

ENERGY POLICY AND ENERGY MARKETS: NEW OR OLD PARADIGMS?

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Energy Policy Challenges: Is the Past Prologue?

Resources for the Future

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The experience of the 1970s can inform policy discussions driven by volatile energy prices.

W. Hogan, "Predictions, Prescriptions, and Policy: Lessons from the Energy Record," in Twenty Years After the Energy Shock -- How Far Have We Come? Where Are We Headed?, Milton Russell, editor, Johns Hopkins University Press, 1996, pp. 105-128.

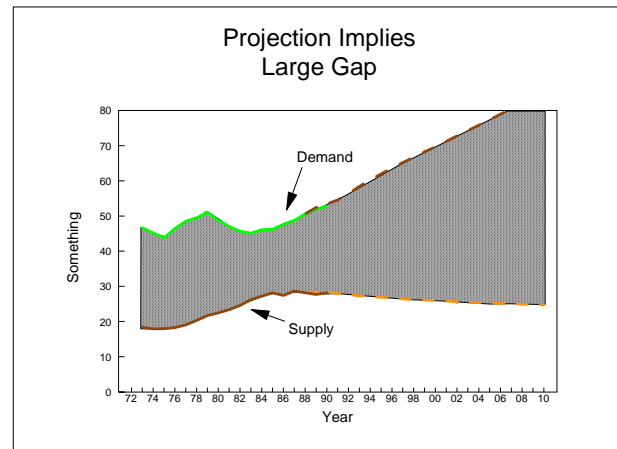
W. Hogan, "Energy Modeling for Policy Studies," Operations Research, Fiftieth Anniversary Issue, January– February 2002, pp. 89-95.

- **Energy Systems and Markets**
- **Energy Security**
- **Cartel Behavior**
- **Technological Innovation**
- **Climate Change**
- **Forecast Uncertainty**

Analysis of energy problems employed different frameworks.

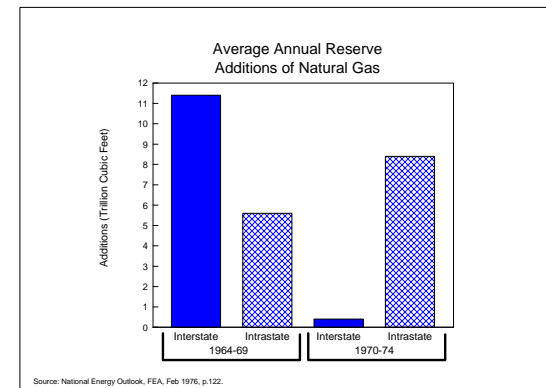
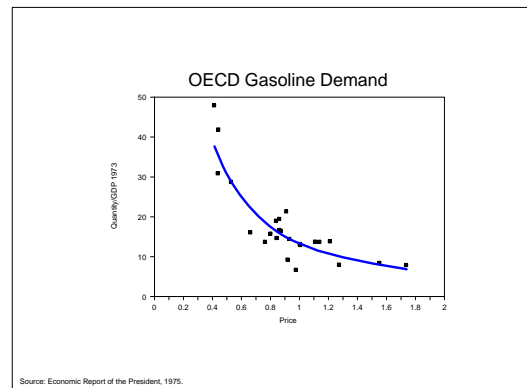
- **Gap Projections**

- Crash Programs.
- Mandates and Subsidies.
- Macroeconomic policy.
- Price Controls.
- Fuel Use Restrictions.



- **Market Responses**

- Price Controls Lifted.
- Market Liberalization.
- Markets Respond.



Early focus was on oil and oil imports.

- **Energy Independence**
 - From Nixon to Obama/McCain. The idea polls well.
 - “Independence” and “1980.”
 - Energy Interdependence. A different policy perspective.

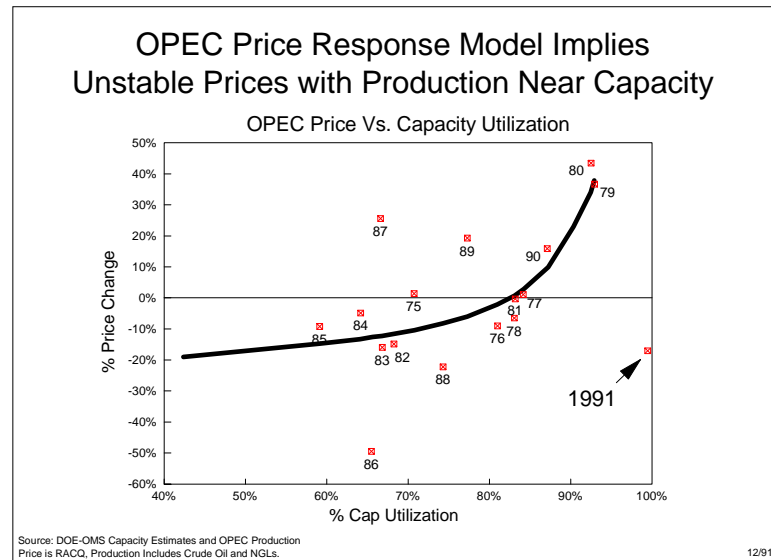
- **Oil Import Tariffs**
 - Prices would go up.
 - Impact would be small.

- **Strategic Petroleum Reserves**
 - Macroeconomic shock absorber, not last resort.
 - Desert Storm and failure to drawdown. OMB was right. “Tactical” petroleum reserve.

- **Geopolitics of Oil**
 - International oil markets are important for our geopolitics.
 - Our oil policy has a modest effect on international oil markets and geopolitics.

International oil market is inherently hard to predict.

- **Milton Friedman.** Cartels always collapse.
- **Morris Adelman.** OPEC is a “clumsy” cartel.
- **Project Independence and National Energy Outlook.**
- **Price shocks continue to surprise.**
 - Poor models.
 - Poor theory.
 - Poor performance.



In the long-run, the most important element is induced technological change.

- **Rumsfeldian “unknown unknowns.”**
 - Yamani: “Stone age did not end because we ran out of stones.”
 - Major advances in supply technologies.
 - Dramatic changes in “energy efficiency.”

- **Endogenous technological change and general equilibrium models.**
 - Transformational technologies.
 - Gradual changes across many small innovations.

Policy paradigm of energy independence is being replaced by imperatives of addressing climate change.

- **Project Independence.**
 - Silent on the issue of climate change.
 - US as the Saudi Arabia of coal.
 - Energy Security Act and Synthetic Fuels Corporation.

- **Mitigating Carbon Emissions.**
 - Post Kyoto agreements and the focus on Copenhagen in 2009.
 - Agreement in Obama/McCain campaign statements.
 - Pricing carbon through taxes or cap-and-trade. Need market incentives.

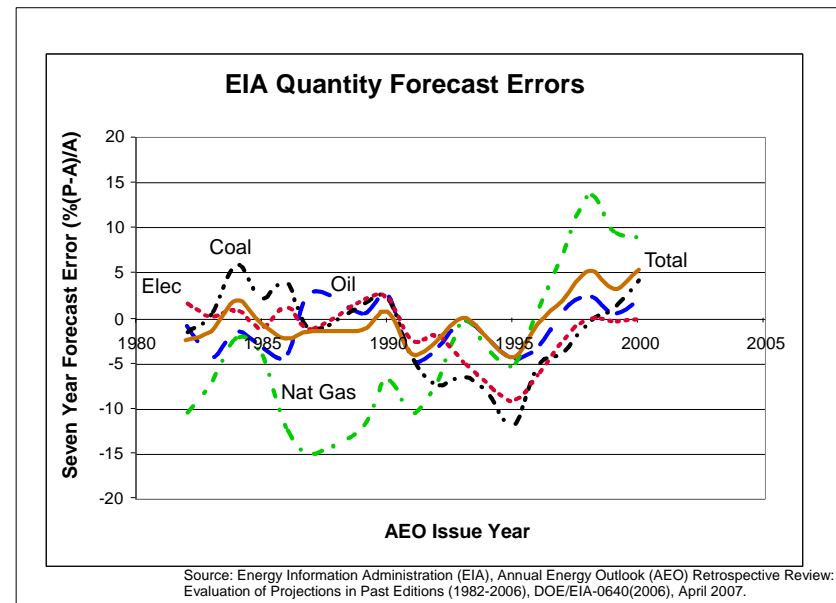
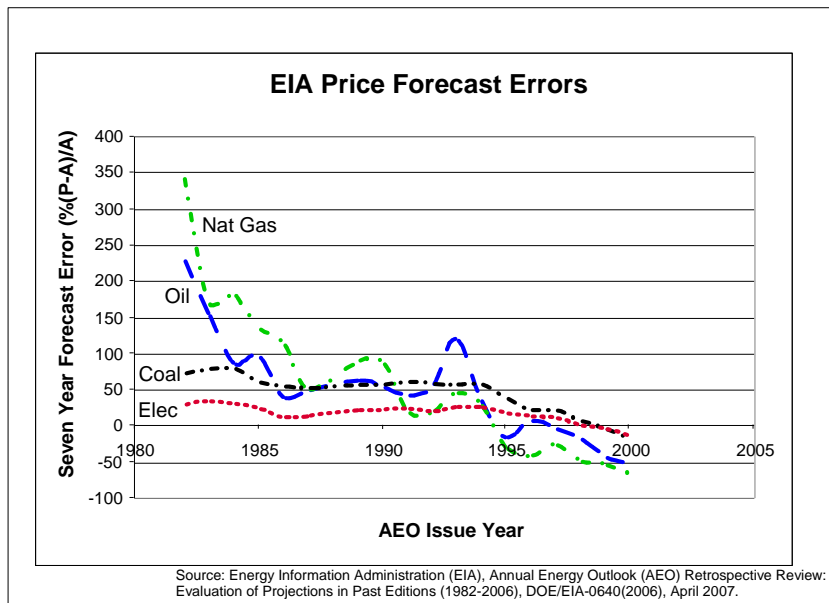
ENERGY CRISIS LESSONS

Forecast Uncertainty

A key problem is changing the locus of decisions and dealing with substantial uncertainty. The connection between investment and uncertainty arises because of the long lead times and long lives of infrastructure investments.

One way to develop an appreciation for the degree of uncertainty is to look at our record from the past. The Energy Information Administration (EIA) has been publishing its annual outlooks for many years. The methodology and knowledge applied have changed with accumulating experience, but there is enough stability in the people and processes to give some reason to compare the results of the forecasts and the actual events. Market design should anticipate and accommodate substantial uncertainty.

EIA Seven-Year Forecast Horizon



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