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Joe Loper

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Evaluating Existing State and Local Tax Codes from an "Environmental Tax" Perspective: The Case of Energy-Related Taxes

JOE LOPER*

I. Introduction

The ability of environmental taxes to provide both enhanced environmental protection and a source of government revenues has generated growing interest in these taxes at all levels of government. From an environmental perspective, these taxes internalize the costs of polluting activities. Because they leave producers and consumers free to choose the means of reducing pollution, environmental taxes promote the most cost-effective sources of emissions reduction and encourage innovative approaches to environmental improvements.

The revenues generated by a tax on polluting activities or products can be used to offset deficits; reduce tax rates on

* The author is currently a Senior Research Associate at the Alliance to Save Energy, a non-profit coalition of business, government, environmental and consumer leaders dedicated to increased energy efficiency in the national and global economies. The author has been involved in a wide range of energy efficiency areas since coming to the Alliance in 1991, including state and local energy tax reform, developing economic profiles of the energy efficiency industry and promoting greater involvement by suppliers of efficient products and services in national and local policy debates. The Alliance continues to pursue reforms in federal and state energy tax codes.

labor, capital and other inputs to a growing economy; or fund specific environmental improvements. A "tax shift" from existing taxes to environmental taxes can provide an overall boost to the economy, since the stimulus from a reduction in marginal tax rates on labor and capital will often exceed the drag on the economy resulting from new environmental taxes.[1]

Although many forms of pollution can be taxed, this paper focuses on taxes on energy. Where monitoring is possible, or where the level of pollution fully corresponds to the level of consumption, a tax can be placed directly on emissions. A tax on the carbon content of fossil fuels, for instance, is equivalent to a tax on carbon dioxide emissions from combustion or decomposition of the fuels.[2] Not all sources of pollution can be taxed directly; indeed, most taxes on pollution must be imposed indirectly through taxes on consumption associated with the polluting activities. A general tax on energy, for example, would indirectly tax a number of environmental damages and risks associated with different types and uses of energy. Although such a tax would not reflect variations in damages or risks from each type of energy and energy use, it would reduce energy consumption and the associated environmental impacts.

At the federal level, a British-thermal unit (Btu) based energy tax was offered by President Clinton in 1993 and was approved by the House of Representatives within a few months.[3] The tax was offered as both a deficit reduction strategy and a means for reducing the pollution associated with energy use.[4] Had the tax passed, the White House

1. DALE W. JORGENSON & KUN-YOUNG YUN, HARVARD INSTITUTE OF ECONOMIC RESEARCH, THE EXCESS BURDEN OF TAXATION IN THE U.S. (Nov. 1990). For additional discussion of the economic implications of carbon taxes see ROGER C. DOWER & MARY BETH ZIMMERMAN, WORLD RESOURCES INSTITUTE, THE RIGHT CLIMATE FOR A CARBON TAX (Aug. 1992).

2. Technically, an exemption would have to be offered for non-combustion fuel uses which are sufficiently stabile such that the carbon is not released into the atmosphere through deterioration or incineration of the final product.

3. *See* HOUSE COMM. ON THE BUDGET, OMNIBUS BUDGET RECONCILIATION ACT OF 1993, H.R. REP. No. 103-111, 103d Cong., 1st Sess. 729-52 (1993).

4. *Id.*

would have been about one-quarter of the way toward meeting the President's Earth Day pledge of reducing United States carbon emissions to 1990 levels by the year 2000.[5]

At the state level, the label "environmental tax" is formally or informally affixed to existing taxes, ranging from a kWh charge in Maryland to various assurance or inspection fees imposed in most states. Additional "environmental taxes" will emerge as a result of the federal Clean Air Act Amendments of 1990,[6] which provide for state collection of fees on polluting businesses to cover the administrative costs associated with implementing the Act.[7]

Although the notion of an environmental tax has made its way from economists and policy analysts to state legislatures and Congress, care must be taken in its use. Simply imposing a tax on a polluting activity or a product associated with environmental damages does not make the tax an "environmental tax." In particular, although many of the energy-related taxes imposed at the state and local levels at first glance might appear to serve the role of an environmental tax, closer scrutiny of these taxes leads to the conclusion that many are environmental taxes by name only.[8] Before state and local governments can construct true environmental taxes, they must assess their existing tax codes. The governments need to identify places in which current tax codes under or over-tax pollution-related activities compared to other activities, e.g., through tax breaks or other mechanisms. While one state may impose special taxes on certain types of energy sales, for example, another state may exempt sales of certain types of energy from taxation altogether.

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5. *See* J. ANDREW HOERNER & FRANK MUELLER, CENTER FOR GLOBAL CHANGE, GREEN TAX ESSENTIAL TO FIGHTING GLOBAL WARMING (July 1993).

6. *See* Clean Air Act § 101, 42 U.S.C.A. § 7401 (West 1983 & West Supp. 1994) [hereinafter CAA].

7. CAA § 502(b)(3), 42 U.S.C.A. § 7661a(b)(3), for regulations promulgated pursuant to this section see Operating Permit Program, 57 Fed. Reg. 32,250 (1992).

8. The information on state and local energy taxes presented here is based on a database of state energy taxes developed by the Alliance to Save Energy over the last two years. *See* JOE W. LOPER, THE ALLIANCE TO SAVE ENERGY, STATE AND LOCAL TAXATION: ENERGY POLICY BY ACCIDENT (June 1994).

II. What is an "Environmental Tax"?

Environmental taxes change behavior. They do so by incorporating some or all of the external environmental costs associated with the consumption of goods and services into market prices. The tax may be imposed at any point along the production process, but it must increase the relative cost of a polluting activity or product compared to non-polluting or less-polluting enterprises. If it does not increase the relative price, the tax will not induce a shift in consumption from environmentally damaging to environmentally benign products. Likewise, the tax will not induce businesses to shift from environmentally damaging to environmentally benign means of production. Unless a tax succeeds in changing behavior, it cannot improve environmental conditions and cannot properly be labeled an "environmental" or "pollution" tax.

In a no-tax world, any tax on polluting activities would meet this criteria and could safely be called an environmental tax. But in the real world, where most products are taxed to one degree or another, the determination of what constitutes an environmental tax is somewhat more complex. This is because market choices are not based on the absolute price attached to a particular commodity, but on its price relative to other goods and services. If all products are taxed at the same *ad valorem*[9] rate, relative prices are unchanged and the tax does not affect consumer choices.[10] Likewise, if all of the inputs to production — labor, capital and materials — are taxed at the same rate, the tax will not affect the choice of production methods.

A tax rate of 2% of the price of energy products, for example, would increase the final price of energy. But if the 2% rate is imposed in a world in which all other products are taxed at a rate of 6%, the overall effect of the tax code would be to reduce the relative cost of energy products. The effect

9. *Ad valorem* is translated as 'according to value.' "A tax imposed on the value of property. The more common *ad valorem* tax is that imposed by states, counties, and cities on real estate." BLACK'S LAW DICTIONARY 51 (6th ed. 1990).

10. Although a tax limited to goods and services will encourage savings as opposed to consumption.

would be an increase in the demand for energy vis-á-vis other goods and services, even though the energy products are not entirely tax-exempt.

No proposed environmental tax can be evaluated in isolation from the overall tax code. In the above example, a proposal to increase the tax rate on energy by 3% — to a total of 5% — would result in a somewhat reduced demand for energy over the status quo, along with any environmental improvements related to the lower use of energy. The fact that the 3% increase would have environmental benefits would certainly be an argument for its adoption. The environmental improvements, however, do not make the proposal an environmental tax per se. Because the 5% rate does not even establish a level playing field between energy and non-energy purchases, it still would result in the consumption of more energy than in a non-tax world. As a result, it cannot be described as incorporating externalities into market prices. To ensure that tax codes take externalities into account, tax proposals should be evaluated in light of the overall tax code; in other words, the proposed energy tax rate (in this case, 5%) should be compared to the existing rate on other goods and services (6%).

Of course, finding the level at which a tax has incorporated environmental externalities is no small task.[11] Although the lack of an independent valuation method often is cited as a rationale for rejecting environmental taxes, it is important to bear in mind that such valuations are made all the time through our political processes. Each environmental law and regulation implicitly establishes a value for the protected resource. Specifying those values as a tax rate rather than in the form of regulations or standards is no less feasible.

11. Despite significant recent advances in means of estimating the value of environmental resources, such as contingent valuation and willingness-to-pay, no method provides estimates of these values which are widely agreed upon.

III. The State and Local Tax Base Can Accommodate Environmental Taxes

In theory, taxes certainly can change behavior. But do state and local governments have a sufficient tax base to make a difference when it comes to the environment? The answer is, clearly, yes. State and local governments collect some $525 billion a year in tax revenues, or about 10% of the gross domestic product (GDP) of the United States. Revenue collections have been growing at a faster rate at the state and local levels than at the federal level. The size of this tax base alone means that state and local governments have substantial opportunity to shift taxes toward polluting activities.

Existing state and local tax codes may be even more readily adaptable to environmental taxes than the federal code. Taxes generally are based on wealth, (e.g., property taxes) income or consumption (e.g., excise or sales taxes). Of these, consumption taxes are the most adaptable to an environmental form since they already are based on the amount of a product or natural resource consumed. Compared with other types of taxes, even general consumption taxes, such as general-sales taxes, may have a positive environmental impact by discouraging the overall consumption of material and energy resources.[12]

State and local revenues which are much more likely to be derived from consumption taxes than are federal tax receipts, consist of $178 billion collected by states and localities in 1990 from sales and excise taxes.[13] Most of these revenues are derived from the general sales taxes imposed at the state

12. The net impact of various consumption taxes on the environment is a tricky and often controversial issue. Although consumption taxes tend to fall more heavily on goods rather than services, some services can use more energy and other resources to produce than some goods per dollar of value added. Targeted pollution taxes overcome some of these limitations of general consumption taxes in reaching environmental objectives. To the extent that consumption taxes encourage savings and investment, for instance, they may increase productivity and future output. Some worry that increased output could at least partially negate the environmental benefits from the consumption tax itself.

13. U.S. BUREAU OF THE CENSUS, STATISTICAL ABSTRACT OF THE UNITED STATES: 1992 280 (112th ed. 1992).

or local level in forty-seven states, in addition to the District of Columbia. Thirty-two percent, however, are derived from consumption taxes levied on sellers or purchasers of specific products or services. Excise taxes on gasoline and cigarettes are perhaps the most well-known of these special consumption taxes.

Nonetheless, the $57 billion that state and local governments currently collect from special consumption taxes[14] represents only 11% of overall collections; only a subset of these, mostly energy-based taxes, could be argued to have an environmental component. State and local governments collect about $40 billion in revenues from all forms of energy taxes, about 8% of total collections. Clearly, there is substantial opportunity for tax shifting at the state and local levels.

IV. Evaluating State and Local Energy Tax Codes

As states ponder the benefits of moving away from taxes on capital and labor and toward taxes on polluting activities, it is essential to have a means of assessing the status of these taxes now, and specifically of estimating existing tax rates on polluting activities and products vis-á-vis other activities and products. In developing environmental tax packages, it is particularly valuable to understand how polluting activities may end up being taxed less than other activities.

On the energy front, state and local governments tax gasoline and other motor fuel products. Most states also tax electricity and natural gas sales along with telephone and other utility sales. The visibility of these taxes has, perhaps, led to a belief that states already heavily tax energy. But, as noted above, these taxes can be characterized as incorporating environmental externalities only to the extent that they increase the price of the energy products relative to other goods and services in a no-tax world.

The Alliance to Save Energy recently calculated overall energy tax rates for ten energy products in each state and the District of Columbia. The energy products are: gasoline; residential, commercial and industrial oil; residential, com-

14. *Id.*

mercial and industrial electricity; and residential, commercial and industrial natural gas. The distinction between end-use sectors was critical both because individual tax provisions may apply to specific sectors and because the base price of the energy often differs by sector.[15] Together, these products represent roughly 87% of energy sales in the United States.

The Alliance's analysis is based on a database of individual state and local energy-related taxes and tax provisions developed over the last two years. The database reflects state and local tax codes as of June 1993. In developing the database, I identified eight broad categories of energy taxes, including: motor fuel taxes, other petroleum taxes, utility gross receipts taxes, other utility taxes, regulatory fees, environmental and safety assurance fees, and inspection fees. The variety of state and local tax provisions related to energy and non-energy products make calculation of overall energy and non-energy tax rates difficult. The following section discusses the method and its shortcomings. It is my hope that states will elaborate on and improve the methods used in my analysis.

a. Scope of Analysis

Given the number and variety of state and local code provisions, comparing tax treatment of all energy products with all other goods and services would be impossible. Since the goal was to examine taxes that change the relative price of energy for consumers (including businesses that consume energy products), I chose to focus on consumption taxes imposed on sales of energy products. I excluded taxes imposed on the extraction of energy resources by primary energy producers, since it is less likely that a tax imposed on producers in a single state could be passed through to consumers given the fungible nature of many primary energy markets. Making

15. Whether they are excise or *ad valorem* taxes, rates can be expressed in terms of physical units or percent of final sales. Defining energy products based on the end-use sector allows us to take price differences into account and thus accurately express any tax on an *ad valorem* basis.

this distinction between taxes imposed on primary producers and suppliers of energy products is somewhat precarious, especially in the case of petroleum products, where products may be purchased and sold several times before reaching the final consumer.

The inclusion of local tax rates was essential, since in some states localities play a more important role in tax collection than in others. Chicago, for instance, has a higher gross receipts tax rate on electric and gas utilities than all but two states. New York City collects more tax revenue than all but three states. I averaged local tax provisions across state energy sales to arrive at a weighted state and local tax rate for each energy product for each state. The use of a weighted average has the advantage of producing a single statewide tax rate. Of course, the actual tax paid by consumers within the state can vary significantly depending upon where they are located.

Finally, I incorporated only those energy tax provisions that apply broadly to the sales of one or more of the examined energy products. In general, I did not incorporate into my calculations taxes or tax breaks which apply only to a small portion of the market for the product. For example, Louisiana's sales tax exemption for energy consumed in crawfish production is not included in my analysis. With respect to electricity and natural gas utilities, I used the tax rates for the predominant type of utility ownership — investor-owned in all but three states. As was the case for local taxes, a more refined method would use a weighted average of tax rates for sales from each type of utility in each state.

b. Estimating State and Local Energy Tax Rates

Often, more than one tax is imposed on the sale of energy products. Electricity and natural gas sales, for instance, are frequently subject to both a gross receipts tax and a regulatory fee assessed by state utility commissions. Gasoline sales often are subject to motor fuels taxes, product inspection fees, and various other taxes. The aggregate of the individ-

ual tax rates applied to each energy product provides the proper basis for comparing energy and non-energy tax rates.

Many, if not most, state and local energy taxes are levied on an excise or unit basis. In order to facilitate aggregation and comparison of energy tax rates, I converted all tax rates to *ad valorem* equivalents using the most recent state-by-state pre-tax product prices available. The use of an *ad valorem* basis for comparing energy taxes allows us to readily compare energy taxes to state general sales tax rates. It also allows for the ready use of price elasticities to estimate demand responses to a specific level of taxes. I stress, however, that this does not mean that *ad valorem* rates are the optimum form for environmental taxes.[16]

The aggregate tax rates developed in this fashion were adjusted in two ways. First, I reduced estimated taxes by an amount necessary to reflect any user fee component of the energy taxes. User fees are charges imposed by governments for the use of government-provided services. They may take the form of itemized or metered charges to individuals for such things as garbage collection or enrollment at a public college. They may also be somewhat indirect charges to a class of consumers for a government service that may or may not reflect the level of usage by individual taxpayers. Motor fuel taxes, tolls and registration fees are some of the ways in which roadway and highway users can be charged for the costs of using those transportation services. Although the definition of motor fuel taxes as a user fee evokes some controversy, from an environmental perspective it is important that roadway users be charged the full cost of their transportation. If personal transportation is subsidized by taxpayers, or if infrequent roadway users subsidize frequent roadway

16. For purposes of environmental taxes, excise taxes have the advantage that they can ensure the same rate per unit of pollution — or some proxy for the level of pollution — across a range of products, even when those products are sold at different prices. Thus, a $5 per ton tax on carbon will be 1.25 times more per million Btus (one million Btus equals about eight gallons of gasoline) of coal than for oil, and 1.3 times more for oil than for natural gas, regardless of changes in the price of each fuel. This ensures that a given type of pollution does not become more heavily taxed when it takes one form rather than another.

users, it will tend to be over-utilized vis-á-vis alternative forms of transportation and alternatives to transportation, e.g., courier rather than facsimile.

From the aggregate energy tax rate for gasoline, I deducted a rate sufficient to cover any roadway costs not already provided for via other roadway user fees, such as tolls up to the amount of the existing tax. The revenues needed to cover the costs associated with highways and roadways resulted in the full motor fuel tax being designated a user fee in nearly all states. I found that states generally collect sufficient funds from highway user fees, including motor fuel taxes to cover their roadway costs, but that local governments do not.[17] Gasoline is the only energy product I reviewed with a significant user fee component; the user fees associated with the other nine energy products were relatively small.

The second adjustment made was to account for special treatment of energy utilities in property and income tax codes. Although the aggregate energy taxes I estimated all involved one form or another of consumption tax, these taxes are sometimes directly or indirectly related to the income or property tax treatments of energy suppliers. This is especially the case for electric and natural gas utilities, which may be subject to a gross receipts tax but benefit from an exemption or reduced rate found in property or income tax codes. On the other hand, energy utilities may be penalized through higher property assessments or higher property or income tax rates. In order to ensure consistency in my comparisons, I adjusted aggregate energy tax rates to reflect all provisions which result in energy utilities being charged income or property tax at rates which differ from the generally applicable rates. I calculated the value of these provisions and converted each of the values into end-use *ad valorem* equivalents. My confidence in the accuracy of these calculations, which were severely constrained by data limitations, is not as high as my confidence in the accuracy of most of my

17. The analysis compared only current receipts with current expenditures. A full estimate of the stream of future receipts and expenditures would provide a better basis for assessing the contribution of motor fuel taxes to roadway costs.

other calculations. Nonetheless, without incorporating these energy-related property and income tax treatments into the picture, clear biases would result.[18]

c. Comparing Energy and Non-Energy Tax Rates

After developing aggregate energy tax rates for each energy product for each state, and adjusting them for the factors discussed above, it is possible to determine, even if crudely, the extent to which existing state and local tax codes might be viewed as incorporating environmental externalities into the price of energy.

To do so, it is necessary to compare tax rates on energy products to rates on non-energy products. This comparison can be made in a number of ways discussed below and, indeed, it would be valuable to pursue several approaches. I chose to compare the adjusted aggregate statutory rates discussed above with each state's general sales tax rate as the benchmark against which the adjusted energy taxes can be compared. For states without any state or local general sales taxes, I used a zero tax rate as my benchmark. This approach has the advantage of being relatively simple and straightforward. It allowed me to compare each energy product with the consumption tax rate applied to a typical non-energy product in the state. Because most states apply the general sales tax rate to some energy products, general sales taxes imposed on energy products rates must be added to the energy-specific taxes before they can be compared with the general sales tax itself.

An alternative approach — and one which is frustrated by the lack of available data — is to compare the effective consumption tax rates on energy and non-energy products. The effective rate of a tax takes into account all special tax provisions, e.g., variations in tax rates, exemptions, credits,

18. Not all energy-related property and income tax provisions are included in this analysis, but rather only those applicable to energy utilities. Given the manner in which utilities are regulated, i.e., most expenses are recovered through rates, taxes on electric and gas utilities are assumed to be passed through to utility ratepayers. As with energy consumption taxes, property and income tax provisions related to primary energy producers are not included.

as well as any shortfalls in the collection of revenues due. Statistically, the effective tax rate is simply the revenue collected from the tax divided by the total volume of sales including exempted items. In practice, while it is possible to calculate the effective tax rate for most energy taxes, calculation of each state's effective consumption tax rates is more problematic. While revenues associated with various consumption taxes, including general sales taxes, are known, the expenditure base is not at the state level, although national average effective tax rates can be calculated.

The effective tax rates for both energy and non-energy products would be lower than the statutory-based energy and sales tax rates discussed above. On the energy side, this is due to the exclusion in my method of many targeted tax breaks, those that did not apply to my entire product category. On the non-energy side, the aggregate sales tax rate is reduced by exemptions or reduced rates for specific non-energy products, such as food and medicine. In addition, many states apply the general sales tax only indirectly to services, by taxing many of the components that go into creating the service, with a net lower effective tax rate for these purchases.

V. Are State and Local Energy Taxes Environmental Taxes?

Based on the methodology outlined above, my analysis indicates that most energy products in most states are currently taxed at a rate equal to or lower than the state's general sales tax rate. Of the 510 energy products reviewed (ten products per state), 29% are taxed at a rate higher than the general sales tax rate, one-fourth are taxed at the same rate as the general sales tax, and 46% are taxed at a lower rate. Nationally, energy products appear to be taxed at a rate that is 1.9 percentage points lower than the general sales tax rate. Although relatively simple, this analysis suggests that for the most part, state and local governments are not imposing taxes on energy products that could be characterized as "environmental taxes." Indeed, my analysis suggests that many

state and local governments would have to raise their energy tax rates somewhat to avoid favoring the consumption of energy products compared to a no-tax world.

In evaluating the impact of existing energy taxes on the environment, one final word is in order. The incidence of a tax — the portion of the tax paid by the consumer versus the producer varies from product to product. Thus, a tax of 3% on a product in which the entire tax is passed through to consumers can have a larger impact than a tax of 5% in which only half of the tax rate is reflected in higher prices on the shelf. In a competitive market, it is generally presumed that taxes are ultimately passed through to consumers. At the state level, however, energy sales and utility sales in particular are often subject to regulations that may or may not mirror competitive conditions; energy is not the only area in which competitive conditions, as economists define them, may not exist. As a result, a better understanding of the incidence of energy and non-energy taxes would provide additional information about the effect of energy taxes on relative prices.

VI. Opportunities for Reform

State and local tax codes are shaped by a variety of fiscal, economic, equitable and other public policy concerns. Traditionally, energy and environmental goals rarely are part of tax debates. The result is tax codes which, as a whole, work at cross purposes to the state's energy and environmental goals.

States can move toward energy-related environmental taxes by adopting three energy tax reform strategies applicable to both state and local governments:

(i) Redress existing imbalances in the current code;
(ii) Evaluate each new tax proposal in light of its energy and environmental impacts;
(iii) Set energy tax rates to reflect environmental externalities.

First, redressing existing imbalances in the current code would result in tax rates on energy products that are similar to tax rates on non-energy products. States can employ a more sophisticated version of the analysis described above to identify the ways in which they can create a level playing field for energy and non-energy products in their tax codes. Second, evaluating new tax proposals — even those which at first glance appear to have little to do with energy from an energy and environmental perspective — would help preserve the balance between tax rates on energy and non-energy products so that tax code reforms are not undone over time. Finally, while the establishment of environmental taxes need not be undertaken as a separate step from redressing existing imbalances, it is useful from a policy perspective to distinguish between tax changes which help to level the playing field, i.e., result in energy products being taxed at equivalent rates to other goods and services, and those changes which incorporate environmental externalities into energy prices.

In ensuring that energy taxes are sufficient to serve as environmental taxes, states will have to wrestle with some of the reasons why energy is taxed at lower rates. Equity and competitiveness concerns appear to be the principal motivations for energy tax breaks to the residential and industrial sectors, respectively. When evaluating equity concerns, it is important for states to remember that across-the-board household energy tax exemptions provide tax breaks to the wealthy as well as to the poor. Indeed, the majority of tax savings accrue to the wealthiest 50% of the population. An alternative would be to tax all energy sales at the normal rate and give a portion of the tax revenues directly to lower-income households through programs such as energy assistance or home weatherization.

Two points need to be borne in mind when assessing the role of energy taxes on industrial competitiveness. First, every dollar generated through increased business-related energy taxes is a dollar that states no longer need to acquire through taxes on business income, investment and property. Corporate tax rates can be lowered across the board, or tax

breaks specifically designed to attract new business can be introduced. Second, to the extent that tax breaks are viewed as a means of lowering business costs, it should be remembered that tax breaks that encourage energy efficiency investments can provide a bigger bang-for-the-buck. Because energy efficiency investments often pay for themselves quickly, dollars provided to businesses through tax breaks for energy efficiency investments can reduce business costs by more than a dollar.

In sum, many state and local tax laws, as currently drafted, encourage energy consumption and the use of polluting energy sources over clean ones. Moreover, by failing to tax energy products the same as other products, governments sacrifice billions of dollars in revenues. As policymakers design and evaluate new environmental tax proposals, they should keep these facts in mind.