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Federal Excise Taxes and the Distribution of Taxes Under Tax Reform

BY J. SCOTT MOODY
ECONOMIST
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JANUARY 1999

BACKGROUND PAPER | NO. 29

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Introduction

The most familiar aspect of tax fairness simply relates to how the burden of a tax or a tax system is spread among the taxpayers. In recent years, the distribution of the tax burden in the U.S. and the changes in that distribution have played prominent roles in guiding tax policy, including tax reform.

Naturally, major changes in the distribution of the tax burden are most likely when the nation seriously contemplates fundamental tax reform. In the current climate, the primary motivations for fundamental tax reform are faster economic growth and simplification of the code. However, changes in the tax burden's distribution are so important politically and socially that no economic or administrative improvements can be considered without a thorough analysis of all possible distributional effects.

As to economic growth, the scoffing of critics does not deter many reasonable analysts from believing that a more economically neutral tax system will encourage a permanently higher level of economic output.

In contrast to the controversy regarding additional economic growth, there is a strong consensus that the current tax system is far too complicated, that this complexity is harmful, and that great savings can be reaped in both administration and compliance costs with the adoption of a much simpler tax system.

While economic growth and simplification are key, the distribution of the tax system remains an important consideration. The current federal tax system, and the federal personal and corporate income taxes in particular, are highly progressive, meaning that an individual or corporation's tax burden tends to rise faster than income.

Most tax reform proposals would replace the federal income tax with some form of consumption tax. Tax rates aside, the essential difference between an income tax and a consumption tax is the taxation of saving. Under an income tax, capital income is taxed repeatedly, while saving is tax exempt under a consumption tax. As levels of wealth and levels of income tend to be closely related, upper-income taxpayers also tend to own relatively large amounts of wealth. Thus, replacing an income tax with a consumption tax tends to reduce the progressivity of the tax system, everything else held constant.

From an economic perspective, the best tax rate structure has a single tax rate. A single tax rate minimizes the economic growth-robbing distortions imposed by the tax system. Rightly or wrongly, social policy considerations have historically dictated a progressive tax system. Progressivity can be achieved in a consumption tax through various exemptions, credits, and through a graduated rate structure. However, each of these devises increases the complexity of the new system and diminishes the economic gains tax reform would otherwise promise.

"The elimination of these excises as part of tax reform would advance the goals of tax reform on virtually all fronts."

A partial solution to the progressivity problem for consumption taxes may be found by expanding the scope of tax reform. Traditionally, tax reform has involved replacing the federal personal and corporate income taxes. Some proposals would integrate the federal payroll tax into the tax reform proposal. Thus far, no major tax reform proposal has incorporated federal excise taxes.

The federal government imposes a wide array of excises that raised an estimated $55.5 billion in 1998. Discussed at greater length below, these taxes include the excise on gasoline and diesel fuel, the excise on telephone services, and the excises on beer, wine, distilled spirits and tobacco. The elimi-

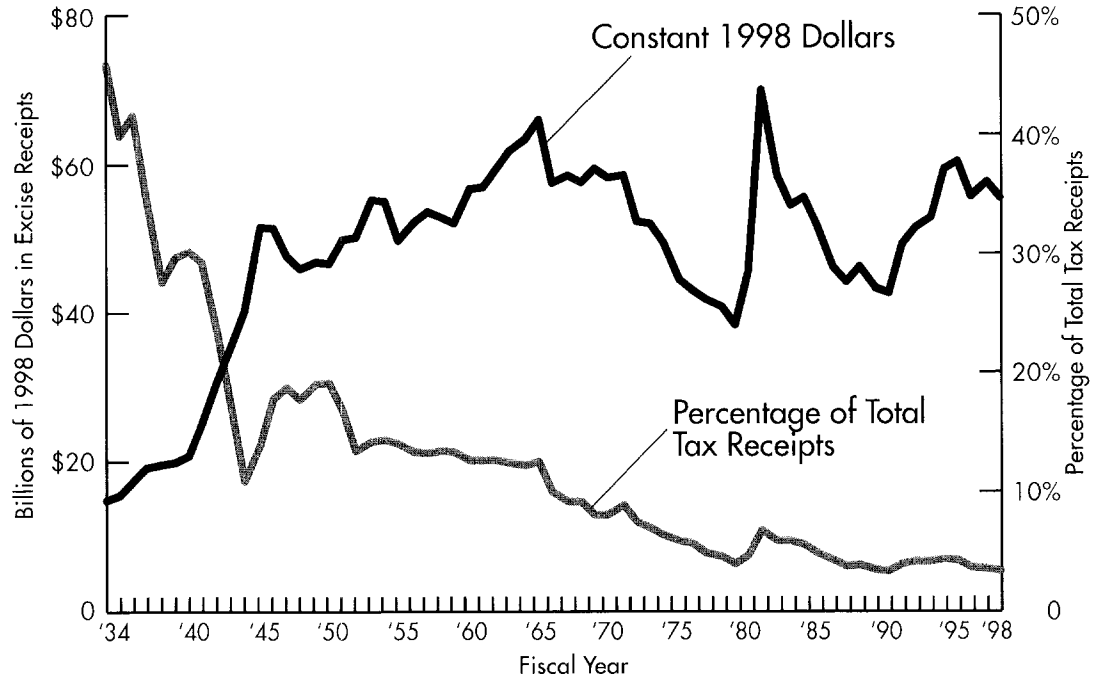
nation of these excises as part of tax reform would advance the goals of tax reform on virtually all fronts.

Eliminating excise taxes is helpful to economic growth because it promotes neutrality. Tax reform is intended to achieve a neutral tax system, and excise taxes are by their very nature discriminatory and non-neutral. They lack policy rationale except in those few cases where the tax is clearly linked to an expenditure that benefits the payor of the tax and where the tax is no greater than the value of those benefits, or where there is some well-defined cost to society from an individual's using a product. Even in such cases, eliminating excise taxes would still be consistent with tax neutrality.

Eliminating excise taxes would help simplify the tax code because each of these excises imposes its own administration and compliance costs. Even if these costs represent only 1 percent of the tax collected, that is still over $500 million annually that would be saved if the taxes were eliminated.

Considering their effect on the distribution of the tax burden, excise taxes also tend to be regressive. A regressive tax is one in which the tax burden is proportionately higher at lower levels of income than at higher levels of income. While there are exceptions, such as the tax on luxury automobiles, most excise taxes impose a disproportionate burden on lower-income taxpayers. Thus, if tax reform were to involve the revenue-neutral replacement of the personal and corporate income taxes and some of the excise taxes with a consumption tax, the net result could well be a tax distribution more acceptable to the Congress and the nation.

Figure 1
Excise Tax Receipts
In Constant Dollars and As a Percentage of Total Tax Receipts
FY 1934–1998



Source: Tax Foundation.

A Look Back at Federal Excise Taxes

Historically, excise taxes have been a major source of federal tax revenue. *Figure 1* shows total federal excise tax collections since 1934, in constant 1998 dollars, as well as their percentage share of total federal revenue. In 1934, excise taxes made up 45.8 percent ($14.9 billion) of total federal revenues. By 1998, the share of federal revenue attributed to excise taxes had fallen dramatically to 3.4 percent even though excise tax collections had grown by more than 270 percent. Clearly, most of the decline in excise taxes' share is due to higher revenue collections from other sources such as income and payroll taxes rather than a decline in excise tax collections.

I. Who Bears the Burden of Federal Excise Taxes?

Tax incidence analysis seeks to discover who bears the real economic burden of a tax. In a market economy, the individual or business that directly pays a tax is not necessarily the one that bears the burden of a tax in the sense of experiencing a loss of purchasing power due to the tax. The real tax burden is often spread around as individuals and businesses attempt to shift the burden onto others.

An oft-repeated and irrefutable conclusion of tax incidence analysis is that businesses do not pay taxes—people do. As such, taxes on business, direct or indirect, are shifted to individuals in any of four different ways, either separately or in combination. For example, an excise tax imposed on diesel fuel suppliers may be (1) shifted forward to consumers in the form of higher prices on goods and services; (2) shifted backward onto labor by reducing wages; (3) shifted backward onto other business suppliers; or (4) absorbed by the diesel fuel suppliers through lower profits. Understanding how market forces will distribute a tax among these four possibilities has important tax policy implications because it helps inform policy makers about the distribution of a particular tax's burden over various income groups.

The Tax Foundation Excise Tax Incidence Model

In this analysis the excise tax incidence is ultimately borne by individuals in one of three ways: (1) passed forward to individuals via their consumption of goods and services; (2) passed backward to businesses; or (3) some combination of the first two. In addition, the excise tax burden on businesses is imputed to individuals through a reduction in labor income (salary and wages) and a reduction in capital income

Table 1
Federal Excise Tax Burden by Income Class
($Thousands)

Adjusted Gross Income	Alcohol	Tobacco	Transportation Fuels and Use	Telephone Services	Airport and Airway	Aquatic Resources	Vaccine Injury Compensation
Under $10,000	$674,694	$1,090,042	$2,298,447	$568,732	$588,555	$26,992	$20,251
$10,000 under $20,000	1,080,301	1,082,560	3,421,538	700,951	881,963	27,183	27,036
$20,000 under $30,000	878,430	1,002,073	3,327,770	618,759	831,769	35,043	18,710
$30,000 under $40,000	695,098	744,346	2,990,611	516,653	777,434	39,518	10,149
$40,000 under $50,000	794,660	633,156	2,516,372	419,139	646,453	29,417	8,908
$50,000 under $75,000	1,450,692	860,503	4,820,238	783,935	1,420,717	50,078	13,670
$75,000 under $100,000	840,685	257,309	2,352,238	399,769	969,548	36,477	6,154
$100,000 under $200,000	637,394	195,087	2,396,741	418,419	960,023	27,656	4,666
$200,000 under $500,000	157,538	48,218	1,104,349	199,682	425,040	6,835	1,153
$500,000 or more	41,510	12,705	1,276,705	237,959	473,499	1,801	304
Total	$7,251,000	$5,926,000	$26,505,009	$4,864,000	$7,975,000	$281,000	$111,000

	Ozone Depleting Chemicals and Products	Other Federal Fund Excises	Black Lung Disability Insurance	Inland Waterway	Hazardous Substance	Oil Spill Liability	Leaking Underground Storage Tank	Total
Under $10,000	$2,369	$106,367	$27,570	$4,997	$4,351	$1,982	$12,140	$5,427,488
$10,000 under $20,000	5,322	147,928	61,925	11,224	9,773	4,451	18,073	7,480,229
$20,000 under $30,000	5,316	169,229	61,857	11,212	9,762	4,446	17,577	6,991,953
$30,000 under $40,000	5,019	177,284	58,408	10,586	9,218	4,198	15,796	6,054,319
$40,000 under $50,000	4,677	145,042	54,422	9,864	8,588	3,912	13,292	5,287,902
$50,000 under $75,000	9,597	269,640	111,673	20,241	17,623	8,026	25,461	9,862,093
$75,000 under $100,000	5,484	175,463	63,809	11,565	10,070	4,586	12,425	5,145,581
$100,000 under $200,000	7,117	174,166	82,813	15,010	13,069	5,952	12,660	4,950,772
$200,000 under $500,000	4,229	77,383	49,213	8,920	7,766	3,537	5,833	2,099,696
$500,000 or more	5,870	86,499	68,310	12,381	10,780	4,910	6,744	2,239,977
Total	$55,000	$1,529,000	$640,000	$116,000	$101,000	$46,000	$140,000	$55,540,009

Source: Tax Foundation.

(interest and dividends).

Typically, excise taxes are among the most regressive of taxes. For example, a recent study by the Congressional Budget Office (CBO) found that in 1995 individuals and families with cash income of less than $10,000 faced an effective excise tax rate of 3.9 percent. In contrast, individuals and families with incomes over $200,000 faced an effective excise tax rate of 0.3 percent. The overall effective excise tax rate was 1.1 percent.[1]

The Tax Foundation has developed a tax incidence model that utilizes data from the Bureau of Labor Statistics' *1994-95 Consumer Expenditure Survey* (CES) and from the Internal Revenue Service's study, *1995 Individual Tax Returns* (ITR). The model uses the CES data as its basis for allocating the incidence of the tax burden on individu-

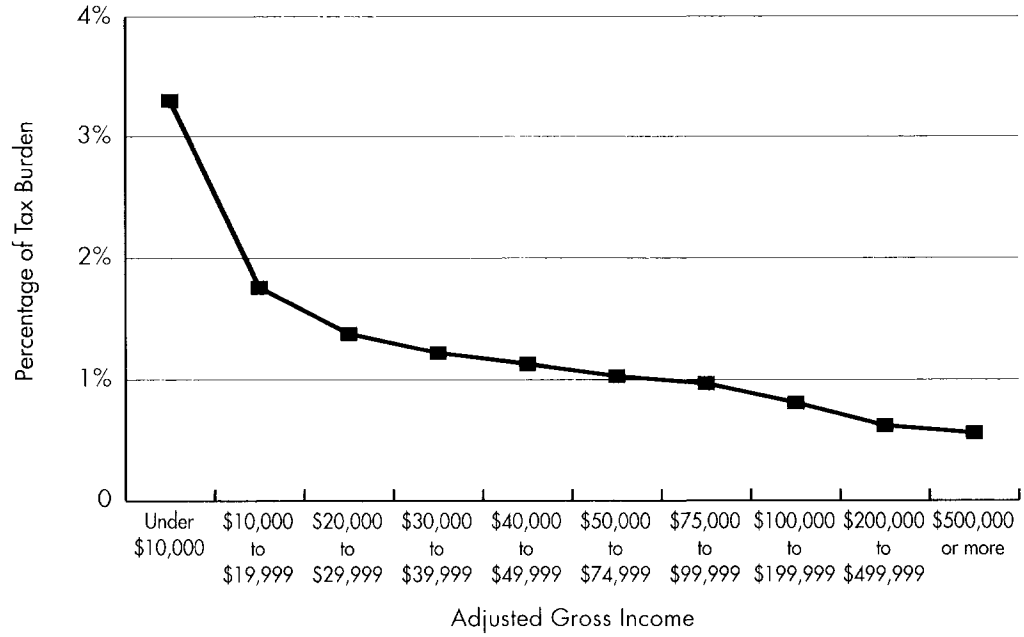
[1] "Estimates of Federal Tax Liabilities for Individuals and Families by Income Category and Family Type for 1995 and 1999," CBO Memorandum, May 1998.

als while using the ITR data as its basis for allocating the incidence of the tax burden on businesses (see Methodology).

The results of the Tax Foundation incidence model corroborate CBO's finding that the burden of federal excise taxes is regressive, though to a slightly lesser degree than CBO's analysis. *Table 1* shows 1998's $55.5 billion federal excise tax burden as distributed by type of tax. Transportation excise taxes are the single largest category of federal excise tax, and they account for almost 48 percent, or $26.5 billion, of total excise tax collections. Airport and airway excise taxes are a distant second and account for 14.4 percent of the total, followed closely by alcohol excise taxes (13.1 percent) and tobacco excise taxes (10.7 percent).

More revealing than the dollar figures are the percentages of AGI (see *Figure 2* and *Table 2*), which show how pronounced the disparity in the tax burden between low- and high-income groups is. Individuals and families who earn $50,000 or less per year pay the majority of total excise tax collections (56 percent). For individuals or families earning less than $10,000 a year, the excise tax burden represents 3.3 percent of income. In comparison, the excise tax burden on individuals or families earning between $75,000 and $100,000 represents a much lower 0.97 percent of income. The excise tax burden falls to 0.56 percent for those with AGIs over $500,000 or more. The overall average effective excise tax rate is 1.13 percent.

Figure 2
Tax Incidence of Federal Excise Taxes by Income Class
Fiscal Year 1998



Source: Tax Foundation.

II. An Overview of Federal Excise Taxes

Ultimately, the division between personal and business consumption determines how regressive an excise tax is. They range from highly regressive taxes such as those on alcohol and tobacco to slightly regressive taxes such as inland waterway excise taxes. The more the burden of an excise tax is passed forward onto personal consumption through higher prices for goods and services, the more regressive it is. The more the tax burden is passed backwards onto business consumption, where the tax burden is subsequently allocated between labor and capital income, the less regressive it is. The burden of many excise taxes is shared by business and personal consumers; these are moderately regressive.

Taxes allocated to labor income tend to have a regressive distribution, while taxes allocated to capital income tend to have a progressive distribution. As a result, excise taxes that are fully passed backwards onto businesses exhibit a slightly regressive U-shaped incidence pattern with higher incidence levels falling on the extreme lower- and upper-income groups.

The Most Regressive Excise Taxes

Alcohol Excises

Excises are imposed on both the production and distribution of alcoholic beverages. Production-oriented excise taxes are based on the occupation of the manufacturer while distribution-oriented excise taxes are based on the alcoholic content of the beverage. These taxes are highly regressive since almost all of the tax burden is shifted forward to individuals who are the prime consumers of alcohol.

Tobacco Excises

Tobacco excises are also imposed on both production and distribution. And similarly, the occupation of the manufacturer determines the production-oriented excise taxes while distribution-oriented excise taxes are based on the weight of the tobacco product. These taxes tend to be highly regressive since personal users consume most tobacco products.

The Vaccine Injury Compensation Excise

A per-dose tax is imposed on the sale of commonly prescribed vaccines. The revenue is collected into a trust fund used to finance a no-fault federal insurance system. The insurance was created to compensate individuals injured by the use of these vaccines. With almost all the burden shifted forward to personal consumers of the vaccines, this is a highly regressive tax.

Aquatic Resources Excise Taxes

These taxes apply to recreational boat users and are levied on motorboat fuel and sporting equipment. The revenue is collected into a trust fund used to finance boating safety and sport fish restoration programs. These taxes tend to be very regressive since personal users are the prime consumers of recreational fuel and equipment.

Moderately Regressive Excise Taxes

Transportation Fuels and Use Excise Taxes

The tax on gasoline (18.3 cents per gallon) and diesel fuel (24.3 cents per gallon) raises the vast majority of the revenue in this category.[2] The revenue is collected into a trust fund and used mostly to finance the construction and maintenance of the

[2] Rates do not include a 0.1 cent per gallon excise tax dedicated to the Leaking Underground Storage Tank Trust Fund.

Table 2
Federal Excise Tax Burden by Income Class as a Percentage of AGI

Adjusted Gross Income	Alcohol	Tobacco	Transportation Fuels and Use	Telephone Services	Airport and Airway	Aquatic Resources	Vaccine Injury Compensation
Under $10,000	0.411%	0.664%	1.399%	0.346%	0.358%	0.016%	0.012%
$10,000 under $20,000	0.254	0.255	0.806	0.165	0.208	0.006	0.006
$20,000 under $30,000	0.173	0.198	0.657	0.122	0.164	0.007	0.004
$30,000 under $40,000	0.140	0.150	0.601	0.104	0.156	0.008	0.002
$40,000 under $50,000	0.169	0.135	0.536	0.089	0.138	0.006	0.002
$50,000 under $75,000	0.152	0.090	0.504	0.082	0.148	0.005	0.001
$75,000 under $100,000	0.159	0.049	0.444	0.075	0.183	0.007	0.001
$100,000 under $200,000	0.104	0.032	0.390	0.068	0.156	0.005	0.001
$200,000 under $500,000	0.047	0.014	0.327	0.059	0.126	0.002	0.000
$500,000 or more	0.010	0.003	0.318	0.059	0.118	0.000	0.000
Total	0.148%	0.121%	0.541%	0.099%	0.163%	0.006%	0.002%

	Ozone Depleting Chemicals and Products	Other Federal Fund Excises	Black Lung Disability Insurance	Inland Waterway	Hazardous Substance	Oil Spill Liability	Leaking Underground Storage Tank	Total
Under $10,000	0.001%	0.065%	0.017%	0.003%	0.003%	0.001%	0.007%	3.304%
$10,000 under $20,000	0.001	0.035	0.015	0.003	0.002	0.001	0.004	1.761
$20,000 under $30,000	0.001	0.033	0.012	0.002	0.002	0.001	0.003	1.380
$30,000 under $40,000	0.001	0.036	0.012	0.002	0.002	0.001	0.003	1.218
$40,000 under $50,000	0.001	0.031	0.012	0.002	0.002	0.001	0.003	1.126
$50,000 under $75,000	0.001	0.028	0.012	0.002	0.002	0.001	0.003	1.031
$75,000 under $100,000	0.001	0.033	0.012	0.002	0.002	0.001	0.002	0.972
$100,000 under $200,000	0.001	0.028	0.013	0.002	0.002	0.001	0.002	0.806
$200,000 under $500,000	0.001	0.023	0.015	0.003	0.002	0.001	0.002	0.622
$500,000 or more	0.001	0.022	0.017	0.003	0.003	0.001	0.002	0.557
Total	0.001%	0.031%	0.013%	0.002%	0.002%	0.001%	0.003%	1.133%

Source: Tax Foundation.

nation's highway system.[3] These taxes are moderately regressive since the consumption of fuel includes both personal and business users and because the share of a person's income used to purchase fuel tends to decline as a person's income rises.

Airport and Airway Excise Taxes

The tax on airline ticket sales, levied on both domestic and international flights, generates the majority of the revenue raised from these taxes. The revenue is collected into a trust fund that is used mostly to finance the construction and maintenance of the nation's air travel infrastructure including the operation of airports and the expenses of the Federal Aviation Administration. These taxes tend to be moderately regressive since air travel includes both personal and business users.

Telephone Services Excise Tax

This excise tax imposes a 3-percent tax rate on communications services. It is mod-

[3] 4.3 cents of the excise taxes imposed on fuel consumption now go into the general fund.

erately regressive since both personal and business users purchase communication services.

Leaking Underground Storage Tank Excise Tax

This excise tax imposes an additional 0.1 cent tax on fuel consumption. The revenue is collected into a trust fund used to finance the clean-up of sites with leaking underground storage tanks. This tax tends to be moderately regressive since fuel is sold to both personal and business users.

Miscellaneous Federal Fund Excise Taxes

The remaining excise taxes have been placed into this category which include taxes on wagering, firearms, recreational equipment, foreign insurance policies, luxuries and other miscellaneous taxes. Due to the eclectic nature of this category, this analysis assumed a 50-50 division in consumption between personal and business users. As such, the model generated a moderately regressive distribution.

Slightly Regressive Excise Taxes

Inland Waterway Excise Tax

This excise tax imposes a tax on fuel consumed (24.4 cents per gallon) by a commercial waterway transportation vessel operating in specified areas. The revenue is collected into a trust fund used to fund the construction and maintenance of inland waterway infrastructure. This tax is slightly regressive since business users are the prime consumers of vessel fuel.

Ozone Depleting Chemicals and Products Excise Taxes

These excise taxes apply to the sale or use of any ozone-depleting chemical and are based on the weight of the chemical product. These taxes are slightly regressive because businesses consume almost all industrial chemical products.

Black Lung Disability Trust Fund Excise Taxes

This excise tax applies to the sale of coal from producers. The revenue is collected into a trust fund, then used to finance the payment of black-lung benefits to injured miners. This tax tends to be slightly regressive since this excise tax is paid through business-to-business transactions.

Hazardous Substance Superfund and Oil Spill Liability Excise Taxes

These excise taxes were imposed to generate revenue to be used in the clean-up of highly polluted sites around the country. Although these excise taxes have expired, proposals for their extension was included in the 1999 federal budget—hence their inclusion in this analysis. These taxes tend to be slightly regressive since business users are the prime consumers of industrial chemical products.

Conclusion

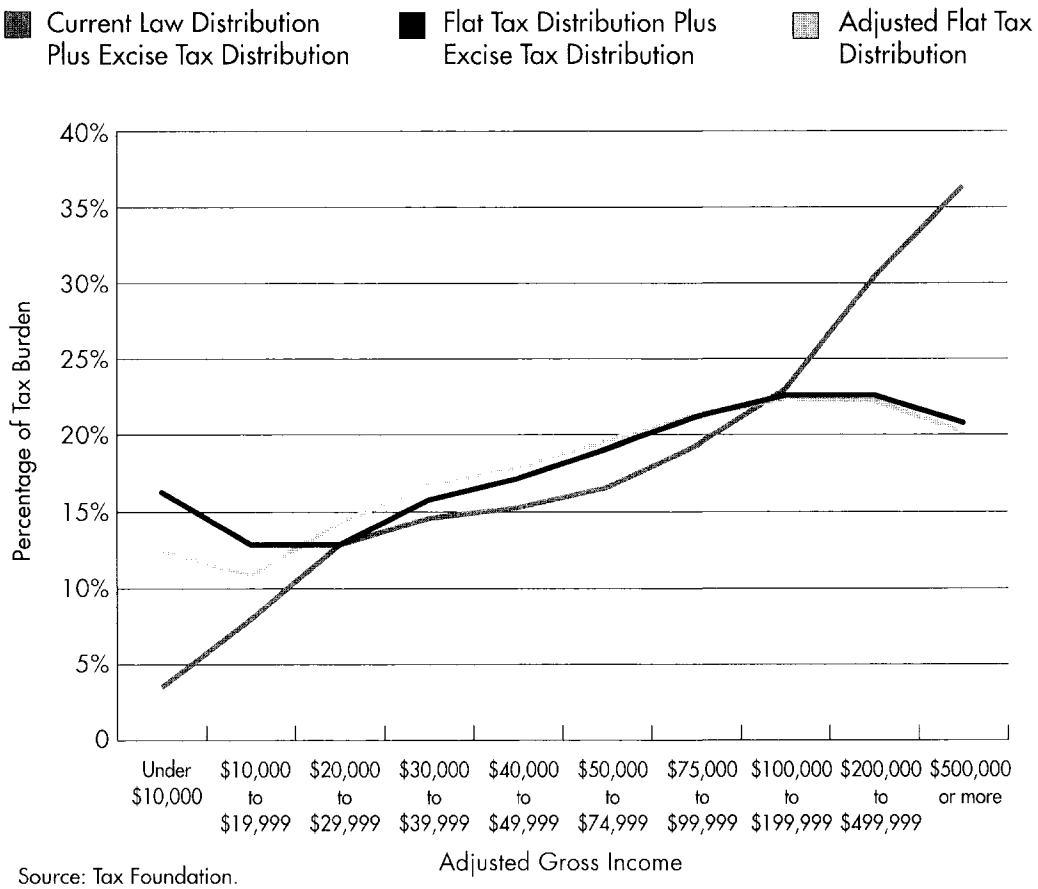
The results of this analysis, along with the CBO study, confirm that federal excise taxes are indeed regressive, hitting low-income groups with a higher federal excise tax burden than high-income groups. The primary reason for the regressivity of excise taxes is that most of the federal excise tax burden gets passed forward to the consumer through higher prices on goods and services. Since consumption as a percentage of income is greater at lower income levels, those individuals and families end up paying a disproportionate share of the tax burden.

III. Tax Reform and Excise Taxes

Many tax reform proposals have been advanced with the notion of replacing the federal personal and corporate income taxes with some form of consumption tax. Such a change could cause a reduction in the progressivity of the federal tax system. More specifically, unless some new elements are brought into the plans—for reasons discussed above—the new system is likely to increase the tax burden on low- and middle-income taxpayers.

To analyze the tax distribution of tax reform, consider the flat tax as introduced by Congressman Armey (R-TX) and Senator Shelby (R-AL). (The flat tax is chosen here because it is perhaps the best known and understood of the reform plans.) The flat tax would initially tax income at a flat, revenue-neutral rate of 20 percent, allowing for only a few basic deductions for individuals and businesses. On the individual side, taxpayers would be eligible for the following personal allowances: $11,600 for single filers, $23,200 for married filers, $14,850 for single head of household filers and $5,300 for every dependent. On the business side, taxpayers would be able to deduct several costs of business that include: the purchase of goods, services, and materials; wages, salaries and pensions; and the purchase of capital equipment, structures and land.

Figure 3
Distribution of Tax Systems Including Excise Taxes

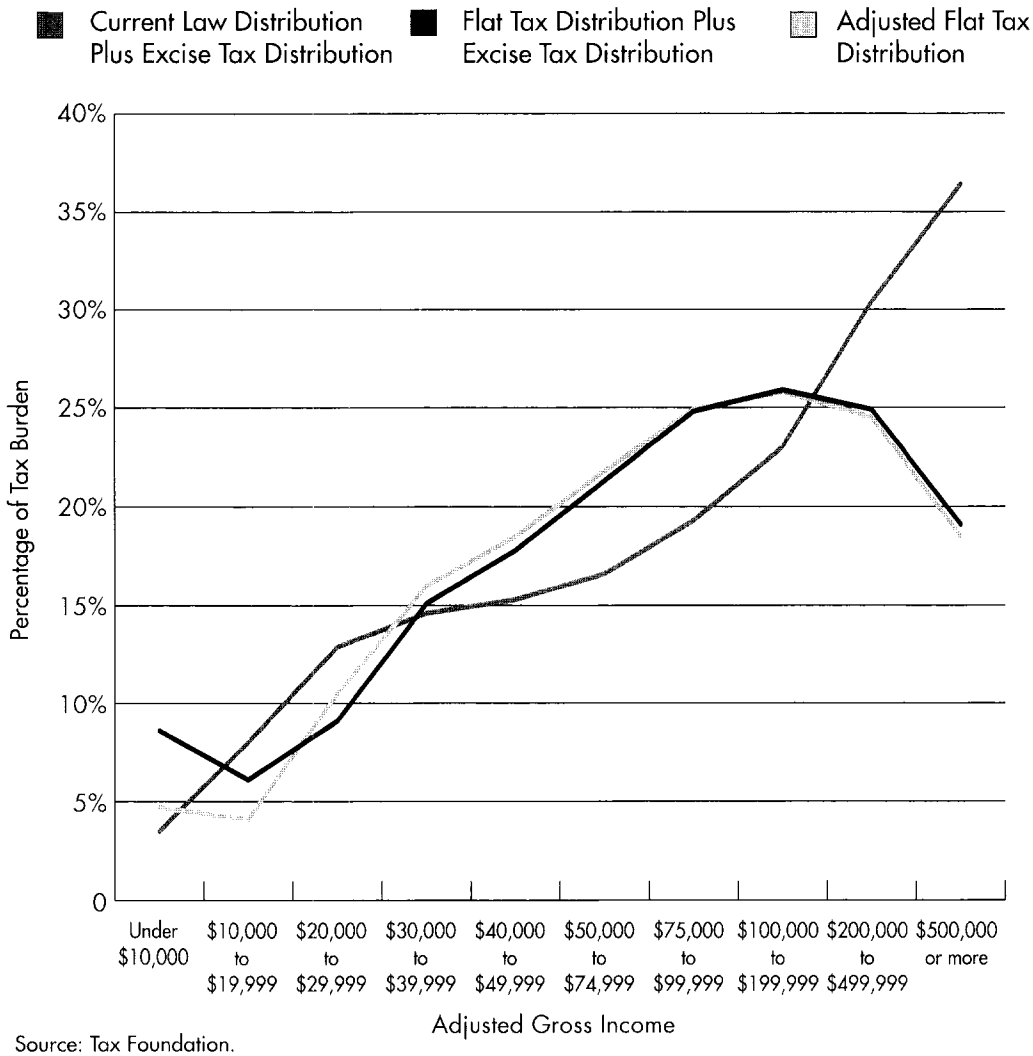


Source: Tax Foundation.

Figure 3 presents the distributions of three tax systems. The steadily rising line represents the distribution of the current-law federal personal and corporate income taxes, plus the current-law excise taxes. The other two lines on the graph represent the distribution of the flat tax in two ways. First, the distribution of the flat tax, as defined in the Armey-Shelby bill, is combined with the distribution of federal excise taxes. The resulting distribution is slightly progressive, though to a much lesser degree than the current tax system. The peculiar distribution of the flat tax plus excise taxes requires a brief explanation.

Because the flat tax excludes a large amount of income and then taxes the remainder at a single rate, one might expect the tax distribution to be flat beyond some income level. Three factors are responsible for the flat tax's distribution. The first is that all individual capital income (capital gains, dividends, interest income, etc.) is tax-exempt under the flat tax. Even for middle-in-

Figure 4
Distribution of Tax Systems Including Excise Taxes
Constant Business Tax Collections



Source: Tax Foundation.

come taxpayers, this would cause some downward movement in the effective tax rate when that rate is calculated as taxes paid over labor plus capital income. Capital income is a very large share of total income for upper-income taxpayers, hence the pronounced downward movement of the distribution at upper-income levels.

The second reason is that the flat tax as written and without any market adjustments would cause a dramatic increase in the tax burden on business. The third reason for the flat tax's peculiar tax distribution, interacting with the second, is that this large increase in the business tax burden is shifted back onto individuals. As modeled here, half of this burden is shifted back onto labor in the form of lower wages and half is shifted back onto the owners of capital. Thus the flat tax, even while excluding low-income workers from the tax system through generous personal allowances, would effectively increase the tax burden on lower-income taxpayers by its increased tax burden on businesses.

Suppose that all federal excises were eliminated as part of tax reform and that the personal allowances under the flat tax were reduced to offset the resulting revenue loss. The adjustments were made by lowering the personal allowances to: $9,500 for single filers, $18,900 for married filers, $12,120 for single head of household filers and $4,320 for every dependent. The third line in *Figure 3* shows that the adjusted flat tax significantly lowers the tax burden on low-income groups while slightly increasing it for middle-income groups.

The second distributional analysis, shown in *Figure 4,* is an attempt to examine a hypothetical flat tax after the market has adjusted to one particular aspect (the elimination of the health insurance deduction) of the flat tax. As noted above, a static analysis of the flat tax shows a significant increase in the tax on businesses. This tax increase results for two reasons: first, because flat tax proposals generally make little or no provision for tax reform transition; and second, because of the treatment of employer-provided health insurance expenses. Under current law, these expenses are deductible to the employer and are excluded from the individual's taxable income. Under the flat tax, these expenses are still excluded from the worker's taxable income, but they would no longer be deductible by the employer.

A clear market reaction can be expected from the change in tax treatment of employer-provided health insurance expenses. Employers would still be willing to administer health insurance plans for their employees, but they would be far less willing to bear the expense and, in fact, will desire to shift a higher percentage of employee compensation into still-deductible wages and salaries. For their part, employees will be indifferent between receiving their compensation in the form of wages or employer-paid health insurance.

As a result, the adjustment process would likely see businesses transform their health insurance benefits into wages (since wages are deductible under the flat tax). The shifting of taxable income was simulated by holding the flat tax's business tax receipts constant at the same level of current corporate tax receipts. The resulting shortfall in revenue was made up on the individual side through higher tax rates.

Figure 4 presents the distribution of the hypothetical flat tax in two ways. First, the flat rate on individuals was increased from 20 percent to 36.55 percent in order to make up the shortfall in business tax revenue. The resulting flat tax distribution combined with excise tax distribution is significantly more progressive than the standard Armey-Shelby flat tax shown in *Figure 3*. Second, the hypothetical flat tax is adjusted to raise the additional revenue necessary to eliminate all federal excise taxes and maintain revenue neutrality. The adjustment was made by lowering the personal allowances to: $10,400 for single filers, $20,800 for married filers, $13,340 for single head of household filers and $4,760 for every dependent. The adjusted hypothetical flat tax significantly lowers the tax burden on low-income

groups while slightly increasing it for middle-income groups.

Methodology

The tax incidence of the federal excise tax burden was calculated using a tax allocation model that distributes the tax burden based on whether or not the tax is: (1) passed forward to individuals via their consumption of goods and services; (2) passed backwards to businesses; or (3) some combination of the first two. The model uses data from the Bureau of Labor Statistics' *1994-95 Consumer Expenditure Survey* (CES) and from *1995 Individual Tax Returns* (ITR) published by the Internal Revenue Service. The data was adjusted to conform with estimated 1998 federal excise tax collections contained in the FY 1999 Budget of the United States Government published by the Office of Management and Budget.

For individuals, the model uses the CES data as its basis for allocating the incidence of the tax burden on personal consumption. Due to limitations in the CES data, the model assumes that consumption remains constant past the $100,000 earning level. The validity of this assumption depends on the nature of the goods subject to excise taxes. Consumption of many products has an upper limit regardless of income. For instance, a heavy smoker earning over $500,000 a year is not likely to smoke more cigarettes than a heavy smoker earning $30,000 a year. Further compounding this effect is the fact that cigarette excise taxes are levied on the weight of the tobacco product and not the price. This analysis assumes that this bound holds for other excise taxes as well.

For businesses, the model uses the ITR data as its basis for allocating the incidence of the tax burden on business consumption. While economists generally agree that the burden of business taxation is ultimately passed on to individuals, there is little consensus on whether or not the tax burden falls more heavily on labor (salary and wages) or capital income (interest and dividends). As a result, the business allocator imputes the excise tax burden paid by businesses to individuals by conservatively assuming a 50-50 allocation of the burden to labor and capital income.

Ultimately, the division between personal and business consumption determines the range of regressivity of any given excise tax—varying from highly regressive taxes such as alcohol and tobacco excise taxes to slightly regressive taxes such as inland waterway excise taxes. Highly regressive excise taxes result from being passed forward onto personal consumption through higher prices for goods and services. Moderately regressive excise taxes result from being passed, in varying degrees that depend on the nature of the tax, to both personal and business consumption. Slightly regressive excise taxes result from being passed backwards onto business consumption, where the tax burden is subsequently allocated between labor and capital income. Taxes allocated to labor income tend to have a regressive distribution, while taxes allocated to capital income tend to have a progressive distribution. As a result, excise taxes that are fully passed backwards onto businesses exhibit a slightly regressive U-shaped incidence pattern with higher incidence levels falling on the extreme lower- and upper-income groups.

The tax incidence of the flat tax and the current tax system was calculated using a tax allocation model based on the ITR data. Since actual flat tax receipts are unknown, the model first constructed a distribution of the applicable tax base for both individuals and businesses. Simply multiplying the tax base by the single 20 percent rate yielded an estimate of tax receipts and, subsequently, the tax burden. In addition, the business allocator imputes the tax burden paid by businesses to individuals by conservatively assuming a 50-50 allocation of the burden to labor and capital income.

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