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# Federal Excise Taxes: An Introduction and General Analysis

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## Summary

There are four common types of excise taxes: (1) sumptuary (or “sin”) taxes, (2) regulatory or environmental taxes, (3) benefit-based taxes (or user charges), and (4) luxury taxes. Sumptuary taxes were traditionally imposed for moral reasons, but are currently rationalized, in part, to discourage a specific activity that is thought to have negative spillover effects (or “externalities”) on society. Regulatory or environmental taxes are imposed to offset external costs associated with regulating public safety or to discourage consumption of a specific commodity that is thought to have negative externalities on society. Benefit-based taxes (which include user charges) are imposed to charge users of a particular public good for financing and maintenance of that public good. Lastly, luxury taxes are primarily imposed as one way to raise revenue, particularly from higher-income households.

This report provides an introduction and general analysis of excise taxes. First, a brief history of U.S. excise tax policy is provided. Second, the various forms of excise taxes and their respective administrative advantages and disadvantages are described. Third, the effect of federal excise taxes on federal, state, and local tax revenue is discussed. Fourth, the economic effects of various types of excise taxes are analyzed. The effects on consumer behavior and equity among taxpayers could be important issues for assessment of current excise tax policy or for the design of new excise taxes. Lastly, a list of references to other CRS reports on specific excise taxes is presented.

Excise taxes have generally played a diminishing role in financing the federal government since the middle of the 20<sup>th</sup> century for multiple reasons. First, Congress has taken legislative action to eliminate many categories of excise taxes. Second, most excise tax rates set in statute have declined in value over time due to inflation and inaction by Congress to change tax rates set in statute.

Excise taxes tend to be regressive, in that lower-income households generally pay a larger share of their income in excise taxes than higher-income households. Because excise taxes generally increase the price of the taxed commodity, they also tend to lower consumer demand.

Excise taxes play a much smaller role in financing the federal government than they did in the past. In 1960, federal excise tax collections were \$355.49 billion (in 2012 constant dollars, after accounting for inflation). In FY2012, federal excise tax collections were \$56.17 billion (roughly one-sixth of their 1960 value in 2012 constant dollars). Federal excise taxes comprised 7.0% of all federal revenue in 1973, whereas they comprised 3.2% in 2012.

Congress may be interested in revisiting the revenue and economic effects of excise taxes because these taxes could play a growing role in financing public goods. Some long-standing excise tax proposals to correct alleged social costs have resurfaced from time to time in policy discussions. Some of these proposals could be targeted towards specific products or activities (e.g., a “sugar-sweetened beverages” tax), while others could affect a broad range of economic activity and raise a significant amount of revenue (e.g., a carbon tax). On the other hand, there is also interest in reducing current excise tax rates as a means to encourage short-term growth in particular industries.

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## Introduction

Excise taxes are selective taxes on specific forms of consumption or behavior (compared to general sales taxes which tend to apply to all forms of consumption, with some exceptions). Today, federal excise taxes apply to a wide variety of consumer goods and economic activities, such as alcohol, tobacco, firearms and ammunition, gasoline, the industrial use of ozone-depleting chemicals, and indoor tanning services.

There are four common purposes of excise taxes: (1) sumptuary (or “sin”) taxes, (2) regulatory or environmental taxes, (3) benefit-based taxes (or user charges), and (4) luxury taxes.<sup>1</sup> Sumptuary (or “sin”) taxes were traditionally imposed for moral reasons, but are currently rationalized, in part, to discourage a specific activity that is thought to have negative spillover effects (or “externalities”) on society.<sup>2</sup> Generally, sumptuary taxes in the United States refer to excise taxes on alcohol or tobacco consumption. Regulatory or environmental taxes are imposed to offset for external costs associated with regulating public safety or to discourage consumption of a specific commodity that is thought to have negative externalities on society. Benefit-based taxes are imposed to charge users for the benefits received from a particular public good and are often used for maintenance and upkeep of that public good. Lastly, luxury taxes are primarily imposed as one way to raise revenue, particularly from higher-income households.<sup>3</sup>

The role of excise taxes has changed over time. Excise taxes narrowly imposed on the consumption of certain products, such as alcohol and tobacco, formed the basis for much of federal tax revenue until the modern income tax was enacted in the early 20<sup>th</sup> century. Although excise taxes have played a diminishing role in the mix of federal revenue sources over time, there has been persistent interest in the possible use of excise taxes to raise revenue or provide disincentives to behavior that is believed by some to have negative effects on society (e.g., a tax on carbon emissions). On the other hand, there is also interest in reducing current excise tax rates as a means to encourage short-term growth in particular industries.<sup>4</sup>

This report provides an introduction and general analysis of excise taxes. First, a brief history of the role of excise taxes is provided. Second, the various forms of excise taxes and their respective administrative advantages and disadvantages are described. Third, the effect of federal excise taxes on federal, state, and local tax revenue is discussed. Fourth, the economic effects of various types of excise taxes are analyzed. The effects on consumer behavior and equity among taxpayers could be important issues for assessment of current excise tax policy or for the design of new

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<sup>1</sup> This list is not exhaustive. For example, rationing taxes have been temporarily levied in order to reduce the consumption of critical supplies during wartime (e.g., rubber) and import duties are basically excise taxes levied on imports generally to protect domestic industries.

<sup>2</sup> Economists also refer to taxes applied to an activity generating negative externalities as a “Pigovian tax.” This type of tax is named after economist Arthur Pigou, who developed the concept of economic externalities.

<sup>3</sup> Excise taxes were previously imposed on luxury vehicles, furs, yachts, etc. However, most of these provisions have either expired or have been repealed over the years.

<sup>4</sup> Economists generally do not view job creation as a justification for providing federal assistance to certain industries in the long run. They argue that in the long run such assistance will likely reallocate jobs within the economy, not increase them. In their view, jobs arise primarily from the size of the labor force.

excise taxes. Lastly, the **Appendix** to this report contains a list of references to other CRS reports on specific excise taxes.<sup>5</sup>

## Historical Summary of Federal Excise Taxes

Federal excise taxes have had a dynamic role within the U.S. tax system. The history of the federal excise tax system is often one that coincides with wars, serving as an emergency source of funds, or reflects periodic concerns about rising budget deficits.<sup>6</sup> Except for taxes on tobacco and liquor, new excise taxes seem to have been used extensively for the control of social costs and as user charges in recent years.

Excise taxes played a key fiscal role in the early history of the United States.<sup>7</sup> The federal government initially relied on customs duties (tariffs) on foreign trade. In 1791, during the presidency of George Washington, Secretary of the Treasury Alexander Hamilton implemented the first federal excise tax on whiskey. The whiskey tax was used as a means to fund the fledgling federal government, repay debts from the American Revolution, and help to establish federal supremacy over the states.<sup>8</sup> The burden of the tax was controversial along geographic divisions (Westerners on the frontier tended to both consume more whiskey and use it as a medium of financial exchange) and ideological divisions (Federalists versus Anti-Federalists). This opposition peaked in the famous “Whiskey Rebellion” of 1794 in southwestern Pennsylvania, where President Washington led 13,000 troops to suppress an armed rebellion. After the suppression of the Whiskey Rebellion in 1794, Congress passed excise taxes on tobacco, snuff tobacco, sugar, and carriages.<sup>9</sup> In 1797, a direct tax was imposed on the ownership of houses, land, and slaves as tariff revenue declined during a period when European powers were engaged in war (with the United States sided against France). The unpopularity of the taxes contributed to Thomas Jefferson’s defeat of Federalist Party candidate John Adams during the presidential election of 1800. All internal excise taxes were repealed in 1802, as the fiscal demand arising from the war in Europe abated.<sup>10</sup>

Federal excise taxes continued to play a significant role in public finances throughout the 1800s. Excises were temporarily reintroduced during the War of 1812, but were repealed from 1817 until the Civil War.<sup>11</sup> Following the onset of the Civil War, Congress passed the Revenue Act of 1861,

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<sup>5</sup> For a comprehensive list of federal excise taxes and their tax rates (as of 2011), see U.S. Congress, Joint Committee on Taxation, Present Law and Background Information on Federal Excise Tax Rates, committee print, 112<sup>th</sup> Cong., 1<sup>st</sup> sess., January 2011, JCS-1-11 (Washington: GPO, 2011). The JCT study classifies some provisions as “excise taxes,” although these penalties are often thought of as “penalties” for certain types of behavior (e.g., the Patient Protection and Affordable Care Act’s penalty for employers who do not provide “adequate” and “affordable” health care coverage to their employees).

<sup>6</sup> For an earlier history of federal excise taxes, see Tax Foundation, *Federal Excise Taxes*, June 1, 1956, at <http://taxfoundation.org/article/federal-excise-taxes>.

<sup>7</sup> For a more in-depth history of federal excise taxes, archived CRS reports are available from the author upon request.

<sup>8</sup> Steve Simon, “Alexander Hamilton and the Whiskey Tax,” U.S. Department of the Treasury, [http://www.ttb.gov/public\\_info/special\\_feature.shtml](http://www.ttb.gov/public_info/special_feature.shtml).

<sup>9</sup> Tax Foundation, *Federal Excise Taxes*, June 1, 1956, p.9, at <http://taxfoundation.org/article/federal-excise-taxes>.

<sup>10</sup> Robert L. Einhorn, *American Taxation, American Slavery* (Chicago, IL: University of Chicago Press, 2008); and Joel S. Newman, “Slave Tax as Sin Tax: 18<sup>th</sup> and 19<sup>th</sup> Century Perspectives,” *Tax Notes*, November 21, 2003.

<sup>11</sup> Tax Foundation, *Federal Excise Taxes*, June 1, 1956, p.9, at <http://taxfoundation.org/article/federal-excise-taxes>.

which restored earlier excise taxes.<sup>12</sup> Most of these excise taxes were repealed after the end of the Civil War, with taxes on distilled spirits and tobacco remaining in effect. In the decades after the Civil War, excise taxes accounted for between one-third and one-half of all federal revenue.<sup>13</sup> Excises were the single largest source of internal revenue during this era.<sup>14</sup> During the Spanish-American War (1898), excise tax revenue was a larger source of federal tax collections than even customs duties on foreign imports, as revenue from tariffs tended to decline during wartime. Emergency excise taxes were levied on a variety of items to fund military spending during the Spanish-American War, such as pianos, playing cards, yachts, and billiard tables. After the end of the war most of these emergency excise taxes were repealed.

Excise taxes were utilized to fund war-time spending during the early 20<sup>th</sup> century. Temporary excise tax provisions were imposed in the Revenue Act of 1918, passed during World War I, to help fund war-time spending, including the first excise tax on firearms, shells, and cartridges. As a result, excise tax collections quadrupled from 1914 to 1919.<sup>15</sup> Excise tax revenues declined significantly after the beginning of Prohibition (falling to less than half of the pre-Prohibition revenue levels by 1930) but rebounded above the pre-Prohibition levels after the consumption of alcohol was made legal again after 1933.<sup>16</sup> Existing excise tax rates were increased again virtually across-the-board around the time of World War II, and new taxes on luxury goods (such as toiletries and furs) were introduced.<sup>17</sup> Additionally, Congress rejected adopting a general sales tax twice during this era (1932 and 1942), despite critiques that the costs of administering excises to a growing list of products was high and the revenue gained from many excises was small.<sup>18</sup>

Excise taxes underwent a time of dynamic reform during the latter half of the 20<sup>th</sup> century. The Revenue Act of 1951 increased many excise tax rates in existence at the time (such as alcohol and tobacco) and increased the tax base for some user charges. However, the Excise Tax Reduction Act of 1954 (P.L. 83-324) and the Excise Tax Reduction Act of 1965 (P.L. 89-44) reduced the number of provisions and their respective tax rates. In particular, the Excise Tax Reduction Act of 1965 eliminated most federal excise taxes with the goal being to “help sustain economic expansion.”<sup>19</sup>

<sup>12</sup> The Revenue Act of 1861 also temporarily imposed the first income tax, which was implemented in 1862. The income tax was repealed in 1872.

<sup>13</sup> By comparison, trade tariffs produced from one-half to two-thirds of all revenue in the decades after the Civil War, whereas proceeds from federal land sales accounted primarily for the remainder of revenue collections. See Lance E. Davis and John Legler, “The Government in the American Economy, 1815-1902: A Quantitative Study,” *The Journal of Economic History*, vol. 26, no. 4 (December 1966), pp. 514-552.

<sup>14</sup> During parts of this period of time, only customs duties outnumbered excise tax collections as the primary source of federal revenue.

<sup>15</sup> Tax Foundation, *Federal Excise Taxes*, June 1, 1956, p.11, at <http://taxfoundation.org/article/federal-excise-taxes>.

<sup>16</sup> See Table 3 in Tax Foundation, *Federal Excise Taxes*, June 1, 1956, p.14, at <http://taxfoundation.org/article/federal-excise-taxes>.

<sup>17</sup> See Revenue Act of 1940 (P.L. 76-656), Revenue Act of 1941 (P.L. 77-250), Revenue Act of 1942 (P.L. 77-753), and Revenue Act of 1943 (P.L. 78-235); and Tax Foundation, *Federal Excise Taxes*, June 1, 1956, p.17, at <http://taxfoundation.org/article/federal-excise-taxes>.

<sup>18</sup> See W.C. Bryant, “Key Republicans Toss Political Dynamite Into Laps of Leaders: Ask Excise Tax Raise,” *Wall Street Journal*, October 21, 1947, p. 5.

<sup>19</sup> U.S. Congress, Senate Committee on Finance, *Senate Report on the Excise Tax Reduction Act of 1965*, 89<sup>th</sup> Cong., 1<sup>st</sup> sess., June 14, 1965, S. Rpt. 89-324 (Washington: GPO, 1965), p. 1. Although many of the scheduled reductions and taxes repealed by the act were delayed until the late 1960s and early 1970s. See Joseph Pechman, *Federal Tax Policy*, 3<sup>rd</sup> ed. (Washington, DC: Brookings Institution Press, 1977), p. 189.

Certain excise taxes were also expanded, in part, to reflect a desire for a wider role for the federal government. An example of this linkage between excise taxes and the expansion of federally provided public goods would be the modern highway system.<sup>20</sup> The Highway Revenue Act of 1956 (P.L. 84-627) increased the federal gasoline tax (in effect since 1932) and directed its collections from the Treasury's General Fund specifically towards funding of public highways.<sup>21</sup> Specific excise taxes linked to trust funds related to air travel, mining, waterway travel, oil spills, and other hazardous chemicals (among others) were created in the 1970s and 1980s. A rising budget deficit helped to bring about the excise tax increases in the Omnibus Budget Reconciliation Act of 1990 (OBRA90; P.L. 101-508). OBRA90 increased tax rates on distilled spirits (last increased in 1985), beer and wine (last increased in 1951), tobacco (last increased in 1982), and gasoline (last increased in 1982).

Since 2000, excise taxes have played a diminishing role in the mix of federal revenue sources even as new provisions have been introduced. As discussed later in the "Revenue" section of this report, excise tax collections have increased in nominal amounts, but have decreased in inflation-adjusted (real) values and as a share of overall federal revenue. The rates on major excise taxes have remained unadjusted for inflation for years, such as the excise taxes on gasoline (since 1997) and alcohol (1991). The excise tax on tobacco was last increased with the Children's Health Insurance Program Reauthorization Act of 2009 (P.L. 111-3), but revenue from the tobacco tax has declined over time in part due to decreased demand for tobacco products.

Recently, new excise taxes have been introduced. Several new excise taxes were created by the Patient Protection and Affordable Care Act (P.L. 111-148 and P.L. 111-152, as amended), such as taxes on indoor tanning bed services, medical devices, and certain high-value insurance plans.

The future role of federal excise taxes in federal policy is still unclear. Excise taxes in the form of user charges could continue to play a role in financing public goods and services. Excises could be one tool to raise revenue, particularly in the absence of a general consumption tax at the federal level.<sup>22</sup> Some long-standing excise tax proposals to correct a perceived social issue have also resurfaced in policy discussions. Some of these proposals could be targeted towards specific products or activities (e.g., a "sugar-sweetened beverages" tax), while others could affect a broad range of economic activity and raise a significant amount of revenue (e.g., a carbon tax).<sup>23</sup>

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<sup>20</sup> See R. Rudy Higgins-Evenson, "Financing for a Second Era of Internal Improvements," *Social Science History*, vol. 26, no. 4 (Winter 2002), pp. 623-651.

<sup>21</sup> For more information on financing public highways, see CRS Report R42877, *Funding and Financing Highways and Public Transportation*, by (name redacted) and (name redacted).

<sup>22</sup> Congressional interest in enacting consumption taxes has been low. For example, a type of national consumption tax, a value-added-tax, has been explicitly rejected by Congress in the past. The Senate voted 85-13 on a resolution rejecting a value-added-tax (VAT) in 2010. See S.Amdt. 3724 (111<sup>th</sup>).

<sup>23</sup> The Congressional Budget Office (CBO) estimated in 2008 that tax on sugar sweetened beverages set at 3 cents per 12 ounces could raise \$50.4 million in revenue in five years. In 2011, CBO estimated that a tax on greenhouse gas emissions could raise nearly \$1.2 trillion over 10 years. See CBO, *Budget Options Volume 1: Health Care*, December 2008, p. 192, at <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/99xx/doc9925/12-18-healthoptions.pdf>; and CBO, *Reducing the Deficit: Spending and Revenue Options*, March 2011, p. 205, at <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/120xx/doc12085/03-10-reducingthedeficit.pdf>.



## Administration

All forms of excise tax use some sort of physical control or measurement by the excise authorities to determine tax liability and ensure compliance with the law.<sup>24</sup> This section of the report describes the different ways that excise taxes are structured, and the advantages and disadvantages of each model.

## Setting the Tax Rate

For excise taxes intended to compensate for the social costs of certain activities, economic theory suggests that the excise tax rate should be set at a level that offsets the negative costs of that consumption to society.<sup>25</sup>

In general, an excise tax rate can be applied in one of two ways:

- *Per unit*: where the tax rate is applied per individual unit produced, purchased, or sold. For example, different per-unit rates are levied on tobacco products based on the product type: 1,000 units of cigarettes or one pound of pipe tobacco.
- *Ad valorem*: where the tax rate is applied as a percentage of the value of the product, either based on the manufacturer's, wholesale, or retail price. For example, the excise tax on firearms and ammunition is set at 10% of the wholesale price for pistols and revolvers, and 11% for other firearms as well as shells or cartridges.<sup>26</sup>

Economists say that per-unit excise taxes are more appropriate when marginal consumption of the targeted commodity is allegedly deleterious. For example, cigarette taxes are levied per unit sold because the alleged spillover effects of smoking (e.g., second-hand smoking) occur with every pack of cigarettes smoked. The excise tax on gasoline is levied per gallon of gasoline sold because the amount of gasoline consumed was a rough approximation of how much driving one did, and thus how much wear and tear a driver would impose on federally managed highways.

However, arguments can be made against these justifications for per unit taxes. Per-unit taxes can invite issues of both horizontal and vertical equality (as addressed later in this report). Also, because per-unit taxes are often set at static rates in statute, these rates often fall in inflation-adjusted (or “real”) terms.<sup>27</sup> For example, the statutory federal excise tax rate on distilled spirits in 1951 was set to \$10.50 per proof gallon (ppg).<sup>28</sup> Legislation was passed in 1985 increasing the

<sup>24</sup> Sijbren Cnossen, *Excise Systems: A Global Study of the Selective Taxation of Goods and Services* (Baltimore, MD: Johns Hopkins University Press, 1977), p. 10.

<sup>25</sup> If taxes are used this way to reflect the full cost of a particular type of economic activity to society, then excise taxes can actually lead to a more efficient allocation of resources. This concept is discussed in more detail in the “Efficiency” section of this report.

<sup>26</sup> For more information on excise taxes on firearms and ammunition see CRS Report R42992, *Guns, Excise Taxes, and Wildlife Restoration*, by (name redacted) and (name redacted).

<sup>27</sup> The decline in the real value of per unit taxes is due, in part, to increasing real prices of the taxed commodity or activity over time.

<sup>28</sup> A proof gallon is a combination of alcohol content and volume. A proof gallon is the volume in gallons, multiplied by the percent alcohol, multiplied by two, and divided by 100.



statutory tax rate from \$10.50 to \$12.50 ppg, and again in 1990 increasing the tax rate from \$12.50 to \$13.50 ppg. The excise tax rate on distilled spirits still remains at the 1990 level of \$13.50 ppg, or \$2.14 per 750ml bottle (a “fifth”) of 80-proof liquor.<sup>29</sup> If the 1951 tax rate was indexed for inflation, it would be over \$95.65 ppg in 2013 dollars, or approximately \$19.49 per 750 ml bottle of 80 proof liquor.<sup>30</sup>

In contrast, *ad valorem* tax rates largely avoid a real decline in value because they are applied based on the price of commodity or activity rather than the quantity consumed or produced. *Ad valorem* rates can also be more progressive than per-unit rates especially if the commodity taxed is a luxury good (whereby demand increases more than proportionally as income rises). However, *ad valorem* rates also have the capability to be regressive if the consumers of the commodity are not limited to those at the upper end of the income distribution.

## Choosing the Stage of Production to Levy the Tax

An excise tax can also be levied at different stages along a commodity’s production and distribution chain.<sup>31</sup>

- Production level: collected on sales by producers to wholesalers, retailers, or other producers. Transactions prior to the sale by the last producer are often partially exempted or taxed at reduced rates.
- Manufacturing level: collected on sales by manufacturers to wholesalers or retailers, including occasional direct sales to consumers.
- Wholesale level: collected on sales by the last wholesaler or manufacturer to retailers, including occasional direct sales to consumers.
- Retail level: collected on sales by retailers to final consumer, including wholesalers or manufacturers selling occasionally to consumers.
- Turnover taxes: collected on sales at all or nearly all stages, and also known as “cascade taxes” on account of their cumulative effects.

Generally, an excise tax that is levied at earlier stages in the production process has lower administrative costs and fewer opportunities for tax evasion. In most situations, consumers vastly outnumber producers. Trying to implement an excise tax at the level of the consumer retail outlet results often in a duplication of bureaucratic processes compared to a tax on manufacturers. For example, more than 303 billion cigarettes were purchased across the United States in 2010, but 85% of these cigarettes were manufactured by three companies.<sup>32</sup> However, *ad valorem* taxes imposed at the manufacturer’s level could provide an incentive for value-added options to be ordered further down the supply chain in an attempt to minimize the tax burden. For example, the

<sup>29</sup> U.S. Department of the Treasury, Alcohol and Tobacco Tax and Trade Bureau, at [http://www.ttb.gov/tax\\_audit/atftaxes.shtml](http://www.ttb.gov/tax_audit/atftaxes.shtml).

<sup>30</sup> CRS calculations based on Consumer Price Index for All Urban Consumers (CPI-U) for all items at <http://www.bls.gov/cpi/data.htm> (accessed May 23, 2013).

<sup>31</sup> Sijbren Cnossen, *Excise Systems: A Global Study of the Selective Taxation of Goods and Services* (Baltimore, MD: Johns Hopkins University Press, 1977), p. 15.

<sup>32</sup> Center for Disease Control and Prevention, “Economic Facts About U.S. Tobacco Production and Use,” at [http://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/economics/econ\\_facts/](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/economics/econ_facts/).

manufacturer tax on firearms is levied on the assembly of a complete rifle, but any add-ons or modification kits to that rifle are not taxed.<sup>33</sup>

Taxes imposed at the manufacturing level could lead to an effective tax rate that is higher than the statutory tax rate. This outcome occurs because some manufactured goods have a long inventory life, and a considerable time period may elapse between when the tax is paid (when the good leaves the manufacturer's premises) and the date that the good is sold. In effect, the manufacturer incurs an interest cost to borrow the money to pay the tax.<sup>34</sup>

The advantage of imposing a tax at the retail level is that it can more easily exclude certain consumers from an excise tax's revenue base, if desired. For example, farmers can receive an excise tax credit for certain fuel purchased for farm use, as this activity generally has a minimal effect on the quality of interstate highways.<sup>35</sup> On the other hand, exemptions could diminish the effect of the tax on the original goal of the tax. An exemption, in the form of a refund, can be implemented through a manufacturer's tax, although this might require additional administrative resources.

## Transition Issues

Special rules are sometimes used to accompany the imposition of a new excise tax or increases in any existing tax rates to prevent tax avoidance. If an excise tax is announced effective as of a specific date in the future, then individuals might stockpile the taxed commodity. One policy to prevent this behavior is a "floor stocks" tax, or an excise tax on all existing inventory as of a particular date. The floor stocks tax is usually imposed on the date a new tax takes effect or the date after a tax-rate increase takes effect; all new inventory subject to tax that is acquired after the new tax becomes effective is then subject to the new tax.

## Excise Tax Reporting

Tax liability for most federal excise taxes is reported on IRS Form 720 "Quarterly Federal Excise Tax Return." This form is generally due at the end of April, July, October, and January, and reports taxes due the preceding quarter ending March, June, September, and December, respectively.<sup>36</sup> Most of the excise taxpayers using Form 720 must deposit the tax owed before filing the form with the IRS. Several excise taxes trigger a requirement to file a form in addition to Form 720 (e.g., Form 6197 [Gas Guzzler Tax], Form 2290 [Heavy Highway Vehicle Use Tax Return], and Form 6627 [Environmental Taxes]).

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<sup>33</sup> For more information, see CRS Report R42992, *Guns, Excise Taxes, and Wildlife Restoration*, by (name redacted) and (name redacted).

<sup>34</sup> Alternatively, the manufacturer could have invested the money used to pay the tax and earned a market rate of return during the period between when it paid the tax and when the good is sold along the next step of the production chain.

<sup>35</sup> For more information, see Internal Revenue Service, *Farmer's Tax Guide* (Publication 225), Chapter 14 – Excise Taxes, at <http://www.irs.gov/publications/p225/ch14.html>.

<sup>36</sup> CCH, Tax Research Consultant, "Excise: 100, Fundamental Concepts: Federal Excise Taxes," accessed via Intelliconnect research database on 8/12/2013.

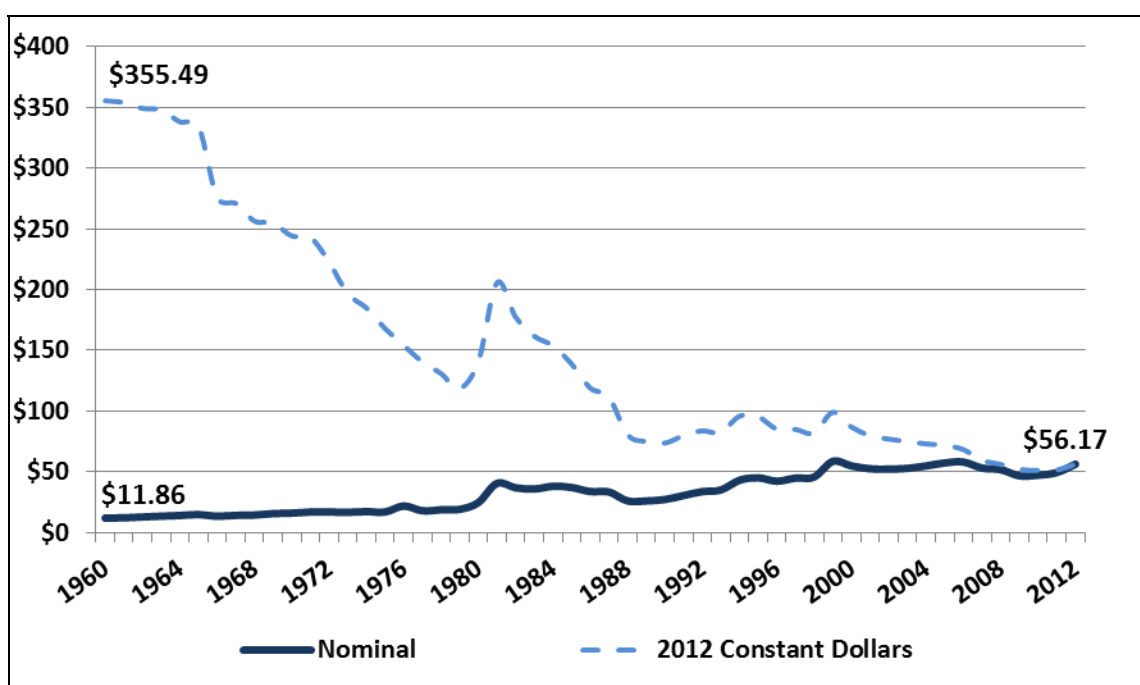
## Revenue

Excise taxes have had a diminishing role in federal public finance over time. Several forms of data analysis, presented in this section, illustrate this point.

One concern with per unit excise taxes is that they are often set in statute at specific levels, thus the inflation-adjusted value, or *real value*, often falls over time.<sup>37</sup> This trend usually continues absent legislative action to increase the statutory rates to reflect the effects of inflation.<sup>38</sup> The decline in the real value of excise tax receipts over time is apparent in **Figure 1**.

**Figure 1. Federal Excise Tax Collections, Nominal and Real Amounts, 1960 to 2012**

Amounts are in billions of dollars



**Source:** CRS analysis of Internal Revenue Service, Table 6, *Databook*, 2012, at <http://www.irs.gov/pub/irs-soi/12databk.pdf>; and Office of Management and Budget, *Budget of the United States*, Historical Tables - Table 10.1, 2013, at <http://www.whitehouse.gov/omb/budget/historicals>.

Although nominal excise tax collections have increased from \$11.86 billion in FY1960 to \$56.17 billion in FY2012 (an increase of more than five times), real excise tax revenue has decreased by more than six times over that same period. In FY1960, excise tax collections amounted to approximately to \$355.49 billion in 2012 constant dollars. The brief spike in excise tax collection during the early 1980s was largely due to the enactment of the excise tax on windfall profits in

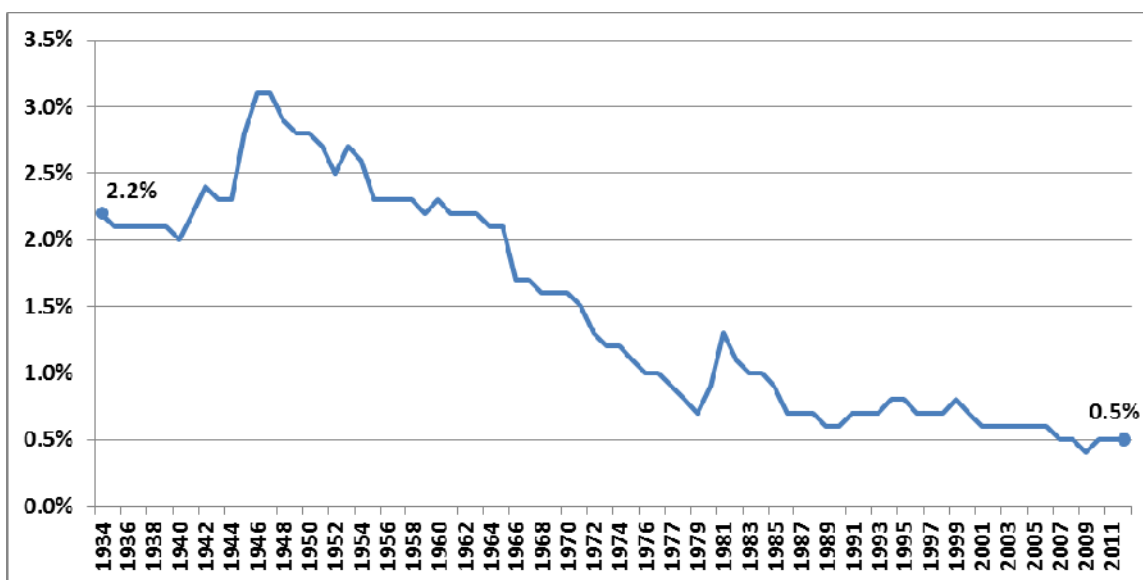
<sup>37</sup> Because these calculations control for changes in the price level, economists generally compare dollar-denominated amounts over time in real terms, not nominal.

<sup>38</sup> For particular federal “trust funds” that are financed through excise taxes, the decline in the value of excise tax revenue can be of a concern. If the growth in spending exceeds revenue, then the trust fund could be depleted over time.

the oil industry, which was phased-out by 1993.<sup>39</sup> While the number, rates, and types of excise taxes in effect have changed between 1960 and 2012, these data illustrate the declining role of excise taxes in federal public finance

Furthermore, federal excise tax receipts as a share of gross domestic product (GDP) are lower today than they were in the past. As shown in **Figure 2**, annual excise tax receipts averaged between 2.0% and 2.5% during the Great Depression, before hitting a peak above 3.0% of GDP during World War II. After the end of the war, federal excise tax receipts declined as a share of GDP—particularly after the reforms in the mid-1960s. After a brief spike in the early 1980s, largely due to the enactment of the oil industry windfall profits tax, excise tax revenue as a share of GDP trended back below 1.0% by the end of the 1980s. In FY2012, federal excise tax receipts were 0.5% of GDP.

**Figure 2. Federal Excise Tax Receipts as a Share of Gross Domestic Product (GDP), FY1934 to FY2012**



**Source:** Office of Management and Budget, *Budget of the United States FY2014 - Historical Tables*, Table 2.3, at <http://www.whitehouse.gov/omb/budget/historicals>.

Federal excise taxes have also declined as a share of all federal tax receipts. As shown in **Figure 3**, federal excise taxes comprised 45.8% of all federal tax receipts in FY1934. After the end of World War II, the share of federal tax receipts from excises began a slow decline below 15% towards a recent trend around 3.2% (in FY2012).

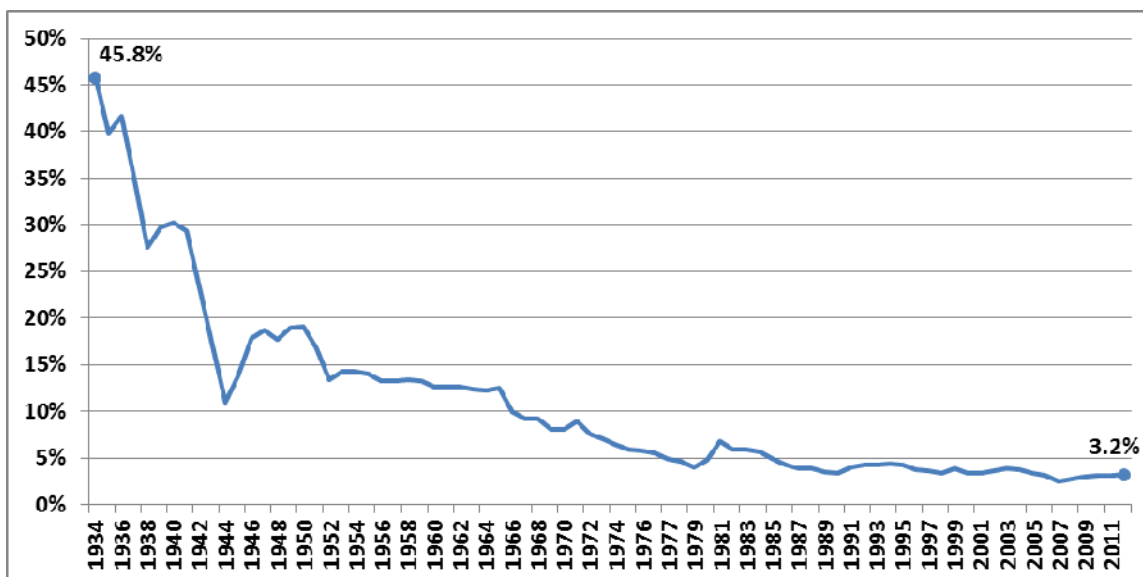
This decline in the share of federal tax receipts collected from excises corresponded with an increase in the role of other sources of tax receipts, notably from the individual income tax code. In 1934, individual income taxes amounted to 14.2% of all federal tax receipts and applied primarily to a narrow tax base.<sup>40</sup> During World War II, the individual tax code supplanted excises

<sup>39</sup> Crude Oil Windfall Profit Tax Act of 1980 (P.L. 96-223).

<sup>40</sup> Office of Management and Budget, *Budget of the United States FY2014 - Historical Tables*, Table 2.2, at <http://www.whitehouse.gov/omb/budget/historicals>.

as being the primary source of federal revenue, as income taxes accounted for 45.0% of all tax receipts in 1944 (compared to 10.9% from excises).<sup>41</sup> Additionally, receipts from social insurance and retirement programs have increased over time.

**Figure 3. Federal Excise Tax Receipts as a Share of All Federal Tax Receipts, FY1934 to FY2012**



**Source:** Office of Management and Budget, *Budget of the United States FY2014 - Historical Tables*, Table 2.2, at <http://www.whitehouse.gov/omb/budget/historicals>.

## Interactions Between Federal and State and Local Excise Taxes

Higher federal excise tax rates tend to reduce state and local excise tax revenues derived from the same products (and *vice versa*).<sup>42</sup> As federal excise taxes increase the price of the targeted product, then consumer demand may decrease depending on the response of consumers.<sup>43</sup> This decrease in consumer demand reduces the tax base. States can increase their excise tax rates to help offset any reductions in the tax base, although higher state taxes can also drive down demand for products subject to excise taxes.

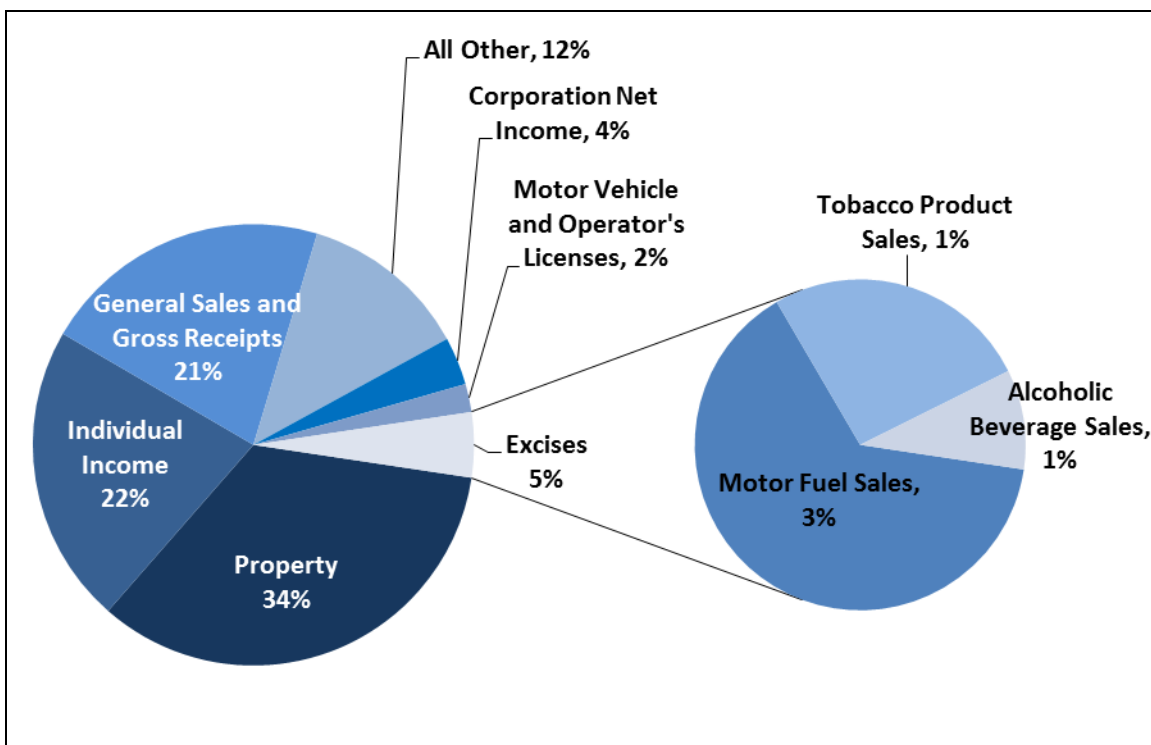
<sup>41</sup> The rise in income tax receipts during World War II was largely due to the enactment of the “Victory Tax” under the Revenue Act of 1942 (P.L. 77-753). The Victory Tax was a flat 5% tax (lowered to 3% in 1943) on net income over \$624, with few deductions. The Individual Income Tax Act of 1944 (P.L. 78-315) repealed the Victory Tax but also raised the marginal tax rates set in statute under the individual income tax code. For more information, see Roy G. Blakey and Gladys C. Blakey, “The Federal Revenue Act of 1942,” *American Political Science Review*, vol. 36, no. 6 (December 1942), pp. 1069-1082; Roy G. Blakey and Gladys C. Blakey, “Federal Revenue Legislation, 1943-1944,” *American Political Science Review*, vol. 38, no. 2 (April 1944), pp. 325-330; and Paul G. Kauper, “Significant Developments in the Law of Federal Taxation, 1941-1947: I,” *Michigan Law Review*, vol. 45, no. 6 (April 1947), pp. 659-678.

<sup>42</sup> The actual magnitude of this effect is difficult to measure, as state and local governments have also raised excise taxes over time.

<sup>43</sup> These behavioral responses, or elasticities, are discussed more in the “Efficiency” section of this report.

Similar to trends at the federal level, though, excise tax collections comprise a relatively small share of state and local tax revenue. As shown in **Figure 4**, personal property taxes were the largest source (34%) of tax revenue for state and local governments combined in 2012. Individual income taxes and general sales taxes accounted for 22% and 21% (respectively) of state and local tax collections in 2012. Excise taxes on motor fuel, tobacco, and alcohol have accounted for 5% of total tax collections.

**Figure 4. Sources of State and Local Tax Collections, 2012**



**Source:** CRS analysis of data from U.S. Census Bureau, Table I – Historical National Totals of State and Local Tax Revenue, at <http://www.census.gov/govs/qtax/>.

However, the data in **Figure 4** underrepresent the amount of state tax revenue derived from tobacco sales because settlement payments from major tobacco companies to the states and territories are not included.<sup>44</sup> In comparison, approximately \$7.3 billion in payments were made by the major tobacco companies to the states in 2011 whereas state and local tax collections from tobacco excise taxes were approximately \$17.5 billion (i.e., the payments to states amounted to

<sup>44</sup> In 1998, the Attorneys General of 46 states signed the Master Settlement Agreement (MSA) with the four largest tobacco companies in the United States to settle state and territorial suits to recover billions of dollars in costs associated with treating smoking-related illnesses. Four states (Florida, Minnesota, Mississippi, and Texas) settled their tobacco cases separately from the MSA states. In short, MSA funds are allocated to the states and territories according to a formula based on estimated tobacco-related Medicaid expenditures and the number of smokers in each state and territory. The annual payments are subject to a number of adjustments, reductions, and offsets—particularly a volume-of-sales adjustment. In other words, the MSA payments are based, in part, on tobacco consumption by state or territory. For more information see National Association of Attorneys General (NAAG), “NAAG Tobacco Project,” at <http://www.naag.org/tobacco.php>.

41.7% of state and local excise collections).<sup>45</sup> Settlement payments allocated to each state and territory are largely based on tobacco consumption in that particular state or territory.

## Equity

Economists generally measure tax equity using two measures: vertical equity and horizontal equity. Vertical equity generally implies that households with a greater ability to pay the tax (i.e., a higher income) pay a greater share of their household income in taxes than households with a lesser ability to pay the tax. A tax system is *progressive* if higher income households pay a greater share of their income in tax than lower income households, whereas the converse is true in a *regressive* tax system. Horizontal equity indicates that households with similar abilities to pay actually pay similar amounts in tax. For example, all households earning a particular amount of income would pay the same amount in taxes in a tax system with perfect horizontal equity.

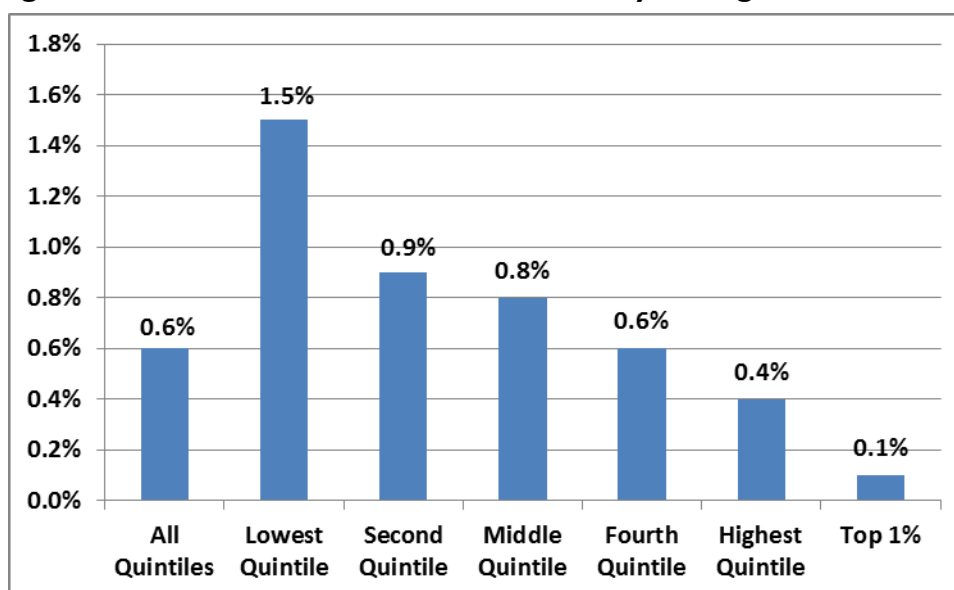
Note that the excise tax rate on a particular good does not reflect its effects on equity. Even if all consumers are subject to the same tax rate of \$1.00 per unit, the tax cannot be immediately deemed as “equitable” from an economic perspective. The tax’s effects on equity will ultimately be a function of who bears the tax’s burden.

**Figure 5** shows the distribution of excise taxes paid in 2009, by average tax rates, as calculated by the Congressional Budget Office (CBO). Average tax rates represent the share of excise taxes paid as a share of pre-tax income.

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<sup>45</sup> For tobacco settlement payments to the states data, see Campaign for Tobacco-Free Kids, *Actual Tobacco Settlement Payments Received by the States, 2002-2012*, October 2012, at <http://www.tobaccofreekids.org/research/factsheets/pdf/0365.pdf>; for state and local excise tax collections data see U.S. Census Bureau, Table 1 – Historical National Totals of State and Local Tax Revenue, at <http://www.census.gov/govs/ntax/>.



**Figure 5. Distribution of Federal Excise Taxes, by Average Tax Rates, 2009**

**Source:** Congressional Budget Office, *The Distribution of Household Income and Federal Taxes*, July 2012, pp. 27 and 33, at [http://www.cbo.gov/sites/default/files/cbofiles/attachments/43373-AverageTaxRates\\_screen.pdf](http://www.cbo.gov/sites/default/files/cbofiles/attachments/43373-AverageTaxRates_screen.pdf).

**Notes:** Average tax rates are equal to the amount of taxes paid divided by pre-tax income. The average amount of pre-tax income for each quintile in 2009 was \$88,400 (all), \$23,900 (lowest), \$43,400 (second), \$64,300 (middle), \$93,800 (fourth), \$223,500 (highest), and \$1,219,700 (top 1%).

With regard to vertical equity, excise taxes tend to be regressive. The lowest income quintile of taxpayers paid, on average, 1.5% of their income on excise taxes in 2009 whereas the highest quintile of taxpayers paid 0.4% of their income in excise taxes.

A luxury tax may be less regressive than other forms of excise taxes, but it could be difficult to isolate the burden of such a tax to upper-income households. First, middle-income consumers might purchase goods classified as “luxuries,” such as jewelry or watches. Second, the definition of “luxury” changes over time. For example, a federal excise tax on telephone calls was first introduced in 1892 as a luxury tax to help finance the Spanish-American War. After several instances of repeal and reauthorization throughout the early 20<sup>th</sup> century, the tax remained part of the permanent tax code from 1947 until 2006.<sup>46</sup> Although one could make the argument in 1892 that telephone calls were “luxury” services, this was certainly not the case by the latter half of the 20<sup>th</sup> century.

With regard to horizontal equity, excise taxes have different effects on households with the same level of income. Households that consume the taxed good pay a larger share of taxes out of their current income than households that do not consume the taxed good. Excise taxes can also create

<sup>46</sup> The federal tax on telephone calls was imposed temporarily from 1892 to 1902 to raise revenue to help finance the Spanish-American War. The “telephone tax” was temporarily imposed again from 1917 to 1924 to help finance U.S. efforts in World War I. The tax was reintroduced temporarily in 1932 to finance the government during the recovery from the Great Depression, and was temporarily extended until its “permanent” authorization from 1947 until 2006. For a history of the telephone tax, see Joseph J. Thorndike, “The Phone Tax: Gone but Never Forgotten,” *Tax Notes*, June 1, 2006.

horizontal inequities across consumers of a taxed product if unequal tax rates are applied to various forms of that product (e.g., beer vs. wine vs. distilled spirits).

## Efficiency

In short, some excise taxes are intended to affect consumer choices. As such, they reduce economic efficiency by distorting what economists characterize as economically optimal consumer behavior. This distortion could be justified, in economic terms, if there is some sort of market failure whereby the consumer's price does not capture the effect of spillover effects to society that result from consumption of the good or service. Individual consumption of certain goods and services might have negative spillover effects, or *externalities*, on society. For excise taxes intended to compensate for the social costs of certain types of consumption, economic theory suggests that the excise tax rate should be set at a level that offsets the negative costs of that consumption to society. If taxes are used this way to reflect the full cost of a particular type of economic activity to society, then excise taxes can actually lead to a more efficient allocation of resources.

## General Behavioral Effects

All types of excise tax have some similar economic effects in a competitive industry.<sup>47</sup> In the short run, an excise tax increases the price of the taxed product (by some fraction of the tax amount), and tax burden could be shared by producers or the consumers. Next, the quantity of the product demanded is reduced. Lastly, the price received by producers for the product is also reduced (i.e., producers receive less for the product post-tax compared to pre-tax).

The exact effect depends on the responsiveness, or *elasticities*, of demand and supply for the product (or the percent change in quantity demanded or supplied, respectively, divided by the percent change in price). The increase in retail price resulting from the tax will be greater as the elasticity of supply increases and the elasticity of demand falls. The effect on quantity will be greater as both the elasticity of demand and the elasticity of supply increase.

In regard to sharing the price burden, the more inelastic the demand is, the larger the share of the tax borne by consumers. The more inelastic the supply is, the larger the share borne by producers. In the limiting cases, consumers will bear the full burden if demand is completely inelastic, whereas producers will bear the full price burden if supply is completely inelastic. Put differently, an excise tax on a product with a relatively inelastic demand will have less of an effect on consumption.<sup>48</sup>

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<sup>47</sup> J. Fred Giertz, "Excise Taxes," in *Encyclopedia of Taxation and Tax Policy*, ed. Joseph J. Cordes, Robert D. Ebel, and (name redacted), 2<sup>nd</sup> ed. (Urban Institute Press, 2000). Economists also refer to competitive markets as exhibiting "pure competition," where no single participant (buyer or seller) has enough power to affect the market price of a product. In contrast, sellers in markets characterized by a single or small group of sellers with enough power to affect prices (i.e., a monopoly or oligopoly) may be able to pass more of the cost of the tax along to consumers in the form of higher prices.

<sup>48</sup> The magnitude of the elasticity is sometimes reported and the negative sign omitted because consumer demand is often negatively correlated with prices. The important factor is if the elasticity is less than or greater than "1." Consumer goods with an elasticity greater than "1" are considered price elastic; less than "1," price inelastic. The elasticity of demand is not necessarily constant along all price points. Economic theory indicates that consumer demand (continued...)

Additionally, economic theory indicates that targeted excise taxes could have efficiency merits, but broadly drawn taxes that cover many product categories generally tend to lead to more distortions and reductions in economic activity than are warranted. From an efficiency perspective, the use of a broad-based tax on a wide range of activities (e.g., a general sales tax) would be preferable to a high excise tax rate on a small number of activities.<sup>49</sup>

## Luxury Taxes

Luxury taxes are usually levied to increase progressivity in the tax system or to increase revenue, not on the basis of improving economic efficiency.

Some argue that luxury taxes in the past have dramatically reduced sales in the targeted industry. However, it is likely that demand for luxury goods is less sensitive to price changes than non-luxury goods, in part, because some luxury consumption goods are purchased by businesses rather than individuals (and could be deducted from a business's income tax returns as a business expense).

A common case study cited in the analysis of luxury taxes includes the luxury boat industry during the early 1990s. Opponents of the luxury tax argued that the yacht industry experienced drastic reductions in sales following the enactment of a 10% *ad valorem* luxury tax in the Omnibus Budget Reconciliation Act of 1990 (OBRA90). According to this logic, the imposition of the excise tax was largely to blame for the decline in sales and rise in unemployment in the industry. However, economic analysis indicates that the yacht sales were beginning to decline from their peak in 1988 (before the tax), and that sales of yachts were more sensitive to changes in personal disposable income and corporate profits after tax rather than price changes due to the tax.<sup>50</sup> In any case, the tax was repealed in the Omnibus Budget Reconciliation Act of 1993 (P.L. 103-66).

## Sumptuary Taxes

Sumptuary tax increases are often based on market failures, relating to *externalized* costs of individual behavior associated with public health, public safety, and additional financial burdens placed on publically financed health services.<sup>51</sup> In short, studies measuring the respective size of the externalities for alcohol and tobacco involve very complicated, technical calculations of lifetime external costs and savings associated with alcohol and tobacco consumption that are often subject to controversy and methodological scrutiny. An advanced review of this literature is

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(...continued)

is relatively more inelastic in the short run and with larger changes in price than with smaller changes in price. In the long run, however, elasticity of demand for a product is relatively elastic as consumers adjust their behavior to changes in prices.

<sup>49</sup> In economic terms, this concept relates to the growth of “deadweight losses” (or “excess burdens”) associated with the tax. The excess burdens of an excise tax increase roughly with the square of the tax rate (e.g., doubling the tax rate quadruples the welfare loss). See J. Fred Giertz, “Excise Taxes,” in *Encyclopedia of Taxation and Tax Policy*, ed. Joseph J. Cordes, Robert D. Ebel, and (name redacted), 2<sup>nd</sup> ed. (Washington, DC: Urban Institute Press, 2002).

<sup>50</sup> This analysis is contained in CRS Report 92-149, *The Effect of the Luxury Excise Tax on the Sale of Luxury Boats*, by (name redacted). This 1992 report is available upon request from the author of this report.

<sup>51</sup> With regard to correcting for negative externalities, regulation can also serve as an alternative (or complementary) policy to taxation.

beyond the scope of this particular report. Still, studies suggest that current law per-unit tax rates on cigarettes exceed the magnitude of the estimated net externalities whereas the opposite could be true for alcohol taxes.<sup>52</sup>

Behavioral responses to sumptuary taxes vary by consumption good. Demand for beer is not particularly responsive to changes in price (e.g., demand is inelastic). Meta-analyses tend to find the demand for beer is more inelastic (i.e., less responsive) to changes in price than demand for either wine or distilled spirits. However, studies diverge on the question of whether demand for wine is more or less elastic than distilled spirits.<sup>53</sup> In comparison, CBO estimates the price elasticity of demand for cigarettes to be between (0.3) and (0.7), and that the average elasticity of the number of smokers is (0.3). In other words, a 1% increase in the price of cigarettes results in between a 0.3% and a 0.7% decrease in demand, and a 1% rise in the price of cigarettes results in roughly a 0.3% decrease in the number of smokers.<sup>54</sup>

Compared to a sumptuary tax on a product that is relatively elastic, a tax on a product that is relatively inelastic often results in a higher tax burden on lower-income households (due to the regressive nature of the tax) with a smaller degree of change in consumption.

## Benefit-Based Taxes

If properly structured, benefit-based taxes could enhance economic efficiency by reducing the spread between private and social costs. In short, inefficiency arises because private markets tend to overproduce economic activities that lead to negative social externalities and underproduce economic activities that lead to positive externalities, absent government intervention. Theory suggests that government intervention can better incorporate social costs into the prices perceived by any one individual. However, it is often difficult to derive the “correct” tax rate that precisely accounts for the marginal social effects of an economic activity.<sup>55</sup>

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<sup>52</sup> For the most comprehensive summary of this analysis, see archived CRS Report 94-214, *Cigarette Taxes to Fund Health Care Reform: An Economic Analysis*, by (name redacted) and (name redacted), particularly pp. 3-6. The analysis in this CRS report is largely based on the findings of study commissioned by the RAND Corporation. See Willard G. Manning et al., *The Costs of Poor Health Habits* (Cambridge, MA: Harvard University Press, 1991). For additional support, see Congressional Budget Office, *Federal Taxation of Tobacco, Alcoholic Beverages, and Motor Fuels*, August 1990, p. 47, at <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/79xx/doc7951/90-cbo-039.pdf>. These studies were conducted before further increases in federal, state, and local excise taxes on cigarettes and the 1998 settlements between the major tobacco companies and the states and territories.

<sup>53</sup> For two examples of studies that indicate that distilled spirits are more elastic than wine, see James Fogarty, “The Demand for Beer, Wine and Spirits: A Survey of the Literature,” *Journal of Economic Surveys*, vol. 24, no. 3 (2010), pp. 428-478; and Alexander C. Wagenaar, Matthew J. Salois, and Kelli A. Komro, “Effects of Beverage Alcohol Price and Tax Levels on Drinking: A Meta-Analysis of 1003 Estimates from 112 Studies,” *Addiction*, vol. 104, no. 2 (2009), pp. 179-190. For an example of a study that indicates that wine is more elastic than distilled spirits, see Craig A. Gallet, “The Demand for Alcohol: A Meta-Analysis of Elasticities,” *The Australian Journal of Agricultural and Resource Economics*, vol. 51, no. 2 (June 2007), pp. 121-135; and See Congressional Budget Office, *Federal Taxation of Tobacco, Alcoholic Beverages, and Motor Fuels*, August 1990, p. 72, at <http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/79xx/doc7951/90-cbo-039.pdf>.

<sup>54</sup> Congressional Budget Office, *Raising the Excise Tax on Cigarettes: Effects on Health and the Federal Budget*, June 2012, p. vi, at <http://www.cbo.gov/publication/43319>.

<sup>55</sup> For more discussion of these issues, see Harvey S. Rosen, *Public Finance*, 7<sup>th</sup> ed. (New York, NY: McGraw-Hill, 2005), p. 93.

Benefit-based taxes can affect consumer demand for public goods if the link between the tax and the use of the public good is clearly apparent. A lack of a direct link between the tax and the use of the public good could lead to declining revenues available for upkeep and maintenance of the public good. For example, one could argue that the purchase of gasoline does not necessarily lead to wear and tear on federal highways; some of this fuel could be used by drivers that commute just along local roads. Thus, many benefit-based taxes are levied on rough proxies that affect forms of consumption unrelated to the ultimate goal of the policy.

An alternative policy could include more direct forms of benefit-based taxation, but there could be a tradeoff between the targeting precision of a tax and its administrative costs. For example, although a retail tax on gasoline sales might be an imperfect proxy for highway usage, it is less complicated than administering an excise tax based on the weight and mileage of every motor vehicle using a federal highway. The costs of the latter form of tax administration might exceed the benefits.

## Regulatory and Environmental Taxes

Much like benefit-based taxes, regulatory and environmental taxes are typically imposed on economic activities that generate externalities.<sup>56</sup> Whereas benefit-based taxes are concerned with an underproduction of some positive externality (e.g., a public good), regulatory and environmental taxes, however, are usually concerned with the overproduction of some negative externality (e.g., pollution). These negative externalities could include losses from damage to plants and animals and to their habitats, rapid deterioration to physical infrastructure, and various harmful effects on human health and mortality. Economic theory indicates that a tax on the marginal production of these negative externalities could be used as a disincentive for harmful production processes and as a means of compensating society for the cleanup and mitigation of those externalities.

In the choice between a tax on pollution (or the regulation of some other activity with negative spillover effects on society) and a total ban on its production, economists generally prefer a tax.<sup>57</sup> From an economic perspective, a society's "optimum level" of pollution is usually not zero; instead, economists look to minimize total waste disposal costs. These costs could include residual waste or by-product recycling, input switching to safer materials, production modification, or other technology adoption. It can be expected that marginal pollution costs increase with increased waste disposal activities as greater investment in more advanced (and more costly) cleanup technologies and mitigation strategies is necessary. Put differently, there may be a point where the marginal cost of eliminating a particular unit of pollution may exceed

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<sup>56</sup> For more background on environmental taxes, see Maureen L. Cropper and Wallace E. Oates, "Environmental Economics: A Survey," *Journal of Economic Literature*, vol. 30, no. 2 (June 1992), pp. 675-740.

<sup>57</sup> In theory, negative environmental and regulatory externalities could be mitigated with policies other than a tax, such as production quotas or tradable permits. Each policy option has its own advantages and disadvantages, particularly with regard to setting the price of the tax or permit or the level of the quota. For a more in-depth comparison of these policies, see A. Lans Bovenberg and Lawrence H. Goulder, *Environmental Taxation and Regulation*, National Bureau of Economic Research, NBER Working Paper 8458, September 2001, at <http://www.nber.org/papers/w8458.pdf>; and Don Fullerton, Andrew Leicester, and Stephen Smith, *Environmental Taxes*, National Bureau of Economic Research, NBER Working Paper 14197, July 2008, at <http://www.nber.org/papers/w14197.pdf>; and Frank S. Arnold, *Why Policy Makers Don't Use Environmental Taxes*, draft report prepared under cooperative agreement with the U.S. Environmental Protection Agency, January 6, 1994, at [http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0312-1.pdf/\\$file/EE-0312-1.pdf](http://yosemite.epa.gov/ee/epa/erm.nsf/vwAN/EE-0312-1.pdf/$file/EE-0312-1.pdf).

the marginal benefit. The tax increases the private costs of pollution to reduce the spread between private and social costs.

To achieve optimum economic efficiency, the excise tax rate would be set at a level such that the marginal, private cost of pollution is equal to the marginal, social benefits of production. Economic theory suggests that the tax should be imposed directly upon the activity which gives rise to the negative externality.<sup>58</sup> The statutory incidence (or burden) of the tax may differ from the economic incidence, because the latter is affected by elasticities. Thus, consumers may bear some or all of the tax through higher prices.<sup>59</sup>

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<sup>58</sup> For more information, see Thomas A. Barthold, "Issues in the Design of Environmental Excise Taxes," *The Journal of Economic Perspectives*, vol. 8, no. 1 (Winter 1994), pp. 133-151.

<sup>59</sup> A more elastic demand (supply) indicates that consumers (producers) are more responsive to changes in price. Consumers absorb a larger share of the tax when producer supply is more elastic than consumer demand.

## Appendix. References to CRS Reports on Specific Excise Taxes

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### Affordable Care Act Taxes

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\*CRS Report R41128, *Health-Related Revenue Provisions in the Patient Protection and Affordable Care Act (ACA)*, by (name redacted)

CRS Report R42971, *Medical Device Excise Tax Regulations*, by (name redacted)

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### Alcohol

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CRS Report R41028, *The Rum Excise Tax Cover-Over: Legislative History and Current Issues*, by (name redacted)

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### Aviation

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CRS Report R42781, *Federal Civil Aviation Programs: An Overview*, by (name redacted)

\*CRS Report RS22641, *Taxation of Aviation Prior to 1970*, by (name redacted)

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### Carbon Tax

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CRS Report R42731, *Carbon Tax: Deficit Reduction and Other Considerations*, by (name redacted), (name redacted), and (name redacted)

CRS Report R40242, *Carbon Tax and Greenhouse Gas Control: Options and Considerations for Congress*, by (name redacted) and (name redacted)

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### Coal

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CRS Report RS22881, *Coal Excise Tax Refunds: United States v. Clintwood Elkhorn Mining Co.*, by (name redacted)

\*CRS Report RS21935, *The Black Lung Excise Tax on Coal*, by (name redacted)

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### Gasoline

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CRS Report R40808, *The Role of Federal Gasoline Excise Taxes in Public Policy*, by (name redacted)

CRS Report R42877, *Funding and Financing Highways and Public Transportation*, by (name redacted) and (name redacted)

\*CRS Report RL30304, *The Federal Excise Tax on Gasoline and the Highway Trust Fund: A Short History*, by (name redacted)

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### Guns and Ammunition

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CRS Report R42992, *Guns, Excise Taxes, and Wildlife Restoration*, by (name redacted) and (name redacted)

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### Oil Industry

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CRS Report RL34689, *Oil Industry Financial Performance and the Windfall Profits Tax*, by (name redacted) and (name redacted)

CRS Report R43128, *Oil Sands and the Oil Spill Liability Trust Fund: The Definition of "Oil" and Related Issues for Congress*, by (name redacted)

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### Rubber Tires

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\*CRS Report RL30302, *Federal Excise Tax on Tires: Where the Rubber Meets the Road*, by (name redacted)

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### Sea Commerce, Harbor Maintenance, Boating, and Inland Waterways

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CRS Report R41042, *Harbor Maintenance Trust Fund Expenditures*, by (name redacted)

CRS Report RS22060, *The Sport Fish Restoration and Boating Trust Fund*, by (name redacted) and (name redacted)

CRS Report R41430, *Inland Waterways: Recent Proposals and Issues for Congress*, by (name redacted)

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## Tobacco

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CRS Report R40226, *P.L. 111-3: The Children's Health Insurance Program Reauthorization Act of 2009*, by (name redacted), (name redacted), and (name redacted)

\*CRS Report RS22681, *The Cigarette Tax Increase to Finance SCHIP*, by (name redacted)

\*CRS Report 97-1053, *The Proposed Tobacco Settlement: Who Pays for the Health Costs of Smoking?*, by (name redacted)

\*CRS Report 94-214, *Cigarette Taxes to Fund Health Care Reform: An Economic Analysis*, by (name redacted) and (name redacted)

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**Source:** <http://www.crs.gov/>.

**Notes:** Archived reports are denoted with an [\*]. Archived reports are available on the CRS webpage, but may not contain the most recent data on a particular tax. Authors of some archived reports may no longer be available at CRS.

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