

## **Volume 30, Issue 2**

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### **Hicks, Hayek, Hotelling, Hubbert and Hysteria or Energy, Exhaustion, Environmentalism, and Etatism in the 21st Century**

By Richard L. Gordon (Professor Emeritus of Mineral Economics and MICASU Faculty Endowed Fellow emeritus, College of Earth and Mineral Sciences, The Pennsylvania State University.)

#### **Abstract**

In 2008, energy independence is making an unwelcome return in a greatly expanded form. The old import-danger excuse is supplemented by claims that exhaustion and global warming also will be cured. The import danger threat remains overblown. Exhaustion is not an impending problem and, if it were, it has no policy implications for anything including for imports. Similarly, whatever is true about global warming, it does not imply import controls.

*Pages 17-40*

### **The Global Natural Gas Market: Will Transport Cost Reductions Lead to Lower Prices?**

By Knut Einar Rosendahl (Statistics Norway, Research Department, Kongensgt. 6, N-0033 Oslo, Norway) and Eirik Lund Sagen (Statistics Norway, Research Department, Kongensgt. 6, N-0033 Oslo, Norway)

#### **Abstract**

Reduced transportation costs are usually associated with lower import prices, increased trade and price convergence. In this paper we show that lower transport costs can actually lead to higher import prices in some regions, and price divergence between import regions. Using both a general theoretical approach and a numerical model of the global natural gas market, we demonstrate that the price effect from trans-

port cost reductions depend on the relative distances between regional markets, the choice of transport technology, and supply and demand responsiveness in the different markets. Our numerical results suggest that European consumers would generally be better off if pipeline costs are reduced, while North American consumers would be better off if LNG costs are reduced.

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## **Powering Progress: Restructuring, Competition, and R&D in the U.S. Electric Utility Industry**

By Paroma Sanyal (Dept. of Economics & IBS, MS 021, Sachar International Center, Brandeis University, 415 South Street, Waltham, MA 02454) and Linda R. Cohen (Dept. of Economics, University of California, Irvine.)

### **Abstract**

This paper investigates the R&D behavior of regulated firms when they transition to a competitive environment. Using data from the US electricity market from 1990-2000, we analyze how competition, institutional changes, and political constraints have contributed to the precipitous decline in R&D expenditure by regulated utilities. We find that firms reduce their R&D significantly at the very early stages of restructuring or even when they expect restructuring to occur. Once the emerging institutional structure becomes clear, R&D spending recovers but is later offset by another decline when restructuring legislation is enacted. In addition, greater competition and the nearing of such competition adversely affects research spending. In aggregate, R&D declines by 78.6 percent after electricity markets are restructured. Firm and state characteristics matter, and a majority of the research is conducted by large generation companies located in pro-research states, especially if they are part of a larger holding company. Such characteristics have a different impact on research spending in the pre- and post-restructured periods.

*Pages 81-96*

## **The Willingness to Pay for Renewable Energy Sources: The Case of Italy with Socio-demographic Determinants**

By Carlo Andrea Bollino (Professor of Economics, Department of Economic, Finance and Statistics, University of Perugia.)

## **Abstract**

According to the “Renewable Sources” EU Directive 2001/77/CE, the Italian Government goal is to attain the share of 22% in RES electricity production in 2010. In such context it becomes crucial to explore the existence of consumer’s Willingness to Pay (WTP) in order to use renewable energy in the electricity production. This study is based on a national survey with 1601 interviews made, in Italy, in November 2006. My aim is twofold. Firstly, I wish to assess the consumer’s WTP which is the basis for market sustainability of such energy policy goal and, secondly, I evaluate the share of the necessary public support to RES policy which is covered by the aggregate WTP of Italians. This is an implicit assessment of the plausibility/acceptance of the announced target policy. In my survey framework I obtain the consumer’s WTP with two different approaches and to this end the sample has been divided in two parts. In the first sub-sample I propose the full price vector with a downward elicitation format while in the second sub-sample I use the same price vector with an upward elicitation format. In this paper I focus on the different uncertainty degree that affects respondent’s choices. I take care econometrically of this issue using an individual stochastic valuation approach and a referendum approach. I obtain for most of the estimated models that estimates of WTP are in agreement with other international results. The aggregate WTP for RES in Italy, however, is (still) not enough to attain the Italian Government goal in 2010.

*Pages 97-116*

## **Long Memory in Oil and Refined Products Markets**

By Kyongwook Choi (Department of Economics, The University of Seoul, 90 Cheon-nong-dong, Dongdaemoon-gu, Seoul, 130-743, Korea) and Shawkat Hammoudeh (Lebow College of Business, Drexel University, 3141 Chestnut Street, Philadelphia, PA)

## **Abstract**

We test for the presence of long memory in daily oil and refined products prices’ absolute return, squared return and conditional volatility, using several parametric and semi-parametric methods. This study finds strong evidence of long memory (LM) in the daily absolute and squared spot and futures returns for crude oil, gasoline and heating oil but at different degrees. The FIGARCH model also demonstrates strong evidence of LM for volatility for most of oil and products prices’ returns, with also different resilience levels. Structural breaks have only the partial effects of slightly reducing persistence for just absolute and squared returns. Examining the forecasting behavior of two competing models, the less parsimonious ARFIMA which satisfies the LM property, and the parsimonious ARMA with short-term processes, the ARFIMA model provides signifi-

cantly better out-of-sample forecasts at all forecasting horizons for all three petroleum types.

*Pages 117-134*

## **Willingness to Pay for Improved Quality of Electricity Supply Across Business Type and Location**

By Mark Morrison (Professor, School of Marketing and Management, Associate Director, ILWS, Charles Sturt University, Bathurst, NSW, Australia) and Craig Nalder (General Manager Origination and Markets, Sanctuary Energy)

### **Abstract**

Regulatory authorities in many countries are experimenting with mechanisms for providing electricity distributors with financial incentives to improve quality of supply. In designing these incentives it is apparent that customers' preferences have rarely been obtained for consideration in the regulatory process. As a result, there is relatively limited understanding of customers' willingness to pay for improved quality of electricity supply. Several studies have examined the willingness of households to pay for improved quality of electricity supply, however, few studies have examined the willingness of businesses to pay for improved quality of supply. In this study we use choice modeling with random parameters logit models to identify the willingness to pay of business for various service related attributes. Furthermore, we examine the values held by both service and manufacturing businesses, from both rural/regional and urban areas, and observe the differences between them. We find several differences in willingness to pay across business types and locations, however overall the value estimates are relatively homogeneous.

*Pages 135-154*

## **Willingness to Pay for Energy Conservation and Free-Ridership on Subsidization: Evidence from Germany**

By Peter Grösche (RWI Essen, Rheinisch-Westfälisches Institut für Wirtschaftsforschung, Hohenzollernstr. 1-3, 45128 Essen, Germany) and Colin Vance (RWI Es-

sen. Rheinisch-Westfälisches Institut für Wirtschaftsforschung, Hohenzollernstr. 1-3, 45128 Essen, German)

## **Abstract**

Understanding the determinants of home-efficiency improvements is significant to a range of energy policy issues, including the reduction of fossil fuel use and environmental protection. This paper analyzes retrofit choices by assembling a unique data set merging a nationwide household survey from Germany with regional data on wages and construction costs. To explore the influence of both heterogeneous preferences and correlation among the utility of alternatives, we estimate conditional-, random parameters-, and error components logit models that parameterize the influence of costs, energy savings, and household-level socioeconomic attributes on the likelihood of undertaking one of 16 renovation options. We use the model coefficients to derive household-specific marginal Willingness to Pay estimates, and with these assess the extent to which free-ridership may undermine the effectiveness of recently implemented programs that subsidize the costs of retrofits.

*Pages 155-178*

## **The Incidence of a U.S. Carbon Tax: A Lifetime and Regional Analysis**

By Kevin A. Hassett (American Enterprise Institute for Public Policy Research, Washington, DC, USA), Aparna Mathur (American Enterprise Institute for Public Policy Research, Washington, DC, USA) and Gilbert E. Metcalf (Department of Economics, Tufts University and National Bureau of Economic Research, Department of Economics, Tufts University, Medford, MA)

## **Abstract**

This paper measures the direct and indirect incidence of a carbon tax using current income and two measures of lifetime income to rank households. Our results suggest that carbon taxes are more regressive when annual income is used as a measure of economic welfare than when lifetime income measures are used. Further, the direct component of the tax, in any given year, is significantly more regressive than the indirect component. We observe a modest shift over time with the direct component of carbon taxes becoming less regressive and the indirect component becoming more regressive. These effects mostly offset each other and the distribution of the total tax burden has not changed much over time. In addition we find that regional variation has fluctuated over the years of our analysis. By 2003 there is little systematic variation in

carbon tax burdens across regions of the country.

## **ENERGY PERSPECTIVES**

*Pages 179-206*

### **Understanding Crude Oil Prices**

By James D. Hamilton (Department of Economics, University of California, San Diego)

#### **Abstract**

This paper examines the factors responsible for changes in crude oil prices. The paper reviews the statistical behavior of oil prices, relates this to the predictions of theory, and looks in detail at key features of petroleum demand and supply. Topics discussed include the role of commodity speculation, OPEC, and resource depletion. The paper concludes that although scarcity rent made a negligible contribution to the price of oil in 1997, it could now begin to play a role.

## **BOOK REVIEWS**

*Pages 207-209*

### **The German Path to Natural Gas Liberalisation: Is it a Special Case?**

By Heiko Lohmann (Oxford: Oxford Institute for Energy Studies, 2006)  
(Book Review by Richard Green)