

Policy Analysis

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The Case against Government Intervention in Energy Markets Revisited Once Again

by Richard L. Gordon

Executive Summary

Many politicians and pundits are panicked over the existing state of the oil and gasoline markets. Disregarding past experience, these parties advocate massive intervention in those markets, which would only serve to repeat and extend previous errors. These interventionists propose solutions to nonexistent problems.

This Policy Analysis reviews the academic literature relevant to these matters and argues that the prevailing policy proposals are premised on a misunderstanding of energy economics and market realities. The interventionists do not distinguish between problems that government can remedy and those that it cannot. They ignore lessons that should have been learned from past experience. They embrace at best second- and third-best remedies rather than first-best remedies for the alleged problems. Moreover, they ignore the extreme difficulty associated with ensuring efficient policy response even when it seems to be theoretically warranted.

Fear of oil imports is premised on pernicious myths that have long distorted energy policy. The U.S. defense posture probably would not be altered by reducing the extent to which oil is

imported from troublesome regions. Fears about a near-term peak in global oil production are unwarranted, and government cannot help markets to respond properly even if the alarm proved correct. Market actors will produce the capital necessary for needed investments; no “Marshall Plans” are necessary. Price signals will efficiently order consumer behavior; energy-consumption mandates are therefore both unwise and unnecessary. Finally, more caution is needed regarding the case for public action to address global warming.

The omnipresent calls for more aggressive energy diplomacy are misguided. Economic theory validated by historical experience implies that the diplomatic initiatives are exercises in futility because they seek to divert countries from the wealth maximization that is their goal. Similarly, the search for favorable access to crude oil is futile. Despite their popularity, rules to force reductions in energy use lack economic justification. Attacks on American oil companies and speculators seek to shift blame to those subject to U.S. government control from the uncontrollable foreign oil-producing governments that are truly to blame.

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Introduction

The vast majority of both Republican and Democratic politicians, including those in the George W. Bush administration,¹ are pushing for increased governmental intervention in energy markets. A disappointingly large number of organizations that analyze policy issues have likewise issued reports supporting such intervention. With the publication of a report in 2007 titled *Hard Truths: Facing the Hard Truths about Energy: A Comprehensive View to 2030 of Global Oil and Natural Gas*,² the National Petroleum Council joined, among others, the National Commission on Energy Policy,³ the Council on Foreign Relations,⁴ and the Milken Institute⁵ in support of additional interventions in energy markets.⁶ The source for the call—the oil industry itself—probably explains the attention the NPC report initially received.⁷ While there was little new in the report, its fuller-than-usual coverage of many of the issues that currently haunt policy makers, the attention it has received from the trade press, and the fact that it came from the oil industry itself makes it a convenient starting point for a discussion about energy markets and public policy.

An Overview of *Hard Truths* and Other Energy Proposals

The standard 2008 case for energy intervention cites the dangers of oil-import dependence and the related problem of high oil prices; the undesirability of oil use because of depletion, undesirable environmental impacts, or both; and the danger of global warming due to fossil-fuel consumption. This is often aggregated into a call for energy independence, but energy independence is inconsistent with oil-depletion and environmental-impact concerns. The NPC report curiously rejects these standard premises but devises similarly unsatisfactory alternative rationalizations for the same policy measures as other commentators advocate. The executive summary of the NPC report argues that the United States must

- Moderate the growing demand for ener-

gy by increasing efficiency of transportation, residential, commercial, and industrial uses.⁸

- Expand and diversify production from clean coal, nuclear, biomass, other renewables, and unconventional oil and gas; moderate the decline of conventional domestic oil and gas production; and increase access for development of new resources.
- Integrate energy policy into trade, economic, environmental, security, and foreign policies; strengthen global energy trade and investment; and broaden dialogue with both producing and consuming nations to improve global energy security.
- Enhance science and engineering capabilities and create long-term opportunities for research and development in all phases of the energy supply and demand system.
- Develop the legal and regulatory framework to enable carbon capture and sequestration. In addition, as policymakers consider options to reduce CO₂ [carbon dioxide] emissions, provide an effective global framework for carbon management, including the establishment of a transparent, predictable, economy-wide cost for CO₂ emissions.⁹

The purpose of this Policy Analysis is to demonstrate that all but one of those propositions—that pertaining to increased access to government-owned resources—are unsound suggestions typical of the prevailing energy debate. Those proposals allegedly derive from the “hard truths” that the NPC asserts about the world energy market, which include challenges to—but also acceptance of—the prevailing political rhetoric. The six hard truths highlighted by the NPC report (which I have numbered for convenience)¹⁰ are as follows:

1. Coal, oil, and natural gas will remain indispensable to meeting total projected energy demand growth.
2. The world is not running out of energy

resources, but there are accumulating risks to the continued expansion of oil and natural gas production from the conventional sources which historically relied upon. These risks create significant challenges to meeting the total projected energy demand.

3. To mitigate these risks, expansion of all economic energy sources will be required, including coal, nuclear, biomass, other renewables, and unconventional oil and natural gas. Each of these sources faces significant challenges, including safety, environmental, and political or economic hurdles, as well as imposing infrastructure requirements for development and delivery.
4. Energy independence should not be confused with strengthening energy security. The concept of energy independence is not realistic in the foreseeable future, whereas U.S. energy security can be enhanced by moderating demand, expanding and diversifying domestic energy supplies, and strengthening global energy trade and investment. There can be no U.S. energy security without global energy security.
5. A majority of the U.S. energy sector workforce, including skilled scientists and engineers, is eligible to retire within the next decade. The workforce must be replenished and trained.
6. Policies aimed at curbing carbon dioxide emissions will alter the energy mix, increase energy-related costs, and require reductions in demand growth.

There is a tension, however, between many of these hard truths and the NPC policy responses that follow from them. For instance, claim (1) is clearly valid, but it should suggest nonintervention, rather than the intervention proposed elsewhere in the report. Claim (2) substitutes for the standard dubious fear of exhaustion the equally questionable fear of a worldwide failure to invest adequately in energy production. Claim (3) similarly is premised upon the odd idea that dominates the NPC

report that market actors are unable to execute profitable investments in energy. The first sentence-and-a-half of claim (4) is spot-on. The last sentence is a truism, and the text in between ranges from the banal to the indefensible. Clearly, energy imports require an increase in world trade and investment. Yet, no public policies are needed to produce the postulated increases in trade and investment. The claim regarding domestic demand and supply points crosses the line between describing what might happen in the marketplace and making indefensible policy suggestions. Claim (5) is a statement of fact that has no satisfactory policy implication. Claim (6) is tautological, and presages the feebleness with which the report handles global warming.

Nevertheless, these truths provide the bases for the governmental intervention proposed by the NPC. This is an ironic outcome. The report, as the list of truths shows, dissents from the import fears and resource pessimism that is popular in other studies, but promotes new and equally dubious problems that are marshaled to justify the very same policy proposals that the other efforts advocate.

The NPC's case is developed in the first five chapters of the report, dealing with, in turn, demand, supply, technology, geopolitics, and carbon management (the report's curious euphemism for global warming):

- The demand chapter moves from a presentation of forecasts to a call for more regulations to reduce energy use.
- The supply chapter is predominantly a review of forecasts and resource-availability studies into which concerns about the difficulties of ensuring necessary investment are interwoven.
- The technology chapter ranges over a variety of options, with the bulk of the attention given to conventional and unconventional sources of oil and gas. Stuck at the beginning is an examination of the dangers of an inadequate supply of people who are trained to manage energy ventures.¹¹
- The geopolitics chapter has little sub-

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stance; it does not distinguish among the threats that prior writers have seen as relevant to policy; those that are unfortunate, but to which market economies can adapt; and flights of fancy about oil-access wars. The NPC displays a faith in negotiation as a remedy, which makes no economic sense, and has proved worthless in practice.

- The carbon management chapter is so perfunctory as to have been better omitted.

The NPC report does not merely embrace the principle of intervention; it advocates continuation and even extension of the many ill-advised energy policies that survived the partial deregulations of the 1981–1992 Reagan-Bush administrations.

The recommendations start by proposing a tightening of energy-performance standards, first in motor vehicles and then in the residential and commercial sectors. The NPC also calls for related increases in government research and development, and federal demonstration projects to highlight better industrial energy-use techniques.

More critically, later recommendations buy into the pernicious fallacy that oil is a special commodity whose availability is heavily affected by political considerations. Without any supporting evidence, the NPC transforms the possibility of politicization into a near certainty:

The world is entering a period in which international energy development and trade are likely to be influenced more by geopolitical considerations and less by the free play of open markets and traditional commercial interactions among international energy companies.¹²

Consequently, the NPC believes that energy should become a central focus of policy in every relevant diplomatic realm. The report calls for the United States government to¹³

- Integrate energy policy into trade, economic, environmental, security, and for-

eign policies by having the Department of Energy share an equal role with the Departments of Defense, State, Treasury, and Commerce on policy issues relating to energy and energy security.

- Continue to develop the international energy marketplace by expanding the energy dialogue with major consuming and producing nations, including China, India, Canada, Mexico, Russia, and Saudi Arabia.
- Promote an effective global energy marketplace by sustaining and intensifying efforts to encourage global adoption of transparent, market-based approaches to energy through multilateral and international institutions—including the World Trade Organization, G8, the Asia-Pacific Economic Cooperation, the International Energy Agency, the International Energy Forum, and the Joint Oil Data Initiative.
- Assist and encourage global adoption of energy transfer programs and lend-lease arrangements.

The critical element of the report's overreach is the NPC's call to subsidize virtually every energy resource imaginable: enhanced oil recovery, conventional oil and gas, oil shale and oil sands, unconventional natural gas, biomass, coal, and nuclear (solar power and wind power are praised elsewhere in the report).¹⁴ A mishmash of policies is suggested to promote those energies. While the NPC nods toward the need for better federal lands management policy to facilitate the production of energy (with particular attention given to oil shale, oil sands, and unconventional natural gas), a report stressing more reasonable regulation would have been much more helpful than what appeared.

On the positive side, the report offers a laudable, but familiar, laundry list of desirable attributes for the world energy market.¹⁵ Those attributes include

- a competitive market
- stable and diverse supply with minimal disruptions

- low price volatility
- adequate spare capacity and logistical infrastructure
- diverse energy mixes
- protection of the global environment, including climate considerations
- flexibility to accommodate shifting demand patterns
- transparency and reliability of commercial relationships

The NPC concludes that neglecting these objectives in a blind pursuit of energy self-sufficiency would risk unintended and harmful consequences for both energy suppliers and consumers alike.¹⁶ The authors, however, adopt undesirable proposals to support these goals. In particular, the NPC seems to believe that the United States has the ability to convince the world to embrace this vision for world energy markets, and the ability to assist in an attempt to translate that wish into reality.

Common Pitfalls of “Blue Ribbon” Reports

Unfortunately, the NPC report shares several key defects with other recent and earlier reports, studies, and books that have plowed this policy terrain.¹⁷ The NPC study is simply one of a long line of ostensibly “blue-ribbon” reports that say more or less the same thing and argue more or less from the same foundation. None constitute a serious attempt to deal with energy issues.

The errors found in these reports are the inevitable result of the politics of blue-ribbon panels. They are designed to include a wide variety of views, make quick decisions, and are at the mercy of a supporting staff whose qualifications depend upon the decisions of the study’s administrators. As subsequent material should suggest, the competence of support staff is widely variable. Moreover, the pressure to rapidly reach a consensus and unite behind it often produces the bloated set of proposals criticized here.¹⁸

A particularly unfortunate aspect of the NPC report is that it fails to even provide

what is advertised—the industry’s perspective on the issues at hand. While the NPC was once the source of insights from industry experience, its aggressive use of non-industry analyses and arguments add external views that lead to incoherence.

That aside, the primary problem manifest in the energy reports noted here is their appalling failure to acknowledge the implications of past experience. There is nothing new, for instance, about producer instability, the search for reliable sources of energy, or the need for finance and staff for energy expansion projects. More critically, the historical record shows the inability of government to effectively assist industry in meeting those challenges.

During the energy turmoil of the 1970s, economists engaged in a great effort to critically examine the then-prevailing energy problems and the policies adopted as reactions to those problems. The basic conclusion was that no valid economic defenses existed for the interventions that were adopted. Some controversial arguments were made for alternative interventions, but they have not stood up. Nothing that has occurred since then has altered these conclusions. Unfortunately, too many commentators have forgotten previous work on these issues.

The NPC report—like the other studies and reports mentioned above—also pays too little attention to the underlying economics of energy. While a report to a general audience may downplay or popularize the technical economic issues, the implicit failure to recognize the issues in play is unacceptable. At times, the NPC, unlike other studies, does state—albeit without elaboration—purported economic rationales for its proposals. None of those justifications, however, are persuasive.¹⁹ That should not surprise: the passion to act regularly inspires neglect of those economic principles that undermine the case. Regardless, what was intended as a fresh look at energy issues repeats chronic errors.

The NPC report, like most others, errs doubly by advocating inferior, and, in the critical international-oil case, totally ineffective cor-

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rective measures of a type identical to those proposed in the Cheney report. Thus, even were the problems real, the proffered policy agenda would not correct them.

The Underlying Economics of Energy

The discussion that follows offers a summary of the underlying economics literature on energy markets and governmental intervention in the same and contrasts those findings with the main arguments offered in the energy agendas advocated by the most popular public reports.

First, I deal with the economics of oil-import dependence, the main concern of most of these blue ribbon reports. The oil-dependence danger is the subject of an extensive, but specialized, literature. Both economic theory and actual experience suggest that the present hysteria is unwarranted.

Next, I turn to the alleged shortcomings of capital markets, which is the only plausible economic basis for public policy to address energy depletion. These concerns have rightly become a backwater of economic analysis; economists have abandoned their concerns over the issue.

Following that, I address the environmental impact of energy consumption, a well-established interest of modern economists. As with all environmental issues, however, economics only can suggest what to do, given that the impacts from man-made global warming are conclusively established to exist and prove harmful.

Then, I consider the implications of imperfect information in energy markets and whether intervention to reduce energy consumption is warranted by the same. Markets are perfectly capable of dealing with most if not all information-related problems in both theory and practice.

Next, I briefly discuss the current obsession with speculators and the impact of market manipulation on energy prices. While this issue has been neglected in the blue-ribbon reports discussed in this paper, it reappears regularly in energy policy debates and is a manifestation of economic illiteracy.

After that, I consider the importance of selecting the appropriate remedies for identified problems. The alleged problems highlighted by the NPC can be better and more directly addressed by straightforward interventions that were never considered by the NPC and similar studies. This is another example of the unanalytic, ahistorical devotion to pet remedies that mars current energy policy discussions. These errors are another consequence of arguing without considering the relevant economics. Rather than first-best responses, the NPC report embraces (at best) third- or fourth-best responses that will fall short of their policy mission, introduce unintended consequences that complicate markets even further, or do both.

Finally, I examine the difficulty involved in remedying market failures with government intervention, even when those market failures clearly exist. The NPC report, like almost all other such reports, is quick to argue that markets fail on a wide range of fronts, yet implicitly assumes that government remedies to market failures never misfire. A vast literature proves exactly the opposite.

Oil Import Problems in the Economics Literature

Starting well before the oil turmoil of the 1970s, economists have found oil to be a major area for study. An enormous literature exists, and more accumulates on a regular basis. The material ranges over many issues and cannot be fully reported or reviewed here.

The single most critical contribution has been that of Professor M. A. Adelman of MIT. Starting in the 1960s, he undertook a comprehensive examination of the underlying economics of world oil and how it was affected by public policies around the world. His classic synthesis book reached completion just as the oil turmoil broke.²⁰ Two decades later, he critically chronicled the evolution of oil markets from 1970 through the aftermath of the first Gulf War, with a particular focus on the behavior of oil-exporting coun-

tries.²¹ Adelman was by no means the only economist to explore this terrain—and many continue to work in these vineyards at present—but his contributions have proven the most important.

An interesting parallel to Adelman's work was produced by President Nixon's Cabinet Task Force on Oil Import Control.²² This was one of those rare government studies that seriously examined the issues. The effort received first-rate staffing, and sought and received excellent input on the issues. Several leading energy economists provided consulting reports, and interested parties were invited to provide input. The result was an impressive review of the issues, focusing on the centrality of fostering and preserving competition in oil and the unsuitability of the then-existing import quota system for oil. Unfortunately, the advice was ignored.

Numerous reviews of import dangers and policy have since emerged with important contributions by economists at Resources for the Future, such as Milton Russell, Douglas Bohi, Michael Toman,²³ and, most recently, Ian Parry.²⁴ The fascination with government oil stockpiles produced several efforts.²⁵ The macroeconomic implications of oil-supply shocks have also received a great deal of attention. Professor James Hamilton at the University of California, San Diego, is the most quoted advocate of the argument that oil shocks cause major macroeconomic dislocations, but, as sketched below, many have concurred or dissented.²⁶ The most comprehensive synthesis of oil economics and public policy, however, was produced by energy economist Robert L. Bradley Jr.²⁷

Economics vs. Politics in World Crude Oil Markets

A long-standing conflict prevails between those who believe that the world oil supply is primarily driven by the conventional economic objective of wealth maximization, and those who believe that political influences are dominant. Neither view, however, should be pushed to its logical limits.

Proponents of the economic view generally

recognize that at least one important departure from wealth maximization has arisen: the nationalization of the oil industry within OPEC countries during the 1970s. The ability of national oil companies to hire foreign managers, combined with prior efforts by OPEC members to arrange that its domestic workforce secured training in petroleum industry management, ensured that operations were not undermined. Investment decisionmaking, on the other hand, was harmfully altered. During the private-ownership oil regime, foreign contractors concentrated on making profitable investments in capacity maintenance and addition. With nationalization, however, the funds derived from oil production became part of a national pool of wealth, and oil investments had to compete with other governmental priorities. The effects of this on the industry illustrate the fallacy of reliance on allegedly superior governmental investment skills (an issue to which I return later).²⁸

One clear consequence of an economics-based view of oil is that if oil policy is governed by national self-interest, the engagement with producers—so beloved among politicians and the NPC—is at best a waste of time, and at worst an arrogant presumption of superior knowledge. Exporting, if profitable, will be undertaken whatever foreign diplomats may suggest. Conversely, unprofitability precludes exports.²⁹ A key point here is that, to date, the danger from imports has been of temporary disruption of supplies due to some local crisis.³⁰ This is a manageable problem that free-market institutions could have handled if they had not been thwarted by intervention (another matter to which I will return later). Eliminating or even sharply reducing oil imports is not a sensible response to such short-term disruptions.

It is premature to postulate and respond to the risk of longer-term supply disruptions. Indeed, it is hard to conceive of plausible long-term threats. The advantages of oil trade to buyers and sellers are powerful incentives for both to maintain flows. Oil is more easily extracted, transported, transformed, and utilized than any other fuel. Rival energy sources are so costly that they prevent the energy tran-

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sitions so eagerly advocated by many commentators. The resulting revenues to producing countries dwarf what they can earn elsewhere.

A classic illustration was Richard Nixon's call for energy independence. Fortunately, the old Federal Energy Administration assembled a team of bright young operations researchers to synthesize the numerous studies commissioned to support the Project Independence initiative. Their well-designed (but necessarily very oversimplified) model nicely quantified what experienced energy observers sensed: the nature of petroleum use with its heavy concentration in the transportation sector makes substitution extremely expensive.³¹

Conversely, the political theory of producer behavior bears a strong resemblance to what economists call the "managerial-slack model" of firm behavior. In that model, producers supposedly have sufficiently limited objectives, so that they sacrifice opportunities for wealth maximization. The political theory of producer behavior, however, has the same inherent implausibility as the slack theories that it resembles.³²

More critically, the key example cited to buttress the argument that politics drives producer behavior—the purported Arab oil embargo of 1973—implies no such thing. First, there was no embargo because selective embargos are infeasible.³³ Once oil hits the high sea, its destination cannot be controlled. Moreover, an embargoed nation can easily shift to other suppliers. Adelman's classic 1995 analysis of world oil argues that whatever production reductions that were undertaken were motivated by a desire to force up oil prices rather than by a desire to punish anyone for support of Israel.

Further evidence is provided by the effects of the critical revolutions in Iraq, Libya, and Iran, in which rulers who were friendly to the West were replaced by rulers who were hostile to the West. Aside from the later years of Saddam Hussein's rule in Iraq, those hostile rulers were at least as dedicated as their predecessors to the maintenance of oil supplies.³⁴ Even Saddam Hussein's attacks on Iran in 1979, and Kuwait in 1991, had wealth-maxi-

mizing aspects. To be sure, the moves were motivated by ancient enmities. However, the efforts could also be construed as oil grabs based on ill-conceived beliefs that more oil wealth could be secured cheaply.

Similarly, Adelman's 1995 book convincingly demonstrates that the special relation with Saudi Arabia is a sham. Saudi Arabia, as should be expected, does what is in its economic interest, which rarely means doing what the United States wants.³⁵ No vision of oil-exporter restraint from wealth maximization implies either that good relations are needed to ensure supply or that the exporters are susceptible to cajoling.

The nadir of this stress on diplomacy was the notorious 1971 Tehran negotiations.³⁶ As was ultimately learned by reporters from *Forbes*, the State Department, apparently under the leadership of its long-time energy advisor James Akins, pushed through a producer-consumer deal that allowed major increases in oil prices, ostensibly as a means of heading off even larger price increases. Adelman argued that the government's timidity would unleash even more vigorous efforts to raise oil prices closer to a monopoly-profit-maximizing level. The 1973-74 oil price spiral was the realization of Adelman's warnings.³⁷

As Adelman also warned, what has been critical is the oil dependence of these countries. Most possess nothing else that can produce significant incomes. Others have become so dependent on oil that other industries lie fallow. Maximizing wealth and spending the proceeds is far more rewarding to producer states than the capricious political manipulation of markets.

Some have suggested, at least tacitly, that the rise of Islamic fundamentalism profoundly alters the situation. That suggestion rests on at least two critical implicit assumptions: first, that because fundamentalists are willing to harm fellow Muslims, radical fundamentalist governments would take the ultimate step—avoided by the Iranian fundamentalists—of dooming Islamic nations by ceasing oil production; and second, that these fundamentalists have good prospects to assume power in

many oil-producing states. A possible third tacit assumption is that the strategy of economic suicide could not be resisted any more than a scorpion could resist stinging the proverbial frog that was carrying it across the water. While all this might occur, it appears far too wild a possibility to be the core of national energy policies. Moreover, it is unlikely that any good strategy exists to prepare for this doomsday.

The belief that oil producers are motivated by political considerations breeds the belief that some set of policies can ensure favorable access to oil relative to other customers. Of course, in markets governed by economic principles, access is secured by paying the prevailing market price, regardless of how competitive the market may be. With textbook-pure competition, everyone is a price taker, buying or selling what is economic at the prevailing market price. With imperfect competition, some sellers and buyers may affect the price, but sellers will still sell to all at whatever price results from the interaction.³⁸

Logic and experience suggests that the search for favorable access is an exercise in futility. All parties in the oil trade face enormous pressures not to indulge in favoritism. By definition, favoritism is bad for the producing companies and countries. Favoritism can only mean selling to less remunerative outlets. Even the consuming countries suffer the consequences of diversion from what may be actual or potential allies.

Reality, however, has not prevented pursuit of special relations with oil producers. The classic illustration was the maneuvering to secure rights to develop oil in the Middle East. The first important case was the British government's purchase of the company that was developing Iranian oil resources (the predecessor of today's BP).³⁹ The key symbolic start of the United States' embrace of the political-relations approach to oil was Franklin D. Roosevelt's 1945 visit with Saudi Arabian king Ibn Saud. Other forms of deals have arisen. France and Japan have likewise engaged in futile efforts to establish special relations with oil producers. Current Chinese efforts simply

repeat past errors and are thus of no great concern. No evidence exists that these arrangements have ever affected product allocations.

The NPC raises an alternative, more germane worry regarding access: the willingness of governments to allow the development of oil and gas resources. A good example of this problem is the reluctance of the United States government to lease oil-development rights on federal land and in coastal waters. This is surely the best policy analysis in the NPC report. It gets lost, however, in the barrage of mostly questionable suggestions elsewhere in the report, particularly the move to infer similar reluctance in the rest of the world.

In sum, the economic view of oil advocated here holds for the primacy of economic goals, recognizes that oil markets generate vast revenues that may be and indeed often are misused, and acknowledges that the feasible options open to the United States and other major oil consumers are limited to avoiding incentives to rig markets. Given that oil-market behavior is determined by the exporting countries' perception of what the market will permit, it is fantasy to believe that oil-importing countries can redirect the policies of oil-exporting countries. Countries cannot be persuaded to ignore their economic interests. It is equally unrealistic to believe that dialogue will improve these countries' knowledge of market realities. If anything, their record in market perception far excels that of consuming-country governments. That should not be a surprise. Exporting-country survival depends on realism about markets. Consuming-country governments, in contrast, are essentially bystanders to decisions made by their citizens. These governments thus face little or no pressure to be correct.

A related form of wishful thinking is that consuming-country governments can persuade oil-exporting countries to eliminate the many undesirable ways in which oil money is used. These misuses are broad and real. They include corruption, support of destabilizing activities in other countries, and overinvestment in armaments. Given the strong forces

It is fantasy to believe that oil-importing countries can redirect the policies of oil-exporting countries.

The main concern of the United States when it comes to oil markets is to ensure that there is vigorous competition in those markets.

that lead to such excesses, it is futile to expect that external criticism will have any impact.

Import Dangers Revisited

Before dealing with specific issues related to oil imports, various views on the subject require our attention. Among the studies criticized here, the 2006 Council on Foreign Relations Task Force has the clearest and fullest listing of the problems widely believed to be associated with excessive reliance on foreign oil. The task force saw six dangers:

1. "The control over enormous oil revenues gives exporting countries the flexibility to adopt policies that oppose U.S. interests and values." (p. 26)
2. "Oil dependence causes political realignments that constrain the ability of the United States to form partnerships to achieve common objectives." (p. 26)
3. "High prices and seemingly scarce supplies create fears—especially evident in Beijing and New Delhi, as well as in European capitals and in Washington—that the current system of open markets is unable to ensure a secure supply." (p. 27)
4. "Revenues from oil and gas exports can undermine local governance." (p. 28)
5. "A significant interruption in oil supply will have adverse political and economic consequences in the United States and in other importing countries." (p. 29)
6. "Some observers see a direct relationship between the dependence of the United States on oil, especially from the Persian Gulf, and the size of the U.S. defense budget." (p. 29)

This list is characteristically problematic in its failure to distinguish between what is disturbing but uncorrectable and that to which a sensible response is possible. Danger (1) is a much-repeated irrelevance. As noted earlier, there is nothing the United States can do to affect the situation. At best, any strategies that lower oil prices will lessen the power to do mischief. Danger (2) expresses an old concern that others will be more unwise than the United

States in seeing and trying to counteract political forces in oil markets. Danger (3) then postulates an unfamiliar proposition that others also will be more errant in perceiving what drives the market. Danger (4) is another example of the untenable belief that the quality of foreign governments matters to and is correctable by, the United States. Danger (5) ignores the fact that supply disruptions would have the same effect on a nation regardless of how much oil it imports. Danger (6) is a strange, unhelpful twist on an old argument. Instead of deploring security costs, we worry that others fear the existence of these security costs. A direct consideration of security costs is preferable.

In contrast, Bohi and Toman's much more critical survey of the economics of oil imports identifies three relevant policy issues: the potentially reducible effects of higher oil prices, the macroeconomic effects, and the effects on the military budget.⁴⁰ A discussion of each follows below.

World Oil Prices and U.S. Policy

In the early 1970s, both Professor Adelman and the Cabinet Task Force on Oil Import Control concluded that the main concern of the United States when it comes to oil markets is to ensure that there is vigorous competition in those markets. This was precisely what was not being done at the time. The United States had for years protected the domestic oil-producing industry by imposing quotas on oil imports.⁴¹ Denied the opportunity to compete for sales in U.S. markets, exporters turned to market-rigging operations.

The infamous oil negotiations in 1971, first with Libya and then in Tehran with the Middle Eastern producers, were the great turning point. Adelman's initial view was that the negotiations produced price-rigging policies that would have been avoided had exporter demands been resisted, but he later noted that perhaps the outcome would have arisen in any case. In any event, the federal government's ambivalence about competition in oil markets made the creation of a cartel easier.

Since 1971, the oil-exporting countries have secured sharply higher but volatile prices. Some analysts argued, particularly in the early years of high prices, that those high prices were less the product of production constraint by the cartel than they were the product of endogenous shifts in global supply and demand that would have occurred whether the cartel existed or not.⁴² Subsequent experience, however, indicates that the cartel has, in fact, had a hand in those price fluctuations. In particular, market behavior involved price collapses and spikes without major changes in the underlying demand or supply. Adelman nicely epitomized the situation as one of a clumsy cartel.⁴³

The reason that the cartel exhibits “clumsiness” is because OPEC member states often disagree about cartel strategy, exhibit an on-again, off-again commitment to agreed-upon production quotas, and lack conclusive information about how far they can push the market on price at any given time. Thus, prices have cycled widely and wildly. The current worldwide oil price boom, for instance, followed years of historically low prices.

Several ideas have been forwarded to counteract the power of the OPEC cartel, but the only credible idea that has arisen is an oil-import-quota auction. That idea, which gained some academic traction in the 1970s, has its roots in the venerable international trade theory concept of an optimal tariff. The case for an oil-import-quota auction follows from the fact that large consuming nations collectively have monopsony (buyers’ monopoly) power. Theoretically, one could impose a tariff that restricts imports and lowers prices received by exporters to their monopsony-optimum level, or else that optimum-import level could be set as a quota.

Several problems arise, however, in implementing such an optimum tariff or quota. First, determining the proper import level is beyond the capabilities of any government anywhere. Second, protectionist instincts may lead to excessively high restrictions. Third, exporters might retaliate and trigger a worldwide trade war. Fourth, a great power seeking

to foster international trade sets a very bad example by engaging in opportunistic restrictions. The United States has undertaken too many unjustified interventions, such as in steel and automobiles; piling on more is not desirable.

The quota auction variant of this idea was proposed largely to exploit a weakness inherent in all cartels. The fundamental insight here is that if cheating on cartel production quotas can be concealed, cartel members will be more willing to cheat. Hence, auctions for export rights to consuming nations would be in the form of sealed bids with the results kept secret. Unfortunately, it is doubtful that the secrets in question could be kept.

The many and varied problems associated with and an oil-import-quota auction have largely (and rightly) killed interest in the idea. The clearest advice for consuming states that remains unscathed is that they do nothing to obstruct the flow of oil in world markets. The NPC recognizes, but does not analyze, what is always at the core of world oil issues—the competitiveness of the market. The NPC’s stress on diplomatic approaches, as noted, is an unrealistic response to the challenge of stimulating competition. What is really needed is to do nothing to create fears of market-access restriction. In short, the biggest danger of imports is the hysteria about them and the market-disrupting measures proposed as cures.

The Macroeconomics of Oil

Another hearty perennial is that oil-price instability, supposedly exaggerated by dependence on oil imports, has severe adverse macroeconomic effects. In particular, it is said to cause the simultaneous appearance of inflation and unemployment. As sketched below, academics have conducted extensive investigations of this matter, and a wide range of views has arisen. Unfortunately, formidable econometric problems arise in separating out the impacts of oil-price increases from those of other factors, particularly monetary policy. The most recent work, nevertheless, seems skeptical about the argument that major macroeconomic impacts follow from oil-price volatility.

OPEC member states often lack conclusive information about how far they can push the market.

The literature reveals formidable problems in establishing a convincing theoretical analysis regarding why macroeconomic impacts arise.

Any discussion of this issue must be anchored in the revolution in macroeconomics that occurred in the 1970s and initiated the third phase of the evolution of macroeconomics.⁴⁴ Prior to the appearance of John Maynard Keynes's *General Theory* in 1936, economic instability was treated in a fragmentary, unsystematic basis. Keynes provided the basis for a more systematic framework.⁴⁵ His own formulation was very loose, but several commentators, particularly J. R. Hicks, prepared formalization that transformed Keynes' ideas into the Keynesian model of macroeconomics.⁴⁶

The second evolution was the rise of the monetarist school of macroeconomics, most notably advanced by Milton Friedman, Karl Brunner, and Allan H. Meltzer. Friedman, in collaboration with Anna Schwartz, produced a massive history of U.S. monetary policy that argued that it was inept monetary policy rather than some breakdown of the capitalist system that had caused economic instability, particularly the great depression of 1929–33.⁴⁷ Monetarists argued that monetary policy was more influential than fiscal policy in determining the course of macroeconomic events, which directly contravened much of the Keynesian perspective. This contention had enormous influence with many leading economists who accepted the findings.

The third evolution of macroeconomic thought was ushered in by a group of younger economists led by Robert Lucas,⁴⁸ Thomas Sargent, and Neil Wallace.⁴⁹ They incorporated principles from traditional economics, such as good foresight and rapid market clearing into macroeconomic thought. Taken to its outer limits, this "rational expectations" approach implies that economic instability will not arise, and, if it did, intervention to reverse instability would not work. While these theories are heavily criticized for assuming far more knowledge that actually exists, that is the point. Economic instability is no longer inherent, but comes from precisely what economic theory cannot handle: unanticipated changes in public policy.

All this matters to theories of oil-price shocks and economic instability because the

newer theories are much less supportive of the idea that oil-price instability can induce macroeconomic shocks. Economists Ben Bernanke, Mark Gertler, and Mark Watson, for instance, conducted an econometric analysis and found that the macroeconomic impact of oil-price shocks has historically been caused by improper monetary responses to the shock and that a more stable monetary policy could have avoided the harms.⁵⁰ Robert Barsky and Lutz Kilian likewise found that bad monetary policy, rather than oil shocks, caused the stagflation of the 1970s.⁵¹

In sum, while the debate has not been settled, concerns about oil shocks have been greatly lessened. The literature on oil shocks reveals that formidable problems exist, in both establishing a convincing theoretical analysis regarding *why* macroeconomic impacts arise, and then econometrically testing the subsequent theories. The weak theoretical support for the fear that oil-price shocks can trigger significant macroeconomic deterioration, combined with the formidable difficulties in isolating the effect of oil-price shocks on the economy as a whole, inspires skepticism about oil-shock theories. Certainly, the theories do not support reducing imports in the hope that the shocks will be sufficiently less profound in order to justify the large, clearly extant costs associated with import restrictions.

At present, the main U.S. policy for addressing the macroeconomic risk of oil-price shocks is the Strategic Petroleum Reserve, a public inventory of crude oil that would theoretically be available during such shocks. Thus, doubts about the dangers associated with those shocks weaken the case for the Strategic Petroleum Reserve. An alternative explanation for the alleged suboptimal level of private oil inventories is that the regular imposition of price controls discourages optimal inventory levels and that a public stockpile can compensate for this.⁵² The previously cited literature on stockpiling, however, suggests that considerable problems exist in ensuring optimal release of public inventories. This led me to conclude that the fundamental

problem was political fear of windfall profits.⁵³ As Taylor and Van Doren observed, this is a fundamental defect for which no credible corrective action exists.⁵⁴ Every indication is that the error of controlling prices will be repeated. Thus, the stockpile has no satisfactory justification.

Investment Myopia and the End of Oil: The Theory and Practice of Energy Transition

People who are alarmed about trends in energy markets commonly contend that a decline of oil production is impending, yet private investors are not correctly anticipating this development. These assertions inevitably link back to M. King Hubbert's inadvertently prescient prediction of a decline in U.S. oil production. Hubbert's analysis, however, was based on a statistical appraisal of the physical availability of oil in the United States, not in the world as a whole.

In practice, economic limits to production kick in well before geological limits, and that is what happened in the United States. Oil production declined, not because of depletion, but because a superior (less-costly) alternative—Middle Eastern oil—arose. The peak was reached later than was desirable because of the federal government's policy of restricting oil imports. Thus, it was dumb luck that the pattern of decline dictated by changing energy policy matched what Hubbert expected due to physical limits.

The imperfect-foresight argument, in general, is an absurdity. To believe that governments are better anticipators of the future than private investors ignores the vast record demonstrating the contrary.⁵⁵ This is particularly true of the extreme pro-government claims discussed further below. These views posit a government dispassion and wisdom that is lacking in the private sector. Experience shows the opposite. The private sector has the advantage of a multiplicity of actors whose

survival depends on correct decisions. In theory, things might be so unpredictable that disaster might arise from sudden changes that no one could foresee. This is unlikely in energy. The participants are always concerned about, and act to anticipate, future developments. The large size and profitability of oil companies reflects their skills at appraising prospects. If the companies fail, no one else will do better.

An alternative view employs an often used but wildly implausible concept of market failure—the belief that market actors will not establish enough procedures to hedge risks and thus will produce inefficiently low levels of investment. Ronald Coase's point (see below) about the costs associated with transactions such as hedging is the critical analytic response to the criticism.⁵⁶ Every possible risk is not hedged simply because most of them are too small to justify establishing protective measures.

The facts are even more devastating. The years since World War II have seen the rise of a vast array of new financial instruments. Mutual-fund companies have introduced a stunning variety of options that differ in the extent of their active management, whether stocks, bonds, or other assets are involved, what countries are included; in what sectors of the economy investments are made; and in which markets the shares are purchased. Futures markets emerged for crude oil when the major oil companies lost their oil concessions from OPEC nations.

Moreover, improving foresight does not necessarily translate into reducing oil production, let alone support the conclusion that peak oil is near. To discuss this issue intelligently, a review of the underlying and extensive literature on exhaustible-resource management is necessary.

The first widely cited item in the literature is an article by L. C. Grey in 1914.⁵⁷ Subsequent writers made Harold Hotelling's 1931 article on the subject the iconic starting point of the literature.⁵⁸ In the 1960s, however, natural-resource economists such as Anthony Scott,⁵⁹ Orris Herfindahl,⁶⁰ Richard Gordon,⁶¹ and particularly Ronald Cummings,⁶² made

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the critical contributions that produced the essence of this theory.⁶³

Hotelling's theory explains the optimal behavior of a producer who is producing a good in which supply is fixed by nature. If the demand for that good persists long enough so that it is profitable to hoard output, then it is no longer optimal to sell at a price equal to the marginal cost of production. Instead—because there would be later periods in which, because of depletion, no demands could be met—optimally restricting the earlier output to meet these later demands would be profitable. As a few expositions of the theory have noted, should that critical time of unsatisfied demand be nonexistent or simply at a sufficiently distant date, efficient current behavior would ignore the eventual depletion.⁶⁴

When depletion comes nearer, wealth-maximizing resource owners would respond by restricting output to provide for later generations. However, contrary to many or even most treatments of Hotelling, this would not produce a simple, readily observable impact on prices.⁶⁵ When dealing with homogenous resources producible at constant costs, Hotelling argued that the “net price” (the average *profit* per unit of output) would rise at the market rate of interest.⁶⁶ With pure competition in mineral rights, those rents would be paid as royalties. However, because production incurs costs, the market price would necessarily grow at a slower rate than profits.

Other work found that resource hoarding can produce two further economic rewards. First, Grey's pioneering effort stressed that with the standard assumption of increasing marginal costs, output reductions raised profits by lowering marginal costs. Extensions of Hotelling's general case showed that a further reward arises if resources are heterogeneous. In that case, reducing output delays the increasing costs of cumulative production. Several writers demonstrated that the benefit of delaying the depletion of “better” resources was simply the sum of the present values of the resulting cost savings. While this is an unsurprising result, much effort went into its derivation.⁶⁷

While this analysis usually implies rising

prices and falling output over time, those outcomes are not inevitable. Rapid but decelerating shifts in *demand* or rapid downward shifts in costs might lead to rising output.⁶⁸ Thus, Hotelling's argument that the net price of fixed-supply goods would rise at the market rate of interest degenerates into the general proposition that something is valuable, and thus an asset, only if some combination of immediate payments and capital gains gives an overall yield at least equal to the market rate of interest.

The critical point here is that exhaustibility introduces no new market failures into the market. If the assumptions for pure competition prevail, response to exhaustion is efficient. To make matters worse, the impacts of market failure differ depending upon the failure in question. Monopoly still usually produces inefficiently low output; detrimental externalities still lead to excess output. Imperfect capital markets, if interpreted narrowly, might imply excessive output. However, this proves not to be true in general.

The economic interpretation of the claim that market actors demonstrate inadequate concern for the future is that market actors demand too high a rate of return on investment.⁶⁹ As noted earlier, in a simple exhaustible-resource model, concern for the future inspires hoarding of supply for future generations of consumers.⁷⁰ Requiring investment to produce a very high rate of return has the direct effect of making hoarding less attractive. If inefficiently high interest rates are reduced, oil production may indeed be slowed because of increased incentives not to produce.

However, this can be counteracted by the increased incentives that would arise to invest in and operate new producing capacity. An indirect effect of raising the interest cost of utilizing equipment discourages investment in and utilization of producing capacity. Neither effect will always outweigh the other. For producers that are hoarding so much that prices are well above current production costs, a higher interest rate reduces the attractiveness of hoarding. When costs are closer to price, the investment-disincentive effect dominates.⁷¹

In any case, the theory indicates what

would happen if demand for a physically limited material lasts forever. Some have argued that it is thus a useless theory. It is better to contend that the theory, properly used, provides guidance about whether exhaustion is a pressing problem. The presence or absence of the expected results thus gives evidence of the importance of exhaustion.

Contrary to some assertions often made in the early years of oil-price increases (see above), oil-exporter behavior is better explained by theories of cartelization than of exhaustion. Exhaustion theory implies that decisions will be consistent over time and that unilateral producer action is, if anything, preferable. The opportunity to hoard exists whatever other producers do, and indeed, the less that others hoard, the more the actual hoarders benefit. In contrast, cartelization requires coordination. Consistent behavior also is preferable to those hoping to cartelize, but the theory and practice of cartelization indicates that differences among potential participants often lead to breakdowns.⁷² The fitful path of oil prices since 1971 is clear evidence that unstable cartelization is the most likely situation.

Of course, discussions about oil scarcity are heavily affected by the inherent lack of hard data. For good economic reasons, data on the long-run availability of oil and other minerals do not exist. Information on what is knowable, current production and actually developed (proved), is often hard to come by (particularly data from fields governed by members of the OPEC cartel), and all the data are characterized by terms that are sometimes quite unclear or misleading. However, Adelman's work in the area tacitly treats the issues.⁷³ He first notes the critical distinction between exploration and development. Exploration is the initial and far less costly step of locating potentially valuable mineral deposits. Development is the much more expensive step of constructing the facilities needed to extract the minerals. Adelman suggests that exploration is steadily undertaken to build up a backlog of sites that are potentially worth developing. Then, as justi-

fied, the locale is developed. Such development can continue for decades, and indeed even centuries, as conditions dictate.

He argues that exploration is an ongoing activity, driven not by fear of depletion, but by recognition that good opportunities to reduce costs may exist. Exploration and development are limited to serving immediate opportunities to produce.

Given this, the actual endowment of most minerals is unknown. What is known is the amount of proved reserves—the amount in developed deposits and the prospects for developing more. Neglect of this fundamental point perennially produces concern, often reaching hysteria, on resource availability.

Indicators also exist about the vast physical availability of several alternatives to oil and natural gas such as coal, oil shale, tar sands, uranium supplies as extended by breeder reactors, hydrogen, wind, and solar. The broad prediction that ultimately the world economy will move to one or more of these alternatives is probably correct but of no practical value. We simply lack knowledge of what the optimum outcome will be. Neither the identity of the preferred options nor the timing of the transition is knowable. Moreover, the failure as yet to adopt these options reflects the current relatively plentiful supply of oil rather than short-sightedness.

In any case, the situation produces much speculation. Two broad classes of scenarios emerge. In one case adopted by the NPC, moving through coal and perhaps shale and tar sand is undertaken before moving to one or more non-fossil alternatives. Others would skip the first stage. Clearly, the differences lie in views of the overall economics of the alternatives. A critical consideration is whether or not the direct costs of the fossil alternatives are low enough to outweigh the perceived high environmental costs.

In sum, the theory and practice of depletion strongly indicate that a market solution is vastly superior to government intervention.

Discussions about oil scarcity are heavily affected by the inherent lack of hard data.

Proposals for regulations to reduce energy consumption, promote new technologies, and develop technical capabilities can most charitably be viewed as imperfect ways to respond to the alleged underpricing of oil.

Environmental Issues

Dealing with environmental issues such as global warming is tricky because the central issues lie far outside economics. However, neglect is inappropriate because important economic considerations exist.

The case for altering fuel-use practices to fight global warming involves several premises. The starting point is that global temperatures are rising. The critical second proposition is that human activity is a major cause of these rises. The third is that these temperature increases are harmful. Fourth, it is presumed that restricting the heat-raising activities is the most efficient response. Only the first of these is well established.

In viewing the debate, it is necessary to get past the obfuscation regularly used to throttle discussion. The world does not neatly divide into disinterested parties nobly pursuing truth, justice, and the American way and interest groups with selfish aims. It is more realistic to view all participants as possessing an agenda that they are vigorously pursuing. A “special interest” charge is a standard tactic to discredit opposition. Environmental groups have a bias towards finding damages to the environment. Governments have a slant toward encouraging the continuation and expansion of their activities. Universities want to secure research funding. Corporations and trade associations believe that their industries make valuable—and indeed, indispensable—contributions to the economy. All this should be viewed suspiciously. All will overdo; some may be right at times.

The environmental movement is particularly suspect because of its extensive history of overreach. Leaving aside phony crises such as DDT, Love Canal, and Alar, alarmist declarations are usually built upon mountains of misinformation.⁷⁴ Certainly, worries about disaster from the operation of nuclear plants proved virtually baseless.⁷⁵ Studies surrounding acid rain revealed that fears about the effects on forests and lakes were unjustified.⁷⁶

When considering the issue of climate

change, one must always keep in mind the bias imparted by the dominance of government support in research financing. That backing tacitly rests on the presumption that the case for global warming will be confirmed. Concerns are reinforced here by indications that climate scientists who are not heavily involved in massive studies are skeptical that human activities are causing dangerous global warming.⁷⁷

Whatever the causes, the climatological effects and their economic consequences are unclear. The possibility exists that beneficial effects will dominate. Even if not, Goklany calculates that mitigating the effects of global warming will be much cheaper than greenhouse gas emission reduction.⁷⁸

The Economics of Consumption Regulation

The proposals for regulations to reduce energy consumption, promote new technologies, and develop scientific and engineering capabilities can most charitably be viewed as imperfect ways to respond to the alleged underpricing of oil. An alternative interpretation is that market imperfections cause inefficient responses even to correct energy prices. Neither argument is satisfactory.

Two main rationales exist for concerns over energy-consumption choices. The first is the inefficient-capital-market contention just criticized. The second is the assertion that consumers are inadequately informed about energy options. This is an argument with weak theoretic support and unacceptable empirical analyses.

Concern about inefficient market response to price signals has emerged from new academic efforts to discover ways in which market outcomes are unsatisfactory.⁷⁹ The proliferation of these efforts can be explained by two phenomena. One is the simple academic pressure to develop new ideas. The other is a desire to counter the onslaught on older market-failure theories. Discontent with older claims about market failure has become vigorous since at least the 1970s. Many economists now

are skeptical about our ability to determine whether inefficiency does or does not prevail and about the feasibility of devising a satisfactory remedy. So many false accusations and inappropriate cures have emerged in the past that skepticism is essential.

Newer concepts of market failure, however, are considerably more problematic. The new theories deal with more complex cases than were previously considered. The most relevant here are those that purport to demonstrate that asymmetric information between buyer and seller often produces unsatisfactory market outcomes. A critical way in which the new theories differ is that, unlike older work that identified conditions that always led to inefficiency, these new models deal with situations that may or may not produce inefficiency.

While both old and new theories are difficult to verify (and remedy via government intervention), verification is more difficult with these new theories, in which proof of undesirable effects is more difficult to ascertain.

The most relevant critique of these newer theories of market failure is that of Northwestern University economist Daniel Spulber.⁸⁰ Spulber presents his analysis in two parts. The first begins by showing, as would be expected, that no inefficiency arises if the standard assumptions of pure competition with complete information prevails. The existence of monopoly may or may not produce inadequate (or excessive) response. The second part deals with the inefficiencies that might arise with various types of knowledge gaps by the participants. Spulber is quite careful to recognize both that private alternatives to public intervention exist, and that the prospects for public design of efficient intervention are dubious. He concludes that public supply of information to remedy asymmetric information is probably preferable to directly regulating transactions.

If anything, Spulber's critique of these new theories does not go far enough; too many of the analyses that he cites, for instance, postulate problems that are unlikely to arise. For example, Spulber notes Akerlof's work on the market for used vehicles, and how difficult it is for buyers to detect "lemons"—a problem that

leads to sub-optimal prices for all used vehicles.⁸¹ However, economist Eric Bond's examination of the used-truck market suggested that mechanisms existed to appraise used-truck quality.⁸²

What is critical here is that these newer theories of market failure apply to transactions where the relevant knowledge is difficult for one party to the transaction to secure. This hardly applies to energy transactions. Consumers can readily determine the energy-use characteristics of all the energy-using equipment that they purchase (the government perhaps deserves credit for forcing disclosure). Once information problems have been solved, performance mandates (such as automotive fuel efficiency standards) are indefensible because they violate basic (and sound) economic principles about the optimal manner in which choices should be made. No one can be a better judge of what is best than a well-informed consumer, given that performance preferences and consumption patterns vary by individual. Neither government agencies with a mandate to reduce energy consumption nor conservationists devoted to the cause of less energy are to be trusted. In short, affection for performance standards is very bad economics.

Viewing what passes for the empirical literature on these matters inspires total rejection of the case for intervention. For over three decades, assorted research groups have generated paper studies purporting to prove the existence of massive amounts of neglected opportunities that would economically reduce energy consumption. The critical problem is that none of these groups has experience in implementing energy choices.⁸³ Thus, the other logical possibility, that these studies are incorrect, seems more plausible. The situation is not helped by the willingness of conservationists to extend the criticism about inefficient energy use beyond small-scale users to large consumers and product producers. These large-scale users have greater incentives than households to investigate opportunities to reduce energy consumption and have organized to do so.

The academic literature on government intervention to address these sorts of alleged

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market failures is extensive. A notable review of electric-utility energy-conservation programs by MIT economists Paul Joskow and Donald Marron found serious flaws in the manner in which the benefits from these programs were calculated.⁸⁴ The central element of energy-consumption control—fuel-efficiency standards for automotive vehicles (known as corporate-average-fuel-economy standards, or CAFE), is widely, but not universally, criticized as undesirable, even if the alleged market-failure problems prevailed.⁸⁵ The main problems are effects of the standards on other aspects of automobile performance, such as safety,⁸⁶ and the incentives to increase automobile use from the higher mileage and thus low per mile travel cost.⁸⁷

A further drawback, in practice, was created by Congress when it established more stringent rules for automobiles than for light trucks. As should have been expected, this spurred the substitution of light trucks for automobiles, and new types of trucks with properties more like automobiles emerged.

The literature on CAFE suggests that the case for such standards critically depends on massive consumer neglect of the value of fuel savings. For example, a curiously ambivalent article written by Resources for the Future economists Fischer, Harrington, and Parry shows that with consumer awareness, CAFE is at best redundant and has negative effects if it diverts investment from improving other characteristics of motor vehicles. Nevertheless, the authors support modest tightening of CAFE because of other supposed benefits that their analysis did not capture. Those benefits, however, seem more speculative than the consumer-ignorance arguments, about which the authors were properly skeptical.⁸⁸

Big Oil and the Speculators: The Great Excluded Issues

Politicians often rail against the role played by large privately owned oil companies and speculators in energy markets. Blue-ribbon panels have neglected the subject. In the NPC case, this was due to the rules to prevent collu-

sion under which the Council operates. The neglect elsewhere, by definition, indicates that these other groups found the questions unimportant. Given the general ineptitude of these efforts, dumb luck is as likely an explanation as a sudden attack of good sense. However, the persistence of the charge that oil companies and financial speculators routinely engage in price fixing, market manipulation, and collusion necessitates mention here.

There is nothing new about the complaints being lodged against “Big Oil” or Wall Street speculators. Assertions of mischief-making always arise when speculators are active in markets undergoing major changes. However, such assertions have no substance. Efforts dating back to the 1970s and resuming in the 21st century have consistently failed to support charges of energy market rigging by privately owned companies operating in the United States.⁸⁹ The charges against speculators are exercises in economic illiteracy. Speculation is a bet about future prices. The bet can be won only by correctly predicting prices. These, moreover, are wagers in games of *skill*. Speculators persist because they are adept at anticipating price trends. Current prices are affected only if the high futures price inspires increased stockpiling, which has not been the case. The attacks on both oil companies and speculators are simply a demagogic way to express frustration. Confiscating profits then removes the incentives of companies and speculators to apply their skills to the market. The OPEC countries, which are the real culprits, are beyond congressional reach, but oil company executives and financial company executives must respond to subpoenas.

The Exile of First-Best Alternatives

Modern economic analysis, particularly in international trade theory, labors mightily to match solutions to problems. At least in this literature, the writers are careful to limit their attention to policy measures that are normally employed, and which might work in the cases

considered.⁹⁰ Hence, analysts are interested in picking the policy instrument that most directly solves the problem in question. Analysts only consider feasible policy instruments that would have the desired effect. Thus, discussion immediately begins with examination of which qualitatively feasible policy is best.

In this literature, then, only stimulating policies are considered when stimulation is the goal, and similarly, only retarding policies are considered when restriction is the objective. For instance, subsidies stimulate that which is subsidized, while taxes discourage that which is taxed. Industries not targeted by the subsidies feel the opposite effect. For instance, a tax on coal stimulates natural gas.

In the present case, the alleged problems are dangers of oil imports and of global warming. Thus, if the fears are valid, the most direct approaches are to tax imports and greenhouse-gas emissions.

Unfortunately, the bundle of policy interventions embraced by the NPC and most others in the business of pontificating about energy policy does not directly address the identified problems. For instance, taxes on oil or gasoline, or fuel efficiency standards for new vehicles, discourage the consumption of both international *and* domestic oil. CAFE standards have the further drawback of raising the cost of owning a motor vehicle, but simultaneously lowering the cost of using that vehicle. It becomes unclear whether energy use will rise or fall, and the same holds true for other performance standards. The wide use of such standards means that they extend to areas such as electric appliances—and even toilets—in which oil use is negligible. Thus, they mainly hit domestic consumption of fuels that, at least in many cases, the usage should probably be encouraged.

Market Failure vs. Government Failure

A key aspect of the modern economic theory of intervention is skepticism about whether governments in fact have the ability and desire to remedy market failures and

increase efficiency. As a result, theories of government failure have proliferated.

Columbia economist Jagdish Bhagwati has neatly summed up the standard uses of market-failure arguments as the “*puppet government* approach.”⁹¹ The old-fashioned textbook government possesses far more prescience and acceptance of economic principles than do actual governments. Real governments lack the competence and the motivation to increase efficiency. Moreover, intervention is expensive to design and operate properly. Thus, the inefficiencies must be great for regulation to be desirable.

A remarkable article by Ronald Coase, “The Problem of Social Cost,” is the critical source of the last point and a much more modern appraisal of intervention.⁹² In the essay, Coase dealt with a much-discussed but badly dated analysis of “externalities” by A. C. Pigou, a long-time professor of economics at Cambridge University. Externalities are the incidental effects of economic actions on people who are not directly involved. These can be harmful, as with pollution and noise, or beneficial, as with pollination of plants by bees.

Coase emphasized two defects of Pigou’s analysis. First, Pigou presumed that government intervention always was needed, but Coase provided numerous examples of how cures to externality problems were secured privately. Second, Pigou asserted that, when confronting positive externalities (where by definition the costs to society were lower than the costs to the private producers or consumer), a subsidy to the producer or consumer was appropriate. Conversely, negative externalities should be taxed. Coase showed that this also was wrong; subsidizing the abatement of a detrimental externality would produce the same result as a Pigouvian tax.

Coase’s insights proved remarkably impervious to criticism. Two potential problems, however, are evident. First, Coase tacitly assumes that the beneficiaries of the tax are not so different from the beneficiaries of the subsidy that demands shift. Second, an implicit further condition of optimum externality response is that the response should ensure

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It is only when transaction costs are high (but not by a degree to render action unprofitable) that government intervention *might* be desirable.

that only firms whose total social value exceeds their total social costs should survive. The correct social policy requires additional measures to attain this goal.⁹³

Coase is well aware that the choice of policy response affects the welfare of those involved. By example, he shows that those harmed by the externality are not always the ones whom it is appropriate to compensate. In some cases, these victims knowingly moved near an existing externality-producing entity, about which the newcomer should have been aware.

Coase moves so tersely through the arguments that many commentators overlooked or misunderstood his discussion of why private action may not resolve the externality problem.⁹⁴ Coase argued that when a large number of people are involved, the transaction costs associated with providing for a remedy could prove to be so steep that private action would be difficult to implement. However, he presented two objections to the presumption that such high transaction costs justified government action. First, with sufficiently high transaction costs, even if the government can act more cheaply than private groups, the total costs of intervention will still exceed the benefits. High enough transaction costs can be a barrier to both private *and* public externality remedies. Second, even if this is not true, a public solution is not necessarily preferable to a private solution. Given the limitations of governments, the inefficiencies of a private solution may be less than those of a public one. In a follow-up article, “The Lighthouse in Economics,” Coase showed that the traditional assertion that lighthouses were a clear example of a good that had to be supplied by government was historically invalid. In the United Kingdom, the government took over lighthouses only after a private association successfully established a system of lighthouses.⁹⁵

George Stigler observed that Coase’s analysis applied to all market failures.⁹⁶ Stigler stressed that with low enough transaction costs, market failures could all be overcome privately. Coase’s caveats about the implications of high transactions also apply to all interventions.

While Coase seems never to have made the links explicit, these arguments are closely related to another celebrated contribution to the literature—Paul Samuelson’s 1954 analysis of the justification of government action.⁹⁷ Samuelson employed the concept of “publicness,” in which a good could not be made available exclusively to individuals; if one person received it, everyone did. Everyone in society then would benefit from the private consumption of a public good. Private solutions, however, would fail to adequately recognize all of these benefits. Thus, the government should provide the goods.

Coase’s analysis can be restated as indicating that it is only when publicness was involved that government intervention to address externalities might be justified. Coase can then be credited with creating a different and superior theory of government action: it is only when transaction costs are high (but not by a degree to render action unprofitable) that government intervention *might* be desirable.

The advantage of Coase’s approach is that it leads to a consideration of critical problems that the Samuelson analysis ignores. First, considerable evidence exists that politicians have motivations far different from attaining an efficient supply of public goods.⁹⁸ Second, the Coase problem of attaining an optimum is formidable. Governments often lack the competence to identify and optimally correct inefficiencies. Both these difficulties are extensively reviewed in the economics literature, but the bad-motivation argument is stressed more than the limited-ability concern.⁹⁹

The adoption of inappropriate objectives is the subject of a very rich literature that examines the motivations of political actors. The starting point is Schumpeter’s observation that, in a democracy, political actors are primarily engaged in a competition for votes.¹⁰⁰ As numerous subsequent observers have noted, one key way to secure votes is to legislate an (economically) inefficient policy—in which a few beneficiaries each receive gains large enough for them to note—by creating losses for many others that are too small for any to notice.¹⁰¹

Some observers, notably Harvard economist Joseph Kalt, have examined the proposition that, in some cases, action arises only from an ideological preference for intervention by legislators whose constituents lack significant interest in an issue.¹⁰² Kalt and collaborators have found statistical support for this proposition.¹⁰³ A simpler possibility is that politicians instinctively believe that if a problem arises which receives extensive attention, they can—and should—intervene.

The problem of determining and satisfying demands for public goods is more loosely treated in the literature. Economists Ludwig von Mises, F. A. Hayek, and Ronald Coase have all argued that, among other things, governments cannot readily secure the information needed for efficient intervention.¹⁰⁴ Coase's treatment is far less extensive, but also far more general, than those of Mises or Hayek. Their extended writings on socialist calculation, nevertheless, should have made clear the difficulties of optimally devising plans for any kind of government spending. The debate was started by an assertion by Mises that a socialist state could not be efficient because it lacked information about the demands for commodities.¹⁰⁵ In the most celebrated response, Oscar Lange¹⁰⁶ replied that this problem could be resolved by establishing planning boards to measure demands and set prices appropriate for those demands. Hayek answered Lange by noting that this was a much more cumbersome approach than an unregulated marketplace.¹⁰⁷ Mises asserted that the solution would break down for producers' goods because of concentration of ownership in state monopolies.

In any case, Lange was changing the subject. His system depended upon the competence of the planning board, which, after all, could be imposed on top of any ownership pattern. The planning board as Lange envisioned it, however, is the expansion of the public utility commission concept. Thus, it may be asked why a technique that works badly when it treats a few industries could well treat the whole economy any better. Nevertheless, the literature in this area strangely evades discussion of the full con-

sequences of this knowledge problem.¹⁰⁸ In practice, the problem is herculean.

Reviews of specific policies have illustrated the point. Richard Posner's wide-ranging review of the regulation of natural monopoly, for instance, notes many of the problems related to securing the information needed to attain efficient results.¹⁰⁹

In any case, these basics suggest further reasons to treat recommendations for energy intervention by the NPC and others skeptically. Not only are their proposed remedies nth-best means of addressing identified problems, they further assume perfectly informed, hyper-efficient government responses that are implausible in the extreme.

Conclusion

Bad theory, bad history, and bad practice mar energy (and most other public policy) discussions. The shock of 9/11 has badly aggravated these problems. Across an absurdly broad range of issues, panic over remote possibilities of terrorist actions has produced hysteria. The present paper was written in the midst of a political campaign in which these problems seemed particularly severe. As suggested here, energy, as is usually the case, has not been spared. Even a group that should have known better (the NPC), directed by the former head of a company known for its astuteness (Exxon-Mobil), could not refrain from a plunge into this frenzy.

Economic analysis shows both the defects of public policy and why these faults are impervious to analytic objection. Interference with international trade, for example, is routinely attacked by economists and adopted by politicians. Ill-advised efforts such as that of the NPC are regrettable but predictable.

Economists periodically debate whether their efforts are justified. Surely, without serious economic analysis, what comprises desirable reform remains unknown. Something must stand against the temptation to seek narrow political gains. Even those economists who are particularly concerned about govern-

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ment failure are divided about whether their efforts are worthwhile. Some stress the many instances in which the advice was ignored; others believe that enough good results arise to provide the encouragement to continue.

Clearly, the analysis here is grounded in the latter view. Enough successes, both big and small, have arisen to inspire hope. Opportunities for improvement periodically but unpredictably arise, and economic analyses that provide guidance can only help assist the response. Moreover, bad policy imposes wastes that the power to tax allows to persist. This ability to err is not unlimited. Intolerable strains do emerge. Thus, economists should continue the onslaught on bad policy to anticipate openings when they occur. Perhaps future study groups can be weaned away from ideas that harm themselves and everyone else.

Notes

For more works by Richard L. Gordon, see, for instance, *An Economic Analysis of World Energy Problems* (Cambridge, MA: MIT Press, 1981); *Regulation and Economic Analysis: A Critique over Two Centuries* (Boston: Kluwer Academic Publishers, 1994); "The Economics of Optimal Self-sufficiency and Energy Independence, Mineral Wars and Soft Energy Paths," *Materials and Society* 7, no. 2 (1983): 225–35; "Using Markets to Solve Natural Resource Problems," in *Resources and World Development*, ed. D.J. McLaren and B. J. Skinner (New York: John Wiley, 1987), pp. 453–72; "Energy Intervention after Desert Storm," *Energy Journal* 13, no. 3 (1992): 1–15; "Energy, Exhaustion, Environmentalism, and Etatism," *Energy Journal* 15, no. 1 (1993): 1–16; and "Law and Macroeconomics," in *Encyclopedia of Law and Economics, Volume I: The History and Methodology of Law and Economics*, ed. Boudewijn Bouckaert and Gerrit De Geest (Cheltenham and Northampton, UK: Edgar Elgar, 1999), pp. 660–93.

1. Most notably in *National Energy Policy*, Report of the National Energy Policy Development Group (Washington: 2001), henceforth referred to as "the Cheney report," since it was produced by a White House task force that was directed by Vice President Dick Cheney.

2. National Petroleum Council, *Hard Truths: Facing the Hard Truths about Energy: A Comprehensive View to 2030 of Global Oil and Natural Gas* (Washington: 2007). The present Policy Analysis was initiated as a response to the NPC's vigorous promotion of its

report, but it was implemented as a review of the overall debate on energy. Since the NPC report provides the fullest, most coherent presentation of the interventionist agenda, it is used here as a prime example.

3. National Commission on Energy Policy, *Ending the Energy Stalemate: A Bipartisan Strategy to Meet America's Energy Challenges* (Washington: 2004). Despite its name, the commission was funded by private foundations (Hewlett, Pew, MacArthur, and Packard) rather than the United States government. The report presents, without justification, policy proposals similar to the NPC and, despite the need for further support, was backed up by one of the most incoherent sets of supporting papers of any energy study of which I am aware.

4. *National Security Consequences of U.S. Oil Dependence* (New York: Council on Foreign Relations, 2006). The task force that produced the CFR report was directed by James Schlesinger and John Deutch. Schlesinger, a Ph.D. economist, had several important government jobs, including being the first Secretary of Energy. Deutch, an MIT chemistry professor, also had government service, including several DOE posts and the CIA directorship. Although it should have known better, the task force concentrated on reducing gasoline consumption rather than directly taxing oil imports. Specific proposals included an increase of the federal gasoline tax, tightened corporate-average-fuel-economy (CAFE) standards, and tradable permits to use gasoline. The CFR report also calls for foreign-policy initiatives similar to those championed in the NPC and Cheney reports. The CFR report, however, only briefly (pp. 26–31) discusses why imports are dangerous; it spends most of its time proposing cures.

5. Milken Institute, *Financial Innovations for Achieving Energy Independence* (Santa Monica, CA: 2007). This report has its analysis backward. It proposes financing techniques to promote energy alternatives without assessing the desirability of these developments.

6. This listing is limited to reports generated by organizations rather than by freelance individuals. Their inclusion would too greatly expand the discussion even if only those dealing with overall energy prospects were covered.

7. As more fully discussed later, because of pressures to broaden input into the NPC, the participants actually came from a wide variety of areas, mostly outside the oil industry. However, the leading oil industry participants took an active role in promoting the findings. The promotional effort was probably a major factor in the attention that was initially received.

8. This misuses the concept of efficiency. Efficiency occurs when the use of one input is reduced without increasing another. It is unclear whether this is true for energy-saving actions. Thus, when I discuss forced reductions in energy use, I avoid the term efficiency. The NPC report apparently does not rule out reduction by taxation, but the language used implies a preference for tighter performance standards. It is argued below that taxes are preferable to standards.

9. National Petroleum Council, p. 6.

10. *Ibid.*, pp. 5–6.

11. Concern over personnel availability in some realms is a hearty perennial in policy proposals, dating back at least to the 1957 U.S. panic over the Soviet Union's launch of its Sputnik satellite. More broadly, it is a variant of the standard claim of interest groups that the marketplace does not efficiently meet the groups' needs.

12. *Ibid.*, p. 23.

13. *Ibid.*, p. 24. This inflation of proposed responses is endemic to "blue-ribbon" panels of all sorts.

14. A more banal and innocuous set of recommendations relates to capabilities. The areas of concern are infrastructure needs, science and technology capabilities, research and development activities, and energy data. Infrastructure needs are to be the subject of a Department of Energy study, and the Energy Information Administration is told to collect infrastructure data. The main idea in the other areas, predictably, is to do more. In the data area, not only should information on current activities be increased, but extensive studies of resource availability are proposed. This reflects more of the economic illiteracy that mars the report. These studies are not undertaken for the very good reason that in a free-market economy, resources and the facilities to develop them are made available without any such global information. Along with science and engineering capabilities, the report makes further suggestions of eased immigration and changes in tax and retirement plan rules in order to foster work by retirement-age people.

15. *Ibid.*, p. 228.

16. *Ibid.*, p. 227.

17. Even so, the NPC report has the distinction of being better than the report of the National Commission on Energy Policy. Vice President Cheney's 2001 take on the subject avoids clear analytic errors by eschewing analysis altogether. However, by making more suggestions than the NPC, including many on the electric power industry and foreign

policy, the Cheney report presents more bad ideas. It lacked supporting material.

18. The Cabinet Task Force on Oil Import Controls, praised below, reached a solid conclusion by presenting the divergent views of the members. Good staff does not always lead to a satisfactory report, and good reports are not demonstrably more influential than bad ones.

19. A possible exception is the treatment of global warming. It would be correct to argue that intervention is appropriate if the assertions about large climate damages due to fuel use were correct. The NPC report's sketchy, narrowly-focused treatment of global warming, however, never rises to a clear policy position.

20. M. A. Adelman, *The World Petroleum Market* (Baltimore, MD: Johns Hopkins University Press, 1972).

21. M. A. Adelman, *The Genie out of the Bottle: World Oil since 1970* (Cambridge, MA: MIT Press, 1995). An anthology of his oil writings also was published: M. A. Adelman, *The Economics of Petroleum Supply: Papers by M. A. Adelman 1962–1993* (Cambridge, MA: MIT Press, 1993).

22. U. S. Cabinet Task Force on Oil Import Control, *The Oil Import Question: A Report on the Relationship of Oil Imports to the National Security* (Washington: Government Printing Office, 1970).

23. Douglas R. Bohi and Milton Russell, *Limiting Oil Imports: An Economic History and Analysis* (Baltimore: Johns Hopkins University Press, 1978); Douglas R. Bohi and W. David Montgomery, *Oil Prices, Energy Security, and Import Policy* (Washington: Resources for the Future, 1982); Douglas R. Bohi, *Energy Price Shocks and Macroeconomic Performance* (Washington: Resources for the Future, 1990); and Douglas R. Bohi and Michael A. Toman, *Energy Security as a Basis for Energy Policy* (Boston: Kluwer Academic Publishers, 1995). The American Petroleum Institute distributed the manuscript as a pamphlet without charge; that version was used here. At the time, Bohi and Toman were on the staff at Resources for the Future, but privately prepared the report for the American Petroleum Institute. Resources for the Future had a policy against accepting support from interested parties that failed to exclude government funding.

24. Parry, often with co-authors, has produced a series of useful studies, one of which is cited below, on the wisdom of various energy-related public policies, particularly involving motor vehicles.

25. Daniel H. Newlon and Norman V. Breckner, *The Oil Security System* (Lexington, KY: Lexington

Books, D. C. Heath, 1975); David A. Deese and Joseph S. Nye, eds., *Energy and Security* (Cambridge, MA: Ballinger Publishing Company, 1981); James Plummer, ed., *Energy Vulnerability* (Cambridge, MA: Ballinger Publishing Company, 1982); Alvin L. Alm and Robert J. Weiner, eds., *Oil Shock: Policy Response and Implementation* (Cambridge, MA: Ballinger Publishing Company, 1984); George Horwich and David Leo Weimer, *Oil Price Shocks, Market Response, and Contingency Planning* (Washington: American Enterprise Institute for Public Policy Research, 1984). Newlon and Breckner are the first of whom I am aware to blame the inadequacy of inventories on price controls. The other books discuss the problems of tapping the stockpile optimally.

26. His key works are: James D. Hamilton, "Oil and the Macroeconomy since World War II," *Journal of Political Economy* 91, no. 2 (April, 1983): 228-48; James D. Hamilton "What Is an Oil Shock?" *Journal of Econometrics* 113 (2003): 363-98; and James D. Hamilton and Anna Maria Herrera, "Oil Shocks and Aggregate Macroeconomic Behavior: the Role of Monetary Policy," *Journal of Money, Credit, and Banking* 36 (April, 2004): 265-86.

27. Robert L. Bradley, Jr., *Oil, Gas & Government: The U.S. Experience* (Lanham, MD: Rowman & Littlefield, 1995).

28. Adelman's 1995 book makes these points.

29. As discussed below, further considerations relate to possible consequences of dealing with imported oil. Theories have proliferated on ways to counteract monopolistic behavior of oil exporters and on the alleged macroeconomic effects of oil shocks.

30. This point is often made in the energy economics literature; the previously cited Resources for the Future studies and Adelman's works previously cited are key examples.

31. U.S. Federal Energy Administration, *Project Independence Report* (Washington, 1974).

32. With the key exception of Oliver E. Williamson, the literature on slack is maddeningly imprecise. Williamson, however, developed a solid analysis of the behavior of managers who were able to divert profits from stockholders. He points out that the best strategy for managers in this situation is to maximize profits and then divert the money to themselves in wages and fringe benefits. He notes that cases can arise when the fringe involves undertaking an unprofitable venture. A firm's output decisions would be altered undesirably when it hires employees who will produce more costs than revenues. Oliver E. Williamson, *The Economics of Discretionary Behavior:*

Managerial Objectives in the Theory of the Firm (Chicago: Markham Publishing Company, 1967; Englewood Cliffs, NJ: Prentice-Hall, 1964).

33. Again Adelman's 1995 book is a key source among the many presentations of this argument. The long lines at gas stations in the United States during the embargo were due to the imposition of price controls on gasoline and their enforcement by rigid rules for distribution. Price controls always thwart the role of price signals in supply allocation. Messy rules must be imposed to deal with the excess of the quantity demanded over the amount available.

34. This, too, is another argument of Adelman's 1995 book.

35. Adelman's warning that the U.S.-Saudi special relationship would prove a to be a fraud whenever seriously tested is still widely ignored, as was well illustrated by both President George W. Bush's May 2008 failure to inspire Saudi output increases and Congressional complaints about the inadequacy of the effort.

36. The critical works on this again are Adelman's. Both his oil books are relevant, as is M. A. Adelman, "Is the Oil Shortage Real? Oil Companies as OPEC Tax-Collectors," *Foreign Policy* 9 (1973): 69-107 (reprinted in Adelman 1993, pp. 329-57). See also Anthony Sampson, *The Seven Sisters: The Great Oil Companies and the World They Shaped* (New York: Viking Press, 1975). *Forbes* did a remarkable reporting job that showed how the State Department blindly fostered acquiescence with oil-country demands. "Don't Blame the Oil Companies, Blame the State Department," *Forbes*, April 15, 1976. The State Department seems to have felt that this was the least bad possible outcome, but *Forbes* feels that the State Department overestimated the strength and resolve of the producing countries. The State Department characteristically failed to comprehend the importance of preserving competition.

37. M. A. Adelman, *The World Petroleum Market* (Baltimore, MD: Johns Hopkins University Press, 1972). M. A. Adelman, *The Genie out of the Bottle: World Oil since 1970* (Cambridge, MA: MIT Press, 1995).

Akins's implicit rebuttal to Adelman can be found in James E. Akins, "The Oil Crisis: This Time the Wolf is Here," *Foreign Affairs* 51, no. 2 (April, 1973): 462-90. I can attest from direct experience that Akins did not understand the limitation of his knowledge and was incapable of absorbing the substantial amount of advice available to him. In 1968, I presented a paper at an invitation-only seminar in Colorado Springs that was attended only by experienced observers of energy markets. I

resorted to standard economics to note that if dollar problems became severe, devaluation would arise. Akins lectured me as if I were a stupid erring schoolboy on why this would never happen. Of course, it did happen in 1971. Richard L. Gordon, "Without Rudder Compass or Chart—The Problem of Energy Policy Guidelines," in *The Political Economy of Energy and National Security*, S. H. Hanke, ed., published as *Quarterly of the Colorado School of Mines* 64, no. 4 (October, 1969): 29–51.

38. A further complication is "discrimination," the ability to charge different prices for the same product to different parties. Whatever its role in the history of the oil industry and in special deals by some producers, it is not a factor in sales to large consuming countries.

39. This story appears in every one of the many histories of world oil of which the most celebrated example is Daniel Yergin, *The Prize: The Epic Quest for Oil, Money & Power* (New York: Simon & Schuster, 1991).

40. Douglas R. Bohi and Michael A. Toman, *Energy Security as a Basis for Energy Policy* (Boston: Kluwer Academic Publishers, 1995).

41. Disputes arose about what parts of the U.S. industry benefited. Clearly, the small-scale producers were preserved by the combination of import quotas and state regulations favoring output by such smaller scale producers. One issue then is whether the benefits of high prices to larger producers offset the output reductions by large firms inherent in the state favoritism toward smaller producers. A second issue is the impact on companies with substantial foreign operations. Adelman's 1972 book argues that the policy hurt all but the small producers.

42. Paul W. MacAvoy, *Crude Oil Prices as Determined by OPEC and Market Fundamentals*, (Cambridge, MA: Ballinger Publishing Company, 1982) is a major example of doubts about OPEC's role. A. D. Johany, *The Myth of the OPEC Cartel* (New York: John Wiley and Sons, 1980) presented a more elaborate theory based on the wildly implausible assertion that the transfer of control to the countries implied greater concern about hoarding resources. As Adelman's 1995 book aggressively argued, the greater foresight assertion in untenable; it is shown below that greater foresight need not lead to lesser production.

43. M. A. Adelman, "The Clumsy Cartel," *The Energy Journal* 1, no. 1 (January, 1980): 43–53. Reprinted in M. A. Adelman, *The Economics of Petroleum Supply: Papers by M. A. Adelman 1962–1993* (Cambridge, MA: MIT Press, 1993), pp. 407–16.

44. This was not the end of the evolution, but that is not critical here. A good survey, organized as an examination of the different macroeconomic approaches, is Brian Snowdon and Howard Vane, *Modern Macroeconomics: Its Origins, Development, and Current State* (Cheltenham and Northampton, UK: Edward Elgar, 2005). Further insight is provided in Brian Snowdon and Howard Vane, eds., *An Encyclopedia of Macroeconomics* (Cheltenham and Northampton, UK: Edward Elgar, 2002).

45. John Maynard Keynes, *The General Theory of Employment, Interest and Money* (New York: Harcourt Brace; London: Macmillan and Company, 1936).

46. J. R. Hicks, "Mr. Keynes and the 'Classics': A Suggested Interpretation," *Econometrica* 5, no. 2 (April, 1937): 147–59. The resulting literature is summarized and synthesized best in Don Patinkin, *Money, Interest and Prices*, 2nd ed. (New York: Harper and Row, 1965). A good appraisal of the debates appears in Axel Leijonhufvud, *On Keynesian Economics and the Economics of Keynes: A Study in Monetary Theory* (New York: Oxford University Press, 1968).

47. Milton Friedman and Anna J. Schwartz, *A Monetary History of the United States, 1867–1960* (Princeton, NJ: Princeton University Press, 1963).

48. Robert E. Lucas Jr., *Studies in Business Cycle Theory* (Cambridge, MA: MIT Press, 1981).

49. For the key writings of a cross-section of the contributors to this development, see Robert E. Lucas Jr. and Thomas J. Sargent, eds., *Rational Expectations and Econometric Practice* (Minneapolis, MN: University of Minnesota Press, 1981).

50. Ben S. Bernanke, Mark Gertler, and Mark Watson, "Systematic Monetary Policy and the Effects of Oil Price Shocks," *Brookings Papers on Economic Activity*, no. 1 (1997): 91–157.

51. Robert B. Barsky and Lutz Kilian, "Do We Really Know That Oil Caused the Great Stagflation? A Monetary Alternative," *NBER Macroeconomics Annual* 16 (2001): 137–83.

52. Daniel H. Newlon and Norman V. Breckner, *The Oil Security System* (Lexington, MA: Lexington Books, D. C. Heath, 1975).

53. Richard L. Gordon, "Energy Intervention After Desert Storm," *The Energy Journal* 13, no. 3 (1992): 1–15

54. Jerry Taylor and Peter Van Doren, "The Case against the Strategic Petroleum Reserve," *Cato Institute Policy Analysis* no. 555, November 21, 2005.

55. See, for example, Linda Cohen and Roger Noll, *The Technology Pork Barrel* (Washington: Brookings Institution, 1991). To be sure, private investors can err; however, the mistakes are fewer and more readily correctable.
56. Ronald H. Coase, "The Problem of Social Costs," *Journal of Law and Economics* 3 (October, 1960): 1–44. The article, a freshly written follow-up, and several other key writings appear in Ronald H. Coase, *The Firm, the Market and the Law* (Chicago: University of Chicago Press, 1988).
57. Lewis C. Gray, "Rent under the Assumption of Exhaustibility," *Quarterly Journal of Economics* 28, no. 2 (May, 1914): 466–489, reprinted in *Extractive Resources and Taxation*, ed. Mason Gaffney (Madison, WI: University of Wisconsin Press, 1967), pp. 423–46.
58. Harold Hotelling, "The Economics of Exhaustible Resources," *Journal of Political Economy* 39, no. 2 (April, 1931): 137–75. The article provided sketches of numerous cases. It took later generations much effort to nail down the theory.
59. Anthony Scott, "The Theory of the Mine under Conditions of Certainty," *Extractive Resources and Taxation*, ed. Mason Gaffney (Madison, WI: University of Wisconsin Press, 1967), pp. 25–62.
60. Orris C. Herfindahl, "Depletion and Economic Theory," *Extractive Resources and Taxation*, ed. Mason Gaffney (Madison, WI: University of Wisconsin Press, 1967), pp. 63–90.
61. Richard L. Gordon, "Conservation and the Theory of Exhaustible Resources," *Canadian Journal of Economics and Political Science*, 32, no. 3 (August, 1966): 319–26; Richard L. Gordon, "A Reinterpretation of the Pure Theory of Exhaustion," *Journal of Political Economy* 75, no. 3 (June, 1967): 274–86.
62. Ronald G. Cummings, "Some Extensions of the Economic Theory of Exhaustible Resources," *Western Economic Journal* 7, no. 3 (September, 1969): 201–10. Cummings demonstrated that Hotelling's general case could be developed to show that hoarding had a second benefit of the present value of the cumulative cost saving from delaying the depletion of higher-quality resources. Many others subsequently independently developed the case. For instance, David Levhari and Nissan Liviatan, "Notes on Hotelling's Economics of Exhaustible Resources," *Canadian Journal of Economics* 10, no. 2 (May, 1977): 177–192 shows that the more advanced mathematics employed by Cummings were not needed to derive the proof. Two widely spaced efforts showed that a discrete-time approach greatly simplified the derivations: William J. Baumol and Wallace E. Oates, *The Theory of Environmental Policy: Externalities, Public Outlays, and the Quality of Life* (Englewood Cliffs, NJ: Prentice-Hall, 1975); and Eduardo M. Modiano and Jeremy F. Shapiro, "A Dynamic Optimization Model of Depletable Resources," *The Bell Journal of Economics* 11, no. 1 (Spring, 1980): 212–36.
63. Numerous surveys of the literature are available. Baumol and Oates's text on environmental economics included a good survey of exhaustion theory but only in its first edition. Richard L. Gordon, *An Economic Analysis of World Energy Problems* (Cambridge, MA: MIT Press, 1981) is another, simpler survey. Partha Dasgupta and G. M. Heal, *Economic Theory and Exhaustible Resources* (Cambridge: Cambridge University Press, 1979) produced the fullest review available, but it is unnecessarily complex.
64. Orris C. Herfindahl, "Depletion and Economic Theory," *Extractive Resources and Taxation*, ed. Mason Gaffney (Madison, WI: University of Wisconsin Press, 1967), pp. 63–90, Richard L. Gordon, "A Reinterpretation of the Pure Theory of Exhaustion," *Journal of Political Economy* 75, no. 3 (June, 1967): 274–86, and Tjalling C. Koopmans, "Ways of Looking at Future Economic Growth, Resource and Energy Use," *Energy: Demand, Conservation, and Institutional Problems*, ed. Michael S. Macrakis (Cambridge, MA: MIT Press, 1974), pp. 3–15.
65. Hotelling's analysis was much more complex, but also sketchier, than subsequent discussions indicate. He presented numerous short, cryptic treatments of many different cases.
66. Hotelling, "The Economics of Exhaustible Resources," *Journal of Political Economy* 39, no. 2 (April, 1931): 137–75 does not make this clear, but Orris C. Herfindahl, "Depletion and Economic Theory," *Extractive Resources and Taxation*, ed. Mason Gaffney (Madison, WI: University of Wisconsin Press, 1967), pp. 63–90, stated the conclusion and Richard L. Gordon, "A Reinterpretation of the Pure Theory of Exhaustion," *Journal of Political Economy* 75, no. 3 (June, 1967): 274–86, proved that this had to be the case. The simplicity of the case explains its frequent use, but the more general model must be used in practice. Many attacks on Hotelling are really criticisms of only considering the simplest case.
67. This is the case that was sketched by Hotelling, which Cummings and others previously noted later developed. Grey dealt with movements along the marginal-cost curve prevailing in each time period and the new cases discuss the trend toward supply-decreasing shifts over the time represented by the curve.
68. Richard L. Gordon, *An Economic Analysis of World Energy Problems* (Cambridge, MA: MIT

Press, 1981); discusses this case. With rapidly falling costs, prices could decline. Perpetual rapid growth in exhaustible resources is subject to the paradox discussed in the general literature on investment: it is more profitable to trade the asset than to use it. However, in the exhaustible-resource case, where demand initially grows rapidly but then slows down, the optimal behavior is to start before the demand-growth slow-down and exhaust during the slow-growth period. The criterion of rapidity is a growth of more than the market rate of interest of the marginal profitability of the optimum output at any time.

69. Those familiar with financial theory will recognize that this is a less technical description of net present value.

70. To simplify, here I ignore the effects (noted above) of saving high-quality resources.

71. Richard L. Gordon, "Conservation and the Theory of Exhaustible Resources," *Canadian Journal of Economics and Political Science* 32, no. 3 (August, 1966): 319–26.

72. The theory of interactions among firms is enormous. The crux is that firms would like to join alliances to maximize profits for the group, but many pressures preclude that outcome. These include too many participants to manage, sharp differences among firms, the difficulties of monitoring performance, and the undermining of cooperation by fears about what the others will do. With the popularity of game-theory approaches to interaction, it is standard to relate the last problem to the classic and much over-cited case of the prisoners' dilemma, where both of two separately interrogated prisoners are better off not to confess. However, fear that one will confess will lead the other one to confess. Extensions of the theory have failed to show experience will resolve this dilemma. A survey of the empirical literature is available from Margaret C. Levenstein and Valerie Y. Suslow, "What Determines Cartel Success?" *Journal of Economic Literature* 44, no. 1 (March 2006): 43–95.

73. M. A. Adelman, "Mineral Depletion, with Special Reference to Petroleum," *Review of Economics and Statistics* 72, no. 1 (February, 1990): 1–10. Reprinted in M. A. Adelman, *The Economics of Petroleum Supply: Papers by M. A. Adelman 1962–1993* (Cambridge, MA: MIT Press, 1993), pp. 219–39.)

74. The literature on environmentalism and its defects are vast. Three key critiques are Gregg Easterbrook, *A Moment on the Earth: The Coming Age of Environmental Optimism* (New York: Viking, 1995); Julian L. Simon, *The Ultimate Resource: 2*, (Princeton, NJ: Princeton University Press 1996); and Bjørn Lomborg, *The Skeptical Environmentalist:*

Measuring the Real State of the World (Cambridge and New York: The Cambridge University Press, 2001). Easterbrook, an environmental journalist, provides surveys of numerous key issues. His exposition suffers badly from his discomfort over the anti-intervention implications of his reviews. Simon presents a broad attack on all forms of resource pessimism. Lomborg's work presents a confirmation of Simon's views, which Lomborg was seeking to refute. The environmentalist attacks on these works are illustrations of the tendency to excess rather than careful refutations.

75. It is indicative of the state of the situation that no obvious citations arise on either side. When nuclear power was a hot topic, concerns arose about release of radiation from regular operations, large discharges from accidents, diversion of nuclear material to military programs or to terrorists, and the hazards of waste disposal. As all but the last were deflated by experience, waste disposal became the sole concern. Critics demanded an instant solution and then opposed efforts to develop such a remedy.

76. U. S. Congress, Office of Technology Assessment, *Acid Rain and Transported Air Pollutants: Implications for Public Policy* (Washington: Government Printing Office, 1984).

77. Patrick J. Michaels, *Meltdown, The Predictable Distortion of Global Warming by Scientists, Politicians, and the Media* (Washington: Cato Institute, 2004), and also his shorter writings, which provide a moderate review of why the reaction to global warming is overdone.

78. Indur M. Goklany, *The Improving State of the World: Why We're Living Longer, Healthier, More Comfortable Lives on a Cleaner Planet* (Washington: Cato Institute, 2007); "What to Do about Climate Change," Cato Institute Policy Analysis no. 609, February 5, 2008.

79. These efforts and their refutation have reached the point where a new anthology has appeared: Tyler Cowen and Eric Crampton, eds. *Market Failure or Success: The New Debate* (Cheltenham and Northampton, UK: Edgar Elgar for the Independent Institute, 2003). This is a sequel to Cowen's *The Theory of Market Failure: A Critical Examination* (Fairfax, VA: George Mason University Press, 1988), which deals with the older theories. Both anthologies start with examples of the assertions of failure and go on to present articles criticizing the claims. Curiously, while numerous books review the state of theory after the newer theories, no similar unified treatment of only the case against the older theories seems to exist.

80. Daniel F. Spulber, *Regulation and Markets*

(Cambridge MA: MIT Press, 1989). Spulber offers an analysis of what he calls “internalities” to relate these theories to the persistence of government regulation of private transactions. Spulber’s analysis is extended—but not cited—in Glen Whitman, “Against the New Paternalism: Internalities and the Economics of Self-Control,” *Cato Institute Policy Analysis* no. 563, February 22, 2006. Whitman deals with a family of arguments for intervention when the individual can be expected to make a decision that is subsequently regretted—such as to smoke or to not save enough money for retirement. These arguments lack the analytic basis of those treated by Spulber; despite its proponents’ claim of novelty, the approach is merely a repackaging of the familiar old argument that superior outsiders exist, and that they can act efficiently to correct the errors of individuals. What makes Spulber more germane than anything else in the vast literature that grapples with asymmetric-information theory is his explicit consideration of the internality question.

81. George A. Akerlof, “The Market for ‘Lemons’: Qualitative Uncertainty and the Market Mechanism,” *Quarterly Journal of Economics* 84 (1970): 488–500.

82. Eric W. Bond, “A Direct Test of the ‘Lemons’ Model: The Market for Used Pickup Trucks,” *American Economic Review* 72, no. 4 (September, 1982): 836–40. The Akerlof article, which helped win a Nobel Prize in economics for its author, is one of the four examples of the new theory of market failure reprinted in Cowan and Crampton (the refuting essay was the just-cited paper from Bond). Two of the remaining three examples were from Joseph E. Stiglitz, who has generated many models of peculiarly inefficient markets. The other comes from Paul A. David. The Nobel prizes awarded to Akerlof and Stiglitz for their work in this area prove that novelty, not validity, can secure academic acclaim.

83. The chief offenders are a research group at Oak Ridge National Laboratories and Amory Lovins.

84. Paul L. Joskow and Donald B. Marron, “What Does a Negawatt Really Cost? Evidence from Utility Conservation Programs,” *The Energy Journal* 13, no. 4 (1992): 41–71.

85. One of the rarer economic defenses of CAFE standards can be found in David Greene, “Why CAFE Worked,” *Energy Policy* 26, no. 8 (1998): 595–614. Greene argues, contrary to what is argued here, that exactly the right combination of market failures prevail to justify mandatory fuel-efficiency standards.

86. Robert W. Crandall and John G. Graham, “The

Effects of Fuel Economy Standards on Automobile Safety,” *Journal of Law and Economics* 38, no. 1 (April 1989): 97–118.

87. Andrew N. Kleit, “Impacts of Long-Range Increases in the Corporate Average Fuel Economy (CAFE) Standard,” *Economic Inquiry* 42 (2004): 279–94.

88. Carolyn Fischer, Winston Harrington, and Ian W .H. Parry, “Should Automobile Fuel Economy Standards Be Tightened?” *Energy Journal* 28, no. 4 (2007): 1–29.

89. Among the reports published in the 1970s are Joseph P. Mulholland, *Economic Structure and Behavior in the Natural Gas Production Industry*, *Staff Report to the Federal Trade Commission* (Washington: Government Printing Office, 1979); Joseph P. Mulholland, John Haring, and Stephen Martin, *Staff Report on an Analysis of Competitive Structure in the Uranium Supply Industry* (Washington: Government Printing Office, 1979); U.S. Congress, General Accounting Office, *The State of Competition in the Coal Industry* (Washington: 1977); U.S. Department of Energy, *Coal Competition: Prospects for the 1980s* (Springfield: VA : National Technical Information Service, 1981); U.S. Federal Trade Commission, Bureau of Economics, *Report to the Federal Trade Commission on the Structure of the Nation’s Coal Industry 1964–1974* (Washington: Government Printing Office, 1978). Later studies include Jay S. Creswell Jr., Scott M. Harvey, and Louis Silvia, *Mergers in the U.S. Petroleum Industry 1971–1984: An Updated Comparative Analysis* (Washington: U.S. Federal Trade Commission, 1989); U.S. Federal Trade Commission, Bureau of Economics, *The Petroleum Industry: Mergers, Structural Change, and Antitrust Enforcement* (Washington: 2004); U.S. Federal Trade Commission, *Gasoline Price Changes: The Dynamic of Supply, Demand, and Competition* (Washington: 2005); U.S. Federal Trade Commission, *Investigation of Gasoline Price Manipulation and Post-Katrina Gasoline Price Increases* (Washington: 2006); U.S. General Accounting Office, *Energy Markets: Effects of Mergers and Market Concentration in the U.S. Petroleum Industry* (Washington: 2004).

90. This differs from the complex market-failure theories criticized above that rely on policy alternatives that are inapplicable to international trade.

91. Jagdish N. Bhagwati, “The Theory of Political Economy, Economic Policy, and Foreign Investment,” in *Public Policy and Economic Development*, M. Scott and S. Lai, eds. (Oxford, UK: Clarendon Press, 1990), pp. 217–30, reprinted in Jagdish Bhagwati, *Political Economy and International Economics*, Douglas A. Irving, ed. (Cambridge, MA: MIT Press, 1991), pp. 154–67. The emphasis is in the original.

92. Ronald H. Coase, "The Problem of Social Cost," *Journal of Law and Economics* 3 (October 1960): 1-44. An alternative critique is Buchanan's thought-provoking presentation about the relevance of the "club goods." Buchanan suggested that private clubs served as a way for a group collectively to consume a good. Thus, it may well be that, in many circumstances, private-club action may be preferable to government action. James M. Buchanan, "An Economic Theory of Clubs," *Economica* 32 (February, 1965): 1-14. His treatment concentrates on the formal analysis of clubs rather than the implications of government intervention. The Coase article on lighthouses (discussed below) more clearly expressed concern over neglect of the club alternative.

93. William J. Baumol and Wallace E. Oates, *The Theory of Environmental Policy: Externalities, Public Outlays, and the Quality of Life* (Englewood Cliffs, NJ: Prentice-Hall, 1975) and the revised edition (Cambridge: Cambridge University Press, 1988) suggest, but do not clearly express or resolve this problem. The key point is that the correct marginal charge or subsidy is not sufficient to ensure that only socially profitable firms survive. This requirement necessitates lowering unregulated profits by the total cost of external costs. Standard economic principles show the problems. It is clearest with a simple flat subsidy. It would raise the profits of existing and entering firms and thus offset the marginal incentives to pollution control, unless the subsidy to a socially inefficient firm was maximized at zero output. A tax by reducing total profits encourages exit, but a flat tax could lower profits by more than the total cost of externalities. In the standard case of marginal costs that increase with the level of polluting activity, a flat tax equal to the marginal cost of the optimal level of the polluting activity would lower profits by more than the total cost of externalities. The total cost would be the area under the marginal cost curve, which is less than the tax charge equal by definition to the marginal cost times the level of polluting activity. More complex policies could in theory remedy these defects.

94. The controversial nature of Coase's arguments, and the rambling way in which he presented them, produced much commentary that differs considerably in the interpretation of his work. My interpretation can be restated by arguing that Coase shows that, in practice, transaction costs can range from ones so low that private solutions are feasible, to ones so high that any response is inefficient. Glenn Fox, "The Real Coase Theorem," *The Cato Journal* 27, no. 3, (Fall 2007): 373-96, echoes Coase's 1988 comments by stressing that consideration of transaction costs is the essence of Coase's analysis. Fox is correct in that others have stressed cases where private solutions were possible and neglected the

much briefer, but still complete, discussion of the problems caused by high transaction costs. Fox, however, seems to have gone too far and neglected the large number of cases in which transaction costs are low enough to allow private solutions.

95. Ronald H. Coase, "The Lighthouse in Economics," *Journal of Law and Economics* 17, no. 2 (October, 1974): 357-76; also in Ronald H. Coase, *The Firm, the Market and the Law* (Chicago: University of Chicago Press, 1988).

96. George J. Stigler, *The Citizen and the State: Essays on Regulation* (Chicago: University of Chicago Press, 1975).

97. Paul A. Samuelson, "The Pure Theory of Public Expenditure," *Review of Economics and Statistics* 36, no. 4 (November, 1954): 387-89. Reprinted in Joseph E. Stiglitz, ed., *The Collected Papers of Paul A. Samuelson*, vol. 2 (Cambridge, MA.: The MIT Press, 1966), pp. 1223-25. The difficulties of that article required several follow-ups: Paul A. Samuelson, "Diagrammatic Exposition of a Theory of Public Expenditure," *Review of Economics and Statistics* 37, no. 4 (November, 1955): 350-56. Reprinted in Joseph E. Stiglitz, ed., *The Collected Scientific Papers of Paul A. Samuelson*, vol. 2 (Cambridge, MA.: The MIT Press, 1966), pp. 1226-32. Paul A. Samuelson, "Aspects of Public Expenditure Theories," *Review of Economics and Statistics* 40, no. 4 (November, 1958): 332-38. Reprinted in Joseph E. Stiglitz, ed., *The Collected Scientific Papers of Paul A. Samuelson*, vol. 2 (Cambridge, MA.: The MIT Press, 1966), pp. 1233-39. Paul A. Samuelson, "Pure Theory of Public Expenditures and Taxation," in *Public Economics*, eds. J. Margolis and H. Guitton (New York: St. Martins Press, 1969), pp. 98-123. Reprinted in Robert C. Merton, ed., *Collected Scientific Papers of Paul A. Samuelson*, vol. 3, (Cambridge, MA.: The MIT Press, 1972), pp. 492-517. Samuelson stressed he was formalizing concepts that had been more loosely discussed in prior writings, and that he was treating an extreme case.

98. The argument that the provision of public goods is the only valid role of government relies upon recognizing that everything government does supplies a service to its citizens, and that citizens are the best judges of the value of those services.

99. This is particularly true of the works devoted to public choice. They are strongest in treating the tendency to inefficient policies. However, such treatments also have had major contributions from economists who do not specialize in public choice. The public-choice literature is weak on the problems of identifying and satisfying demands for public goods. This literature is surveyed in Dennis C. Mueller, *Public Choice III* (Cambridge: Cambridge

University Press, 2003). The Liberty Fund has issued multivolume collections of the works of two leading public-choice economists, James Buchanan and Gordon Tullock.

100. Joseph A. Schumpeter, *Capitalism, Socialism, and Democracy*, 3rd ed., (New York: Harper & Brothers, 1950).

101. The germane literature on this matter is vast. For important contributions, see Anthony Downs, *An Economic Theory of Democracy* (New York: Harper and Row, 1957); Gordon Tullock, "The Welfare Costs of Tariffs, Monopolies and Theft," *Western Economic Journal* 5 (1967): 224–32; Anne O. Krueger, "The Political Economy of the Rent-Seeking Society," *American Economic Review* 64, no. 3 (June, 1974): 291–303; Jagdish N. Bhagwati, "Directly-Unproductive Profit-Seeking (DUP) Activities," *Journal of Political Economy* 90:5 (October, 1982): 988–1002; George J. Stigler, "The Theory of Economic Regulation," *Bell Journal of Economics and Management Science* 2, no. 1 (Spring, 1971): 3–21; and Sam Peltzman, "Towards a More General Theory of Regulation," *The Journal of Law and Economics* 19, no. 2 (August, 1976): 211–40.

102. See for example, Joseph P. Kalt and Mark A. Zupan, "Capture and Ideology in the Economic Theory of Politics," *American Economic Review* 74, no. 3 (June, 1984): 279–300.

103. I have a cherished personal example of this. When I served on the Interior Department's coal leasing commission in 1985–86, Massachusetts Democratic Congressman Edward Markey presented an argument for vigorous enforcement of the coal-leasing amendments. I asked him whether he would continue to do so if he realized that this hurt his constituents. He expressed doubts and fled before I could show him that he was clearly wrong. The kind of enforcement that he proposed was likely to produce inefficiently low leasing levels. The amendments mandated higher royalty levels. Both effects reduce supply and thus raise prices to consumers. Massachusetts, of course, consumes but does not produce coal.

104. The most celebrated of his several statements on the limited abilities of government is Ronald H. Coase, "The Problem of Social Cost," *Journal of Law and Economics* 3 (October, 1960): 1–44.

105. Mises wrote extensively on the defects of intervention and the virtues of free markets. Ludwig von Mises, *Human Action: A Treatise on Economics*, 4th rev. ed. (Indianapolis, IN: Liberty Fund, 2007 [1949, 1966, 1996]); Percy L. Greaves Jr., *Mises Made Easier: A Glossary to Ludwig von Mises' Human Action*, presents both sides of the case; Ludwig von Mises, *Socialism: An Economic and*

Sociological Analysis (Indianapolis: Liberty Classics, 1981) is a sweeping critique of intervention that was his earliest comprehensive attack on socialism.

106. Oscar Lange, "On the Economic Theory of Socialism," *Review of Economic Studies* 4:53–71 and 4:123–42 (1936–1937).

107. Hayek's most famous take on this is Friedrich A. Hayek, "The Uses of Knowledge in Society," *American Economic Review* 35, no. 4 (September, 1945): 519–30. Two complementary articles deserve note. Friedrich A. Hayek, "The New Confusion about 'Planning,'" *Morgan Guaranty Survey* (January, 1976): 4–13. Reprinted in Friedrich A. Hayek, *New Studies in Philosophy, Politics Economics and the History of Ideas* (Chicago, IL: University of Chicago Press, 1978). Friedrich A. Hayek, "The Pretense of Knowledge," *American Economic Review* 79:6 (December, 1974): 3–7.

108. James M. Buchanan and Gordon Tullock, *The Calculus of Consent: Logical Foundation of Constitutional Democracy* is a critical example (Ann Arbor, MI: University of Michigan Press, 1962). (Volume 3 of the Liberty Fund Collected Works of Buchanan and volume 2 of the selected works of Tullock.) They start with Wicksell's suggestion to require unanimous agreement for state intervention. At least tacitly, they conclude that the unmanageably high transaction costs of reaching a unanimous solution require resort to alternatives. Rather than confront the daunting task of defining an optimal alternative, Buchanan and Tullock simply indicate the drawbacks of other approaches such as simple majority voting. A fundamental flaw of this analysis is that it presumes far more citizen input than arises. In practice, we citizens only get to choose a few participants in the decision process. Those decisionmakers have great latitude in determining what to do. Undertaking exhaustive studies of public demand is not a widely used option. This reliance on instinct should be another major reason for skepticism about the extension of government activities. The demand-revealing approach subsequently endorsed by Tullock has the same drawbacks. See Dennis C. Mueller, *Public Choice III*, (Cambridge: Cambridge University Press, 2003): pp. 162–68, for an uncritical review of the concept and its history.

109. Richard A. Posner, "Natural Monopoly and Its Regulation," *Stanford Law Review* 21 (February, 1969): 548–643. (Reprinted by The Cato Institute in 1999 with a new introduction by Posner.) Even this essay, which is often represented as a radical critique of state intervention, understates the true problems. Efficient public-utility regulation would seek to impose efficient prices that eliminate monopoly profits. Such prices are difficult to design. To aggravate matters, an infinite number of efficient pricing

schedules exist. Efficient pricing involves selling marginal sales at the marginal cost of production and alleviating the central problem with a decreasing cost industry. If prices on all outputs equal marginal costs, total costs exceed revenues. In response, higher charges for some inframarginal purchases are the solution. Thus, there is the telephone approach of an entry fee to allow unlimited purchase at the marginal cost of efficient output or the electric-power approach of declining block rates when earlier units of consumption are priced higher than later ones. In either case, given a goal of pre-

venting monopoly profits, the required profit cuts can be made in infinitely many ways. The total cut is fixed, but any amount of anything can be split in infinitely many ways. Consider the case of ten consumers sharing a \$10 cut. Possibilities such as \$10 to one consumer and nothing to the rest; \$1 to each consumer; and \$2 each to five consumers and nothing to the other five, are all among the infinite possibilities. Richard L. Gordon, "Don't Restructure Electricity: Deregulate," *Cato Journal* 20, no. 3 (Winter, 2001): 327-58.

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