

# The Effect of Restructuring Electricity Distribution Systems on Firms' Persistent and Transient Efficiency: The Case of Germany

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One of the challenges arising subsequently to the German reunification in 1990, was to integrate the eastern and western sectors of electricity distribution. To achieve this, the East German sector was comprehensively restructured. While it was organized based on political rather than economic reasons before, the pursued strategy for this restructuring was to broadly adapt the existing structure of the western German electricity distribution sector, i.e., implementing local and regional distribution networks.

The focus of this paper is the analysis of the persistent impact of the restructuring—that followed the reunification—on the current performance of providers of electricity distribution services, i.e., DSOs. We analyze this by applying a state-of-the art stochastic frontier model that allows identifying determinants of time-variant (transient/short-run) and time-invariant (persistent/log-run) performance. We use a novel panel dataset of eastern and western German DSOs observed between 2006 and 2012. We approximate the restructuring by the location of the DSOs.

We find that overall inefficiency within the sector is driven by persistent rather than transient inefficiency. While all DSOs perform equally well in terms of transient inefficiency, DSOs located in East Germany exhibit, on average, less persistent inefficiency. We further show that, first, eastern DSOs perform uniformly well and better than most of the western DSOs, and, second, that the performance of most of the eastern DSOs are at par with best practice of their western counterparts. From this we conclude that the restructuring was beneficial to East German DSOs in terms of persistent efficiency and that today's implemented regulatory scheme successfully addresses transient inefficiency.

Our analysis shows that disentangling both types of inefficiency is an important exercise because it identifies improvement potentials, it can explain which factors actually drive short-term and long-term efficiency and, thereby, helps identifying appropriate strategies to achieve this improvement. Short- and long-term inefficiencies are likely to be issues in most public infrastructures due to the network-based technologies. Thus, we consider the applied methodology as being also relevant to other public sectors, e.g., gas distribution, water supply, sewerage, and local transportation.

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