

# On the Elimination of Gasoline Tax Deductibility and the Distribution of Income

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## ABSTRACT

In 1979, the deduction for state and local gasoline taxes on income tax returns was eliminated. To determine the resulting impact on income distribution, the change in net gasoline tax incidence must be determined. Conventionally, the incidence of a (gross) gasoline tax has been calculated by noting the relationship between income and purchases of motor fuel. Most studies have not explicitly included consideration of the impact of allowing state and local gasoline taxes to be deducted; however, one study concluded that the impact of deductibility is to make the fuel tax less regressive. Using data available from the Bureau of Labor Statistics (U.S. Department of Labor) and the Internal Revenue Service (U.S. Department of the Treasury), the opposite was found. This resulted from the positive correlation of income with three factors: marginal tax rate, percentage of taxpayers who itemize deductions, and amount of gasoline tax paid. It is concluded in this paper that the elimination of deductibility has made the gasoline tax less regressive.

Effective for taxable years beginning in 1979, the Revenue Act of 1978 repealed the itemized deduction for state and local gasoline taxes on federal individual income tax returns. This was largely in response to the mood of conservation and the concern over dependence on foreign oil spawned by the energy crisis of the 1970s. The purpose of this paper is to examine the impact of this repeal on the net incidence of a motor fuel tax.

In most studies of excise tax incidence it is assumed that the final incidence is similar to the initial distribution of liabilities (statutory incidence) (1-3). This conclusion may be modified in some market structures and under some cost conditions. In general, tax increases will raise costs and the relative price of the taxed product, which will, in turn, cause resources to move out of the industry thus further raising prices. To the extent that labor and capital can receive approximately the same income in other industries, the entire tax may be shifted to buyers in the form of higher prices.

Such complete shifting of an excise tax may be questioned if different geographic regions have different tax rates. This could alter consumer purchasing patterns and the ability of a firm to raise prices for competitive reasons. However, this problem can be avoided empirically if data on actual tax payments by income level are available. If only the repeal of gasoline tax deductibility is examined, however, it can be safely assumed that differential fuel tax rates would not change and therefore would not affect purchasing patterns.

Approximately 35 percent of motor fuel taxes are paid by businesses. The burden of this portion of gasoline taxes will depend on resultant changes in prices, profits, and wages. Because the emphasis in this paper is on individual tax payments, business-based fuel purchases will be ignored. The incidence of a gasoline tax could therefore be calculated by noting how gasoline purchases (and gasoline taxes) vary by income level.

## PREVIOUS STUDIES

A few studies have included consideration of a motor fuel tax incidence. In most of these studies, how-

ever, this tax has been combined with other goods that are either selectively taxed or combined with all sales and excise taxes (2-4). One study that included separate calculations on gasoline tax incidence was conducted by Freeman (5) using 1972 household data provided by the Brookings Institution. Using an assumed tax of \$0.20 per gallon (although the results would, in a relative sense, be representative of any tax that would be proportional to use), an incidence pattern was obtained that was slightly progressive except at the extremes of the income distribution where there was regression. A second study, by Zupnick (6), examined the incidence of a tax-induced \$0.10-per-gallon price increase. Average fuel economy by model year was combined with average miles driven by income group and with ownership of each model year by income class. The result was progressive in the lower to middle income brackets, but was regressive in the upper income bracket. Unfortunately, the type of data used by Zupnick are no longer being collected. None of these endeavors included consideration of deductibility impact on incidence.

The only study that has included specific consideration of deductibility was conducted by Due (7). By using Internal Revenue Service (IRS) statistics, the distributional pattern of state and local gasoline tax deductions was explored. For 1973, it was estimated that such deductions fell continuously from 2.3 percent of adjusted gross income (AGI) in the lowest income bracket to negligible amounts (as a percentage of AGI) in the highest income bracket. He reexamined this result by using Brookings Institution data on tax savings from deductions as a percentage of tax paid in the absence of deductions, by income level. The gasoline tax deduction again tended to fall in percentage terms as income levels rose, although the middle income brackets displayed a proportional range. Due concluded that state and local gasoline taxes are a progressive deduction that reflects a declining percentage of taxable expenditures relative to income. A deduction was regarded as progressive if the tax savings from it constituted a lower percentage of income in high income groups than in low income groups; that is, the deduction increased the progressivity of the income tax. The implication is that the removal of deducti-

bility would make the distribution of income less equal.

However, there is a serious limitation in Due's analysis: as noted by the author, the sample was limited to only those taxpayers who itemized deductions on their tax returns. Less than 2 percent of all taxpayers in the lowest income bracket deducted gasoline taxes. Those in this bracket who did itemize would be expected to have substantial individual deductions because most taxpayers at that income level took the standard deduction. On the other hand, almost 80 percent of the highest income bracket taxpayers itemized deductions. Although it is true that for those who itemized deductions, the amount deducted as a percentage of income decreased as income level increased, the percentage of those who itemized deductions increased strongly as income level increased. Considering the population as a whole, the overall benefits of itemizing accrued largely to higher income taxpayers. As shown in the following paragraphs, deductibility made the gasoline tax more regressive; removal of deductibility made the tax system less regressive.

#### ANALYSIS

To determine the incidence of a state and local fuel tax after deductibility, data on gasoline tax paid by income bracket must be matched with data on gasoline tax itemized by income bracket. This necessitates the merging of two data sources as follows.

Motor fuel tax paid by income level can be calculated from the Bureau of Labor Statistics report, consumer Expenditure Survey (CES) (8,9). However, because the CES does not report on tax deductions, the average itemized gasoline tax deduction per tax return by income level must be obtained from IRS statistics. With knowledge of the marginal tax rate per income level, the reduction in federal income tax due to itemization is available. The net incidence of a gasoline tax can thus be computed and the impact of deductibility repeal examined.

One major problem in merging these two data sets is that they use somewhat different definitions of income. The CES uses a concept called family income, which is broader than the IRS concept of AGI. Because they are not identical, those households in a CES income bracket may not be the same group as those in the same bracket using AGI. Family income includes most of AGI, plus pensions, unemployment and workers' compensation, and cash transfer payments less certain occupational expenses. The compatibility problem will be most evident in the lower income brackets, where transfer payments and unemployment compensation are proportionately larger. A family with a low AGI in this situation would have a somewhat higher family income.

Two options exist. The first would be to manipulate the two data sets by making adjustments to make them more compatible. However, this may result in simply substituting one set of problems for another. The chosen option was to assume that the two data

sets are compatible and note that this will introduce some inaccuracy or bias in the analysis. As concluded in the following, this problem will not materially affect the results.

The first step in the analysis is to calculate incidence ignoring the impact of itemizing. This would reflect incidence if deductibility was not allowed and can be determined by noting state and local gasoline tax paid by income level. The CES uses 12 income brackets, ranging from under \$3,000 to over \$25,000. As documented in Table 1, gross motor fuel expenditures (including taxes paid) rose from an average of \$108 for the lowest income bracket to \$635 for the highest income bracket from 1972 to 1973.

To determine how much of the gross expenditures represent the gasoline tax, it is noted that from 1972 to 1973, the weighted average of state and local motor fuel taxes was about \$0.75 per gallon (10). Coupled with an average gasoline price of \$0.40 per gallon, state and local taxes represented about 18.75 percent of gross spending. Multiplying the gross expenditures by 18.75 percent yields tax payments and the results are displayed in row 2 of Table 1. The families in the lowest income bracket paid an average of \$20 in state and local gasoline taxes, whereas those in the highest income bracket paid an average of \$119.

Using the mean income within each bracket (row 3), the amount of gasoline tax paid as a percentage of income is calculated (row 4). This percentage falls from 1.2 percent of income in the lowest bracket to 0.3 percent in the highest. These numbers can be normalized by using the concept of relative incidence. The highest income groups' fuel tax payments as a percentage of income is assigned an index value of 1.0; the other income brackets are scaled accordingly. On this basis, the lowest income group pays 3.7 times more gasoline tax as a percentage of income than does the highest income group--a regressive result. Most of the regression occurs between the first two and the last two income brackets. The tax is roughly proportional for a wide income range.

There is some discrepancy between the previously cited studies and the results presented in Table 1. This may be partly because of the income brackets chosen for these studies, which do not match the income brackets of Table 1. Nevertheless, the regression at low and high income levels is consistent with both Freeman's (5) and Zupnick's (6) findings. The results of Musgrave et al. (2) agree with the regressive impact at higher income levels.

Actually, relative incidence could have been calculated by simply using data on gross gasoline expenditures without separating out the tax. Because gasoline taxes would be proportional to quantity purchased and hence expenditures (being unit taxes), the relative incidence for either expenditures or taxes on expenditures would be the same. That is, comparing total expenditures on gasoline as a percentage of income for each income bracket relative to that of the highest income bracket would yield

TABLE 1 Gross Gasoline Expenditures and Incidence, 1972-1973 (8)

	Family Income (\$000s)											
	<3	3-4	4-5	5-6	6-7	7-8	8-10	10-12	12-15	15-20	20-25	>25
1. Gross expenditures (\$)	108	153	193	237	270	306	363	418	482	544	614	635
2. State and local gasoline tax (\$)	20	29	36	45	51	57	68	78	90	102	115	119
3. Mean income (\$)	1,713	3,491	4,494	5,482	6,478	7,486	8,970	10,952	13,404	17,237	22,118	37,661
4. Gasoline tax (% of income)	1.19	0.82	0.80	0.81	0.78	0.77	0.76	0.72	0.67	0.59	0.52	0.32
5. Relative incidence	3.7	2.6	2.5	2.5	2.4	2.4	2.4	2.3	2.1	1.8	1.6	1.0

the same relative pattern as the distribution of gasoline tax burden. However, because the deduction value of motor fuel tax itemization was not uniform by income level, the tax paid needs to be separated out for later adjustments.

An initial concern relating to state and local tax itemization on federal income tax returns is the determination of who receives the most benefit. That is, most taxpayers use the standard deduction, which can be taken in lieu of itemizing. A certain amount of the standard deduction implicitly includes state and local tax payments; however, it is impossible to determine how much. In addition, nonitemizers receive no additional benefit for additional expenditures of taxable goods. In other words, the only beneficiaries at the margin are those who itemize. For this group, the corresponding reduction in income taxes would lower the (net) gasoline tax paid for the purpose of calculating incidence. It is assumed that the full amount of gasoline taxes paid represented a deduction by those who itemized. That is, the sum of all deductions except gasoline tax is assumed to be larger than the standard deduction.

The first row of Table 2 displays the average dollar amount of gasoline tax paid per tax return as calculated by the IRS (11,12). It consisted of the average gasoline tax deducted by those who itemized, weighted by the percentage of all returns from those households that itemized. For example, in the lowest income bracket (\$0-\$3,000) the average gasoline tax paid by those who itemized was around \$60. (This amount is substantially higher than the corresponding figure determined from CES data for all families. As mentioned previously, those families who do itemize would be expected to have substantial individual deductions.) But because less than 2 percent of families in this income bracket itemized, the average per return was only \$0.76. Separate calculations were made for 1972 and 1973, and the results averaged out to be identical to the CES data for the corresponding period.

Each dollar of gasoline tax deducted lowered income tax liability. To approximate this amount, the average income level within each tax bracket was calculated from IRS data and the marginal tax rate associated with this amount is noted in row 2 of Table 1. Because the overwhelming majority of tax returns that contained itemizations were filed jointly (84 percent), the joint marginal tax rate was used. In addition, the average taxable income within each AGI bracket was calculated for itemizers only because the tax benefit occurred to them only.

The third row is the average income tax savings per return, obtained by multiplying the average gas-

oline tax deducted by the marginal tax rate. For example, the highest income bracket taxpayer averaged \$36.52 in income tax savings (\$93.64 average deduction multiplied by 0.39). As expected, the value of itemizing rose significantly with income. This occurred because the percentage of taxpayers itemizing, the marginal tax rates, and the amount of gasoline taxes paid were all positively related to income. The final row suggests that the impact of a gasoline tax deduction was regressive because the tax savings constituted a higher percentage of income, as income levels rose. This result is exactly the opposite of that found by Due (7).

To calculate net incidence, gasoline taxes paid at each income level (from Table 1, row 2) are reduced by the average income tax savings at each level (from Table 2, row 3); the results are displayed as net taxes paid in the first row of Table 3. The second row displays net taxes paid as a percentage of income; it is seen that they remained the same for the lower income brackets, but declined significantly in the higher income brackets (compared with gross fuel tax incidence). Relative incidence emphasizes this result. Tax payments for families in the lowest income bracket as a percentage of income went from 3.7 times as much as the highest income bracket ignoring deductibility, to 5.4 times as much including deductibility. Thus, motor fuel tax deductibility increases the regressive nature of this tax. Alternatively, the existence of itemized deductions makes the individual income tax less progressive.

#### QUALIFICATIONS

The CES data reflect expenditure patterns and thus incidence from 1972 to 1973. If the distribution of these patterns has changed, tax incidence could change. However, updated CES results are not now available. In addition, the use of a single year's income in calculating incidence can be criticized as being unrepresentative of a longer-run view of income [e.g., Davies (13)]. Unfortunately, no data are readily available to correct this. As mentioned previously, the data and results are based on a national aggregate sample. Individual state or local incidence could differ because of variations in tax rates and expenditures. Finally, the merging of the two data bases could cause inaccuracy in the results. As mentioned previously, the bias is most likely in the lower income brackets. However, because the impact of deductibility appears minor in these brackets, the problem does not appear serious.

TABLE 2 Gasoline Tax Deductions, Marginal Tax Rates, and Tax Savings, 1972-1973 (10)

	Adjusted Gross Income (\$000s)											
	<3	3-4	4-5	5-6	6-7	7-8	8-10	10-12	12-15	15-20	20-25	>25
1. Average deduction per return (\$)	0.76	4.38	7.87	12.50	17.83	23.89	34.26	44.98	54.67	76.84	96.70	93.64
2. Marginal tax rate (%)	14	14	15	15	16	17	19	19	19	22	25	39
3. Tax savings per return (\$)	0.11	0.61	1.27	1.88	2.85	4.06	6.51	8.55	10.39	16.90	24.18	36.52
4. Tax savings (% AGI)	0.006	0.017	0.028	0.034	0.044	0.054	0.073	0.078	0.078	0.077	0.098	0.097

TABLE 3 Incidence of (Net) Gasoline Tax, 1972-1973

	Family Income (\$000s)											
	<3	3-4	4-5	5-6	6-7	7-8	8-10	10-12	12-15	15-20	20-25	>25
1. Net state and local gasoline tax (\$)	20	28	35	43	48	53	62	70	80	85	93	83
2. Net tax (% of income)	1.18	0.80	0.78	0.78	0.74	0.71	0.69	0.64	0.60	0.49	0.41	0.22
3. Relative incidence	5.4	3.6	3.5	3.5	3.4	3.2	3.1	2.9	2.7	2.2	1.9	1.0

## CONCLUSIONS

Given the qualifications, the results should be viewed with some caution. Nevertheless, although the numbers may not be exact, it is clear that by allowing state and local gasoline taxes to be deducted on federal income tax returns, coupled with the positive correlation between income and marginal tax rates, and purchases of gasoline and percentage of taxpayers who itemize, a more regressive tax would result. This is the opposite conclusion to that reached by Due.

The implication of this result is that the 1979 removal of the deductibility of state and local motor fuel taxes made the net incidence of the tax the same as the gross incidence. That is, the tax became less regressive, making the distribution of income somewhat more equal. Although this was not a stated reason for the policy enactment, it is, nevertheless, a significant by-product.

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