

The Case for a Pay-by-the- Barrel Oil Tax

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Economists frequently recommend using taxes to address “market failures” arising when the actions of individuals impose broader costs on society; for example, taxes could be designed to make motorists pay for their contribution to highway congestion. Are there also market failures associated with our addiction to oil? If so, how high should the tax be, and should it be levied on all oil uses? Is a tax a more cost-effective approach than other policy instruments and how effective might it be in reducing oil use?

Oil dependence is potentially harmful to the stability of the economy as a whole, the environment, and national security, although to what extent the market fails in these regards is often murky. Oil price shocks can disrupt the economy by temporarily idling labor and capital as industries contract in response to higher energy costs, and by transferring purchasing power from oil importers to foreign suppliers. However, the macroeconomic impacts of oil price volatility are difficult to gauge because they depend on many factors, including the oil intensity of the economy (the ratio of oil use to gross domestic product), the oil import share, whether the economy is booming or slumping, and how jittery financial markets might already be about trade and fiscal imbalances.

Market Failures

The extent to which macroeconomic disruption costs constitute a market failure is also contentious; some analysts argue that firms and households adequately account for oil price volatility in their decisions, while others argue that disruption costs partly reflect market imperfections (for example, frictions preventing the smooth reallocation of resources across industries, or underinvestment in fuel-efficient technologies). In short, the case for taxing oil based on macroeconomic concerns is not clear cut; available estimates of the appropriate tax vary from near zero up to about \$10 per barrel (25 cents per gallon of gasoline).

Taxing oil might yield another economic benefit to the nation by lowering the world demand for oil and thereby the long-term world price. Put another way, the oil tax burden would not be fully passed on to U.S. consumers in higher domestic prices but would be borne, in part, by foreign oil suppliers in the form of lower world prices. The price impact is difficult to judge—it would depend on how oil producers and consumers throughout the world respond to a slackening of global demand—but is likely modest. Studies suggest that U.S. market power might warrant a further oil tax of anything up to \$5 per barrel.

Local environmental effects of oil use are less of a concern today for many regions than in the past; for example, regulations have helped to dramatically reduce passenger-vehicle tailpipe emissions. The biggest problem is the contribution of carbon dioxide emissions from oil combustion to future global climate change, which will impact agriculture, coastal activities, human health, ecosystems, and so on. In this regard a global cost of oil consumption is not reflected in the market price. Although the measurement problems are daunting, climate economists have put this cost at about \$5–\$50 per ton of carbon, even making some crude allowance for the risk of extreme climate scenarios; in principle, this justifies an additional oil tax of anywhere from 50 cents to \$6 per barrel.

Dependence on oil also constrains U.S. foreign policy to the extent that oil-producing nations with governments hostile to the West may retaliate to U.S. pressure by disrupting the oil market. But the overriding fear now is that oil revenues are funding governments, like Iran, or other groups, such as terrorists or insurgents in Iraq, that threaten regional or U.S. security. Unfortunately, however, unilaterally taxing oil would do little to reduce these revenue flows to foreign oil producers; for example, a tax of \$20 per barrel would likely lower the long-term world oil price by only 1–5 percent, which is small when set against the recent doubling of world oil prices. Other factors, such as the effect of U.S. foreign policy on the degree of anti-Western sentiment, proliferation of weapons of mass destruction, and political developments in the Middle East, are far more important in the near term for determining terrorist threats than unilateral U.S. conservation policies designed to lower world oil prices.

The United States also maintains a military presence in the Middle East to protect oil supplies, although this serves other objectives, such as attempts to promote regional security. Studies that apportion part of this military burden to oil suggest that these costs amount to around \$3–\$6 per barrel of oil consumption, although valuing the annualized cost of U.S.-involved conflicts is extremely controversial. Nonetheless, taxing oil only yields an additional dividend if military resources are scaled back in proportion as oil imports fall. This may not be realistic, at least for modest import reductions, given that the United States would still be vulnerable to oil price shocks from supply and other market disruptions.

Summing up, I might, albeit tentatively, put the appropriate tax to correct for market failures at somewhere in the region of \$5–\$25 per barrel, or 12–60 cents per gallon of gasoline. While gasoline is already taxed at the federal and state levels at about 40 cents per gallon, oil refined into gasoline should not be exempt from a new oil tax, as this existing tax

Using Oil Taxes to Promote New Technologies

Most likely, the private sector lacks adequate incentives to develop commercially viable alternatives to current oil technologies, such as plug-in electric hybrid vehicles. For one thing, other firms can adopt new technologies; an individual firm may have little incentive to take these “spillover” benefits into account when deciding on its own R&D budget, especially if firms are located in rapidly industrializing countries, such as China and India. Firms may also be reluctant to undertake major R&D projects when the ultimate payoffs are highly uncertain, due to oil price volatility.

The spillover problem provides the *raison d’être* for the patent system, and various tax credits and other government subsidies for private sector research. However, these inducements can be problematic: for example, public funding for research involves the government attempting to pick winners among alternative investment projects. In this regard, complementing existing technology policies with a tax-induced increase in the oil price is attractive, as it leaves applied R&D decisions in the hands of private firms.

may be warranted to reduce traffic congestion and highway accidents. (However, taxing vehicle mileage, for example at peak period in urban areas, would be far better than gasoline taxes to address these concerns).

Taxing Oil versus Alternative Approaches

Reducing oil use through a broad oil tax imposed on crude oil inputs to refineries (and imported refined petroleum products) involves lower economic costs than taxing gasoline use alone, as it exploits conservation opportunities across all oil uses (including aviation, trucking, manufacturing, and home heating) rather than placing the entire burden on passenger vehicles, which account for just under half of total oil consumption.

In addressing larger issues like climate change and energy security, policymakers often turn quickly to options like fuel-economy standards (the CAFE rules). But they are even less cost-effective than a gasoline tax because they do not raise fuel prices and therefore do not directly encourage people to economize on vehicle use. Many analysts argue that higher fuel-economy standards are needed (in conjunction with higher energy taxes) because new car buyers undervalue fuel economy, although there is little solid evidence on this issue either way.

An oil tax would impose some burden on households; for example, a \$10 tax per barrel would increase annual fuel costs for the average motorist by around \$150. On the other hand, this oil tax would also raise an extra \$70 billion in tax revenues for the government each year, which might be used productively. For example, the revenue could be used to lower the federal budget deficit by around 25 percent, thereby reducing the burden of debt payment on future generations. Alternatively, the revenue could be used to lower the average individual's federal income tax bill by around 7 percent, roughly compensating households for higher oil prices. Using revenues to cut other taxes that distort incentives for work, savings, and educational investment would help to keep the overall economic costs of the oil tax low.

Nonetheless, an oil tax by itself is not going to solve our oil dependency overnight; for example, a \$10-per-barrel oil tax imposed at current prices would, at best, reduce near-term oil consumption by 10 percent below market-determined levels. However, the tax may have more dramatic impact over the longer term by encouraging firms to develop oil-conserving technologies, especially if it were designed to impose a floor price for oil, thereby removing some of the downside risk for large-scale investments. In fact, an oil tax may be a better way

to promote such critical R&D efforts than more traditional policies (see the box on page 27).

A Ray of Hope

Skeptics of a broad oil tax have raised two important practical objections: the revenue advantage of taxes may be squandered on pork-barrel spending, and lobbying groups representing motorists and energy-intensive industries would likely stave off any attempt to introduce a new oil tax. While I am no political scientist, I am slightly more optimistic about the prospects for a tax shift onto oil over the longer term.

The problem of oil dependence is going to be with us for some time to come, and policies that may appear infeasible today may not be a decade or more down the road. Environmental tax shifts have recently been implemented in many European countries, and the same may happen in the context of traffic management; for example, the U.K. government has proposed replacing its gasoline tax with a nationwide congestion tax. It is conceivable that this trend toward innovative taxes may spread to the United States as their merits become more transparent and they become more acceptable to the general public. In fact there is already much debate at the local level about the use of pricing instruments to improve traffic flow and safety.

Moreover, pressures to find new sources of revenue will likely increase in the United States in upcoming years as the Baby Boomer generation begins to retire, imposing a growing burden on the Social Security and Medicare systems. And policymakers might turn oil volatility to their advantage to alleviate the burden of a new oil tax on politically influential groups. The tax might be set very modestly at first, and then ratcheted up during periods of depressed oil prices, leaving motorists and other groups no worse off than under recently experienced price levels. ■