

Historical Effective Federal Tax Rates: 1979 to 2005

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The following tables update the series of historical effective tax rates estimated by the Congressional Budget Office (CBO) by providing values for an additional calendar year—2005.¹ The tables show effective tax rates for the four largest sources of federal revenues—individual income taxes, social insurance (payroll) taxes, corporate income taxes, and excise taxes—as well as the total effective rate for the four taxes combined. The tables also present average pretax and after-tax household income; counts of households; and shares of taxes, income, and households for each fifth (quintile) of the income distribution and for the top percentiles of households.

Effective Tax Rates in 2005

Compared with its rate in 2004, the overall effective tax rate rose by 0.4 percentage points in 2005: to 20.5 percent from 20.1 percent (see Summary Table 1). Increases in both the effective individual income and corporate income taxes contributed to the change; partially offsetting those increases was a decline in the effective social insurance tax rate. The overall effective excise tax rate was unchanged.

The effective individual income tax rate rose by 0.3 percentage points. The applicable tax law was virtually unchanged from 2004 to 2005, so that change primarily reflects changes in the underlying tax base. Part of that increase comes from real bracket creep—the tendency of effective income tax rates to rise as income grows faster than inflation, causing more income to be taxed in higher brackets. An upward shift in the income distribution also contributed to the increase. The rise in effective tax rates was lower than otherwise would have been expected, however, because income from capital gains, which faces lower tax rates than most other income, grew more rapidly than other forms of income, driving down the effective rate.

The effective corporate income tax rate also rose, by 0.5 percentage points, reflecting rapid growth in corporate profits and the taxes owed on those profits.

In contrast, the effective social insurance tax rate fell by 0.4 percentage points, partially offsetting the increases in the other tax rates. Wage income, the base for that tax, grew more slowly than nonwage income, lowering the effective tax rate. And the share

1. Effective tax rates equal the amount of tax liability divided by income. See Congressional Budget Office, *Effective Federal Tax Rates, 1979-1997* (October 2001) and *Effective Federal Tax Rates, 1997 to 2000* (August 2003), as well as Web-only updates that extend the period of analysis through 2004.

of wages earned above the Social Security taxable maximum also increased, further pushing down the effective payroll tax rate.

Methodology

The Congressional Budget Office uses a multistep methodology to produce its estimates of the distribution of income and taxes. The Current Population Survey (CPS) and the Statistics of Income (SOI) are the primary sources of data for CBO's estimates of population and household income. CBO estimates federal taxes for each household on the basis of income, demographic characteristics, and existing laws in the relevant year. CBO then groups the households into quintiles on the basis of their income and tabulates the income and taxes for each quintile.

Sources of Data

CBO's analysis of effective tax rates draws information on income from two primary sources. The SOI, produced by the Internal Revenue Service, reports much of the information that taxpayers provide on their individual income tax returns. The March supplement to the Bureau of the Census's CPS contains survey data on both the demographic characteristics and income of a large sample of households.

CBO statistically matches each SOI record to a corresponding CPS record on the basis of demographic characteristics and income. The matching process begins by dividing all records in both the CPS and the SOI into demographic subgroups on the basis of household composition, including the marital status of the head of the household, the number of children, and the number of elderly members. Because income measures in the SOI and CPS are not directly comparable, CBO uses a regression equation for each demographic subgroup (which is estimated using data from the SOI) to calculate a predicted income for each record for each source of data. All CPS and SOI records are ranked by predicted income within demographic subgroups, and the two files are then matched, starting at the top of the income distribution: the SOI record with the highest predicted income is matched with the CPS record with the highest predicted income—after their sample weights are taken into account.² The SOI record with the next highest predicted income is then matched with the corresponding CPS record, and the process is repeated until all SOI records in the demographic subgroup have been paired with CPS records.

Each pairing results in a new record that takes on the demographic characteristics of the CPS record and the income reported in the SOI. Some types of income, such as most transfer payments and in-kind benefits, appear only in the CPS; values for those items are drawn directly from that survey. Because not all households have to file tax

2. Because both the SOI and the CPS are stratified samples, each record is assigned a sample weight indicating its relative size in making up the entire population represented by the database. The matching process takes account of those weights by effectively considering each record to be replicated by the number of times indicated by its weight.

returns, some households do not appear in the SOI; thus, the CPS reflects more households. After all SOI records have been matched to CPS records, the remaining survey records are recorded as nonfilers, and the income values are taken directly from the CPS. CBO then estimates the tax liability for each matched record.

Who Pays Taxes?

CBO's analysis of effective tax rates assumes that households bear the burden of the taxes that they pay directly, such as individual income taxes (including taxes on interest, dividends and capital gains) and employees' share of payroll taxes. The analysis assumes—as do most economists—that employers' share of payroll taxes is passed on to employees in the form of lower wages than would otherwise be paid. Therefore, the amount of those taxes is included in employees' income, and the taxes are counted as part of employees' tax burden. CBO estimates payroll taxes and individual income taxes, including refundable tax credits, with a tax “calculator” that applies the tax law for the relevant year to the tax return data from the SOI.

Excise taxes are assumed to fall on households according to their consumption of taxed goods (such as tobacco and alcohol). Excise taxes that affect intermediate goods, which are paid by businesses, are attributed to households in proportion to their overall consumption. CBO assumes that each household spends the same on taxed goods as similar household with comparable income in the Consumer Expenditure Survey.

Far less consensus exists about how to attribute corporate income taxes (and taxes on capital income generally). In this analysis, CBO assumes that corporate income taxes are borne by owners of capital in proportion to their income from interest, dividends, capital gains, and rents. (The shares of various tax liabilities borne by different income groups in 2004 and 2005 are shown in Summary Table 2.) Over the long term, however, some models suggest that at least part of the burden falls on labor income.³

Measuring Income

This analysis focuses on households' adjusted pretax comprehensive income. That measure includes all cash income (both taxable and tax-exempt), taxes paid by businesses (which are imputed to individuals, as noted above), employees' contributions to 401(k) retirement plans, and the value of income received in-kind from various sources (such as employer-paid health insurance premiums, Medicare and Medicaid benefits, and food stamps). The calculations use the Census Bureau's fungible value measure to determine the cash equivalent of in-kind government transfer payments.

Income Quintiles

In a series of steps, CBO combines the income and taxes of households to create tables showing distributions of income and taxes among income groups and types of households. First, CBO adjusts for household size by dividing household income by the

3. See, for example, William C. Randolph, *International Burdens of the Corporate Income Tax*, CBO Working Paper 2006-09 (August 2006).

square root of household size, to take account of the differing needs of larger and smaller households.⁴ In the next step, CBO ranks households by their (adjusted) income and groups them in quintiles (fifths of the distribution). The quintiles contain equal numbers of people, but because households vary in size, quintiles generally contain unequal numbers of households. CBO then tabulates overall income and taxes for each quintile as well as for smaller groupings at the top of the distribution.

Types of Households

Separate tables in the appendix show effective tax rates and income for three different types of households: those with members under age 18 (households with children), those headed by a person age 65 or older and with no member under age 18 (elderly childless households), and all others (nonelderly childless households). Those tables group households into quintiles based on their position in the population-wide income distribution, not the sub-population distribution, so households within a sub-population need not be evenly spread across the income quintiles.

Detailed Tables for 1979 to 2005

The following tables are available on CBO's Web site in pdf (portable document format) and spreadsheet format.

■ All Households

- Table 1A. Effective Federal Tax Rates
- Table 1B. Shares of Federal Tax Liabilities
- Table 1C. Number of Households, Average Pretax and After-Tax Income, Shares of Pretax and After-Tax Income, and Income Category Minimums

■ Households with Children

- Table 2A. Effective Federal Tax Rates
- Table 2B. Shares of Federal Tax Liabilities
- Table 2C. Number of Households, Average Pretax and After-Tax Income, Shares of Pretax and After-Tax Income, and Income Category Minimums

■ Elderly Childless Households

- Table 3A. Effective Federal Tax Rates

4. CBO used adjusted income only to rank households in the income distribution; the values for average income in Summary Table 1 and Tables 1C, 2C, 3C, and 4C of the appendix are based on income unadjusted for household size.

- Table 3B. Shares of Federal Tax Liabilities
- Table 3C. Number of Households, Average Pretax and After-Tax Income, Shares of Pretax and After-Tax Income, and Income Category Minimums
- Nonelderly Childless Households
 - Table 4A. Effective Federal Tax Rates
 - Table 4B. Shares of Federal Tax Liabilities

Summary Table 1.**Effective Federal Tax Rates, 2004 and 2005**

| Income Category | Millions of Households | Average Income (2005 dollars) | | Effective Tax Rate (Percent) | | | | |
|------------------|------------------------|-------------------------------|-----------|------------------------------|-------------------------|------------------------|------------------------|--------------|
| | | Pretax | After-Tax | All Federal Taxes | Individual Income Taxes | Social Insurance Taxes | Corporate Income Taxes | Excise Taxes |
| | | | | | | | | |
| 2004 | | | | | | | | |
| Lowest Quintile | 23.6 | 15,800 | 15,100 | 4.3 | -6.2 | 8.0 | 0.4 | 2.3 |
| Second Quintile | 21.9 | 37,200 | 33,500 | 9.9 | -0.9 | 9.1 | 0.4 | 1.3 |
| Middle Quintile | 22.0 | 58,000 | 49,800 | 14.1 | 3.0 | 9.5 | 0.6 | 1.1 |
| Fourth Quintile | 22.3 | 84,500 | 69,900 | 17.3 | 5.9 | 9.7 | 0.8 | 0.9 |
| Highest Quintile | 23.0 | 214,500 | 160,400 | 25.2 | 13.9 | 6.6 | 4.2 | 0.5 |
| All Quintiles | 113.3 | 81,300 | 64,900 | 20.1 | 8.7 | 8.0 | 2.6 | 0.8 |
| Top 10% | 11.6 | 307,800 | 224,400 | 27.1 | 15.9 | 5.4 | 5.5 | 0.4 |
| Top 5% | 5.8 | 457,400 | 326,100 | 28.7 | 17.6 | 4.1 | 6.7 | 0.3 |
| Top 1% | 1.2 | 1,299,300 | 891,600 | 31.4 | 19.7 | 1.9 | 9.5 | 0.2 |
| 2005 | | | | | | | | |
| Lowest Quintile | 24.1 | 15,900 | 15,300 | 4.3 | -6.5 | 8.3 | 0.4 | 2.1 |
| Second Quintile | 22.0 | 37,400 | 33,700 | 9.9 | -1.0 | 9.2 | 0.5 | 1.3 |
| Middle Quintile | 22.2 | 58,500 | 50,200 | 14.2 | 3.0 | 9.5 | 0.7 | 1.0 |
| Fourth Quintile | 22.6 | 85,200 | 70,300 | 17.4 | 6.0 | 9.7 | 1.0 | 0.8 |
| Highest Quintile | 23.1 | 231,300 | 172,200 | 25.5 | 14.1 | 6.0 | 4.9 | 0.5 |
| All Quintiles | 114.5 | 84,800 | 67,400 | 20.5 | 9.0 | 7.6 | 3.1 | 0.8 |
| Top 10% | 11.7 | 339,100 | 246,300 | 27.4 | 16.0 | 4.8 | 6.1 | 0.4 |
| Top 5% | 5.8 | 520,200 | 369,800 | 28.9 | 17.6 | 3.5 | 7.4 | 0.3 |
| Top 1% | 1.1 | 1,558,500 | 1,071,500 | 31.2 | 19.4 | 1.7 | 9.9 | 0.2 |

Source: Congressional Budget Office.

Notes: Income categories are defined by ranking all people by their comprehensive household income adjusted for household size--that is, divided by the square root of the household's size. (A household consists of the people who share a housing unit, regardless of their relationships.) Quintiles, or fifths, of the income distribution contain equal numbers of people.

Comprehensive household income equals pretax cash income plus income from other sources. Pretax cash income is the sum of wages, salaries, self-employment income, rents, taxable and nontaxable interest, dividends, realized capital gains, cash transfer payments, and retirement benefits plus taxes paid by businesses (corporate income taxes and the employer's share of Social Security, Medicare, and federal unemployment insurance payroll taxes) and employee contributions to 401(k) retirement plans. Other sources of income include all in-kind benefits (Medicare, Medicaid, employer-paid health insurance premiums, food stamps, school lunches and breakfasts, housing assistance, and energy assistance). Households with negative income are excluded from the lowest income category but are included in the totals.

Summary Table 2.**Shares of Federal Tax Liabilities, 2004 and 2005**

| Income Category | Percentage of Households | Share of Income | | Share of Tax Liabilities | | | | |
|------------------|--------------------------|-----------------|-----------|--------------------------|-------------------------|------------------------|------------------------|--------------|
| | | Pretax | After-Tax | All Federal Taxes | Individual Income Taxes | Social Insurance Taxes | Corporate Income Taxes | Excise Taxes |
| 2004 | | | | | | | | |
| Lowest Quintile | 20.8 | 4.1 | 4.9 | 0.9 | -2.9 | 4.1 | 0.6 | 11.1 |
| Second Quintile | 19.4 | 8.9 | 10.0 | 4.4 | -0.9 | 10.1 | 1.5 | 14.9 |
| Middle Quintile | 19.4 | 13.9 | 14.9 | 9.7 | 4.7 | 16.5 | 3.0 | 18.4 |
| Fourth Quintile | 19.7 | 20.4 | 21.2 | 17.6 | 13.8 | 24.9 | 6.5 | 22.1 |
| Highest Quintile | 20.3 | 53.5 | 50.1 | 67.2 | 85.3 | 44.3 | 87.3 | 33.1 |
| All Quintiles | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Top 10% | 10.3 | 38.9 | 35.5 | 52.5 | 70.8 | 26.2 | 81.4 | 20.2 |
| Top 5% | 5.2 | 29.0 | 25.9 | 41.4 | 58.5 | 14.8 | 74.7 | 12.6 |
| Top 1% | 1.0 | 16.3 | 14.0 | 25.4 | 36.7 | 4.0 | 59.5 | 4.8 |
| 2005 | | | | | | | | |
| Lowest Quintile | 21.1 | 4.0 | 4.8 | 0.8 | -2.9 | 4.3 | 0.6 | 11.1 |
| Second Quintile | 19.2 | 8.5 | 9.6 | 4.1 | -0.9 | 10.1 | 1.4 | 14.4 |
| Middle Quintile | 19.3 | 13.3 | 14.4 | 9.3 | 4.4 | 16.7 | 3.0 | 18.1 |
| Fourth Quintile | 19.7 | 19.8 | 20.6 | 16.9 | 13.1 | 25.1 | 6.2 | 21.9 |
| Highest Quintile | 20.2 | 55.1 | 51.6 | 68.7 | 86.3 | 43.6 | 87.8 | 34.1 |
| All Quintiles | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Top 10% | 10.2 | 40.9 | 37.4 | 54.7 | 72.7 | 25.8 | 81.6 | 21.2 |
| Top 5% | 5.1 | 31.1 | 27.8 | 43.8 | 60.7 | 14.4 | 74.9 | 13.5 |
| Top 1% | 1.0 | 18.1 | 15.6 | 27.6 | 38.8 | 4.0 | 58.6 | 5.5 |

Source: Congressional Budget Office.

Notes: Income categories are defined by ranking all people by their comprehensive household income adjusted for household size--that is, divided by the square root of the household's size. (A household consists of the people who share a housing unit, regardless of their relationships.) Quintiles, or fifths, of the income distribution contain equal numbers of people.

Comprehensive household income equals pretax cash income plus income from other sources. Pretax cash income is the sum of wages, salaries, self-employment income, rents, taxable and nontaxable interest, dividends, realized capital gains, cash transfer payments, and retirement benefits plus taxes paid by businesses (corporate income taxes and the employer's share of Social Security, Medicare, and federal unemployment insurance payroll taxes) and employee contributions to 401(k) retirement plans. Other sources of income include all in-kind benefits (Medicare, Medicaid, employer-paid health insurance premiums, food stamps, school lunches and breakfasts, housing assistance, and energy assistance). Households with negative income are excluded from the lowest income category but are included in the totals.

