Price effects of independent transmission system operators in the United States electricity market

Theodore J. Kury

Abstract In 1996, the Federal Energy Regulatory Commission (FERC) sought to “remove impediments to competition in the wholesale bulk power marketplace and to bring more efficient, lower cost power to the Nation’s electricity consumers” through a series of market rules. A product of these rules was the establishment of regional transmission organizations (RTOs) and independent system operators (ISOs) charged with facilitating equal access to the transmission grid for electricity suppliers. Whether these changes in market structure have succeeded in achieving FERC’s goal to provide “lower cost power to the Nation’s electricity consumers” remains an open question. This paper utilizes a panel data set of the 48 contiguous United States and a treatment effects model in first differences to determine whether there have been changes in delivered electric prices as a result of the establishment of ISOs and RTOs. To avoid the confounding effects of electric restructuring, the model is estimated with the full panel data set, and then again without the states that have restructured their electric markets. This estimation shows that electricity prices fall approximately 4.8% in the first 2 years of an ISO’s operation and that this result is statistically significant. However, this result is dependent on the presence of states that restructured their electric markets. When these restructured states are removed from the data set the price effects of RTOs become indistinguishable from zero. The paper concludes that rate agreements are the principal source of the observed decrease in prices and that RTOs have not had the desired effect on electricity prices.

Keywords Electricity market structure · Regional transmission organizations · Electricity market reform

JEL Classification L22 · L51 · L94
1 Introduction

Before the Federal Energy Regulatory Commission (FERC) issued its landmark Order 888 in April of 1996, the electricity generation, transmission, and distribution market in the United States had functioned largely within a vertically integrated monopoly structure for over 100 years. The opening paragraph of Order 888 reads:

Today the Commission issues three final, interrelated rules designed to remove impediments to competition in the wholesale bulk power marketplace and to bring more efficient, lower cost power to the Nation’s electricity consumers. The legal and policy cornerstone of these rules is to remedy undue discrimination in access to the monopoly owned transmission wires that control whether and to whom electricity can be transported in interstate commerce. A second critical aspect of the rules is to address recovery of the transition costs of moving from a monopoly-regulated regime to one in which all sellers can compete on a fair basis and in which electricity is more competitively priced.1

FERC appears to believe that the vertically integrated structure in which the generator of electricity also controls the transmission of electricity is inefficient, and that this inefficiency leads to higher prices. The issuance of this order paved the way for numerous states to introduce plans to restructure their electric markets, with varying degrees of success. This movement began most notably in California, Texas, and a number of states in the Northeast, with the separation of the utility’s generation from the transmission and distribution functions. To facilitate non-discriminatory access for all generators to the transmission grid, FERC conditionally approved the formation of five independent system operators (ISO) in 1997 and 1998 to oversee the deregulated wholesale power markets.

In December of 1999, FERC issued Order 2000, which stated:

The Federal Energy Regulatory Commission (Commission) is amending its regulations under the Federal Power Act (FPA) to advance the formation of Regional Transmission Organizations (RTOs). The regulations require that each public utility that owns, operates, or controls facilities for the transmission of electric energy in interstate commerce make certain filings with respect to forming and participating in an RTO. The Commission also codifies minimum characteristics and functions that a transmission entity must satisfy in order to be considered an RTO. The Commission’s goal is to promote efficiency in wholesale electricity markets and to ensure that electricity consumers pay the lowest price possible for reliable service.2

This Order suggests that FERC believed that the establishment of independent entities to control access to the electric transmission system would result in costs that are no greater than the costs that exist at the time of the order.

---

1 FERC Order 888, issued April 24, 1996, p. 1 (75 FERC ¶61,080).