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How Progressive is the U.S. Federal Tax System? A Historical and International Perspective

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Over the last 40 years, the U.S. federal tax system has undergone three striking changes, each of which seems to move the federal tax system in the direction of less progressivity. First, there has been a dramatic decline in top marginal individual income tax rates. In the early 1960s, the statutory individual income tax rate applied to the marginal dollar of the highest incomes was 91 percent. This marginal tax rate on the highest incomes declined to 28 percent by 1988, increased significantly to 39.6 percent in 1993, and fell to 35 percent as of 2003. Second, corporate income taxes as a fraction of gross domestic product have fallen by half, from around 3.5–4.0 percent of GDP in the early 1960s to less than 2 percent of GDP in the early 2000s (for example, Auerbach, 2006). Meanwhile, corporate profits as a share of GDP have not declined over the period, suggesting that capital owners—who are disproportionately of above-average incomes—earn relatively more net of taxes today than in the 1960s. Third, there has been a substantial increase in payroll tax rates financing Social Security retirement benefits and Medicare. The combined employee–employer payroll tax rate on labor income has increased from 6 percent in the early 1960s to over 15 percent in the 1990s and 2000s. Moreover, the Social Security payroll tax applies only up to a cap—equal to $90,000 of annual earnings in 2005—and is therefore a relatively smaller tax burden as incomes rise above the cap.

However, the conclusion that these three changes have reduced the progressivity of the federal tax system is less obvious than it may at first appear. For example, in the case of the individual income tax, the numerous deductions and

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exemptions mean that the tax rates listed in the tax tables might be a poor measure of the actual tax burden faced by each income group. In addition, some forms of income, such as capital gains, have traditionally faced lower tax rates; this benefits disproportionately high-income taxpayers. In the case of the corporate income tax, there are competing theories about who bears the burden of the tax: for example, does it reduce returns for stockholders or reduce the returns on other assets such as bonds or pensions of future retirees; is it paid by workers in the form or lower wages or is it paid by consumers in the form of higher prices?

We begin this paper by using the large public micro-file tax return data to estimate the current progressivity of the U.S. federal tax system, which essentially includes individual and corporate income taxes, estate taxes, and payroll taxes. We will lay out what we think are the most plausible and simple assumptions about the incidence of taxes based on previous work. We will then look at trends in the progressivity of the U.S. tax system from 1960 to the present. Throughout this discussion, we will pay particular attention to small groups at the top of the income distribution, who often represent a significant fraction of aggregate income and aggregate taxes paid, and who often face tax rules that have their main impact at the top of the income distribution.

Government agencies such as the Internal Revenue Service (IRS) and the Congressional Budget Office produce annual statistics on tax progressivity in the United States. Our approach differs from the IRS statistics (Parisi, 2004–05; Strudler, Petska, and Petska, 2005), because those statistics ignore other federal taxes such as the corporate income tax, the estate tax, or payroll taxes. Our approach differs from the Congressional Budget Office (2001) statistics because we focus primarily on top incomes while they focus primarily on income quintiles.[1] Our approach also differs from classic comprehensive studies of tax progressivity like Pechman and Okner (1974), Pechman (1985), or Kasten, Sammartino, and Toder (1994), because our more basic method does not incorporate state and local taxes and we ignore government transfers. However, we provide progressivity results for over 40 years, while previous studies have focused on a few years at most. We will then contrast the U.S. results with the experience from other countries. Using a similar (if simplified) methodology, we will present progressivity results for the tax systems of France and the United Kingdom.

Current Federal Tax Progressivity in the United States

The definition of a progressive tax system usually starts with the idea of a proportional tax, in which everyone pays the same share of income in taxes. From that baseline, a progressive tax is one in which the share of income paid in taxes rises with income, and a regressive tax is one in which the share of income paid in

[1] The U.S. Department of the Treasury and the Joint Committee on Taxation also produce distributional analyses to evaluate tax reforms. Their distributional analyses are close to those of the Congressional Budget Office (2001).

taxes falls with income. Of course, real-world tax codes are complex and full of rules that have different effects across the income distribution. Thus, a more general definition is that a tax system can be defined as progressive if after-tax income is more equally distributed than before-tax income, and regressive if after-tax income is less equally distributed than before-tax income.

Inequality and tax progressivity have many facets and should be explored along different measures depending on the specific issue one wants to examine. For example, an analyst can look at the impact of taxes on the poverty rate or on a measure of inequality like the Gini coefficient. In this paper, we will focus on top income shares, specifically how the tax code affects the fraction of total income going to a given group in the income distribution, such as the top decile or top percentile.[2]

We begin with estimates of the progressivity of the U.S. tax code in 2004. We will use data on incomes for the year 2000, the most recent year for which detailed micro data on types of income is available; adjust for nominal and real growth to 2004 dollars; and then apply the tax code as it stood in 2004.

Income Groups

The first column of Table 1 displays the groups we are considering according to the percentile of income, ranging from the second quintile (percentile 20–40) to the top 0.01 percent (P99.99–100). We exclude the bottom quintile (P0–20) from the analysis because many low-income earners have zero market income and receive only government transfers such as Social Security or Disability Insurance income, and do not file income tax returns. Groups are based on "tax units." A tax unit is defined in the U.S. tax code as a married couple or a single person, with their dependents if the tax unit has any. The total number of tax units in 2004 is 144 million (Piketty and Saez, 2003, 2006). It is estimated from census data as the sum of all adults (aged 18 and above in the U.S. population) less all married women. In other words, this is the total number of tax units in the United States if every family had been required to file an individual tax return. In recent decades, about 90 to 95 percent of tax units file a tax return. Nonfilers have in general very low incomes and they owe little or no income tax.

The average income for each group of tax units is shown in the second column. Income is defined as all sources of *market* income reported on income tax returns. This includes wages and salaries (before employer and employee Social Security and Medicare payroll taxes are deducted); bonuses and exercised stock-options; employer and private pensions; self-employment income; business income; dividends, interest, and rents; as well as realized capital gains.[3] We exclude all

[2] The after-tax income share is equal to before-tax income share times the ratio of one minus the tax rate for the given group to one minus the average tax rate across the full distribution. Or in algebraic terms: after-tax income share = before-tax income share · (1 – average tax rate for the group)/(1 – average tax rate economy-wide).

[3] Because realized capital gains are not an annual regular stream of income and tend to be realized by individuals in a lumpy way once every few years, we rank tax units based on income excluding realized capital gains when we define the income fractiles. We then add back realized capital gains to the

Table 1
Income and Federal Tax Rate Statistics in 2004
(based on 2000 inflated incomes)

		Average tax rates (percent)					*Income shares*	
Income groups	*Average income (pre-tax)*	*Federal individual*	*Payroll (Social Security + Medicare) tax*	*Federal corporate*	*Federal estate and gift*	*Total federal taxes*	*Pre-tax income share*	*Post-tax income share*
Full population (144 million tax units)	$52,110	11.5	9.3	2.3	0.4	23.4	100.0	100.0
P20–40	$15,897	−3.2	10.6	2.0	0.0	9.4	6.1	7.2
P40–60	$29,870	3.2	11.2	1.7	0.0	16.1	11.5	12.6
P60–80	$52,137	7.3	11.6	1.6	0.0	20.5	20.0	20.8
P80–90	$83,012	9.2	11.9	1.6	0.0	22.7	15.9	16.1
P90–95	$117,709	11.6	11.5	1.8	0.0	24.9	11.3	11.1
P95–99	$199,033	16.4	8.1	2.5	0.1	27.2	15.3	14.5
P99–99.5	$428,690	21.4	4.6	3.7	1.6	31.3	4.1	3.7
P99.5–99.9	$863,607	23.8	3.0	4.3	1.9	33.0	6.6	5.8
P99.9–99.99	$3,158,720	25.1	1.6	4.9	2.4	34.1	5.5	4.7
P99.99–100	$18,113,612	26.2	1.4	4.6	2.5	34.7	3.5	3.0

Sources: Computations are based on income tax return statistics and NBER TAXSIM calculator.
Notes: Computations are based on incomes from 2000 adjusted for growth and using 2004 tax law. Families are ranked based on market income excluding realized capital gains and imputed payroll and corporate taxes. P20–40 denotes families between percentile 20th and percentile 40th of the income distribution (second quintile), etc. Average income includes realized capital gains and imputed payroll and corporate taxes. Tax rates are estimated relative to income including realized capital gains and imputed payroll and corporate taxes. Payroll tax includes employee and employer Social Security and Medicare taxes (excludes payroll taxes for unemployment and workers compensation).

government transfers such as Social Security retirement and disability benefits; government-provided health benefits (Medicare and Medicaid); unemployment and workers compensation; and all cash and in-kind welfare programs. Our admittedly simple approach sidesteps a number of issues about how to measure income appropriately: for example, our income measure does not include the value of imputed rent for homeowners and does not exclude interest payments on debts such as mortgages or consumer credit. Our income measure also excludes nontaxable benefits such as employer-provided health care. At the end of this section, we offer some further discussion of conceptual issues that can arise in measuring income. We use the large, publicly available micro dataset of individual tax returns

incomes of each of those income groups. (We use the same definition for one set of the top income share series in Piketty and Saez, 2003.) Ranking individuals based on income including capital gains would make the individual income tax look less progressive as capital gains have generally received a favorable treatment.

produced by the IRS, available most years from 1960 to 2001, to estimate individual income and construct our various income fractiles.[4]

Taxes, Tax Rates, and Tax Incidence

We consider four federal taxes: the individual income tax; the corporate income tax; the estate (and gift) tax; and the payroll tax financing disability, retirement, and health benefits for the elderly. Those four federal taxes represent over 90 percent of all federal taxes. The remaining federal taxes are primarily excise taxes like those on gasoline, alcohol, and tobacco, and various other small taxes such as stamp duties.

The federal individual income tax is the largest tax, typically collecting 7–10 percent of GDP in most years since the 1960s. Individual income taxes declined sharply from 2000 to 2004 following the tax cuts of the Bush administration, falling from 10.3 percent of GDP in 2000 to 7.0 percent of GDP in 2004. The payroll tax financing Social Security and Medicare has increased significantly, climbing from about 2 percent of GDP in the 1960s to 6.4 percent of GDP by 2004. The corporate income tax has shrunk dramatically: it was typically 3.5–4.0 percent of GDP in the 1960s, but had fallen to 1.6 percent of GDP by 2004. The estate and gift tax has always been very small relative to the other taxes, although it is important for distributional analysis because it disproportionately affects those with higher incomes. The estate tax collected about 0.6 percent of GDP in the 1960s, and 0.25 percent of GDP in 2004.

Columns 3–6 of Table 1 display the average (not the marginal) tax rate for each of the four federal taxes we are considering; that is, what share of income for that group was collected by that tax in 2004. Column 7 displays the sum of the average tax rates of all four taxes combined.

We use the TAXSIM calculator developed at the National Bureau of Economic Research (Feenberg and Coutts, 1993) to compute federal individual income taxes.

Payroll taxes are by definition paid based on wages and salaries and shared between employers and employees. The distinction is in principle irrelevant. We assume that both the employer and employee payroll tax is paid by the wage earner, so that for most employees in recent years, the federal payroll tax rate is 15.3 percent (and not 7.65 percent).

We will assume that the corporate income tax falls entirely on capital income and that all financial assets (and not only corporate stock) bear the tax equally. Auerbach (2006) summarizes the literature on the incidence of the corporate income tax and points out that there is still considerable uncertainty on the question because of the inherent difficulty in measuring empirically the economy-wide incidence of the corporate tax. Our assumption that the corporate income tax falls on capital income in general can be seen as a middle-ground assumption

[4] An appendix to this article at the website ⟨http://www.e-jep.org⟩ provides additional details on sources and methodology for income and tax-rate statistics for the United States from 1960 to 2004. Full details on our estimation methodology, as well as a comparison with estimates from previous contributions, are reported in Piketty and Saez (2006).

between two scenarios. In one scenario, the corporate income tax falls solely on shareholders. Because corporate stock ownership is more concentrated than wealth ownership in general, the corporate income tax would look more progressive under this scenario. In the other scenario, the corporate tax is shifted onto labor income, either in the form of reduced wages or increased commodity prices. Because capital income is more concentrated than labor income, the corporate income tax would look less progressive under this scenario.[5]

The federal estate tax is paid based on total net worth of the decedents after various exemptions such as spousal bequests and charitable donations. Only net estates larger than $1.5 million in 2004 are liable for the estate tax. As a result, only about 1 percent of all adult decedents are liable for the estate tax in 2004. We use IRS published tabulations reporting the number of estates and estate taxes paid by size of estate to estimate the amount of taxes paid by each fractile of decedents (relative to the total number of adult deaths). We then assume that those taxes are borne by the corresponding fractile of tax units. This basic method is valid to the extent that ranking by income is relatively close to ranking by wealth at the top of the distribution.

How Taxes Affect the Income Distribution

The eighth column of Table 1 displays the share of pre-tax income for each group. The final column displays the share of post-tax income for each group. These statistics illustrate several themes. First, the federal tax system as a whole was progressive in 2004. The post-tax share of income is higher than the pre-tax share of income for those income groups that are lower in the income distribution; conversely, the post-tax share of income is lower than the pre-tax share of income for the groups highest in the income distribution, above the 90th percentile. Second, the statistics show that, even though the very top groups are very small in terms of number of families, they represent a large share of income earned, and an even larger share of total taxes paid. For example, the upper 1 percent of the income distribution earned 19.6 percent of total income before tax, and paid 41 percent of the individual federal income tax and 28 percent of all federal taxes.

Some Caveats

The calculations presented in Table 1 sidestep or ignore a number of issues. We mention seven of those issues here.

First, government transfers, such as welfare programs, accrue disproportionately to the bottom of the income distribution and also reduce inequality in disposable income. Conceptually, transfers should be included (as a negative) in the tax rates to estimate the full redistribution carried out by the government through taxes and transfers. However, as our focus in this paper will primarily be on the top of the income distribution, and since transfers represent a very small

[5] The increased openness of the U.S. economy might have shifted the corporate tax more toward labor income, which would accentuate the trends we document here.

fraction of middle- and high-income earners incomes, ignoring transfers has little effect on our results.

Second and related, there is an argument that the payroll taxes that finance Social Security benefits should not be treated as a pure tax because Social Security benefits depend on payroll taxes paid. In principle, one would want to subtract the value of future Social Security benefits from payroll taxes paid on an individual basis and consider only the pure tax component of the tax. For simplicity, we count the entire payroll tax financing Social Security as a tax. Social Security benefits are overall progressive; that is, the progressive benefits formula more than compensates for the lower life expectancy of lower-income groups (Liebman, 2002). Hence, taking into account Social Security benefits would make the Social Security payroll tax look less regressive but would not much affect top-income groups. Medicare benefits are independent of payroll tax contributions, and hence the Medicare payroll tax is a pure tax.

Third, we focus on annual incomes, which are not a perfect measure of permanent income over the course of a lifetime. Several studies have shown that, because of year-to-year transitory fluctuations in income, progressive individual income taxes appear less progressive from a lifetime perspective than from an annual perspective (for example, Fullerton and Rogers, 1993). However, there is also substantial evidence that consumption tracks income closely, either because households face borrowing constraints or because they do not plan according to the classic intertemporal utility model (Akerlof, 2005). Thus, the best measure of economic affluence is probably in between the extreme cases of the annual perspective and the lifetime perspective. Measuring lifetime income requires longitudinal data, but there are no publicly available longitudinal data that do a good job with the very top of the U.S. income distribution. In this paper, we focus solely on the annual perspective. Kopczuk, Saez, and Song (2006) show that mobility has been quite stable within top wage income groups since the 1950s, which suggests that taking a longer-term perspective for measuring income would probably not bias the *trend* of declining progressivity that we document here.

Fourth, our analysis ignores behavioral responses to taxation such as tax avoidance or reduction in labor supply or savings due to taxation. Those behavioral responses create an excess burden on taxpayers over and above the taxes paid; Fullerton and Rogers (1993) build a general equilibrium model where they estimate total tax burdens, including excess burdens. However, economists have substantial disagreement on the size of behavioral responses to taxation, and so considering the basic case with no behavioral response is a useful starting place.

Fifth, we ignore untaxed income, which is especially important in the case of in-kind employer benefits such as health care insurance and the imputed rent of homeowners.[6] Health benefits and pensions accrue disproportionately (relative to

[6] Similarly, our income measure excludes contributions to employer pensions (either defined benefits or defined contribution pensions), but we do include employer pensions when they are received. Thus, our pension income measure, like our measure of capital gains, can be viewed as based on realization rather than accrual.

income) to the middle and upper middle class and would reduce estimated average tax rates for those groups. However, this would probably not much affect the time series analysis for top groups.

Sixth, a number of issues arise in thinking about the treatment of capital gains. In our approach, capital gains serve as a way of counting corporate income. After all, retained earnings are reflected in the stock prices and will be part of our income definition when capital gains are realized on those stocks. In the long-run and in the aggregate, realized capital gains on corporate stock reported on individual tax returns are of comparable magnitude to retained earnings from corporations estimated in national accounts. Realized capital gains (or equivalently retained earnings) are net of corporate income taxes. Because we include corporate income taxes in the analysis, we add back corporate income taxes to income (Feldstein, 1988). There are also issues regarding what portion of capital gains should be counted as income, and when it should be counted. In principle, capital gains should be counted as income when they accrue rather than when they are realized. However, our income measure includes only realized capital mainly because unrealized gains are difficult to observe.[7] Also, there is an argument in principle for adjusting capital income for inflation and only counting real gains as income, both in the case of capital gains and in the case of interest income (Feldstein, 1988). We do not attempt such a correction here.

Finally, we ignore state and local taxes in this study. Federal taxes represent about two-thirds of all U.S. taxes, and the remaining third are state and local taxes. State and local taxes in the United States are primarily of three types. First, state income taxes (individual and corporate) tend to be progressive and are about 25 percent of state and local tax revenues on average.[8] Second, property income taxes, primarily on residential real estate, are about 30 percent of state and local tax revenue. Property taxes are progressive if incidence falls primarily on property owners, but become regressive if they are shifted onto rents. Third, sales and excise taxes, which are regressive as lower-income families spend a larger fraction of their income on taxed consumption goods, are about 35 percent of state revenue. Overall, state and local taxes are believed to be somewhat regressive but this depends on the assumed incidence of the property tax. If the property tax is assumed to fall on owners of capital, then overall, Pechman (1985) shows that state and local taxes are very close to being proportional to income across income groups. In that case, ignoring state and local states would be of no consequence when assessing overall tax progressivity.

[7] Capital gains are never realized on individual tax returns if the assets are transferred at death or through intervivos gifts. Poterba and Weisbenner (2001) estimate that, in 1998, such capital gains on transferred assets represent about 35 percent of the value of gross estates reported on estate tax returns. The fraction of never-realized gains passed at death for financial assets is small relative to realized capital gains reported on individual tax returns and is ignored in this study.

[8] State income taxes can be deducted as an itemized deduction from income for federal income tax purposes. As we do not include state taxes in our analysis, we have also not deducted state taxes in our individual income tax TAXSIM computations.

U.S Trends in Federal Tax Progressivity

To examine the evolution of U.S. federal tax progressivity over time, it is necessary to look at the patterns of how the tax code has evolved over time and how sources and size of income—especially for the very top of the income distribution—have evolved over time.

Federal Tax Rates Over Time

Figure 1 displays the average federal tax rate paid in 1960 and 2004 for various groups along the income distribution. Again, as in Table 1, because the latest IRS micro data is only available until year 2001 (before most of the recent tax cuts took place), we report tax rates based on 2004 tax law, applied to incomes reported in 2000 and adjusted for nominal and real growth.

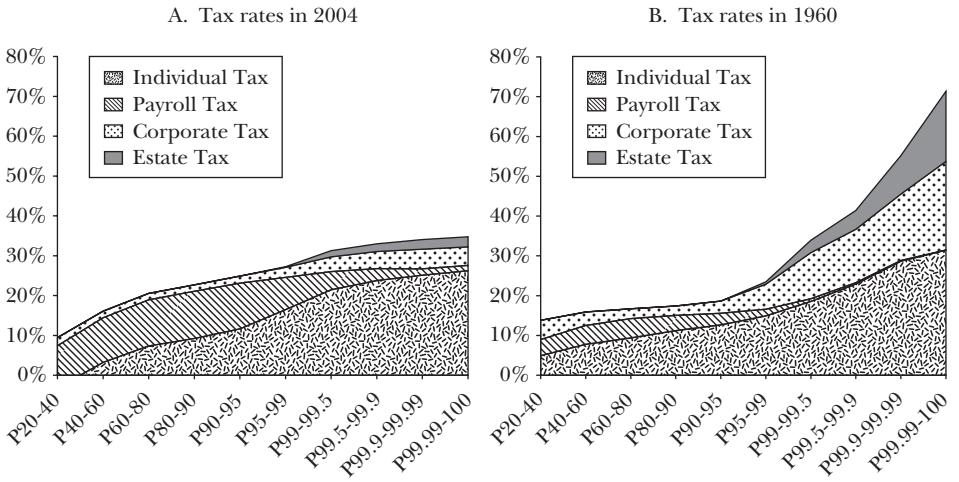
The federal tax system is clearly progressive. In 2004, the average tax rate increases smoothly with income from less than 10 percent in the second quintile (P20–40) to around 35 percent at the very top. In that year, the average tax rate increases only modestly from 30 percent in the bottom half of the top percentile (P99–99.5) to 35 percent at the very top (P99.99–100), suggesting that the current federal tax system is relatively close to a flat tax rate within the top 1 percent (incomes above around $300,000 in 2004).

The figure also shows how the total federal tax rate is decomposed into individual income tax, payroll tax, corporate income tax, and estate tax average rates. The individual income tax is the main component driving progressivity in 2004. The average individual tax rate is actually negative at the bottom of the income distribution (primarily because of the refundable Earned Income Tax Credit) and increases to an average rate of over 25 percent at the very top. The progressivity of the federal income tax is due to the increasing structure of marginal tax rates coupled with exemptions and credits, which benefit lower incomes disproportionately. The average tax rate, however, remains substantially below the top marginal tax rate of 35 percent even at the very top, because of lower tax rates on long-term capital gains and dividends (a 15 percent maximum rate) and, to a lesser extent, deductions for mortgage interest payments and charitable contributions.

The corporate income tax and the estate tax are also progressive in 2004—they increase from a combined average rate of less than 2 percent at the bottom of the income distribution to about 7 percent at the very top—but are small relative to the individual income tax. Those two taxes are progressive because capital income is concentrated at the top of the income distribution. The estate tax also has a very progressive structure coupled with very large exemptions, so that less than 1 percent of adults who die are liable to pay any estate tax. Finally, the payroll tax is regressive, involving an average tax rate of about 11 percent of total income below the top decile and declining to about 1 percent at the very top. This result is due to the cap in the Social Security payroll tax (above $87,900 in 2004) and the fact that labor income is a smaller fraction of total income at the top than in the middle of the distribution.

The contrast between the progressivity of federal taxes in 2004 and in 1960 is

Figure 1
Federal Tax Rates in the United States in 2004 and 1960



Notes: Figures display the tax rate for each of the four federal taxes for various groups of the income distribution in 2004 (based on 2000 incomes adjusted for economic growth) and in 1960. Tax rates are stacked.

striking, as shown in Figure 1. In 1960, the federal tax system imposed higher average tax rates on those with low incomes, then lower rates on a middle group up to the 95th percentile, and much higher rates within the top 5 percent of the income distribution, especially in very top groups. The lower tax burden in 1960 for the middle groups is largely due to the fact that the payroll tax, which falls primarily on the groups from P20 to P95, was much smaller in 1960 than today. The 1960 federal tax system was very progressive even within the top percentile, with an average tax rate of around 35 percent in the bottom half of the top percentile to over 70 percent in the top 0.01 percent. This finding illustrates the theme that it is important to decompose the top of the income distribution into very small groups to capture the progressivity of a tax system. Although very top groups contain few taxpayers, they account for a substantial share of income earned, and an even larger share of taxes paid.

Interestingly, the larger progressivity in 1960 is not mainly due to the individual income tax. The average individual income tax rate in 1960 reached an average rate of 31 percent at the very top, only slightly above the 25 percent average rate at the very top in 2004. Within the 1960 version of the individual income tax, lower rates on realized capital gains, as well as deductions for interest payments and charitable contributions, reduced dramatically what otherwise looked like an extremely progressive tax schedule, with a top marginal tax rate on individual income of 91 percent.

The greater progressivity of federal taxes in 1960, in contrast to 2004, stems from the corporate income tax and the estate tax. The corporate tax collected about 6.5 percent of total personal income in 1960 and only around 2.5 percent of

Table 2
Federal Tax Rates by Income Group from 1960 to 2004

	Average federal tax rates (percent)					
Income Groups	*1960*	*1970*	*1980*	*1990*	*2000*	*2004*
Full population	21.4	23.3	26.6	25.8	27.4	23.4
P20–40	13.9	18.5	16.3	16.2	13.1	9.4
P40–60	15.9	20.2	21.4	21.0	20.0	16.1
P60–80	16.7	20.7	24.5	24.3	23.9	20.5
P80–90	17.4	20.5	26.7	26.2	26.4	22.7
P90–95	18.7	21.4	27.9	27.9	28.7	24.9
P95–99	23.5	25.6	31.0	28.6	31.1	27.2
P99–99.5	34.0	36.1	37.6	31.5	35.7	31.3
P99.5–99.9	41.4	44.6	43.0	33.0	38.4	33.0
P99.9–99.99	55.3	59.1	51.0	34.3	40.2	34.1
P99.99–100	71.4	74.6	59.3	35.4	40.8	34.7

Notes: The table displays the average federal tax rate (including individual, corporate, payroll, and estate) for various groups of the income distribution, for various years. 2004 figures are based on 2004 tax law applied to 2000 incomes adjusted for economic growth.

total income today. Because capital income is very concentrated, it generated a substantial burden on top income groups. The estate tax has also decreased from 0.8 percent of total personal income in 1960 to about 0.35 percent of total income today. As a result, the burden of the estate tax relative to income has declined very sharply since 1960 in the top income groups.

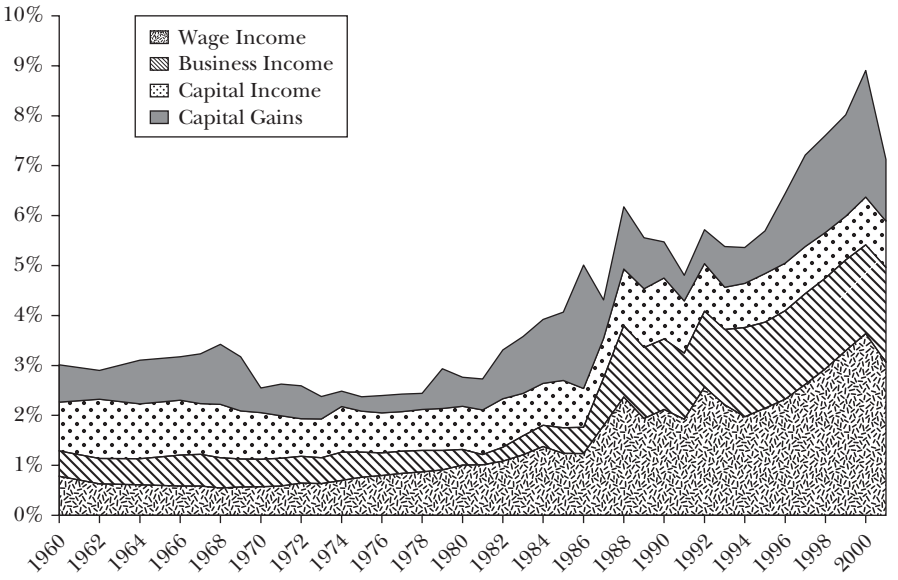
Table 2 displays the pattern of federal average tax rates for different income groups in 1960, 1980, 1990, and 2000, and the projection for 2004. The table shows a flattening of the tax rate structure. In 1960, average taxes collected were fairly flat up from the 20th to the 90th percentile, and then rose sharply. By 1980, average taxes collected from the very top income groups, especially within the top percentile, had declined sharply, while average tax rates collected from between the 40th and 95th percentiles had risen. From 1980 to 1990, tax rates at the top declined, while tax rates in the middle class stayed constant. In the 1990s, tax rates increased only within the top 5 percent. The 2004 projected tax rates restore lower rates of 1990 at the top and reduce tax rates on the middle class below the levels of 1980, 1990, or 2000.

Income and Taxes at the Top of the Income Distribution

The changes in progressivity of the income distribution since 1960 have been most marked at the very top of the income distribution, which as Table 1 illustrated, accounts for a substantial share of total income. In an earlier paper (Piketty and Saez, 2003), we document the evolution of the incomes of those at the very top of the income distribution. Figure 2 displays the total share of income received by the top 0.1 percent of the income distribution and its composition.

Two important facts stand out. First, the share of income going to the top 0.1 percent of the income distribution has grown tremendously since the late 1970s: the share of total income received by the top 0.1 percent was around 2.5 of total

Figure 2
Income Share and Composition for the Top 0.1 Percent, 1960–2001



Notes: The figure displays the income share of the top 0.1 percent of tax units, and how the top 0.1 percent of incomes are divided into four income components: wages and salaries (including exercised stock options), business income (S-corporation profits, partnership profits, sole proprietorship profits), capital income (dividends, interest, and rents), and realized capital gains. Imputed corporate taxes are included in the corresponding categories. Top 0.1 percent is defined based on individual market income excluding realized capital gains and corporate taxes. Tax rates are stacked.

income in the 1970s and reached a peak above 9 percent of total income in 2000. In fact, most of the overall increase in the inequality of income has been driven by the very top of the income distribution. The U.S. Bureau of the Census reports, using a somewhat different definition of income than ours, that the top quintile of the income distribution received 43–44 percent of all income in the 1970s, but this share had increased to about 50 percent by 2001. Piketty and Saez (2003) show that most of the relative income gains for the top quintile have been concentrated within the top 1 percent—and especially the top 0.1 percent—with relatively modest gains in the top decile excluding the top percentile (P90–95 and P95–99).

Second, the composition of top incomes has changed substantially. Figure 2 shows the breakdown into wage income, business income, capital income (including imputed corporate taxes), and realized capital gains. In the 1960s, top incomes were primarily composed of capital income: mostly dividends and capital gains. The surge in top incomes since the 1970s has been driven in large part by a steep increase in the labor income component, due in large part to the explosion of executive compensation. As a result, labor income now represents a substantial fraction of income at the top. This change in composition is important to keep in mind, because the corporate and estate taxes that had such a strong effect on creating progressivity in the 1960s would have relatively little effect on labor income.

Figure 3 shows how the progressivity of the federal income tax system has mitigated income concentration since 1960. Panel A displays the share of total income received by the top 0.1 percent of the distribution before and after all federal taxes. Panel A shows that the federal tax system reduced income concentration the most in the 1960s and 1970s when income concentration was relatively low, and that the federal tax system has a relatively modest effect on the top 0.1 percent income share in recent years when income inequality has become higher. To put it another way, the pre-tax share of income for the top 0.1 percent rose from 2.6 percent in 1970 to 9.3 percent in 2000. The rise in after-tax income shares was from 1.2 percent in 1970 to over 7.3 percent in 2000. In percentage point terms, the increase in pre-tax incomes is slightly greater than the increase in post-tax incomes. But in terms of observing what those with very high incomes can afford to consume, the after-tax share of income for those in this income group multiplied by a factor of 6.1, while the pre-tax share of income multiplied by a factor of 3.5. The tax reductions enacted in 2001 and 2003 have further weakened the redistributive power of the federal income tax today.[9]

When the pattern of redistribution is broken down into different taxes, an expected pattern emerges. The overall extent of redistribution from the very top of the income distribution was higher in the 1960s, mainly because of the impact of the corporate income tax and the estate tax. In more recent years, as the relative magnitude of the corporate and estate taxes has diminished and as average income tax rates have dropped a great deal at the bottom of the income distribution, the income tax has become the primary element of progressivity in the overall federal tax code, creating a gap between pre-tax and post-tax income for those at the highest income levels.

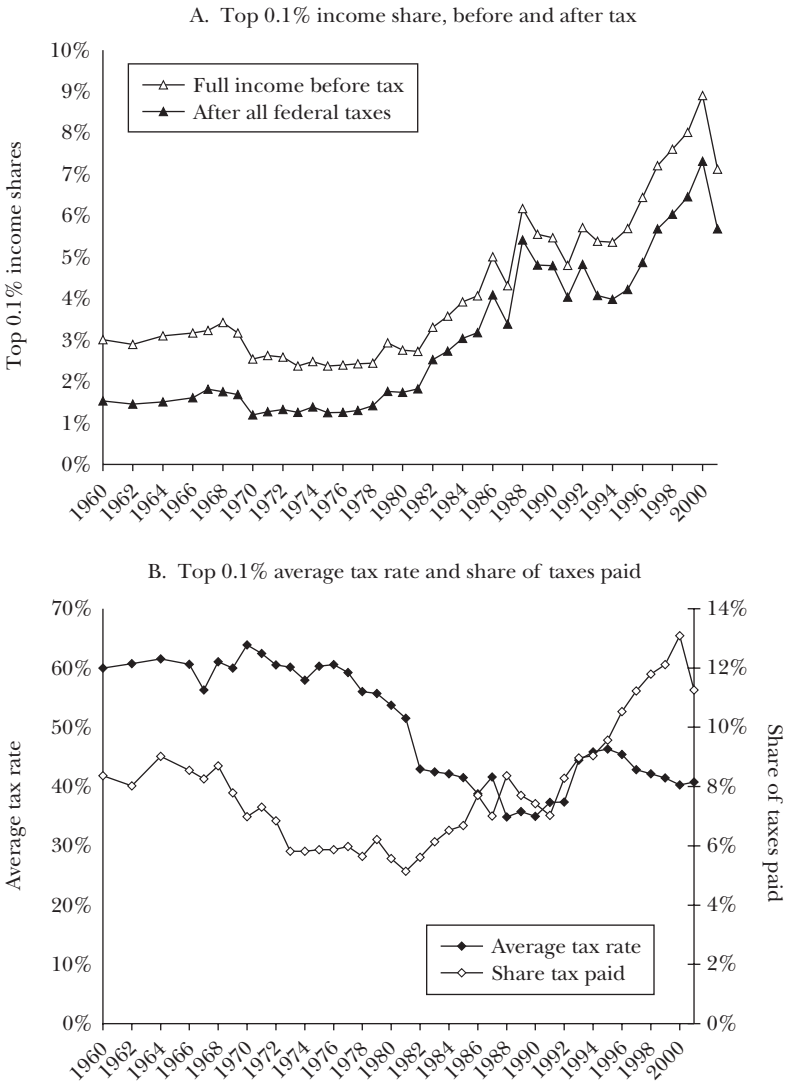
Panel B of Figure 3 displays the average tax rate of the top 0.1 percent (on the left axis) and shows that most of the decline was concentrated in a relatively brief period from 1976 to 1988 when the average rate dropped from over 60 percent to 35 percent. The share of taxes paid by various income groups is sometimes used as a measure of progressivity, but this measure is improper and misleading. Panel B also shows the fraction of total taxes paid by the top 0.1 percent income group (on the right axis). The share of taxes paid is given by

$$\text{Top 0.1\% share of tax} = \frac{(\text{Top 0.1\% tax rate}) \times (\text{Top 0.1\% income share})}{\text{Average tax rate}}.$$

Panel A shows that the share of income received by the top 0.1 percent has risen dramatically over several decades, and it is not surprising to see that,

[9] It is a disputed question whether the surge in reported top incomes has been *caused* by the reduction in taxation at the top through behavioral responses. There is clear evidence of short-term responses to changes in tax rates through retiming of income realization or shifts from the corporate to the individual tax base. Demonstrating a long-term causal relationship from top tax rates to more economic activity at the top, and especially to the surge in top wage compensation, is almost impossible (Saez, 2004). It is conceivable that causality might have run in a reverse way—that nontax forces generated an increase in income concentration and that top income earners were able to use their greater incomes to influence the political process and obtain a reduction in tax progressivity subsequently.

Figure 3
Top 0.1 Percent Income Shares Before and After Tax, Average Tax Rate, and Share of Taxes Paid



indeed, the share-of-tax series follows the income-share series. But although the share of tax paid by the top 0.1 percent of the income distribution has increased substantially over the last 30 years, the average tax rate of the top 0.1 percent has declined substantially over that same time. When the share of income received by the top income groups is changing, the share of tax paid by those top income groups is a misleading method for evaluating the progressivity of the tax system.

International Perspectives

In this section, we apply the same methodology to France and the United Kingdom, and we compare the resulting patterns of effective tax rates for 1970 and a recent year with those obtained for the United States.[10] Table 3a displays the average tax rates in all three countries across income groups for 1970; Table 3b shows the results for a recent year: 2004 in the United States, 2005 in France, and 2000 in the United Kingdom. The tables also shows how those tax rates are broken down into individual income taxes; payroll taxes; estate and wealth taxes; and corporate taxes. We did not include the corporate tax in the French and British analysis because it would have required a much more in-depth analysis. However, in contrast to the United States, the ratio of corporate taxes to GDP has been fairly stable in France and the United Kingdom since 1960, suggesting that including the corporate tax would not alter the direction of change in tax progressivity in those countries. The British results build upon the top-income-share series and individual-tax-rate series built by Atkinson (2006) and the French results build upon Piketty (2003).

Three key findings emerge from our international perspective. First, in all three countries, individual-income-tax progressivity has declined substantially since 1970. The decline has been particularly sharp in the United Kingdom, where the average share of income collected by income tax for fractile P99.95–100 dropped from over 69 percent to less than 35 percent in 2000. In contrast to the United States, the very high British top marginal rates prevailing in 1970 were not tempered by tax deductions and tax loopholes.

In recent years, individual income tax burdens incurred by top income groups are virtually identical in all three countries today, with average tax rates around 30 percent at the very top. In particular, contrary to some popular beliefs, effective individual income tax rates currently incurred by top income groups are smaller in France than in Anglo-Saxon countries. At fractile P99–99.5, the average income tax rate was only 11.6 percent in France as of 2005, as compared to 21.4 percent in the United States and 27.4 percent in the United Kingdom. That is, most high-wage individuals currently pay a substantially higher share of their income in the form of individual income taxes in the United States or in the United Kingdom than in France. The statutory top marginal rate is currently 48 percent in France versus 35 percent in the United States and 40 percent in the United Kingdom.[11] But the

[10] For a full and detailed exposition of the sources and methodology for the income and tax rate statistics for France and the United Kingdom presented in this paper, see the technical appendices to the working paper version (Piketty and Saez 2006). In particular, we exclude from our French and U.K. estimates the large value-added taxes and excise taxes, which are slightly regressive. Those taxes constitute about one-third of tax revenue in those countries. Because France and the United Kingdom have very small local taxes, this exclusion of indirect taxes from our analysis is comparable to excluding the local and state taxes in the U.S. case, which are also seen as slightly regressive.

[11] Estimates for France were computed using 2005 tax law, and did not take into account the new income tax cuts recently announced by the French government (the top marginal rate is scheduled to drop to around 42 percent in 2007).

Table 3a

International and Historical Comparison of Tax Rates: 1970 (United States, France, and United Kingdom)

	Average tax rates (percent)					*Shares (percent)*	
Income groups	*Individual income tax*	*Payroll taxes*	*Estate, gift, and wealth tax*	*Corporate tax (U.S. only)*	*Total taxes*	*Pre-tax income share*	*Post-tax income share*
A. United States							
Full population	12.5	5.8	0.7	4.3	23.3	100.00	100.00
P0–90	9.9	7.2	0.0	3.2	20.2	67.61	70.54
P90–95	13.7	4.5	0.0	3.2	21.4	10.76	11.03
P95–99	16.1	3.0	0.7	5.7	25.6	12.60	12.23
P99–99.5	20.7	1.5	3.8	10.0	36.1	2.87	2.39
P99.5–99.9	25.8	0.9	5.8	12.0	44.6	3.63	2.62
P99.9–99.99	31.5	0.4	12.5	14.7	59.1	1.76	0.94
P99.99–100	32.2	0.1	23.4	19.0	74.6	0.76	0.25
B. France							
Full population	5.3	20.8	0.3		26.4	100.00	100.00
P0–90	2.3	24.0	0.0		26.3	69.30	69.39
P90–95	6.4	17.6	0.2		24.2	10.65	10.97
P95–99	10.6	14.1	0.4		25.1	12.51	12.74
P99–99.5	16.8	10.6	0.8		28.2	2.59	2.52
P99.5–99.9	21.9	7.4	1.9		31.2	3.09	2.88
P99.9–99.99	30.2	4.2	4.2		38.6	1.37	1.14
P99.99–100	40.1	1.7	6.9		48.8	0.50	0.35
C. United Kingdom							
Full population	17.1	7.0	1.1		25.1	100.00	100.00
P0–90	13.0	8.1	0.0		21.2	71.64	75.42
P90–95	19.0	5.8	0.2		25.0	10.10	10.12
P95–99	25.0	4.1	2.1		31.2	11.41	10.49
P99–99.5	32.3	2.4	5.5		40.3	2.40	1.91
P99.5–99.9	41.3	1.6	10.4		53.4	2.86	1.78
P99.9–99.95	52.3	1.0	16.5		69.8	0.57	0.23
P99.95–100	69.2	0.6	21.9		91.7	1.01	0.11

Sources: Computations based on income tax return statistics. United Kingdom computations based on Atkinson (2006).

Notes: See Piketty and Saez (2006) for complete details on methodology. Note that the top group in the United Kingdom is P99.95–100 (and not P99.99–100 as in the United States or France). U.S. numbers are based on 2004 tax law applied to 2000 incomes (adjusted to economic growth). French numbers are based on 2005 tax law applied to 1998 incomes (adjusted to economic growth). U.K. numbers are based on 2000 tax law applied to 2000 incomes (adjusted to economic growth). U.K. and French computations exclude the corporate income tax.

higher top marginal tax rates in France are largely undone by the large base exemptions and tax deductions that have always characterized the French individual income tax system. Also, the share of French taxpayers facing these very high marginal rates is relatively low. The last columns of the recent data show that the share of income received by the top 0.5 or 0.1 percent of the income distribution in France is much smaller than in the United States or the United Kingdom.

In 1970, the progressivity of the tax code taken as a whole was unambiguously

Table 3b

International and Historical Comparison of Tax Rates: 2004 (United States), 2005 (France), 2000 (United Kingdom)

	Average tax rates (percent)					*Shares (percent)*	
Income groups	*Individual income tax*	*Payroll taxes*	*Estate, gift, and wealth tax*	*Corporate tax (U.S. only)*	*Total taxes*	*Pre-tax income share*	*Post-tax income share*
A. United States							
Full population	11.5	9.3	0.4	2.3	23.4	100.00	100.00
P0–90	5.4	11.5	0.0	1.5	18.5	53.75	57.28
P90–95	11.6	11.5	0.0	1.8	24.9	11.29	11.07
P95–99	16.4	8.1	0.1	2.5	27.2	15.28	14.51
P99–99.5	21.4	4.6	1.6	3.7	31.3	4.11	3.69
P99.5–99.9	23.8	3.0	1.9	4.3	33.0	6.63	5.80
P99.9–99.99	25.1	1.6	2.4	4.9	34.1	5.46	4.69
P99.99–100	26.2	1.4	2.5	4.6	34.7	3.48	2.96
B. France							
Full population	3.8	33.3	0.7		37.8	100.00	100.00
P0–90	1.8	34.8	0.1		36.7	68.93	70.19
P90–95	4.5	33.7	0.6		38.8	11.57	11.39
P95–99	7.0	31.4	1.4		39.8	12.84	12.44
P99–99.5	11.6	26.5	2.2		40.3	2.36	2.27
P99.5–99.9	16.4	21.4	5.1		43.0	2.67	2.45
P99.9–99.99	22.3	16.5	8.9		47.8	1.19	1.00
P99.99–100	28.8	8.5	24.2		61.5	0.43	0.26
C. United Kingdom							
Full population	15.0	8.3	0.3		23.7	100.00	100.00
P0–90	9.7	7.6	0.0		17.3	61.22	66.34
P90–95	15.8	13.8	0.0		29.6	11.72	10.81
P95–99	21.7	11.9	1.0		34.6	14.79	12.66
P99–99.5	27.4	10.1	1.3		38.8	3.45	2.76
P99.5–99.9	30.5	8.6	1.3		40.5	4.81	3.76
P99.9–99.95	33.2	7.6	1.4		42.2	1.30	0.98
P99.95–100	34.5	6.5	1.5		42.5	3.42	2.58

Sources: Computations based on income tax return statistics. United Kingdom computations based on Atkinson (2006).

Notes: See Piketty and Saez (2006) for complete details on methodology. Note that the top group in the United Kingdom is P99.95–100 (and not P99.99–100 as in the United States or France). U.S. numbers are based on 2004 tax law applied to 2000 incomes (adjusted to economic growth). France numbers are based on 2005 tax law applied to 1998 incomes (adjusted to economic growth). U.K. numbers are based on 2000 tax law applied to 2000 incomes (adjusted to economic growth). U.K. and French computations exclude the corporate income tax.

less in France than in the United Kingdom or the United States. For example, the top .01 percent of the distribution paid 75 percent of income in taxes in the United States in 1970 and over 90 percent of income in taxes in the United Kingdom; but only 49 percent of this group's total income went to taxes in France. During most of the postwar period, income tax progressivity has been substantially greater in Anglo-Saxon countries than in France and most other continental European

countries. For example, Dell (2006) presents an analysis of Germany, which appears fairly close to France.

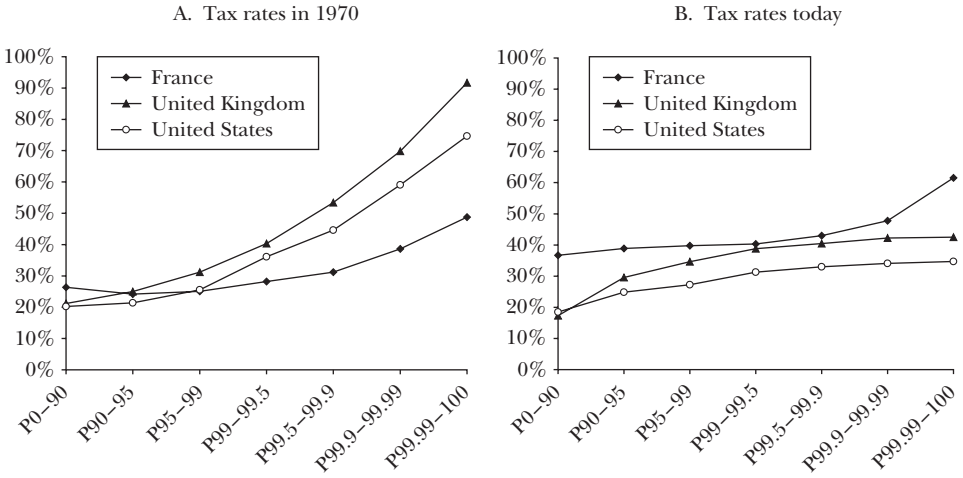
This pattern illustrates a general point made by Lindert (2004): countries in which government spending is a fairly high share of GDP have always relied on a mix of taxes that create relatively low distortion, with less progressivity, large exemptions for capital income, and so on. Meanwhile, Anglo-Saxon countries in which government spending is a relatively low share of GDP have historically relied on more progressive taxes. According to Lindert, this pattern is the key reason why the huge rise of social transfers in high government-spending countries such as France did not generate large efficiency losses and hence reductions in aggregate growth. Although Lindert's point holds true if one adopts a long-run perspective, the novelty from the recent decades is that Anglo-Saxon countries have gone through a series of significant top rate cuts since the 1970s, and have converged towards (and overshot) the average of the OECD countries in terms of the progressivity of their overall tax code.

A second major finding from Tables 3a and 3b is that the payroll tax burden has increased substantially over the 1970–2005 period in all three countries. The rise in payroll tax burden has been particularly high in France. As of 2005, the employee payroll tax is 22.5 percent of gross wages in France, and the employer payroll tax is 42.5 percent. In practice, this means that the total labor cost corresponding to a net wage of 77.5 is as large as 142.5 (and the income tax then applies to the remaining 77.5). In France in 1970, the employee and employer payroll tax rates were respectively 8.2 percent and 32.8 percent of gross wages. Moreover, most payroll taxes were capped in 1970, and most have been gradually uncapped between 1970 and 2005 and now apply to all wages, including very top wages.

As all internationally-mobile, high-wage earners should know, the reason why the overall tax burden is on average much higher in France than in Anglo-Saxon countries has little to do with the individual income tax, and a lot to do with the many social contributions levied through payroll taxation. However, because very top incomes are disproportionately composed of business and capital income rather than wage income (and especially so in France), the overall impact of payroll taxation on tax progressivity is regressive. In France, as of 2005, the regressivity of the payroll tax system undoes the progressivity of the individual income tax system, so that the resulting tax system is basically flat. The last two columns of Table 3b for France in 2005 show that the pre-tax and post-tax shares of income in France are almost the same. For instance, the average tax rate for income and payroll taxes combined is 36.6 percent at the level of fractile P0–90 (1.8 percent for the income tax plus 34.8 percent for the payroll tax), and 37.3 percent at the level of fractile P99.99–100 (28.8 percent for the income tax plus 8.5 percent for the payroll tax). Of course, the overall picture of how government affects the distribution of income would look substantially different if, rather than looking only at the tax side, we were to look at the benefits side. But the benefits side is not considered in this paper.

The third key conclusion emerging from our international perspective is that in spite of the parallel evolutions of income tax and payroll tax components across

Figure 4
Tax Rates in France, the United Kingdom, and the United States in 1970 and Today



Notes: Figure displays tax rates acorss income groups in the three countries. Tax rates in the United States include the four federal income taxes. Tax rates in France and the United Kingdom include individual income taxes, payroll taxes, and estate and wealth taxes but exclude corporate income taxes. In the united Kingdom, the two top groups are P99.9–99.95 and P99.95–100 (instead of P99.9–99.99 and P99.99–100).

countries, overall tax progressivity has not evolved in the same way in all three countries during the 1970–2005 period. Figure 4 illustrates this by displaying the (full) average tax rates across income groups in the three countries in 1970 (Panel A) and more recently (Panel B). In this case, however, we show the bottom 90 percent of the income distribution grouped together, separating out the percentiles above this, which make such a substantial difference to progressivity. Progressivity of the overall tax code has unambiguously declined in the United States and in the United Kingdom. The average share of income paid by those at the very top of the income distribution has dropped substantially. However, progressivity in the overall French tax code did not change much from 1970 to 2005, and may even have increased somewhat, especially at the very top end of the distribution. This is due to a combination of two factors: the estate tax and the wealth tax.

While the impact of the estate tax on progressivity has declined enormously in the United States and in the United Kingdom, it has increased in France. The progressivity of estate taxation has always been fairly moderate in France, just as in a number of continental European countries such as Germany, especially for estates transmitted to spouses and children (so-called "direct line" estates). The top marginal estate tax rate was only 20 percent in France until 1983, when it was raised to 40 percent. In contrast, the top marginal estate tax rate in the United States and in the United Kingdom was above 70 percent during most of the post–World War II period, and was gradually reduced since the 1980s. As a consequence, the contribution of estate taxation to overall tax progressivity has declined substantially

in the United States and in the United Kingdom between 1970 and 2005, while it has increased somewhat in France.

The other important factor is the creation of a wealth tax in France following the 1981 election, which brought a socialist party to power. France then repealed the wealth tax in 1986 and reintroduced it in 1989. It is now levied on the top 1 percent wealth holders, with a top marginal rate of 1.8 percent on wealth above 15 millions euros (or approximately $20 million U.S. dollars). As one can see from Tables 3a and 3b, the contribution of the wealth tax to overall tax progressivity is sizeable. The wealth tax pushes the effective average taxes above 60 percent for P99.99–100 in France in 2005. This level of average taxation for groups at the very top of the income scale in France in 2005 is still far less than the levels observed in 1970 in the United States and in the United Kingdom for the very top groups. Thus, the French socialist governments of the 1980s–1990s are supporters of progressive taxation, but less so than the Democrat and Labor Anglo-Saxon governments of the 1950s and 1960s.

Although these comparative results for the United States, France, and the United Kingdom rely on incomplete and exploratory estimates, we believe they illustrate several points. First, to assess progressivity of an overall tax system, it is critical to take a broad view of the tax system. Without taking estate and wealth taxation into account, it would not be apparent that tax progressivity has increased somewhat in a country like France between 1970 and 2005, while declining enormously in the United Kingdom and in the United States. Second, these findings suggest that Lindert's (2004) law is either about to change or has already done so; that is, Anglo-Saxon countries with relatively low levels of government spending relative to GDP used to have a more progressive tax system than high-spending welfare states. However, today, a high-spending welfare state like France seems to display both higher average tax rates and higher tax progressivity. This interesting issue deserves further research. In particular, in order to study intra-European tax competition, it would be valuable to extend the analysis to a much broader set of European countries, and to develop more systematic and rigorous methodologies encompassing a broader set of taxes.

Conclusion

This paper has discussed the progressivity of the U.S. federal tax system, its evolution since 1960, and how it compares with other countries. Several important findings emerge.

First, the progressivity of the U.S. federal tax system at the top of the income distribution has declined dramatically since the 1960s. For example, the top 0.01 percent of earners paid over 70 percent of their income in federal taxes in 1960, while they paid only about 35 percent of their income in 2005. Average federal tax rates for the middle class have remained roughly constant over time. This dramatic drop in progressivity at the upper end of the income distribution is due primarily to a drop in corporate taxes and to a lesser extent estate and gift

taxes, both of which fall on capital income, *combined* with a sharp change in the composition of top incomes away from capital income and toward labor income. The reduction in top marginal individual income tax rates has contributed only marginally to the decline of progressivity of the federal tax system, because with various deductions and exemptions, along with favored treatment for capital gains, the average tax rate paid by those with very high income levels has changed much less over time than the top marginal rates. Large reductions in tax progressivity since the 1960s took place primarily during two periods: the Reagan presidency in the 1980s and the Bush administration in the early 2000s. The only significant increase in tax progressivity since 1960 took place in the early 1990s during the first Clinton administration.

Second, the most dramatic changes in federal tax system progressivity almost always take place within the top 1 percent of income earners, with relatively small changes occurring below the top percentile. For example, many of the recent tax provisions that are currently hotly debated in Congress, such as whether there should be a permanent reduction in tax rates for capital gains and dividends, or whether the estate tax should be repealed, affect primarily the top percentile of the distribution—or even just an upper slice of the top percentile. This pattern strongly suggests that, in contrast to the standard political economy model, the progressivity of the current tax system is not being shaped by the self-interest of the median voter.[12]

Third, international comparisons confirm that is it critical to take into account other taxes than the individual income tax to assess properly the extent of overall tax progressivity, both for time trends and for cross-country comparisons. We hope that the preliminary international comparisons presented in this paper will help to stimulate more systematic comparative research in this area.

■ *We are grateful to Anthony B. Atkinson and the editors of this journal for helpful comments.*

[12] Permanent reductions in dividend and capital gains combined with a repeal in the estate tax would certainly reduce the current progressivity of federal taxes and favor large wealth holders. The Alternative Mininum Tax, which is not indexed for inflation and hits more and more tax filers, will mostly increase tax burdens on the upper middle class but will not affect much the top 0.1 percent.

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