An Economic Assessment of
Eliminating Oil and Gas Company Tax Preferences

Testimony Prepared for a Hearing on

Oil and Gas Tax Provisions:
A Consideration of the President's FY10 Budget Proposal

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Mr. Chairman, thank you for the opportunity testify before the subcommittee about the president's proposal to raise about $30 billion in additional revenue by eliminating oil and gas company tax preferences. My name is Stephen Brown. I am a nonresident fellow at Resources for the Future (RFF), a 57-year-old research institution, headquartered here in Washington, DC, that focuses on energy, environmental, natural resource, and public health issues. Nonresident means that I primarily live and work elsewhere, in my case, Texas.

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Summary Remarks

As part of his proposed budget, the president has recommended eliminating $31.5 billion worth of tax preferences for U.S. oil and gas production—as estimated over the time period 2011 to 2019. Over the same time period, U.S. oil and gas production is projected to value about $3.4 trillion.

Although the tax preferences represent less than one percent of the oil and gas industry's projected revenue, a call to end them raises questions about how such preferences fit into the overall U.S. tax system, how eliminating the preferences will affect U.S. oil and natural gas markets, and how the resulting changes in energy markets will affect U.S. energy security, employment, and regional economic activity. Those are the issues I address today.

Tax preferences are instruments of policy. Their use should be limited to activities that need more encouragement than is provided by free market forces. Otherwise, tax preferences reduce overall economic wellbeing. The near record-high prices that are projected for oil and natural gas over future years suggest that free markets will provide sufficient encouragement for the development of domestic oil and natural gas resources, and that additional government encouragement is not needed at this time.

Ending preferential tax treatment for U.S. oil and natural gas production will have very small effects on U.S. oil and natural gas markets—primarily because the increased tax revenue amounts to less than one percent of the total revenue the industry is projected to earn on its domestic production. Over the 2011 to 2019 timeframe used in the president's budget projections, eliminating the tax preferences would mean that the average U.S. consumer will pay about $1.40 more per year for petroleum products and natural gas. That figure compares with an annual gain in U.S. government revenue of about $10.70 per U.S. consumer that would be obtained by eliminating the tax preferences.

By my estimates, eliminating the tax preferences would boost the world oil price by an average of about 6 cents per barrel over this timeframe, which would mean increases in gasoline, diesel, and home heating oil prices of less than 0.2 cents per gallon. U.S. oil producers would receive an average of 84 cents less per barrel of oil. These changes are relatively small when compared to the U.S. Energy Information Administration's (EIA) projected trajectory for world oil prices of $65 to $115 per barrel over the reference period.

I also estimate that eliminating the tax preferences will boost the market price of natural gas by an average of about 2.4 cents per million Btu over the 2011 to 2019 timeframe. At the same time, the after-tax price received by domestic natural gas producers will fall, on average, about 2.7 cents per million Btu. Again, these changes are quite small when compared to the. EIA's projected trajectory for U.S. natural gas prices of $5.47 to $7.11 per million Btu between 2011 and 2019.

The small changes in oil and natural gas prices mean correspondingly small changes in market quantities. U.S. oil consumption would fall very slightly—about 0.04 percent. U.S. oil production would fall by 0.36 percent. U.S. oil imports would rise by an estimated 0.1 percent of U.S. oil consumption. U.S. natural gas consumption would fall by 0.2 percent, while domestic natural gas production will fall by more than 0.25 percent. Natural gas imports will rise by an estimated 0.03 percent of consumption.

The small reduction in U.S. oil consumption would slightly enhance energy security by reducing the overall exposure of U.S. economic activity to oil price shocks. The small gain in U.S. oil imports will likely have a small negative effect on energy security because it can be expected to increase the market share of unstable oil-producing countries. The net effect is to slightly increase the exposure of the economy to oil-supply disruptions. The very small gain in natural gas imports is of little concern because domestic sources are projected to supply more than 90 percent of U.S. natural gas consumption—even after tax preferences

are eliminated for domestic oil and natural gas production. Again, the security effects are small because the changes in oil and natural gas market conditions are small.

The U.S. economy tends toward full employment, so eliminating the oil and gas company tax preferences is unlikely to have a significant effect on overall U.S. employment. Given the relatively small effects on oil and natural gas markets, the primary economic effects will be to shift activity slightly away from those regions of the United States that either produce or heavily consume oil and natural gas toward the rest of the nation.

Introduction

The president's budget proposal calls for eliminating tax preferences for U.S. oil and natural gas production—an action that is estimated to boost U.S. government tax revenue by a total of $31.5 billion over a nine-year period from 2011 to 2019.[1] Over the same time period, calculations based on recent projections by the U.S. Energy Information Administration (EIA) indicate domestic oil and gas production will yield revenues of about $3.4 trillion (in constant 2007 dollars).[2] Although the tax preferences represent less than one percent of the oil and gas industry's projected revenue, a call to eliminate them raises questions about how such preferences fit into the overall U.S. tax system, how eliminating the preferences will affect U.S. oil and natural gas markets, and how changes in energy markets will affect U.S. energy security, employment, and regional economic activity.[3] These issues are examined in the sections that follow.

Some Economic Principles of Tax Preferences

The provision of services requires the government to generate revenue. It is generally recognized that the government claim on resources prevents their use in the private sector, so economists have often suggested that the productivity of resources used in the public sector ought to equal that in the private sector. What may not be well understood outside the economics profession is that the means of taxation reshapes economic activity in the private sector in such a way that the potential loss in the value of private sector output is greater than the simple transfer of resources to the public sector.[4]

To promote economic wellbeing, tax policy must be directed at minimizing the undesired interference with the private sector. Such a goal is generally furthered through broadly applied taxes that treat all economic activity equally.[5] The exceptions to such a rule occur when tax policy is used to redirect private economic activity toward socially desirable goals or away from socially undesirable outcomes, as examined by Schultze (1977). Therefore, tax preferences are instruments of economic policy, and their value should be assessed in light of current market conditions and policy objectives.

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[1] See Office of Management and Budget (2009) and U.S. Department of Treasury (2009).
[2] See Energy Information Administration (2009b).
[3] Changes in U.S. oil and natural gas prices also will affect U.S. coal markets. Given the small scale of the potential changes in policy, implications for coal markets are ignored.
[4] The provision of government services also can be inefficient. See Brown and Saving (2002).
[5] See Musgrave and Musgrave (1989).

As seen from the perspective of policy, tax preferences for domestic oil and gas production could be justified on the basis of promoting more U.S. oil and gas production than would be provided in a free market—perhaps to sustain the domestic industry and promote energy security when energy prices are unusually low. When energy prices are high, as they have been in recent years and are projected to be in coming years, such tax preferences are not needed to support a strong domestic energy industry, and do relatively little to enhance energy security.

Unless tax preferences are used as an instrument of policy, they can be harmful to economic activity. Tax preferences shift the overall mix of economic activity from that determined in a free market. Moreover, the foregone revenue necessitates higher taxes on other activities to close the budgetary gap, and those tax gains further shift the mix of economic activity away from that determined in a free market.

The Effects on U.S. Oil Markets

The estimated effects on U.S. oil markets of eliminating tax advantages for U.S. oil and natural gas production are quite small—primarily because the oil and gas company tax advantages that would be eliminated are miniscule in comparison to the projected world oil prices. Even at projected world oil prices in excess of $100 per barrel, the additional tax revenue is less than one dollar per barrel.

For the period used in the president's budget projections, eliminating the tax preferences would boost the world oil price by an average of about 6 cents per barrel, as is shown in Figure 1. Such an increase in oil prices translates into a gain of less than 0.2 cents per gallon of gasoline, diesel fuel, or home heating oil. The change in consumer prices is very small because oil prices are determined on an international market in which the United States accounts for less than 10 percent of production.

As a result of higher world oil prices, the average U.S. consumer would spend an estimated 60 cents more on petroleum products each year. Meanwhile, the government would collect an average of $7.06 in additional revenue from crude oil and natural gas plant liquids for each consumer annually.

With the international market dulling the impact on consumers, eliminating the oil and gas company tax preferences would reduce the after-tax price received by domestic oil producers by an average of 84 cents per barrel over the budget assessment period. As shown in Figure 1, this reduction is quite small in relationship to the EIA projected prices of $65 to $115 per barrel over the same time period.

The small changes in oil prices would yield correspondingly small changes in U.S. oil consumption, production and imports. The slight gain in consumer prices would reduce domestic oil consumption by an average of 7,000 barrels per day over the period 2011 to 2019, less than 0.04 percent of the projected U.S. oil consumption of 20 million barrels per day. Because domestic oil production is relatively sensitive to after-tax prices, it will fall by

an estimated 26,000 barrels per day—almost 0.4 percent of the projected 7.3 million barrels per day in U.S. oil production (including crude oil and natural gas plant liquids).[6] Filling the gap, U.S. oil imports will rise by an estimated 19,000 barrels per day—about 0.1 percent of projected U.S. oil consumption.

About the Oil Market Estimates: A small simulation model of the international oil market was used to estimate the effects on international oil markets of eliminating U.S. oil and gas company tax preferences. The model takes as its baseline the projected domestic and international oil market conditions reported in the *Updated Annual Energy Outlook 2009* produced by the EIA.[7] This April update incorporates revised expectations for overall economic activity and the provisions of the American Recovery and Reinvestment Act that were enacted in mid-February 2009. The EIA outlooks assume no new policy initiatives and are widely available, well documented, frequently compared with other major energy outlooks, and often evaluated for their ability to track the historical record. Specific estimates depend on the baseline assumptions, but the qualitative findings do not.

The Effects on U.S. Natural Gas Markets

Over the period used in the president's budget projections, eliminating oil and gas company tax preferences would boost the U.S. natural gas price by an average of about 2.4 cents per million Btu, as is shown in Figure 2. Over the same period, eliminating the tax preferences would reduce the after-tax price received by domestic natural gas producers by an average of about 2.6 cents per million Btu. As shown in Figure 2, these changes are quite small in comparison to the EIA projected trajectory of prices from $5.47 per million Btu at Henry Hub in 2011 to $7.11 per million Btu in 2019.[8]

As a result of higher prices, the average U.S. consumer would spend an estimated 82 cents more on natural gas each year. Meanwhile, the government would collect an annual average of $3.65 in additional revenue on dry natural gas for each consumer.

The changes in natural gas prices will yield correspondingly small changes in U.S. natural gas consumption, production, and imports. U.S. natural gas consumption would be reduced by an average of 42 billion cubic feet annually over the 2011 to 2019 timeframe—about 0.2 percent of the projected U.S. consumption of 21.3 trillion cubic feet per year. Domestic natural gas production will fall by an estimated 49 billion cubic feet annually—about 0.25 percent of projected U.S. natural gas production of 19.4 trillion cubic per year. Natural gas imports will rise by an estimated 7 billion cubic feet per year—about 0.03 percent of U.S. natural gas consumption.

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[6] The EIA finds that U.S. crude oil production is sensitive to price because the domestic resource base generally requires more costly secondary or tertiary recovery techniques. See Energy Information Administration (2009a).

[7] See Energy Information Administration (2009b).

[8] Henry Hub is the principal trading hub for natural gas in the United States, and the price at this location is used as a standard reference for U.S. natural gas pricing.

About the Natural Gas Market Estimates: A small simulation model of the U.S. natural gas market was used to estimate the effects on U.S. natural gas markets of eliminating the oil and gas company tax preferences. Similar to the approach taken for estimating the effects on oil markets, the model takes as its baseline the projected domestic natural gas conditions, including imports reported in the EIA's *Updated Annual Energy Outlook 2009*.[9] Specific estimates depend on the baseline assumptions, but the qualitative findings do not.

Consequences for Energy Security

Changes in oil consumption and oil imports raise issues about energy security. Practical experience and a long-established economics literature—assessed by Brown and Yücel (2002); Jones, Leiby, and Paik (2004); Kilian (2008); and Hamilton (2009)—has found that oil supply shocks can lead to sharply rising oil prices and weakened U.S. economic activity. In fact, sharply rising oil prices have preceded all but one of the eleven U.S. recessions since World War II.[10] Because the U.S. economy is vulnerable to oil supply shocks, reducing the potential size or economic consequences of such shocks is at the heart of energy security.[11]

Because oil is fungible, market forces transmit oil supply shocks to oil prices worldwide. The oil price shocks experienced in the United States depend neither on the extent of its oil imports nor on the specific countries from which it imports oil. U.S. oil consumption plays an important role in its energy security because oil consumption determines the extent to which its economic activity is exposed to internationally transmitted oil price shocks.[12]

U.S. oil imports play a role in energy security only to the extent that they affect the expected size of future supply shocks by changing how much potentially unstable producers contribute to world oil supply. Because historically unstable producers adjust their production to world market conditions, they are among the marginal sources of world oil— even though other producers have higher costs, which makes them among the most likely to respond to changes in U.S. oil imports. Consequently, small reductions in U.S. oil consumption will slightly enhance the nation's energy security, while gains in U.S. oil imports will reduce energy security slightly. The net effect on security is to increase the expected loss in economic activity and transfers abroad by an estimated $7.9 million per year.

The story is quite different for natural gas because high transportation costs limit international arbitrage of world natural gas prices.[13] So, the very small gain in natural gas imports is of relatively little concern because domestic sources are projected to supply

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[9] The EIA *Updated Annual Energy Outlook 2009* shows projected natural gas prices substantially below that suggested by the historical relationship with crude oil prices that is documented by Villar and Joutz (2006), Brown and Yücel (2008), and Hartley, Medlock, and Rosthal (2008). The historical relationship depends on substitutability between natural gas and petroleum products, which is seen as substantially diminished in the EIA outlook.
[10] See Hamilton (1983) and Balke, Brown, and Yücel (2008).
[11] See Leiby (2007).
[12] See Brown and Huntington (2009).
[13] See Brown and Yücel (2009).

more than 90 percent of U.S. natural gas consumption—even after tax preferences are ended for domestic oil and natural gas production.

Employment and Regional Economic Effects

The U.S. economy tends toward full employment, so eliminating the oil and gas company tax preferences is unlikely to have a significant effect on overall U.S. employment. Given the relatively small size of the changes in oil and natural gas markets, the primary economic effects will be to slightly shift activity away from those regions of the United States that either produce or heavily consume oil and natural gas toward the rest of the nation.

The shifts in economic activity should occur relatively smoothly. Although firms do look ahead, the slight reductions in energy industry employment and shifts in regional economic activity will come mostly from prospective growth rather than current employment. Even after losing their tax preferences, the industry can expect to benefit from rising oil and natural gas prices as the world economy recovers.

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Figure 1
World Oil Prices
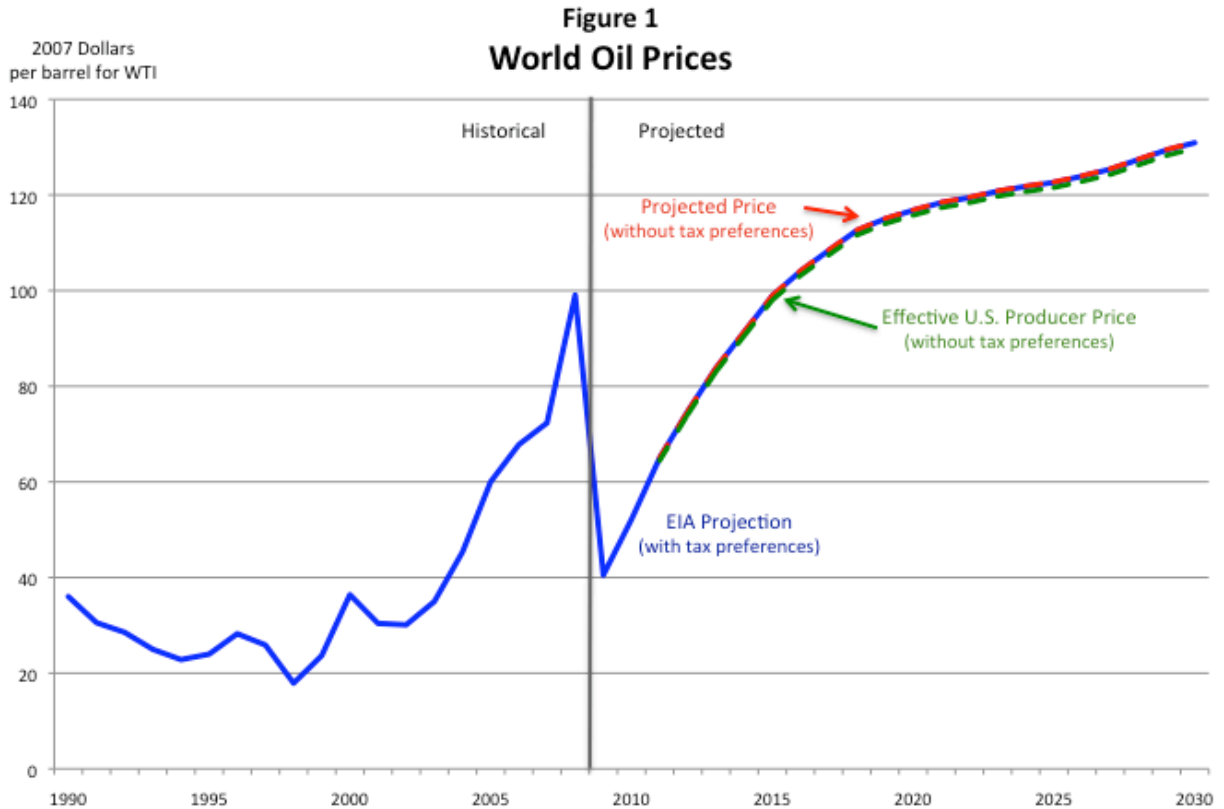
Notes:
EIA projections (represented in blue) show the price of oil rising from a low of $40.52 per barrel of West Texas Intermediate crude oil in 2009 to a high of $130.92 in 2030. Over the 2011 to 2019 period used in the president's budget projections, the EIA projection rises from $65.02 to $114.99 per barrel, averaging $94.87 per barrel.

With the tax preferences eliminated, the projected oil prices (represented in dashed red) rise from $65.06 per barrel in 2011 to $131.00 in 2030. Over the 2011-2019 timeframe, the projected oil prices rise from $65.06 to $115.06 per barrel, averaging $94.93 per barrel.

With the tax preferences eliminated, the effective price for U.S. oil production is $0.62 below the projected market price in 2011 and $1.24 below the projected market price in 2030. The effective price for U.S. oil production (represented in dashed green) rises from $64.44 in 2011 to $129.76 in 2030. Over the shorter timeframe used to analyze the budget, the effective price for U.S. oil production rises from $64.44 to $113.97 per barrel, averaging $94.03 per barrel.

Figure 2
U.S. Natural Gas Prices
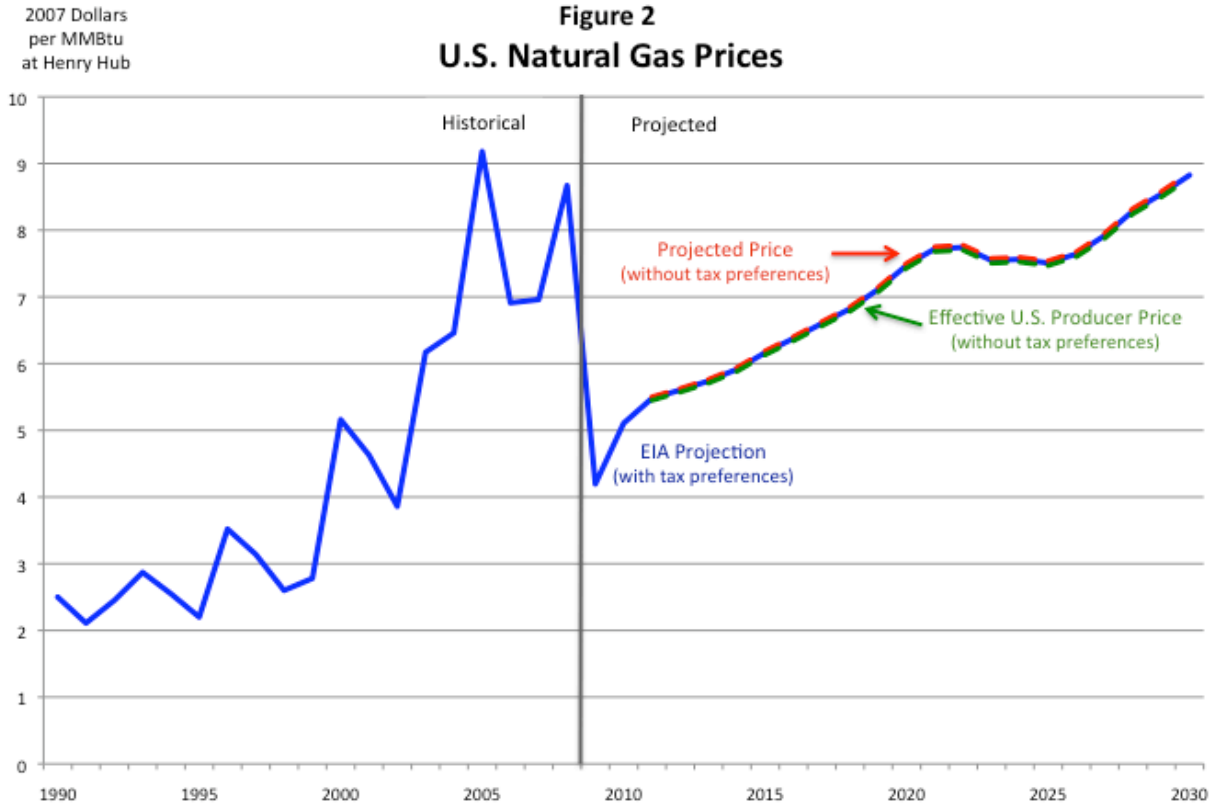
Notes:

EIA projections (represented in blue) show the price of natural gas rising from a low of $4.20 per million Btu at Henry Hub in 2009 to a high of $8.83 in 2030. Over the 2011 to 2019 period used in the president's budget projections, the EIA projection rises from $5.48 to $7.12 per million Btu, averaging $6.20 per million Btu.

With the tax preferences eliminated, the projected Henry Hub natural gas prices (represented in dashed red) rise from $5.50 per million Btu in 2011 to $8.86 in 2030. Over the shorter 2011 to 2019 timeframe, the projected natural gas price rises from $5.50 to $7.14 per million Btu, averaging $6.23 per million Btu.

With the tax preferences eliminated, the effective price for U.S. natural gas production is 5.2 cents per million Btu below the market price in 2011 and 8.4 cents in 2030. The effective price for U.S. natural gas producers (represented in dashed green) rises from $5.45 in 2011 to $8.78 in 2030. Over the shorter timeframe used to analyze the budget, the effective price for natural gas producers would rise from $5.45 to $7.08 per million Btu, averaging $6.17 per million Btu.

Stephen Brown is a nonresident fellow at Resources for the Future (RFF). He holds a B.S. in economics from California Polytechnic State University and an M.A. and Ph.D. in economics from the University of Maryland. Prior to joining RFF in 2009, Brown had a 27-year career at the Federal Reserve Bank of Dallas, where he retired as Director of Energy Economics and Microeconomic Public Policy. He has conducted research and published extensively on the economics of oil and natural gas markets and policy, the economic effects of energy price shocks, energy security, and public-sector economics. He is an associate editor for the journal Energy Economics, *is a regular participant in meetings of the Stanford Energy Modeling Forum, and is currently serving on the American Statistical Association's advisory board for the U.S. Energy Information Administration. He also has worked on energy policy at Brookhaven National Laboratory and has taught at several universities. He was recently honored as a senior fellow by the U.S. Association for Energy Economics.*