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ENERGY BRIEF

Using Oil Taxes to Improve Fiscal Reform

Daniel P. Ahn and Michael A. Levi
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INTRODUCTION

Economists have long argued that taxing oil consumption would be the most efficient way to address U.S. vulnerability to overpriced and unreliable oil supplies. Yet energy taxes are a third rail in American politics. As a practical matter, then, significant increases in oil taxes have long been off the table as a policy tool.

Mounting concern over rising U.S. deficits, however, has recently prompted some people to question whether that might change. Policymakers are confronting difficult choices. Shrinking the yawning U.S. budget deficit would require some mix of higher tax revenues and reduced government spending that extends well beyond the recent legislation that addressed the so-called fiscal cliff. None of the available options is attractive to politicians: no one wants to face constituents who are upset by higher individual or corporate taxes, or by reduced public services, social security payments, or Medicare benefits. In this context, it might be possible to reconsider oil taxes not only as an unwelcome burden, but as an alternative to something worse.[1]

To investigate this possibility, we have modeled the potential consequences of substituting taxes on oil consumption for either higher nonoil taxes or reduced government spending, both as part of a larger deficit reduction package.[2] Doing so can improve economic performance while reducing oil consumption if done right.

CORE SCENARIOS AND PROJECTIONS

The first scenario modeled assumes a deficit reduction package that cuts spending by 3 percent of gross domestic product (GDP) relative to the current trend by 2020 and that increases revenues by 1 percent of GDP over the same period.[3] These changes are phased in linearly over eight years beginning in 2013, and that revenue increases come from an equal mix of corporate and individual tax hikes. The result is a package of spending cuts and revenue increases similar to the one proposed by the National Commission on Fiscal Responsibility and Reform (known as the Bowles-Simpson Commission).

This package is then modified by adding a new oil tax. The tax applies to all oil products, is phased in starting in 2013, and rises linearly through 2020 so that it is eventually equal to 1.5 percent of GDP. This requires a tax that ultimately reaches about $50 per barrel, equivalent to about $1.20 per gallon of gasoline. (Taxes around this level have often been discussed by economists and policy analysis as potentially sensible ways to blunt U.S. oil demand.) Figure 1 shows how the oil tax changes over time.

This new oil tax allows one to pare back tax increases or spending cuts that were previously in the package while maintaining the same aggregate amount of deficit reduction (i.e., roughly 4 percent of GDP). Table 1 shows three different ways to apply this flexibility. Variation 1 uses all of the oil tax revenue to restore part of the previously reduced government spending. Variation 2 uses one-third of the revenues to avoid any increase in individual taxes and the remaining two-thirds to restore previously reduced government spending. Variation 3 uses two-thirds of the oil tax revenues to avoid any increase in individual or corporate taxes and the remaining one-third to restore previously reduced government spending.

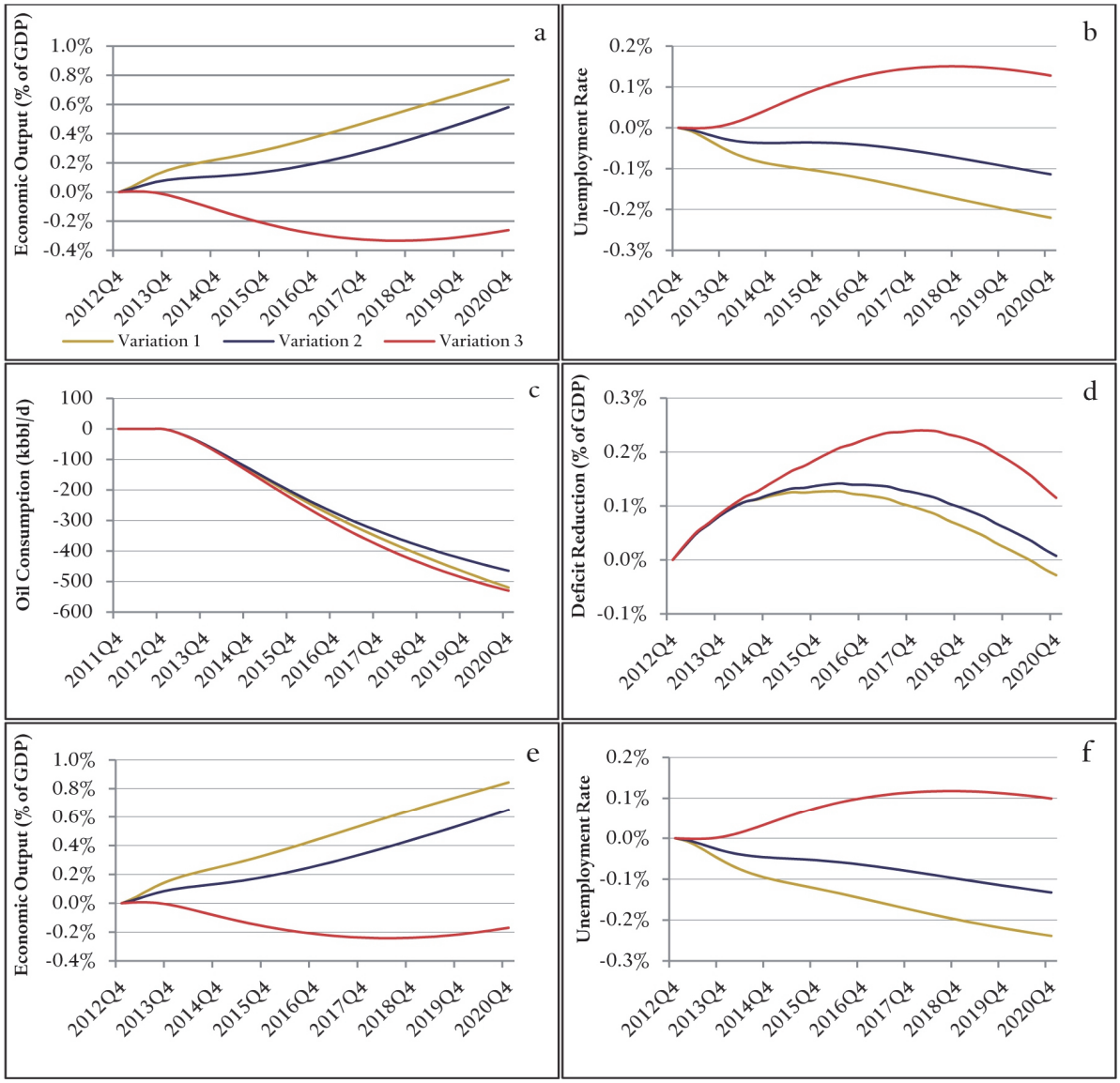
Figure 1 compares projections for economic output, unemployment, oil use, and real-world deficit reduction in the three deficit reduction plans that feature oil taxes, with their projected values given the original deficit reduction plan.

Table 1. Core Cases

	Corporate Taxes	Individual Taxes	Government Spending	Oil Tax
Reference Deficit Reduction Plan	+0.5%	+0.5%	-3.0%	Unchanged
Variation 1	+0.5%	+0.5%	-1.5%	+1.5%
Variation 2	+0.5%	Unchanged	-2.0%	+1.5%
Variation 3	Unchanged	Unchanged	-2.5%	+1.5%

Note: All entries are in units of percentage of GDP relative to current policy and all are for 2020. Changes are phased in linearly between 2013 and 2020.

Figure 1. Core Cases as Described in Table 1



1a shows projected GDP for each oil tax variation relative to projected GDP in the reference deficit package scenario without an oil tax. 1b shows the same for the unemployment rate, 1c shows the same for oil consumption, and 1d shows the same for deficit reduction when effects of the different scenarios on the tax base are accounted for. 1e shows projected GDP when the influence of each deficit package on world oil price is accounted for. 1f shows the same for the unemployment rate.

Two of the three variations that exploit the oil tax consistently deliver higher economic output (Figure 1a) and lower unemployment (Figure 1b) than the deficit package that includes no oil tax.[4] These variations both use the majority of the new oil tax revenue to avoid cuts to government spending. In contrast, the variations that use the majority of the oil tax revenue to retain current individual and corporate taxes results in a smaller economy and higher unemployment throughout the forecast period. It is possible that these variations could deliver superior growth beyond 2020, as near-term investments encouraged by lower corporate tax rates eventually translate into better economic performance.

All three variations also reduce U.S. oil consumption by roughly half a million barrels per day by 2020 (Figure 1c). In addition, when dynamic effects (i.e., the change in the tax base in response to changes in tax policy) are considered, all three reduce U.S. debt by more than the original package that did not include an oil tax does (Figure 1d).

The results just described do not incorporate the potential impact of reduced U.S. oil consumption on world oil prices. Lower U.S. oil consumption would reduce world prices, though the precise impact is unclear. To estimate the maximum possible reduction in oil prices that would result from any of the deficit reduction packages studied here, assume that global supply and non-U.S. oil consumption are not affected by the decline in U.S. oil consumption. This leads to an oil price decline of about three dollars per barrel below the level that would prevail without a deficit reduction package. Figure 1 shows projections for output (Figure 1e) and unemployment (Figure 1f) that incorporate the effects of these lower prices.

Including the impact of lower oil prices strengthens the performance of the various deficit packages, including those that include an oil tax and those that do not. Unemployment is lower and economic output is higher than previously projected.

The absolute impact of accounting for oil price changes, though, is small; it is roughly an order of magnitude lower than the difference between the consequences of the various deficit reduction packages. The remaining analyses in this paper therefore ignore any impact of a U.S. deficit reduction package on world oil prices.

SENSITIVITY ANALYSIS

One can imagine many more variations beyond the three approaches to incorporating an oil tax in a deficit package introduced above. Examining a variety of those sheds further light on how an oil tax might affect the performance of a deficit reduction package, and confirms the basic insights developed above.

Larger and Smaller Oil Taxes

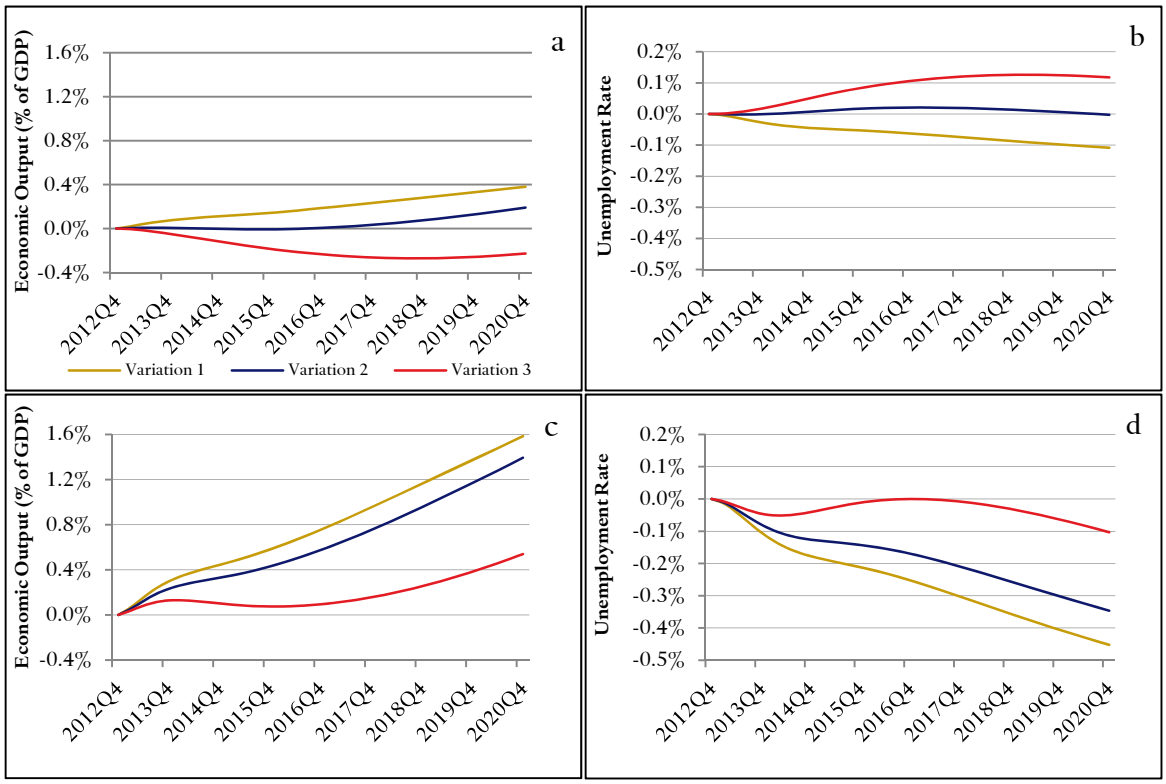
One might imagine using smaller or larger oil taxes as part of a deficit reduction package. Table 2 outlines two new sets of variations on the core deficit reduction package that illustrate this. One set features an oil tax that rises to twice the level assumed thus far—about $100 per barrel—and the other features an oil tax that rises to only half the level used up to this point—about $25 per barrel. Figure 2 shows projections for output and unemployment that result from these variations.

Table 2. Deficit Reduction Packages Using Larger and Smaller Oil Taxes

		Corporate Taxes	Individual Taxes	Government Spending	Oil Tax
Smaller Oil Tax	Reference Deficit Reduction Plan	+0.5%	+0.5%	-3.0%	N/A
	Variation 1	+0.5%	+0.5%	-2.25%	+0.75%
	Variation 2	+0.5%	Unchanged	-2.75%	+0.75%
	Variation 3	+0.25%	Unchanged	-3.0%	+0.75%
Larger Oil Tax	Reference Deficit Reduction Plan	+0.5%	+0.5%	-3.0%	N/A
	Package 1	+0.5%	+0.5%	Unchanged	+3.0%
	Package 2	+0.5%	Unchanged	-0.5%	+3.0%
	Package 3	Unchanged	Unchanged	-1.0%	+3.0%

Note: All entries are in units of percentage of GDP relative to current policy and all are for 2020. Changes are phased in linearly between 2013 and 2020.

Figure 2. Cases With High and Low Oil Taxes as Described in Table 2



2a shows projected GDP for each variation with a small oil tax, relative to projected GDP in the reference deficit package scenario with an oil tax. 2b shows the same for the unemployment rate. 2c and 2d show the same quantities as 2a and 2b, respectively, except with a large oil tax.

Higher oil taxes consistently improve the economic performance of the deficit packages. Indeed, with a large oil tax, even the variation that leaves individual and corporate taxes unchanged still improves unemployment and economic output. Conversely, variations that feature lower oil taxes consistently lead to weaker economic performance than those in the core cases. Still, for those variations where at least some oil tax revenue is used to avoid cuts in government spending, economic output is projected to be stronger than if deficit reduction was done without any oil tax. In contrast, unless revenue from the small oil tax is dedicated to avoiding spending cuts, adding a small oil tax makes unemployment worse.

The smaller oil tax, predictably, also has a smaller impact on oil consumption than the oil tax studied earlier, with the variations that include it resulting in reductions of approximately 250,000 (rather than 500,000) barrels per day. The larger oil tax, meanwhile, has a bigger impact on oil consumption, with the variations that include it resulting in reductions of roughly 900,000 barrels per day.

Compensation for Distributional Effects

The direct burden of oil taxes is well known to fall disproportionately on low-income consumers. (Certain government programs whose benefits are indexed to inflation ameliorate this at least in part.) This can be addressed in the context of broader fiscal reform by crafting other elements of a package (e.g., changes in individual taxes) to compensate. To further illuminate this, though, one can explicitly modify the packages so that half of the notional oil tax is rebated to individuals in equal per capita amounts. Table 3 outlines the new variations that result and describes other adjustments to them that are required to keep the total amount of deficit reduction unchanged.

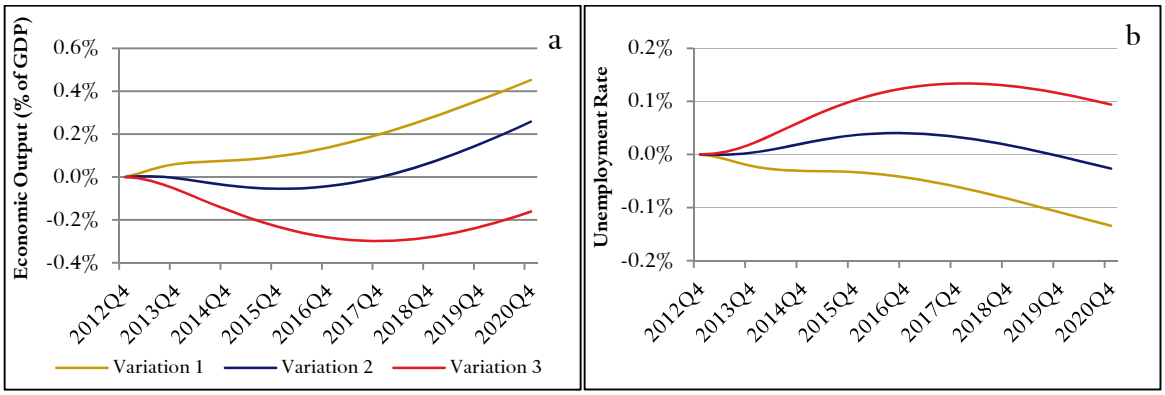
Table 3. Deficit Reduction Packages With Lump Sum Rebates

	Corporate Taxes	Individual Taxes	Government Spending	Oil Tax	Oil Tax Rebate
Reference Deficit Reduction Plan	+0.5%	+0.5%	-3.0%	Unchanged	Unchanged
Variation 1	+0.5%	+0.5%	-2.25%	+1.5%	+0.75%
Variation 2	+0.5%	Unchanged	-2.75%	+1.5%	+0.75%
Variation 3	+0.25%	Unchanged	-3.0%	+1.5%	+0.75%

Note: All entries are in units of percentage of GDP relative to current policy and all are for 2020. Changes are phased in linearly between 2013 and 2020.

Figure 3 shows how projections for output and employment change for these variations.

Figure 3. Cases With a Partial Lump Sum Rebate of Oil Tax Revenue as Described in Table 3



3a shows projected GDP for each variation, relative to projected GDP in the reference deficit package scenario without an oil tax. 3b shows the same for the unemployment rate.

These variations do not perform as well as those without the rebate. Variation 1, in which oil tax revenues are used to avoid large spending cuts, continues to deliver superior output and lower unemployment relative to the package that includes no oil tax through the forecast period. Variation 2, however, now delivers lower economic output and higher unemployment through much of the forecast period. Variation 3 still delivers lower output and higher unemployment than in the case where the deficit reduction package uses no oil tax.

DIFFERENT STARTING POINTS

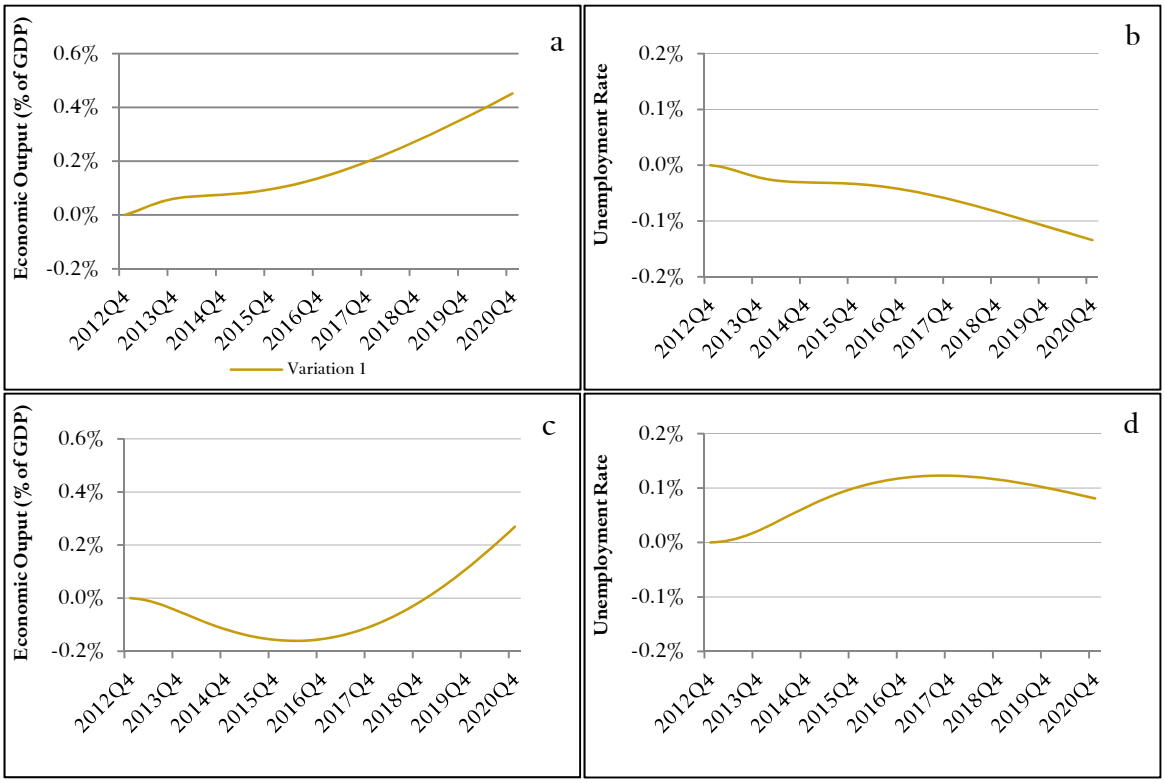
The analysis above started with a deficit reduction strategy that featured tax increases totaling 1 percent of GDP and spending cuts totaling 3 percent. One can, however, imagine different starting points, and then examine variations on each of them that incorporate oil taxes. Table 4 describes two extreme types of deficit reduction plans, one based entirely on tax increases and the other based entirely on spending cuts, as well as variations on those that include oil taxes. Figure 4 shows projections of their consequences for output and employment.

Table 4. Variations on Alternative Deficit Reduction Packages

		Corporate Taxes	Individual Taxes	Government Spending	Oil Tax
Spending Cuts Only	Reference	N/A	N/A	-4.0%	N/A
	Variation 1	N/A	N/A	-2.5%	+1.5%
Tax Increases Only	Reference	+2.0%	+2.0%	N/A	N/A
	Variation 1	+2.0%	+0.5%	N/A	+1.5%

Note: All entries are in units of percentage of GDP relative to current policy and all are for 2020. Changes are phased in linearly between 2013 and 2020.

Figure 4. Variations on Alternative Deficit Reduction Packages as Described in Table 4



4a shows projected GDP for a variation that includes an oil tax, when the reference deficit package consists only of spending cuts, relative to projected GDP if no oil tax is added to the package. 4b shows the same for the unemployment rate. 4c and 4d show the same quantities as 4a and 4b, respectively, except for in a case where the reference deficit package consists only of tax increases.

When the initial deficit reduction plan consists purely of spending cuts, adding an oil tax and using that to scale back those spending cuts improves both economic output and unemployment. When the initial deficit plan consists purely of tax increases, though, adding an oil tax and using that to scale back increases in individual taxes has mixed (though, in the long run, positive) consequences on economic output, while slightly increasing unemployment throughout the forecast period.

CONCLUSION

There are a number of conditions under which incorporating an oil tax into a deficit reduction package can increase economic output and reduce unemployment (relative to a deficit reduction package that does not use an oil tax) while cutting U.S. oil consumption at the same time. There are also, however, cases in which substituting an oil tax for other deficit reduction measures would lead to worse economic outcomes, particularly for employment; the risk of such an outcome is greatest when oil taxes are used solely to avoid increases in other taxes, particularly on corporate income. In addition, the simulations presented in this brief indicate that distributional consequences of an oil tax might be better addressed by tailoring spending cuts and other tax increases to mitigate them, rather than by providing lump sum rebates.

Endnotes

1. Others have discussed the prospect of using a carbon tax to modify deficit reduction packages. This energy brief is agnostic as to the comparative merits of oil taxes and carbon taxes (and policies that include neither) as a matter of energy and climate policy.
2. Further details on the model are available in a technical supplement at http://www.cfr.org/publication/29713.
3. These spending cuts exclude reduced interest payments on U.S. debt that would result from lower deficits. In addition, in keeping with standard Congressional Budget Office scoring practices, these revenue estimates are static (i.e., they do not account for changes in the tax base as a result of the new taxes). This brief uses such static estimates throughout unless indicated otherwise.
4. Some may observe that the projected economic consequences reported in this brief are considerably larger than those reported by Sebastian Rausch and John Reilly, *Carbon Tax Revenue and the Budget Deficit: A Win-Win-Win Solution?* (MIT Joint Program on the Science and Policy of Global Change Report No. 228, August 2012), which models an analogous question with a carbon tax of similar magnitude to the oil tax considered here. The difference appears to be due primarily to the assumption of full employment in Rausch and Reilly. (This reflects an acknowledged limitation in their model.) The U.S. economy is widely agreed to currently be well below full employment, a situation in which rapid changes in government tax and spending policy can have larger output and employment consequences; the results produced by the forecasting model used in this paper reflect that. In addition, since Rausch and Reilly report consequences for welfare while this brief reports consequences for output, the two sets of results are not fully comparable.

About the Authors

Daniel P. Ahn is an adjunct fellow for energy at the Council on Foreign Relations. He is also the chief commodities economist at Citigroup and adjunct associate professor at Columbia University's School of International and Public Affairs.

Michael A. Levi is the David M. Rubenstein senior fellow for energy and the environment at the Council on Foreign Relations and director of the CFR program on energy security and climate change. He is the author of the forthcoming book *The Power Surge: Energy, Opportunity, and the Battle for America's Future.*