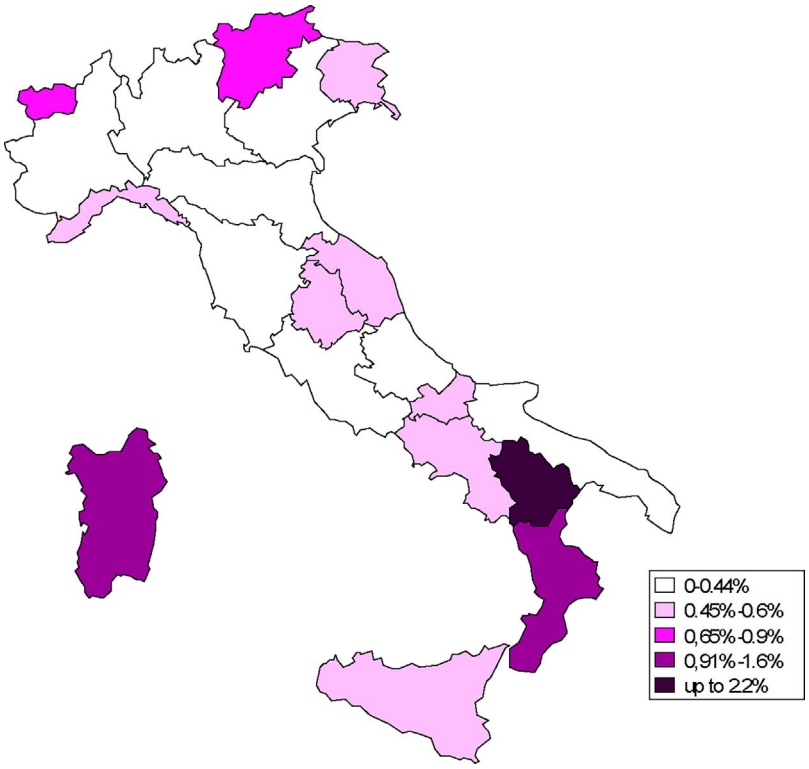

Fig. 1. Environmental expenditure (EE) in 2001 (percentage of *GDP)*.

(1996), among others, show that capitalisation induces the jurisdiction's inhabitants to make the most efficient choice in terms of future environmental quality.

Given the above considerations, the aim of this paper was to test for the presence of pressure from residents and industrial groups on environmental expenditure in Italian regions (NUTS2 level) in the period from 2001 to 2014. To my knowledge, this aspect has not yet been analysed in the econometric literature. There are some studies in the USA that have investigated the pressure effects on Environmental Protection Agency decision-making, but not at a local level. Cropper et al. (1992), for example, found a significant role of business and environmental organisations in determining the rules established by the Environmental Protection Agency. On the other hand, Magat et al. (1986) evidenced that neither economic efficiency nor the participation of the industrial sector had any influence in decision-making on setting effluent standards. The only exception is supplied by Wang and Di (2002) on the determinants of the Chinese government's environmental performance at township level. However, the authors did not use actual local environmental expenditure, but instead derived a proxy of township environmental performance on the basis of interviews in 2000 with township leaders. Their findings showed that the town's wealth and pressure from the industrial sector positively affected the provision of local environmental services, while a negative relationship was found for workers' wages.

In this study, in order to capture the pressure effects on the environmental expenditure of Italian regional governments, a measure of industrial pressure and an indicator of population pressure for environmental expenditure are included in the econometric model, together with some other typical explicative variables. The model is estimated first on the whole sample and then, in a second step of the analysis, re-estimated in order to capture potential variation in behaviour among regions belonging to the North/Centre or South of Italy. Results from all the 20 Italian regions suggest the presence of population pressure for government environmental expenditure supply, and a decrease in demand for local environmental public services in higher-wage industries. In the northern and central regions all the explicative variables have the expected effect on regional environmental expenditure. Population and industrial pressure are evidenced. Regional environmental expenditure increases in more affluent regions. Furthermore, in industries that adopt environmentally friendly technologies, the demand for local public expenditure on the environment decreases. The southern regions behave differently. Here, policy-makers' strategies do not seem to be driven by the economic variables traditionally suggested by the literature.

The paper is structured as follows: the next section illustrates the Italian context and the motivations for the choice of Italy as a case study; Section 3 presents the model and methodology; the results are discussed in Section 4, and Section 5 concludes.

2. The Italian situation: an overview

Why was Italy chosen as a case study? It is worth investigating the behaviour of Italian regions with regard to environmental expenditure for a number of reasons. Article 119 of the Constitution gives regions a measure of financial autonomy in their expenditure. Furthermore, in 2001 a reform of Title V, Part II of the Constitution, redefined the relations between state and regions, an event that explains the choice of the sample period. As regards the environmental sector, although the state has exclusive legislative power on protection of the environment, the regions have concurrent power (that is to say, regions may legislate whilst respecting the fundamental principles of state law) in some areas, such as energy, the enhancement of environmental heritage, land administration and health. In these areas it is evident that a regional government is more subject to local pressure from its inhabitants or industrial groups for the provision of certain services. Furthermore, in recent years it has been quite difficult to distinguish between environmental issues over which the state has exclusive power and those that fall under the sphere of the regional government. Indeed, since 2001 there has been considerable overlap in areas of competence between regions and central government. The Italian Constitutional Court was accordingly invoked during the sample period to resolve disputes on legislative competencies between the two actors.