Energy Taxation: Principles and Interests

by Eric Toder

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Energy policy is an important subject these days, as Americans become increasingly aware of the costs of what President Bush has called "our addiction to oil" and the environmental costs of growing world consumption of fossil fuels. The president's comment addressed the growing risks to the U.S. economy from dependence on oil imported from insecure foreign regions. U.S. domestic oil production has been gradually declining for decades, and in 2005 the United States imported about 60 percent of the oil it consumed. Although some foreign oil comes from friendly and politically stable countries, the world price of oil depends heavily on output in potentially hostile, war-torn, and politically unstable regions. The United States, although still a large producer, accounted for 25 percent of world oil consumption and only 10 percent of crude oil production in 2005.

Beyond that, there is increasing scientific consensus that the earth will warm significantly in the next century, due in large part to carbon dioxide released from the burning of fossil fuels. Concern about global warming and interest in policies to address it by reducing greenhouse gas emissions is much greater in Europe than in the United States. On October 30, 2006, the British government released a report that spelled out the risks of continued growth in greenhouse gas emissions (*The Washington Post*, Oct. 30, 2006, p. A18). The report estimates that failing to curb climate change could lead to a cut in world gross domestic product from 5 percent to 20 percent and urges that to forestall that, we need to "act now and act internationally." Although some will challenge the report's estimates, there is a growing consensus that climate change is an issue that major energy-using countries can no longer ignore.

Burning fossil fuels to produce energy to operate our automobiles, transport goods, heat our homes, grow and ship our food, power industrial machinery, and generate electricity for homes, office buildings, and factories is essential to maintaining our living standards. We are not about to return to a preindustrial economy, nor should we. But policy changes can help us adjust over time to an economy that uses less oil and generates less greenhouse gas emissions. Tax policies can be a crucial component of an energy policy that relies on decentralized markets instead of detailed "command and control" regulations to address global warming and energy security concerns.

Energy Market Failures

Free markets provide powerful incentives for profit-seeking producers to supply the goods and services most valued by society and to use the most cost-effective technologies in production. A free-market tax policy would be neutral among industries, firms, technologies, and final goods purchased by consumers. It would imply no selective excise taxes on fuels (apart from benefit-related taxes, such as gas taxes used to fund highway costs) and no selective tax incentives (expensing, percentage depletion, tax credits) for the production of selected fuels or investments in selected energy technologies.

But unregulated prices in energy markets do not reflect the long-term economic costs of global warming, the political risks of dependence on oil, or the associated air pollution. Existing prices affect numerous choices that might differ if prices of fuels reflected their full social costs, from consumer purchases of sport utility vehicles to use of coal in electric power generation. Higher energy prices would force users to confront the full costs of fossil fuel consumption.

Policies to reduce greenhouse gas emissions and oil import dependence can be in conflict. Raising the price of oil encourages conservation, which benefits the environment, but also encourages the substitution of coal for oil. Greenhouse gas emissions are much higher from burning coal than from burning oil, so *policies that substitute coal use for oil use reduce dependence on oil imports at the cost of increasing greenhouse gas emissions*.

Tax policies can be used to alter energy use in two broad ways. Selective energy taxes can discourage activities that increase oil dependence or contribute to global warming. Energy tax incentives can encourage activities that *substitute* for oil-consuming or greenhouse-gas-generating activities. I discuss each in turn.

Energy Taxes

The most direct way to correct for underpricing fossil fuels is to tax them. Taxes that raise the prices of fossil fuels would encourage a whole range of

responses by households and firms and eliminate the need for complex regulations and narrowly based taxes.[1]

Those responses include:

- reducing fuel-intensive activities (for example, reducing automobile use by carpooling, using public transit, moving closer to work, or reducing heating fuel use by turning down the thermostat);
- investing in more energy-efficient capital (for example, cars with better fuel economy, more energy-efficient appliances, or better insulated homes);
- using alternative energy sources (for example, using renewable resources such as wind energy or hydropower for electricity generation, possibly using more nuclear power in electricity generation, or using solar energy for home heating or hot water heaters); and
- developing new technologies to displace fossil fuel use or to reduce the release of carbon into the atmosphere (for example, improvements in alternative power-generating technologies, such as hydropower, solar or wind energy, development of alternative cars, or development of cost-effective techniques to ''sequester'' carbon released by burning coal.)

Of all those possible responses, the first — using less fuel — would be the most immediate but would be the least effective, while the last — new and improved technologies — would take the longest to materialize but would be essential for controlling fossil fuel growth without sacrificing advanced living standards. The most important reason for imposing taxes on fossil fuel use is that the resulting price increases would provide a powerful incentive for developing more energy-efficient technologies.

Reducing oil import dependence vs. reducing greenhouse gas emissions. The most direct way to reduce oil imports is to impose a fee or tax on imported oil. (The tax base would need to include the oil content of imported energy products, such as refined gasoline.) An oil import fee would be neutral among alternative ways of reducing imports, including lower consumption of gasoline and home heating oil, reduced use of oil in industry, increased domestic oil production, and increased production and use of alternative fuels. An excise tax on all oil would do everything an import fee does except encourage domestic oil production, and it's preferable if oil price uncertainty instead of the size of the import bill is viewed as the main source of the external cost of oil use.

In contrast, the most direct way to reduce greenhouse gas emissions is to tax the carbon content of fuels. A carbon tax would impose a much higher tax rate on coal per dollar than on oil and gas. As with the oil tax, it would encourage conservation and the use of renewable energy sources; however, unlike the oil tax, it would favor oil over coal. Thus, while an oil tax is an inefficient and possibly counterproductive instrument for reducing global warming, a carbon tax alone is an inefficient instrument for reducing oil dependence. A combination of oil and carbon taxes is needed to address both goals.

Taxing consumers vs. producers — arguments for also increasing highway motor fuel taxes. Taxing energy at the producer or importer level has administrative and policy advantages; there are fewer producers than consumers, and taxing all uses of a fuel is more broad-based than taxing selected energy products that use it. Nonetheless, producer taxes can create economic distortions and adverse competitive effects in some industries (for example, petrochemicals) by raising the price of productive inputs (oil, gas, coal) in the United States above the prices of those inputs when embodied in tradable goods.[2] A highway motor fuel tax would apply to a narrower base than would an oil tax (exempting home heating oil and other uses), but would avoid adverse trade effects because gasoline is used almost exclusively by households or in the (nontradable) transportation sector. Moreover, consumption of highway motor fuels imposes other external costs (pollution, congestion), and coal is not a substitute for oil in motor fuels.[3] One possible combined policy to address global warming and oil import dependence would be to impose a modest carbon tax *and* a moderate increase in motor fuel tax rates (above amounts allocated to highway construction) and then gradually increase the rates of both taxes over time.

Taxes or tradable permits. An alternative to instituting carbon taxes and increasing the gasoline tax is to introduce systems of tradable permits for

[1]For example, with gasoline prices that reflected the full social costs of gasoline use, there would be no need for corporate average fuel economy (CAFE) standards, the ''gas-guzzler'' excise taxes on low fuel-efficiency vehicles, and special tax credits for hybrid cars and other alternative vehicles.

[2]Those adverse competitive effects could in principle be eliminated by imposing equivalent tariffs on the oil or carbon content of all imported goods and rebating the domestic oil or carbon tax on the oil or carbon content of all exports, but that would be administratively cumbersome and run afoul of international trading rules. In practice, some distortion in production location is one of the costs of such a tax — a cost that could be offset if other countries imposed similar taxes.

[3]A number of prominent economists, including a former Council of Economic Advisers chairman under President Bush, have endorsed higher gasoline taxes. *See* N. Gregory Mankiw, ''Raise the Gas Tax,'' *The Wall Street Journal*, Oct. 20, 2006, p. A12.

gasoline consumption and carbon emission rights. The system would be similar to the cap-and-trade system currently used to limit emissions of some pollutants by utilities.[4] Cap-and-trade systems effectively raise relative prices in the same way as taxes on the same base, but they allocate the scarcity rents the policy creates to recipients of the initial allocations instead of to the public sector. That can make cap-and-trade systems more popular than taxes, especially if people do not associate benefits from other tax cuts or expanded government programs with increased revenues from energy taxes.[5]

Energy Tax Incentives

The United States does not impose substantial broad-based taxes on energy inputs,[6] and it taxes highway motor fuels at a much lower rate than in other major economies.[7] Politicians prefer tax subsidies (which provide visible benefits to identifiable groups and impose widely diffused costs on others) to energy tax increases (which impose visible costs on identifiable groups to produce widely diffused benefits for others). Over the years, Congress has enacted numerous tax incentives for domestic oil and gas production, the production of alternative fuels, and investments in conservation and alternative energy technologies. Major incentives for oil and gas production (the oil depletion allowance and expensing of oil and gas development and drilling costs) date from the earliest years of the income tax and have survived efforts of tax reformers to eliminate them.[8] Incentives for alternative energy production and conservation have come later in response to concerns first about oil dependence and later about global warming. The Energy Policy Act of 2005 (P.L. 109-58) added new subsidies and expanded existing ones at a cost that the Joint Committee on Taxation estimated at $8 billion over 5 years and $14 billion over 10 years.

I will not discuss those tax incentives in detail, but I will make a few general observations.[9] The tax incentives have mixed effects. Some (for example, the fuel production credit) subsidize coal-based synthetic fuels, which is contrary to environmental policy goals. Other incentives subsidize clean coal technologies, which are better for the environment than conventional coal, but do not reduce greenhouse gas emissions unless the carbon emissions can be sequestered. Others subsidize alternative forms of energy (alcohol-based motor fuels, wind power and hydropower for electricity generation, and solar power for homes); some of those make economic sense given the social benefits from displacing conventional fuels, but others do not, given the cost per dollar of fuel savings. Many have developed constituency support groups that make them hard to terminate.

In general, subsidies to alternative fuels and production techniques compensate for the underpricing (relative to full social costs) of oil, natural gas, and coal. The subsidies are beneficial to the extent that they reduce consumption of fossil fuels, with the benefit depending on the product of the displaced fossil fuel consumption and the difference between the market price of the displaced fuel and the hypothetical correct price that accounts for all social costs of fossil fuel consumption. But subsidies are in general a less cost-effective way of reducing oil vulnerability and greenhouse gas emissions than direct increases in fuel prices because their incentive effects are less complete. Subsidies

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[4]In addition to raising the price of carbon emissions, the federal government can also increase funding of related research and development. For an assessment of policy options to reduce carbon emissions, including taxes, cap-and-trade systems, and increased federal funding of R&D for new technologies, see Congressional Budget Office, ''Evaluating the Role of Prices and R&D in Reducing Carbon Dioxide Emissions'' (Sept. 2006).

[5]In principle, cap-and-trade systems can produce the same relative price effects as given tax increases if the government distributes the right amount of permits. But because that ''correct'' amount is unknown, at least initially, cap-and-trade systems make it easier to set desired quantities, while taxes make it easier to set the desired price. Some proposals would combine a cap-and-trade system with a ''safety valve'' that requires the government to create and sell additional permits if the price rises above a set amount.

[6]There are taxes on oil to finance the Superfund for hazardous waste cleanup and on coal to support the Black Lung Trust Fund. Also, some states impose severance taxes on oil, gas, coal, and other minerals to extract some of the economic rents from domestic energy and mineral production.

[7]Combined federal and state gasoline taxes in the United States average about 43 cents per gallon, significantly lower than the excise tax in Canada (78 cents per gallon) and only a fraction of the taxes of other countries in the G-7 (ranging from $1.95 per gallon in Japan to $3.37 per gallon in the United Kingdom). *See* Sonya Hoo and Robert D. Ebel, ''An International Perspective on Gasoline Taxes,'' *Tax Notes*, Sept. 26, 2005, p. 1565; and Kim Rueben and Sonya Hoo, ''Gasoline Taxes and Rising Fuel Prices,'' *Tax Notes*, July 18, 2005, p. 345.

[8]Advocates of economically neutral business tax rules and supporters of a more environmentally friendly tax system have opposed the incentives for oil and gas production. For an example of the latter, see Craig Hanson and David Sandalow, Brookings Institution and World Resources Institute Policy Brief, ''Greening the Tax Code'' (2006).

[9]Some of the specific incentives have been reviewed in considerable detail in previous issues of *Tax Notes* and in this special issue. *See, e.g.*, Martin Sullivan, ''Multibillion Dollar Coal Credit: Lots of Form, Little Substance,'' *Tax Notes*, Oct. 6, 2003, p. 34; Sullivan, ''Tax Credits Ease Economy's Shift to Coal,'' p. 20 of this issue; and Sullivan, ''Wind Credits and Clean Air,'' p. 34 of this issue.

can encourage firms and households to alter production methods and make investments in specified energy-saving technologies, but they do not reduce consumption of energy-intensive goods and services and do not encourage energy-saving changes in production methods and technology other than those specified in the tax provisions.

Tax incentives for alternative energy technologies should not be ruled out as a policy instrument, given the political difficulties in imposing energy taxes. But subsidies need to be carefully targeted to activities that reduce fossil fuel consumption and do not substitute coal for oil and natural gas, and they should not be so generous that they support alternatives that would fail to meet a market test at energy prices that reflect full social costs. Also, subsidies should be targeted to try to encourage changes in behavior rather than written in a way that rewards current practices. Subsidies that are available to a broad range of alternative production methods that displace fossil fuels are generally preferable to subsidies that narrowly target specific fuel choices or technologies or subsidies based on investment instead of output levels.

Conclusion

Tax policies can be used to increase relative fuel prices in ways that promote the two related but distinct energy and environmental policy goals of reducing oil dependence and slowing the growth of greenhouse gas emissions, while leaving to private individuals and firms decisions on how to alter consumption choices and production methods. Tax incentives for alternative fuels and technologies are less cost-effective ways of achieving those goals than are taxes on fossil fuels, but some existing incentives are worth retaining as long as fuel prices fail to reflect their full social costs.

The United States has very low motor fuel tax rates compared with other advanced economies and no general tax on the carbon content of fuels. Instead, the U.S. tax law contains a complex and growing set of incentives for energy production and investments in alternative fuels and technologies.

When the U.S. government gets serious about the need to reduce dependence on imported oil and contribute to the control of greenhouse gas emissions, both carbon-based taxes and higher motor fuels taxes should be important components of the policy mix. Policymakers will need to find creative ways to combine new and increased taxes with offsetting tax cuts or subsidies that yield a politically acceptable package. The alternative is to continue expanding tax incentives, an approach that provides some beneficial and some counterproductive provisions but that more generally gives the appearance of lots of action without accomplishing much. ■

Energy Tax Policy: Lack of Bright Lines Fuels Confusion

by Ryan Ellis and Scott LaGanga

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Even two presidents whose ideologies were polar opposites agreed on Title 26 of the United States Code, famously calling it "a disgrace to humanity" (Jimmy Carter) and "a complicated mess" (George W. Bush). No area of the tax code is in greater need of fundamental reform than the area of energy tax incentives.

Presidential candidates of both parties slavishly kowtow to the ethanol tax credit during the Iowa caucuses. Southern "Boll Weevil" Democrats in 1981 famously held up the Reagan tax cuts so that they could get percentage over cost depletion for their oil constituency. In the 1990s, then-Vice President Al Gore added a few "pro-green" tax expenditures of his own. The result is a tax code littered with energy incentives, few of which actually help produce more energy capacity, despite our entrepreneurial, superwired economy's desperate need for it.

A fundamental tenet of tax policy is that the code, and by extension the government, should not pick winners and losers. Tax policy should be neutral, and that is just as true in the area of energy. Hybrid cars should not get better treatment than pure-petroleum cars, and green homes should not be tax-advantaged over Ted Kennedy's high-energy mansion in Massachusetts.

A better use of tax policy would be to junk most or all of the current energy tax expenditures, and reinvest the money in a tax code that neutrally encourages a greater energy capacity. As the New York and California brownouts of the last several years demonstrate, increased capacity is one of the building blocks of our international competitiveness. Good energy tax policy is not sufficient, but it is necessary.

The Current Environment

A quick perusal of the *Analytical Perspectives, Budget of the United States Government, FY 2007* (published by the Office of Management and Budget) shows no fewer than 26 tax expenditures