Territorial cohesion and prospects for sustainable development: A co-integration analysis

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ABSTRACT

Territorial cohesion is an indispensable element of sustainable development. Regional inequalities may constraint prospects for sustainable development. This paper aims to shed some further light on the pattern of sustainable development across the European regions. Co-integration analysis is applied in an attempt to identify the relationship between sustainable development and cohesion in the European Union.

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1. Introduction

The contemporary approach to economic development views regions not as spatial areas within a country or arbitrary administrative divisions, which might be arbitrary, but rather as 'engines' of prosperity. This is related directly to a major aim set by the European Union, namely territorial (regional) cohesion. According to European Community (2008), territorial cohesion is about ensuring the harmonious development of all regions and enabling their citizens to make the most of inherent features of these territories. As such, it is a mean of transforming diversity (biological and economic) into an asset. Public policy can help territories to make the best use of their assets, particularly in a context of economic and social restricting stemming from the globalisation of the economy. Increasingly, competitiveness and prosperity depend on the capacity of the people and businesses located there to make the best use of all of territorial assets. In a globalising and interrelated world economy, however, competitiveness also depends on building links with other territories to ensure that common assets are used in a coordinated and sustainable way.

Regions are spatial foci in the context of another major aim of the European Union, that of *sustainable* development. This term indicates the ability of using a system in such a way as to prolong (or to maintain) its existence in the long-run or its ability of a system to remain productive in any development type (United Nations, 1987). The term 'sustainable development', according to Zilberman (2013), may seem paradoxical because 'development' implies change, while 'sustainability' implies permanence. However, the term is actually consistent with economic thinking; it implies the selection of polices that maximize objectives subject to constraints.

Several regional policies put particular emphasis on energy efficiency or developing renewable energy as a means of creating new business and job opportunities. Energy, climate change and the environment are integrated into the economic development strategies in most Member States of the European Union. It follows, therefore, that sustainable development is an indispensable element of territorial cohesion. The research on sustainable development has advanced on several fronts, e.g. with respect technology (Sianipar, Dowaki, Yudoko, & Adhiutama, 2013) or the construction industry (Kibwami & Tutesigensi, 2016; Nannan,

2014). Nevertheless, empirical evidence on relationship between territorial cohesion and sustainable development is rather rare.

Three major dimensions can be included in the notion of sustainable development (Passet, 1979): the environment, the economy and society. Of particular importance is the relation between sustainable development and intangible assets, such as *equity* (United Nations, 2014). Alternatively, the distribution of resources opportunities and intergenerational equity are the guiding principles in the analysis of sustainable development (Malte, 2008). Of equal importance, however, is the distribution of resources among the spatial units, namely territorial cohesion; an issue of particular concern in the EU (Holder & Layard, 2010).

The primary aim of this paper is to shed some further light on the question if there is a conflict between sustainable development and territorial cohesion. Obviously, the answers to such questions have empirical ramifications. This paper provides empirical evidence using an established econometric methodology, namely co-integration analysis. In that sense the paper fills an important gap as, although an increasing number of studies have paid attention to issues of sustainable development, the empirical assessment of the relationship between territorial cohesion and sustainable development has not so far received due attention.

Following this introduction, the paper is divided into three sections. Section 2 introduces the topic to be developed and then asks the question, from an empirical point of view, whether territorial cohesion affects sustainable development. In section 3 descriptive statistics on the key variables are provided so to set the context for the model's specification, followed by the presentation and a detailed account of the obtained econometric results. The final section highlights issues for further discussion.

2. Setting the overall context

An inevitable consequence of economic development is the uneven distribution of income in space. As a result, governments apply appropriate policies in order to eliminate or, at least, to keep regional inequalities to a minimum. The presence of regional disparities, however, is not sufficient *per se* to justify the existence of regional policy (Armstrong & Taylor, 2000). Indeed, regional policy contributes to a wide range of aims, including sustainable development of the economy as a whole.

The premise of this paper is a belief that territorial cohesion is an indispensable element of sustainable development. Territorial cohesion builds bridges between economic effectiveness, social cohesion and ecological balance, putting sustainable development at the heart of policy design. It follows, therefore, that territorial cohesion can be compatible with aggregate efficiency and by extension with sustainable development. A simple example will make the matter clear. Rural areas are an essential part of the EU. They are the location of most of the natural resources and natural areas (lakes, forests, etc.), have good air quality and are often attractive and safe places to live or visit. The European Commission (2006) highlights the contribution which EU rural development programs can make to pursuing territorial cohesion. Protection of environment contributes not only to rural development but also to sustainable growth and hence to territorial cohesion; a proposition which constitutes the 'crux' of the argument that will be developed in this paper.

The key challenge is to ensure a balanced and sustainable territorial development of the EU as whole, strengthening its economic competitiveness and capacity for growth while respecting the need to preserve its natural assets and ensuring social/territorial cohesion. This implies avoiding excessive concentrations of growth and facilitating the access to the increasing returns of agglomeration in all territories (European Community, 2008).

Nevertheless, before deciding on specific measures or policies, it is important to examine the relationship between sustainable development and social cohesion empirically.

'Space' is a rather complex system in which several activities interact and generate conflicts and/or complementarities. Sustainability objectives may contradict with the aim of territorial cohesion; an issue that has prompted a wide concern among policy-making bodies. Some places (regions) suffer from too little development. Other experience (what is judged by some to be) too much. Policies in favour of 'poor' regions may reduce regional inequalities. Such policies, may, in fact, be inefficient to promote sustainable development. In this respect, a *contradiction* seems to be almost ineluctable and an 'inherent' feature in policy-making. Persisting spatial inequalities may constraint prospects for sustainable development. In other words, there is a *conflict* between sustainable development and territorial cohesion. In regional economics, goal conflicts are the rule not the exception (Richardson, 1973). While this 'conflict' or contradiction is emphasised in policy-making (e.g. Bachtler, Wishlade, & Yuill, 2003; Mendez & Bachtler, 2015), nevertheless concrete empirical evidence, which may help deciding on strategies for regional/sustainable development, is rather rare.

And so it becomes necessary to seek out the frameworks within which to examine the relationship between sustainable development and territorial cohesion. The remainder of this section outlines the principles of co-integration analysis, which is a suitable context to examine empirically the aforementioned relationship and to determine whether there is conflict or complementarity between prospects for sustainability and territorial cohesion.

An essential aim of this paper is to determine whether there is a relationship between the *growth* of sustainable development of the economy as a whole (σ') and territorial cohesion ($e_{r,t}$), and if so, what kind of relation characterizes these two variables. This can be specified in terms of the following dynamic regression equation:

$$\sigma'_t = a_0 + a_1 e_{r,t} \qquad (1)$$

In equation (1) the subscript *r* refers to the spatial divisions of a particular economy.[2] Intuitively, a_1 is expected to display a negative sign if a reduction in regional inequalities induces improvements in the growth of sustainability of the economy as a whole. Implicit in equation (1) is an $e_{r,t} \rightarrow \sigma'_t$ causality. Nevertheless, causality may take a different direction; that is $\sigma'_t \rightarrow e_{r,t}$, as implied by equation (2):

$$e_{r,t} = a_0 + a_2 \sigma'_t \qquad (2)$$

Causality is important for policy-makers so as to ensure policy prescriptions are correct − should they focus on improving regional equity or should they focus on creating conditions that foster the rate of sustainable development, for example? It might be argued that $\hat{a}_1 < 0$ can be seen as an indication of the necessity of expenditure in improving the distribution of income in favour of relatively poor regions (regional policy), not only from redistributive point of view but also in terms of improving sustainable development. Conversely, $\hat{a}_1 > 0$ suggests that improvements in sustainable development have not distributed across the regional units in such a way as to create the conditions for territorial cohesion.

To turn these ideas into practice, it is essential to devote a few words about *stationarity*. If a time series is stationary, its mean,

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[2] It is possible to include specific regions or groups of regions. As an indication, the relation between sustainable development and territorial cohesion can be examined across the lagging regions of an economy or using sets of regions that share common structural characteristics (e.g. agricultural regions).