The Strategic Determinants of Oil Stockpiling Behavior

Kenneth R. Vincent, Ph.D.
Office of Petroleum Reserves
U.S. Department of Energy
November 14, 2017
Background: Global Framework

• The International Energy Agency (IEA)
  – Founded in 1975 in response to the Arab Oil Embargo
  – Comprised of OECD countries
  – Goal: provide collective defense against oil supply shortages

• IEA Oil Stockpiling Framework
  – Nations must hold petroleum stocks equivalent to 90 days’ worth of net petroleum imports
  – This requirement can be met in two basic ways:
    • Public stocks owned by a government or quasi-public agency
    • Mandates for industry to hold emergency stocks
Project Overview

• **Key assumption:** the choice of oil stockpiling strategy is a fundamentally consequential policy choice
  – Purchasing public stocks – expensive, highly effective
  – Mandating industry storage – minimizes costs, ineffective

• Research question: **What drives differences in nations’ approach to strategic oil stockpiling?**

• Answer grounded in **international relations (IR) theory**
  – IR aspires to explain patterns of interactions between nations
  – Realist school: unitary rational actors, national security focus
  – Oil stockpiling is conceptualized as a form of “state behavior”
The Model

<table>
<thead>
<tr>
<th>Market Power Conferred by Oil Stocks</th>
<th>Primary Threat Addressed by Oil Stocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>Economic Vulnerability</td>
</tr>
<tr>
<td></td>
<td>High Economic Vulnerability:</td>
</tr>
<tr>
<td></td>
<td>Significant Government Involvement</td>
</tr>
<tr>
<td></td>
<td>Low Economic Vulnerability:</td>
</tr>
<tr>
<td></td>
<td>Limited Government Involvement/</td>
</tr>
<tr>
<td></td>
<td>Cost Minimization</td>
</tr>
<tr>
<td>Small</td>
<td>Security Vulnerability</td>
</tr>
<tr>
<td></td>
<td>Significant Government Involvement and Industry Mandates</td>
</tr>
<tr>
<td></td>
<td>Limited Government Involvement/</td>
</tr>
<tr>
<td></td>
<td>Cost Minimization</td>
</tr>
<tr>
<td></td>
<td>Significant Government Involvement</td>
</tr>
</tbody>
</table>
Empirical Strategy

• Quantitative assessment
  – Panel analysis of the level of government-owned oil stocks in IEA countries from 1984-2012
  – Key takeaway: variables representing security vulnerability outperform those representing economic vulnerability

• Case analysis
  – Qualitative assessment of oil security policy in the United States, Sweden, and the Czech Republic
  – Factors identified in this project drive the discourse on energy security and oil stockpiling in each country
The United States

• Independent variables
  – Economic vulnerability becomes paramount by the 1980’s
  – Market power of the Strategic Petroleum Reserve (SPR) is enormous – 4.4 million barrels per day

• Policy outcome
  – The Department of Energy evaluated the choice between public and private approach → chose public stocks
  – Market power and economic vulnerability have driven the SPR debate
  – The U.S. cost-benefit approach is unique in the IEA

• *The logic of large nations and collective action*
Sweden

- **Independent variables**
  - Small economic vulnerability
  - No market power

- **Policy outcome**
  - Neutrality and trade → initially poured resources into oil stocks
  - Market globalizes → transition to cost minimization

- **Incentive to free-ride drives policy outcome**
The Czech Republic

- Independent variables
  - No Market power
  - National security vulnerability

- Policy Outcome
  - Minimizing dependence on Russia
  - Energy is treated as a matter of national sovereignty
  - Resource-intensive approach to oil stockpiling

- National security outweighs incentive to free-ride

Conclusions

• International relations theory buttresses our understanding of oil stockpiling by highlighting the full array of policy drivers

• Collective action logic explains stockpiling outcomes where energy security is primarily a prosperity issue
  – The benefits of a government-intensive strategy outweigh the costs in nations with substantial market power
  – Nations that cannot impact the market free-ride

• Where energy security is a national security issue, governments expend tremendous resources on building an effective petroleum stockpile
Oil Stockpiling Going Forward

- Non-IEA countries
  - key to the future of oil stockpiling
  - Future research should focus outside of the IEA
- China’s unique position
  - Security and economic concerns both play a role in SPR debates
  - Substantial stockpiling
  - Key question: partnering?