

PRODUCING OIL OR REDUCING OIL:

Which is Better for U.S. Energy Security?

Heather L. Ross

When it comes to lowering the risk of an energy shock to our economy, measures to reduce domestic oil demand outperform measures to increase domestic oil supply.

Energy security has achieved new prominence in the debate over U.S. energy policy. While oil markets of the last decade have remained relatively stable and oil relatively cheap, compared with the oil shock period of the 1970s and early 1980s, security concerns have risen as U.S. oil demand and import reliance have increased while threats of terrorism and Middle-East hostilities have heightened. In June 2001, President Bush sent to Congress a package of proposals developed by a White House task force, the National Energy Policy Development Group, which invoked national security as a major objective. A House bill passed in August 2001 largely adopted this package, including a measure opening the Arctic National Wildlife Refuge (ANWR) to oil drilling.

The Senate, acting in early 2002, rejected ANWR drilling and also voted down raising the Corporate Average Fuel Economy (CAFE) standards. These two proposals—ANWR, the flagship of supply increase measures, and CAFE, the leading demand reduction policy—have dominated public discussion of the pending legislation, which is currently awaiting conference committee reconciliation.

The idea that adding reliable oil supplies is the right way to enhance energy security is understandable—it satisfies our intuition that substituting safe oil for risky oil will make us safer, and it worked on a global scale to help end the oil shocks in the 1980s. But the fact that we have been reducing our demand for oil as a share of the economy for the past 25 years has actually been

the key to increasing U.S. energy security over that period, and demand reductions will continue to offer the best hope for a secure energy future.

Oil security is a function of two factors—the likelihood of a supply disruption and the impact of a disruption if it occurs. U.S. policies that increase domestic supply or decrease domestic demand by the same amount will have the same effect on the likelihood of disruption, because they will back the same amount of imports out of the U.S. market. They will therefore have the same net effect on the global oil market and its participants. But demand reductions, because they reduce the relative importance of oil in the economy, will decrease the impact of any disruption, while supply increases, which replace imported oil with domestic oil but do not alter the oil intensity of the economy, will not.

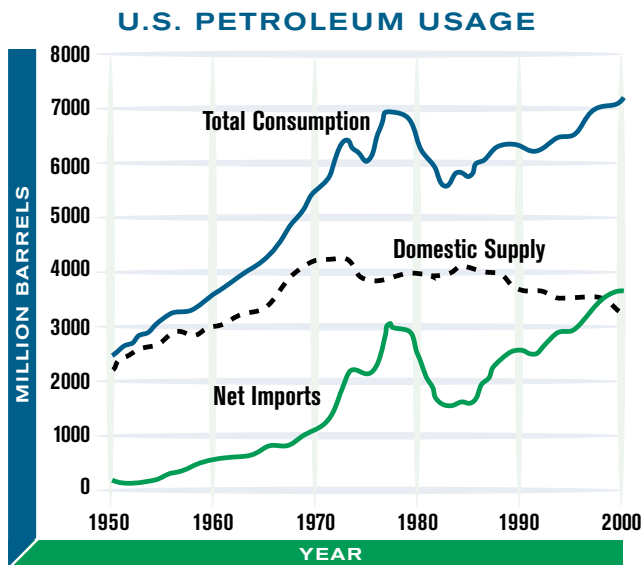
The United States has in fact been following the path of lowering oil intensity—oil consumption per dollar of gross domestic product (GDP)—since the

late 1970s. Figures 1 and 2 show the historical trends in U.S. oil usage and intensity. Figure 1 shows the persistent rise of U.S. oil consumption and oil imports over the past 20 years, a period when domestic production drifted downward. Our imports are now above their 1970s oil-shock peak and, for the first time in history, exceed our own production. Advocates use these facts to argue for increased domestic production in the name of energy security. Figure 2 shows the more pertinent picture. Our vulnerability to oil disruption has been declining throughout this period because oil has come to play a smaller and smaller role in our economy. Oil disruptions are now less harmful to us than they have ever been, because our oil intensity is at a historic low and leverage of the remaining uses of oil on the GDP has not increased enough to offset this effect.

It is reductions in oil demand per dollar of GDP, achieved through policy and market responses, that have gotten us to this point. What, then, do supply-side policies have to offer? With no contribution in terms of lowering the impact of disruption,¹ their only possible merit is if they can displace enough imports to materially reduce the likelihood of disruption, and do so more cheaply than demand-side policies can.

Pursuing this solution on a world scale makes sense—new non-OPEC (Organization of Petroleum Exporting Countries) supplies developed in the 1980s helped bring the original oil shock period to a close, and prospects are promising now for substantial additional

FIGURE 1



Source: Energy Information Administration, *Annual Energy Review 2000*.

¹ Note that domestic production, if it completely replaced imports, would lower the impact of disruption, but this is unattainable. As long as we participate in the world market, a disruption originating anywhere in that market will have the same effect on us regardless of the share of our consumption that is imported, because it will cause a repricing of all our consumption, not just our imports. A lower share of imports will reduce the terms-of-trade disadvantage from sending oil payments overseas, but this is not directly a security consideration, and the indirect effect on security could be negative if lower OPEC revenues had a destabilizing effect on some member countries.

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supplies from newly developing areas in the former Soviet Union and Africa. The United States does not offer many such prospects, however, as our low-cost deposits have been mostly discovered and extracted. A look at Figure 1 shows that U.S. oil production remained flat during the 1980s when production expanded elsewhere in response to OPEC price escalation. Our lack of expansion in the face of a six-fold increase in oil prices, although U.S. prices were initially constrained by price controls, is powerful evidence of the steep slope of our remaining domestic oil supply curve. The cost to us of displacing enough imports to remotely affect the stability of the world oil market is prohibitive.

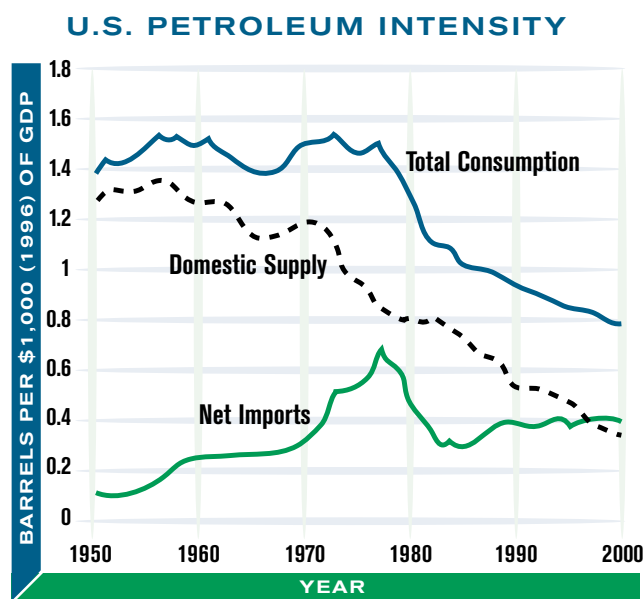
But what about making our marginal contribution to the multilateral mission of reliable oil supplies, and thereby doing our part to reduce the likelihood of disruption? We do this every day as we produce oil within the larger global market to which we belong. The question is whether we can take steps to expand our marginal contribution, and the answer is certainly yes. The United States has been a leader in new explo-

ration and production technology that has greatly lowered the supply cost curve here and around the world, and those technical advances are continuing.

There is less to be said for two other aspects of cost reduction, both of which figure in the current energy bills. The first is new financial breaks for oil companies, in the form of special tax preferences and lease terms. Given the steepness of our oil supply curve, this favored treatment, while reducing tax equity, does a lot more to increase the profitability of production than it does to add to production. Also in play are efforts to reduce environmental costs, including rollbacks in operating requirements and access restrictions. Here, oil interests and others with a stake in oil activity are working against the tide, as people over time have come to understand better and value more the amenities of a clean and natural environment.

The judgment of how and where oil operations can proceed at net social benefit—that is, after mitigating the nonmarket costs of environmental harm and offsetting the value of any unmitigated environmental costs that remain—must be made in the public domain, based on the intangible environmental values held by citizens. In the case of ANWR, given the information that is currently available about oil prospects there, mitigation measures for oil development, and potential harm to Arctic flora, fauna, and wilderness character, the implied estimate of those intangible environmental values can only be described as enormous. It is probably not surprising to see that valuation tested in Congress, although it will probably not result in legislation opening ANWR this time around. In future attempts that will surely come, the proper question will be whether the public's net benefit calculation for development has turned positive, and although untoward events can trigger unfortunate reactions, the truth is that energy security has very little bearing on that calculation.

FIGURE 2



Source: Energy Information Administration, *Annual Energy Review 2000*.

Our principal policy response to the first oil crisis² was on the demand side—notably energy efficiency, including vehicle fuel economy—and the effects of that intervention are still apparent. A committee convened last year by the National Research Council, the study arm of the National Academy of Sciences, estimated that reduced gasoline demand stemming from that earlier era’s CAFE standards plus price-induced conservation was, by the year 2000, reducing U.S. oil consumption by 2.8 million barrels per day, or 14% of total usage.³ When it comes to staying power, there is quite a contrast between temporary supply increases from limited-lifetime wells extracting a nonrenewable resource from a highly depleted base and enduring demand reductions based on oil efficiency improvements and alternative fuels substitution permanently weaning the economy off oil. And while some near-term supply increases can compete with some near-term demand reductions in terms of cost, policy interventions at the scale and duration needed to make a material difference in oil security will come cheaper on the demand side.

In sum, demand reductions outperform supply increases because every barrel of oil we take or keep out of the economy reduces the harm of disruption, and demand reductions can proceed at a greater scale, longer life, and lower cost than supply increases, thereby diminishing the likelihood of disruption more effectively. Deciding to intervene in the oil market for energy security purposes requires careful thought, but if we are thinking of going down that path, our thoughts should turn to reducing oil, not producing oil. ■

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² Work was also begun on the Strategic Petroleum Reserve, an important stop-gap source of oil in the event of disruption.

³ *Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards*, National Research Council, Summer 2001. See also “Penny-Wise and Pound Fuelish?” by Paul R. Portney in *Resources*, Issue 147, Spring 2002.

For More Information:

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