ASSESSMENT METHODOLOGIES
ENERGY, MOBILITY AND OTHER REAL WORLD APPLICATION

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MEASURING TECHNICAL EFFICIENCY OF EUROPEAN COUNTRIES USING DATA ENVELOPMENT ANALYSIS

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Abstract
This study proposes a Data Envelopment Analysis (DEA) framework to assess the technical efficiency of 26 European countries in the last five years, under the ongoing 2020 energy policy. DEA is used to estimate efficiency which is complemented by bootstrapping to obtain statistical inferences. Further, we explore the relationship between the targets regarding energy efficiency, renewable energy share and the greenhouse gas emissions and, in addition, the electricity prices derived from the energy system on the efficiency levels of European countries through a panel data truncated regression with bootstrapping. It is observed that the bias-corrected efficiency of the economies increased approximately 13%, on average, since 2009. The results achieved bring into view that the efforts regarding the energy policies developed in each country to follow 20-20-20 targets, have not threatened the improvement of their efficiency.

1. Introduction

In the last decades, the European Union (EU) has been promoting an integrated approach to climate and energy policy, aiming combat climate change, increase the EU’s energy security and strengthen its competi-

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