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Monitoring trends in EU CO₂ emissions: A carbonization index through divisia index

Concerns on rising concentrations of CO₂ in the atmosphere and global warming have increased in recent years. Numerous environmental studies analyze the trends in CO₂ emissions and their main drivers. In this paper we focus on the dynamics of the carbonization effect as a driving force for CO₂ emissions in the European Union (EU). By implementing the Sato-Vartia logarithmic mean Divisia index method, the trend of European emissions in the 2000-2010 period is factorized by both sector and country. The analysis stresses the relevance of the carbonization and intensity effects in order to reduce emissions. Then, based on so-called attribution analysis we present a new theoretical framework that enables the attribution of both economic sector and individual EU Member State to percentage changes in the carbonization index. Results show strong concentration of this reducing influence in some big economies. In fact, Germany, the United Kingdom, France and Italy have contributed by more than 50%. Industry emerges as the most influential sector, contributing to offset any improvement in the carbonization index. Our findings suggest strategies aiming at encouraging innovation, technical change, research on higher quality energies, fuel substitution, and installation of abatement technologies, particularly in the industrial sector of large economies.

Biography

Paula Fernández González is an Associate Professor of statistics and econometrics at the department of applied economics, University of Oviedo. She has worked for fourteen years in the fields of Energy and Environmental sciences, focusing on statistical methods, economic modelling and econometrics, and paying particular attention to index-based decomposition methods. She has published a book and more than 10 papers in international reputed journals. She is also a regular reviewer in journals such as *Energy*, *Energy Policy*, *Energy Economics*, *Energy Efficiency*, etc. She is Editor of the *Journal of Economics Studies and Research*, and participates in several research projects.

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