

Technical and economical aspects of wholesale electricity markets: An international comparison and main contributions for improvements in Brazil

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Abstract-

The Brazilian power-market design features were based on the system's physical and economic characteristics in the '90s. However, some of the approximations and assumptions adopted for the regulatory framework are no longer valid. Failing to adapt the regulatory framework to the current system and economic reality may provide poor market signals, possibly threatening the sustainability and supply adequacy of the long-run system. Despite the national consensus on the need for modernization, there are still many concerns about which changes should be carried out. The vast literature and international experience in the subject notwithstanding, each system's particularities challenge any simplistic attempt to match the Brazilian case with previously reported experiences. Thus, this work aims to 1) define a general market design nomenclature and classify relevant market structures, 2) draw a systematized panorama of the physical characteristics that have influenced the selection of different market designs and mechanisms, and 3) compare the Brazilian market design, to the international experience. Based on that, we contribute with an updated and standardized panorama of a few relevant market designs and structures. Additionally, we raise awareness and discuss the lessons from the international experience applicable to support and foster the Brazilian market modernization agenda.

Index Terms- Wholesale electricity markets; Power market design; Brazilian power market; International power markets

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