

**Volume 27, Issue 1**

**January, 2006**

*Pages 1-36*

## **Markets for Power in the United States: An Interim Assessment**

by Paul L. Joskow (Professor of Economics, Massachusetts Institute of Technology)

### **Abstract**

The transition to competitive wholesale and retail markets for electricity in the U.S. has been a difficult and contentious process. This paper examines the progress that has been made in the evolution of wholesale and retail electricity market institutions. Various indicia of the performance of these market institutions are presented and discussed. Significant progress has been made on the wholesale competition front but major challenges must still be confronted. The framework for supporting retail competition has been less successful, especially for small customers. Empirical evidence suggests that well-designed competitive market reforms have led to performance improvements in a number of dimensions and benefited customers through lower retail prices.

*Pages 37-54*

## **A Real Options Approach to Evaluating New Nuclear Power Plants**

by Geoffrey Rothwell (Department of Economics, Stanford University, Stanford, CA)

### **Abstract**

Although nuclear power plants are being built in Asia, they have not been ordered in the U.S. since the 1979 accident at Three Mile Island. For many reasons, new attention is being given to light water reactors. Currently- operating nuclear power plants in the U.S. were built under rate-of-return regulation. Now, new nuclear power plants must compete in power markets. This paper models the net present value of building an Advanced Boiling Water Reactor in Texas using a real options approach to determine the risk premium associated with net revenue uncertainty. It finds that a cost of about \$1,200

per kilowatt-electric (including financing costs) for advanced light water nuclear power plants could trigger new orders. On the other hand, owner-operators might be willing to pay higher prices for nuclear megawatts if methods for mitigating price, cost, and capacity risk through contracts or real assets could be found.

*Pages 55-78*

## **Does Oil Price Uncertainty Affect Energy Use?**

by Gerard H. Kuper (University of Groningen, Department of Economics, The Netherlands,) and Daan P. van Soest (Department of Economics and CentER, Tilburg University, The Netherlands)

### **Abstract**

Theory predicts that the presence of fixed costs implies that the relationship between energy use and energy price changes is asymmetric, as the firm's output and investment decisions respond differently to energy price increases and decreases. The asymmetry is exacerbated if future energy prices are uncertain, but to date the empirical literature does not explicitly take uncertainty into account. The contribution of this paper is twofold. First, we develop a new measure of energy price uncertainty. Second, we apply this measure to explain energy use in fifteen OECD countries between 1978 and 1996. Our results support the theoretical prediction that energy price uncertainty affects the asymmetry and renders energy-saving technologies less attractive.

*Pages 79-98*

## **Impacts of the European Emissions Trading Scheme Directive and Permit Assignment Methods on the Spanish Electricity Sector**

by Pedro Linares (Instituto de Investigación Tecnológica. Univ. Pontificia Comillas., Spain), Francisco Javier Santos, Mariano Ventosa, Luis Lapiedra

### **Abstract**

This paper assesses the economic impact of the European Emissions Trading Scheme Directive on the Spanish electricity sector. Although some other studies have been carried out before, our approach uses a more detailed model for the Spanish electricity sector, which provides more realistic results both for the expected price of the carbon allowance and for the evolution of electricity prices, installed power and firms' revenues

in Spain. Results show that the implementation of the Directive will result in a significant increase of electricity prices, and also, due to the Spanish pricing system, in a large increase in the revenues of generating firms, unless the regulator intervenes. Results also show the different implications of different assignment methods. This is especially relevant currently given that most European countries are approving their national assignment plans for 2005-07 and have to revise them for 2008.

*Pages 99-118*

## **Market Integration in the International Coal Industry: A Cointegration Approach**

by Linda Wårell (Luleå University of Technology, Department of Business Administration and Social Science, Division of Economics, Sweden)

### **Abstract**

The purpose of this paper is to test the hypothesis of the existence of a single economic market for the international coal industry, separated for coking and steam coal, and to investigate market integration over time. This has been conducted by applying cointegration and error-correction models on quarterly price series data in Europe and Japan over the time period 1980-2000. Both the coking and the steam coal markets show evidence of global market integration, as demonstrated by the stable long-run cointegrating relationship between the respective price series in different world regions. This supports the hypothesis of a globally integrated market. However, when analyzing market integration over time it is not possible to confirm cointegration in the 1990s for steam coal. Thus, compared to the coking coal market, the steam coal market looks somewhat less global in scope.

*Pages 119-138*

## **Measuring Gains from Regional Dispatch: Coal-Fired Power Plant Utilization and Market Reforms**

by Stratford Douglas (Department of Economics, West Virginia University, Morgantown, WV)

### **Abstract**

This paper examines changes in the utilization rates (annual capacity factors) of coal-burning power plants in the eastern United States after 1996, when federal regulators opened the transmission system to wholesale power markets. This and other

accompanying market-oriented reforms were intended to improve efficiency by encouraging regional dispatch by independent system operators. If the reforms made dispatch more efficient, then utilization rates of high-cost plants should have fallen relative to those of low-cost plants since 1996. A difference-in-difference model using plant-level panel data indicates that relative utilization rates of high-cost plants did indeed fall after 1996, but only in regions with independent system operators. Simulations indicate cost savings on the order of two to three percent.

*Pages 139-178*

## **Seven Centuries of Energy Services: The Price and Use of Light in the United Kingdom (1300-2000)**

by Roger Fouquet (Lecturer, Department of Economics, University of the South Pacific, Suva, Fiji, and Visiting Research Fellow, Centre for Energy Policy & Technology (ICEPT), Imperial College London, Faculty of Life Sciences, South Kensington Campus, London, UK) and Peter J.G. Pearson (Director, Centre for Energy Policy & Technology (ICEPT), Imperial Collge London, Faculty of Life Sciences, South Kensington Campus, London)

### **Abstract**

Before the mid-eighteenth century, most people lived in near-complete darkness except in the presence of sunlight and moonlight. Since then, the provision of artificial light has been revolutionised by a series of innovations in appliances, fuels, infrastructures and institutions that have enabled the growing demands of economic development for artificial light to be met at dramatically lower costs: by the year 2000, while United Kingdom GDP per capita was 15 times its 1800 value, lighting services cost less than one three thousandth of their 1800 value, per capita use was 6,500 times greater and total lighting consumption was 25,000 times higher than in 1800. The economic history of light shows how focussing on developments in energy service provision rather than simply on energy use and prices can reveal the 'true' declines in costs, enhanced levels of consumption and welfare gains that have been achieved. While emphasising the value of past experience, the paper also warns against the dangers of over-reliance on past trends for the long-run forecasting of energy consumption given the potential for the introduction of new technologies and fuels, and for rebound and saturation effects.

## **BOOK REVIEWS**

*Pages 179-181*

***International Energy Markets: Understanding Pricing, Policies, and Profits***

by Carol A. Dahl (PennWell, 2004)  
(Book Review by David Nissen)