

The sclerosis of regional electricity intensities in Italy: An aggregate and sectoral analysis



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HIGHLIGHTS

- ▶ We study the convergence of regional electricity intensities in Italy.
- ▶ We stress the importance of the statistical significance of the results.
- ▶ The geographic distribution of the variable under scrutiny is sclerotic.
- ▶ A shift-share analysis points to the importance of region-specific effects.
- ▶ Policy implications are discussed.

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ABSTRACT

The convergence of regional electricity intensities in Italy is studied over the period from 1997 to 2007. We emphasize the importance of the statistical significance of the results, which show a striking sclerosis of the geographic distribution of the variable under scrutiny. A shift-share analysis points up the importance of region-specific effects. Policy implications are discussed.

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1. Introduction

The research question addressed by this paper is whether the ratio of electricity consumption to output (electricity intensity) and residential electricity consumption per head displayed any tendency to converge at the regional level in Italy from 1997 to 2007.¹ Specifically, we consider the 20 NUTS2 Italian regions.² In so doing, we shift the focus of the literature in a number of unexplored directions.

First, we consider a finer level of geographic disaggregation which has recently received considerable attention from policy

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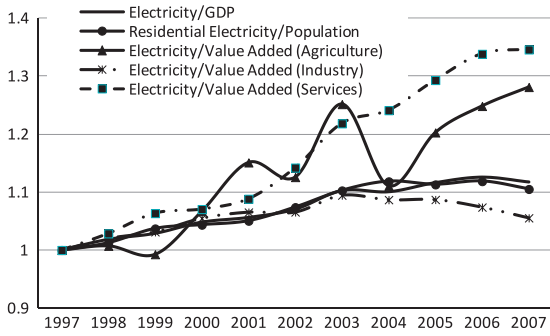
² The length of our period of observation is similar to that of [6] and longer than that of [7,8], for instance.

³ NUTS is the French acronym for Nomenclature of Territorial Units for Statistics used by Eurostat. In this nomenclature NUTS1 refers to European Community Regions and NUTS2 to Basic Administrative Units, with NUTS3 denoting smaller spatial units more similar to counties in the US.

makers promoting a low carbon economy. Both the Assembly of European Regions and the OECD argue that the sub-national level plays a key role in turning political European and national commitments into concrete action and in determining the actual mix of fuels needed to ensure energy security and sustainable economic growth [1,2].

Regarding Italy, national law 13/2009 shared the European targets for the production of renewable energy in different proportions among the Italian regions [3]. As a consequence, by 2010 all the Italian regions had approved Regional Energetic/Environmental Plans setting out their strategies to foster energy efficiency and use of the most convenient renewable energy sources available.

In addition, focusing on regional data is interesting because sustainable energy production and consumption are increasingly regarded by the European regional policy as crucial strategies with which to foster the development of lagging regions [4,5]. For instance, Italian Southern regions, traditionally characterised by



Note: In this figure we do not consider the ratio between electricity consumption and value added for the whole economy because it basically overlaps with that of electricity consumption over GDP.

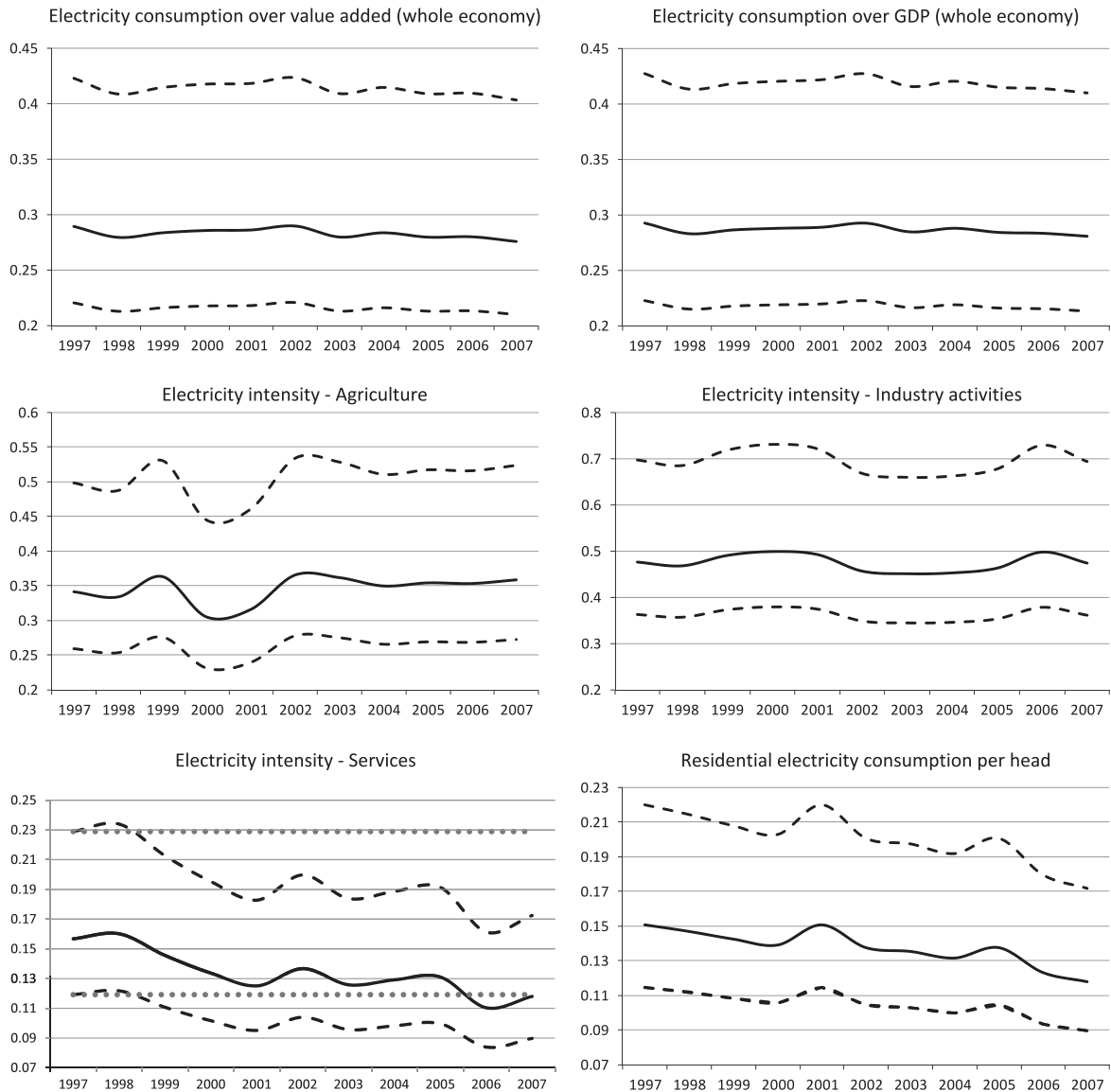
Fig. 1. Intertemporal paths of electricity intensity, residential electricity consumption per head and electricity intensity by sector in Italy, 1997–2007 – data normalized to 1997.

development problems, have received significant economic transfers from the EU through the approval of Regional Operational Programmes promoting interventions on renewable energies and energy efficiency [3].

The second novelty of the paper is that it considers Italy, a country different from the US, on which most previous relevant studies at the sub-national level have focused. As emphasized also by [9–11] adopting an Italian dataset is interesting because it can well represent the challenges facing countries, such as Belgium, Greece, Luxembourg, Portugal, Spain and others that substantially depend on energy imports.

From a methodological point of view, we concentrate more than previous studies on assessing the statistical significance of highlighted developments, and we also adopt a shift-share analysis following [12].

The rest of this paper is structured as follows. The next section conducts a literature review which covers studies analyzing variables similar to ours. Our data and methods are then illustrated,



Notes: Continuous lines denote point estimates and dashed lines 95% confidence intervals computed after Vangel (1996). Dotted lines in the Figure for Services denote the 95% per cent confidence interval of the first year of observation.

Fig. 2. Coefficient of variation of various measures of regional electricity intensity in Italian regions, 1997–2007.

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