GLOBAL DEVELOPMENT AND ENVIRONMENT INSTITUTE

WORKING PAPER NO. 10-07

Progressive and Regressive Taxation in the United States: Who's Really Paying (and Not Paying) their Fair Share?

Brian Roach

December 2010

Tufts University

Medford MA 02155, USA

http://ase.tufts.edu/gdae

Abstract:

The 2010 debate over extending the 2001 and 2003 Bush tax cuts often focused the fairness of the tax distribution in the United States. Unfortunately, discussions of tax fairness rarely take into account the distribution of the overall tax system, typically focusing only on the federal income tax or on federal taxes without consideration of the state and local tax system. This paper updates a 2003 analysis (Roach, 2003) to present a current assessment of the distribution of all components of the U.S. tax system, including recent trends. The results show that the overall federal tax system is quite progressive. But when state and local taxes are included as well, the overall U.S. tax system is only slightly progressive. Further, most of the progressivity of the overall tax system occurs in the lower half of the income spectrum. At upper-income levels, progressivity levels off and actually reverses at the highest income levels. Median-income taxpayers pay about 25% of their total income in taxes, while taxpayers in the top 1% pay about 31% of their income in taxes. Thus claims that America has a "highly progressive" tax system do not appear to be valid.

There is no clear long-term trend in the progressivity of the federal tax system – it is about as progressive now as it was in 1979 with progressivity generally declining in the 1980s and rising since then. The limited data on state and local tax progressivity also fail to indicate a trend in either direction over the last 15 years. Relative stability in tax progressivity stands in stark contrast to rising economic inequality. Since 1979, lower-income households have seen their real incomes stagnate, median households have experienced modest gains, while those in the top 10%, and in particular to the top 1%, have realized dramatic gains. While changes in tax progressivity could have partially offset the rise in income inequality, this has not been the case. Analysis of the compromise plan to extend the Bush tax cuts shows that the progressivity of the plan is much closer to the original Republican proposal than President Obama's proposal that would have eliminated the Bush tax cuts for high-income households.

Progressive and Regressive Taxation in the United States: Who's Really Paying (and Not Paying) Their Fair Share?

Brian Roach

Introduction

In the 2010 debate over extending the Bush tax cuts, the issue of tax fairness often arose. While tax fairness is a subjective topic, any serious discussion of the issue should be based upon comprehensive and objective analysis of the distribution of the entire tax system. Focusing on just one component of the tax system, such as the federal income tax, ignores the distributional impacts of other components of the tax system.

The U.S. tax system is comprised of a mixture of progressive and regressive taxes. By a progressive tax, we mean that the percentage of income an individual (or household) pays in taxes tends to increase with increasing income. Not only do those with higher incomes pay more in total taxes, they pay a higher tax rate. For example, a person making $100,000 in a year might pay 25% of their income in taxes (or $25,000), while someone with an income of $30,000 might only pay a 10% tax rate (or $3,000). A regressive tax is one where the percentage of income paid in such taxes tends to decrease as one's income increases. A proportional, or flat,[1] tax simply means that everyone pays the same effective tax rate regardless of income.

There has been debate in recent years over the degree of progressivity in the U.S. tax system, and over progressivity trends. Consider the following analyst who claims that an increasing share of the U.S. federal tax burden has shifted towards the wealthy in recent decades:

> "America's top income earners now shoulder a greater share of the federal tax burden than they did when President Bush first took office, and they shoulder a *much* greater share than they did in the early 1980s."[2]

But this finding apparently conflicts with the following assessment of trends in the distribution of the federal tax burden:

> "… the progressivity of the U.S. federal tax system at the top of the income distribution has declined dramatically since the 1960s. [T]he most dramatic changes in federal tax

[1] This is not exactly the same concept embodied in proposals for a "flat tax" in the U.S. These proposals would set just one tax rate but would normally exclude a given amount of income from taxation. Thus, flat tax proposals would retain some degree of progressivity.
[2] Currie, 2008.

> system progressivity almost always take place within the top 1 percent of income earners, with relatively small changes occurring below the top percentile."[3]

What explains the dramatic difference in the conclusions of these studies? Both statements are technically correct, but potentially misleading. The first study emphasizes the share of the tax burden paid by different income groups without full consideration of how the income shares of these groups have changed over time. The second study focuses on changes at the top of the income distribution, without a comprehensive evaluation of the entire tax system. A more complete understanding of tax progressivity trends requires further analysis.

This paper updates a 2003 analysis (Roach, 2003) by providing an assessment of the distribution of the entire U.S. tax system, including federal, state, and local taxes based upon the most recent data. Estimates are provided of the degree of progressivity, or regessivity, of each component of the tax system, along with an evaluation of the entire system. Trends in the distribution of individual tax components, and the entire tax system, are determined. These findings will be discussed in the context of the recent debate over the extension of the Bush tax cuts and increasing economic inequality in the U.S.

Measuring Tax Progressivity

Tax progressivity is often measured by comparing categorical data on tax shares to data on income shares. If the tax shares for high-income groups exceed their income shares, and vice versa for low-income groups, then the tax would be progressive. Consider Table 1 which presents the distribution of the federal income tax in 2007. Taxpayers in the lowest income groups actually tend to receive a net tax rebate, thus paying a negative share of the federal income tax burden. Meanwhile, the tax shares of higher income groups exceed their income shares. Thus we can conclude that the federal income tax is a progressive tax.

Income Group	Share of Income	Share of Federal Income Taxes
Bottom Quintile	4.0	-3.0
Second Quintile	8.4	-0.3
Third Quintile	13.1	4.6
Fourth Quintile	19.3	12.7
Percentiles 80-90	13.9	13.3
Percentiles 90-95	9.7	11.7
Percentiles 95-99	12.9	21.5
Top Percentile	19.4	39.5

Source: CBO, 2010.

Table 1. Distribution of the Federal Income Tax, 2007

[3] Piketty and Saez, 2007, p. 22-23.

Categorical comparisons such as those in Table 1 are, however, limited as an analysis tool in a few ways. First, the results don't always clearly indicate whether a tax is progressive or regressive because an obvious pattern may not be evident. Second, the overall degree of progressivity or regressivity isn't easily determined, especially in relation to other taxes. Finally, it is difficult to determine trends in tax progressivity based upon categorical comparisons because the shares of different groups may not be changing in a clear manner over time.

Thus a more comprehensive measure of tax progressivity is needed. In this paper, we use the Index of Tax Progressivity developed by Daniel Suits in the 1970s (Suits, 1977). Also called the Suits Index, this measure is perhaps the most widely-used metric of tax progressivity (Anderson et al., 2003). The Suits Index is constructed by using data on tax and income shares, such as the data in Table 1, to construct a tax progressivity curve plotting the cumulative share of income against the cumulative share of taxes paid. Figure 1 provides an example of tax progressivity curves. The 45-degree dashed line represents the line of tax proportionality. A tax progressivity curve that bows below the dashed line would be a progressive tax because higher-income groups pay a greater share in taxes than they receive in income. The curved line below the tax proportionality line in Figure 1 represents the distribution of a progressive tax. The curve above the line of tax proportionality would be a regressive tax because lower-income groups pay a tax share that exceeds their income share.

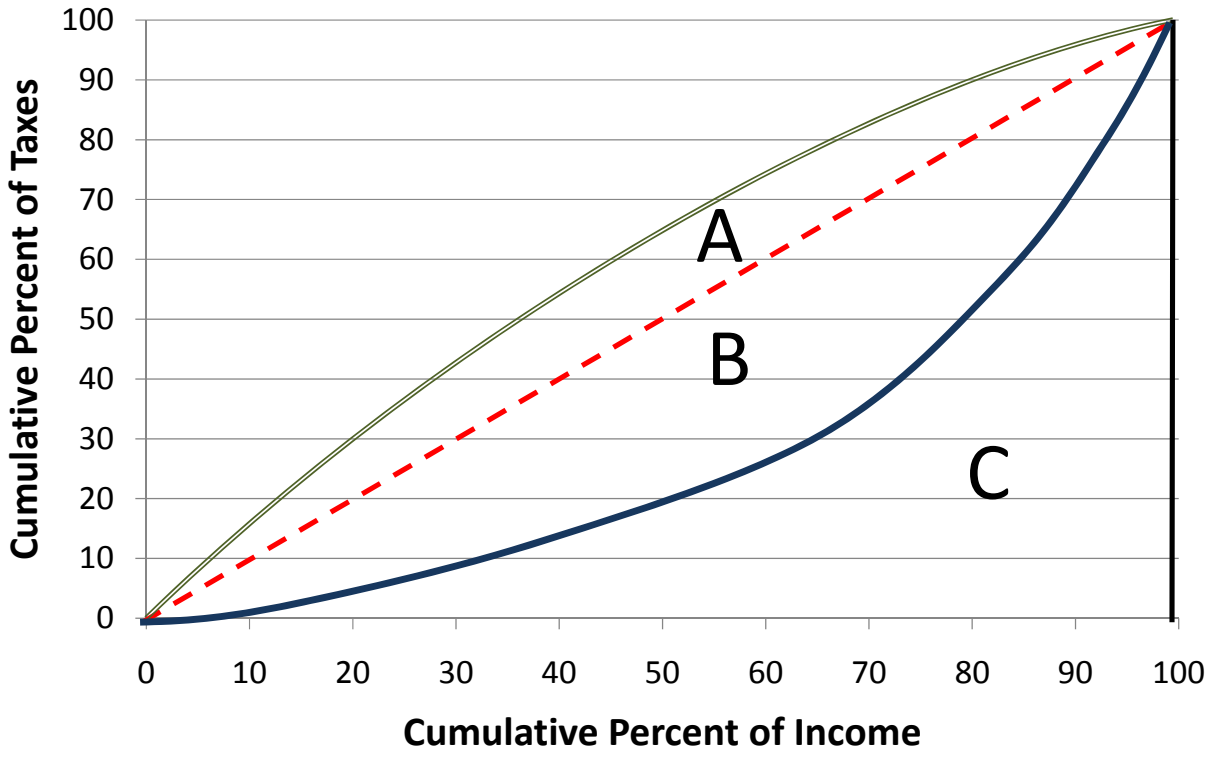


Figure 1. Tax Progressivity Curves

For the progressive tax in Figure 1, the Suits Index is calculated as:

$$[(B+C) – C] / (B+C)$$

Note that as a tax becomes more progressive, the value of C will approach 0 and the Suits Index will approach its maximum value of 1. For a proportional tax, B=0 and the Suits Index would be 0. For a regressive tax, the Suits Index is:

$$[(B+C) – (A+B+C)] / (B+C) = – A / (B+C)$$

Note that the Suits Index will be negative for a regressive tax. As a tax becomes more regressive, the Suits Index would approach its minimum value of –1.

Tax Incidence

While taxes are paid by various entities other than individuals, such as corporations, partnerships, and public service organizations, the burden of all taxes ultimately falls on individuals. The final incidence of taxation is contingent upon how a specific tax translates into changes in prices and changes in economic behavior among consumers, businesses, and other entities:

> "Tax incidence is the study of who bears the economic burden of a tax. … It begins with the very basic insight that the person who has the legal obligation to make a tax payment may not be the person whose welfare is reduced by the existence of the tax. The statutory incidence of a tax refers to the distribution of those legal tax payments – based on the statutory obligation to remit taxes to the government. ...
>
> Economic incidence differs from statutory incidence because of changes in behavior and consequent changes in equilibrium prices. Consumers buy less of a taxed product, so firms produce less and buy fewer inputs – which changes the net price or return to each input. Thus the job of the incidence analyst is to determine how those other prices change, and how those price changes affect different groups of individuals." (Metcalf and Fullerton, 2002, p. 1)

A number of general conclusions have been reached by economists studying tax incidence. The incidence of federal social insurance taxes, while split equally between employees and employers on paper, are assumed to fall entirely on employees in terms of lower wages. Excise taxes fall on households in proportion to their purchases of the taxed goods. Corporate taxes are generally assumed to fall on owners of capital in proportion to their income from capital (dividends, capital gains, interest, and rents) (CBO, 2007). In the long run, property taxes represent a cost of providing rental units and will be passed on to renters in terms of higher rental prices (Goodman, 2005). All of the results presented in this paper represent the output of tax incidence models.

Data on Tax Distribution

We rely upon tax distribution data from three sources for this paper. The Congressional Budget Office (CBO) provides annual tax distribution data for four categories of federal taxes: income, corporate, social insurance, and excise taxes. The Tax Foundation, a nonpartisan tax research group, provides occasional tax distribution data, mostly for federal tax categories. Finally, Citizens for Tax Justice, a nonprofit public interest and advocacy organization, publishes tax distribution data for both federal and state taxes, although also not on a consistent basis.

We first consider the current distribution of the U.S. tax system. The most recent complete data are for 2007. Tax distribution curves for all components of the U.S. tax system are presented in Figure 2, with the dashed line representing tax proportionality.[4] The figure clearly illustrates that federal excise and social insurance taxes are regressive, along with the overall state and local tax system. Meanwhile, federal income, corporate, and estate and gift taxes are clearly progressive.

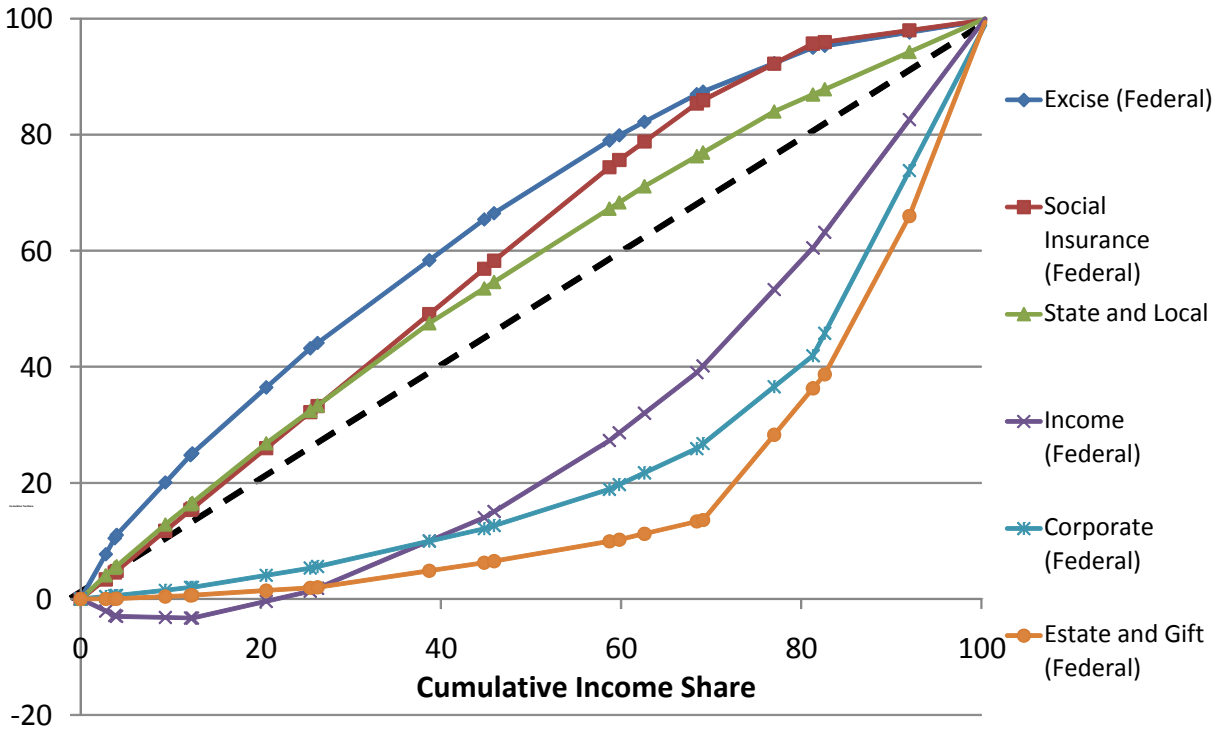


Figure 2. Tax Distribution Curves, 2007

[4] The federal estate and gift tax distribution curve is based on 2008 data, as no 2007 data could be located.

Based on the tax progressivity curves in Figure 2, a Suits Index was calculated for each tax component.[5] The results in Table 2 show that federal excise taxes are the most regressive component of the U.S. tax system while the federal estate and gift tax is the most progressive component. Table 2 also shows that the overall federal tax system is progressive, with a Suits Index of 0.18 for 2007.

Tax Component	**Suits Index**	**Year**	**Data Source**
Federal Income	+ 0.42	2007	Congressional Budget Office
Federal Social Insurance	– 0.20	2007	Congressional Budget Office
Federal Corporate	+ 0.51	2007	Congressional Budget Office
Federal Excise	– 0.31	2007	Congressional Budget Office
Federal Estate and Gift	+ 0.63	2008	Tax Foundation
State and Local Taxes	– 0.12	2007	Citizens for Tax Justice
All Federal Taxes	+ 0.18	2007	Congressional Budget Office
Entire U.S. Tax System	+ 0.06	2009	Citizens for Tax Justice
Entire U.S. Tax System	+ 0.05	2004	Citizens for Tax Justice
Entire U.S. Tax System	+ 0.09	2001	Citizens for Tax Justice

Table 2. Suit Indices for U.S. Tax Components

Given the mix of progressive and regressive taxes in Table 2, the extent of progressivity of the entire U.S. tax system cannot be easily determined. The table also provides some recent estimates of the Suits Index for the overall U.S. system. The results show that the entire system is currently progressive, but only slightly with a value of 0.06 for 2009. The tax progressivity curve for the 2009 U.S. tax system is presented in Figure 3. The figure illustrates that most of the progressivity of the system occurs in the lower-half of income. Comparable data for previous

[5] Note that all Suits Indices in this paper are calculated using linear interpolations between the known data points.

years show that the progressivity of the overall US. tax system was very similar in 2004, with a Suits Index of 0.05, and somewhat more progressive in 2001 with a Suits Index of 0.09.

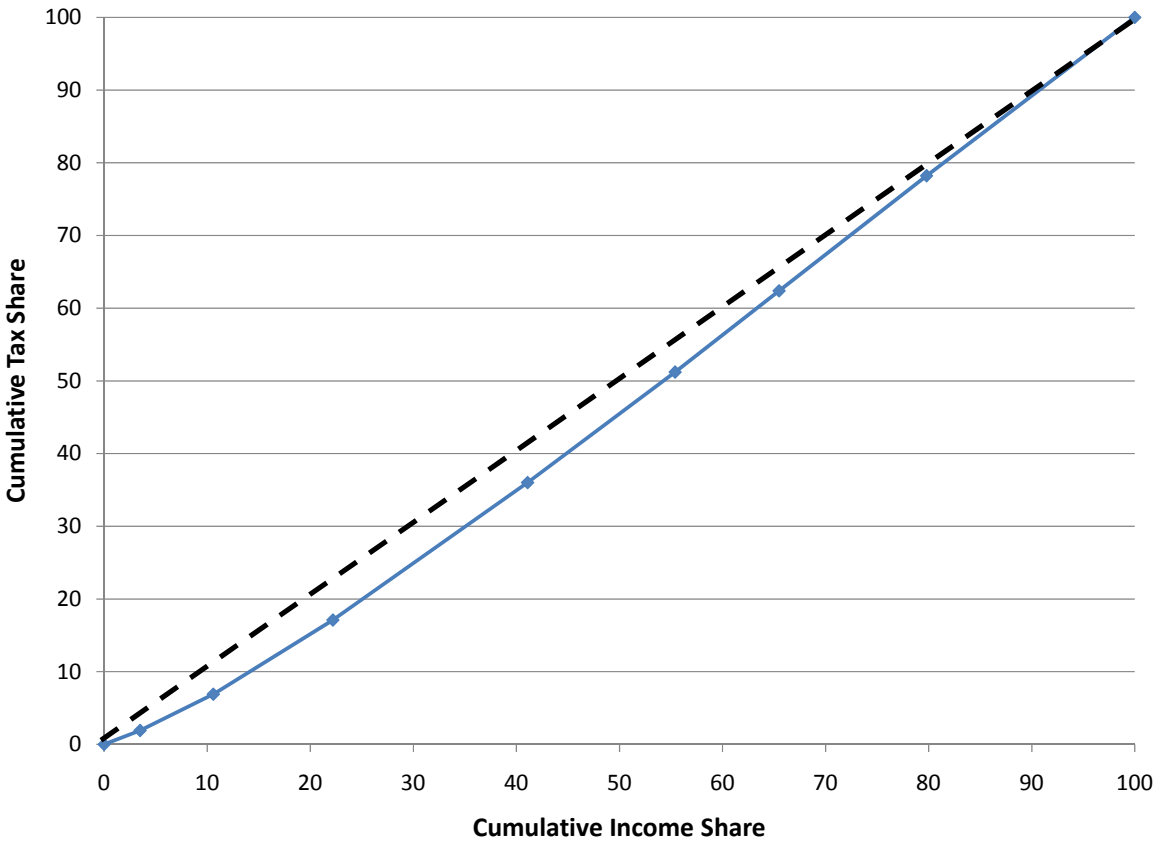


Figure 3. Overall U.S. Tax System Distribution Curve, 2009

For a further understanding of the distribution of the entire tax system, Table 3 shows the distributional impacts by income class. The data on taxes as a percentage of income show that average federal tax rates consistently increase as income increases, but that state and local tax rates decline. The combined effect is that tax rates tend to increase as income increases, although the overall rates flatten out at the highest income levels. The lowest quintile of taxpayers pay an average of about 16% of their income in taxes, median income taxpayers pay an average of around 25% of their income in taxes, while those at the highest income levels pay slightly more than 30% of their income in taxes. Thus most of the progressivity of the overall system arises from the lower levels of the income spectrum rather than the upper levels. Also note that the average overall effective tax rate for the highest income percentile is lower than the

average tax rate for the top 10%. This is largely a result of the relatively high portion of income among the top 1% that derive from capital gains, which are taxed at a lower rate than income.

Income Class	Taxes as a % of Income			Percentage Shares of			
	Federal Taxes	State and Local Taxes	All Taxes	Total Income	Federal Taxes	State and Local Taxes	All Taxes
Lowest 20%	3.6	12.4	16.0	3.5	0.7	4.2	1.9
Second 20%	8.7	11.8	20.5	7.1	3.5	8.1	5.0
Third 20%	13.9	11.3	25.3	11.6	9.1	12.5	10.2
Fourth 20%	17.2	11.3	28.5	18.9	18.5	20.5	18.9
Next 10%	19.0	11.1	30.2	14.3	15.4	15.2	15.2
Next 5%	20.4	10.8	31.2	10.2	11.7	10.4	11.2
Next 4%	21.3	10.2	31.6	14.2	17.0	13.7	15.8
Next 1%	22.3	8.4	30.8	20.4	24.1	15.3	22.1
ALL	18.0	10.6	28.6				

Source: Citizens for Tax Justice, 2010a.

Table 3. Distribution of the U.S. Tax System by Income Class

Trends in Tax Progressivity

Trends in the federal tax system can be analyzed using the 1979-2007 data from the Congressional Budget Office. Annual Suits Indices were calculated for three federal tax types: income taxes, social insurance taxes, and the overall federal tax system.[6] The results are presented in Figure 4. We see that the federal income tax has generally increased in progressivity over the last few decades, peaking in 2003 with a Suits Index of 0.46 and then becoming slightly less progressive since then with an Index of 0.42 in 2007. Social insurance taxes maintained a relatively constant degree of progressivity through the 1980s and early 1990s, and then have generally become more regressive since then. The overall federal system tended

[6] Note that the CBO data exclude federal estate and gift taxes.

to become less progressive from 1979 to 1986, then tended to become more progressive up to 2003, and has become slightly less progressive since then.

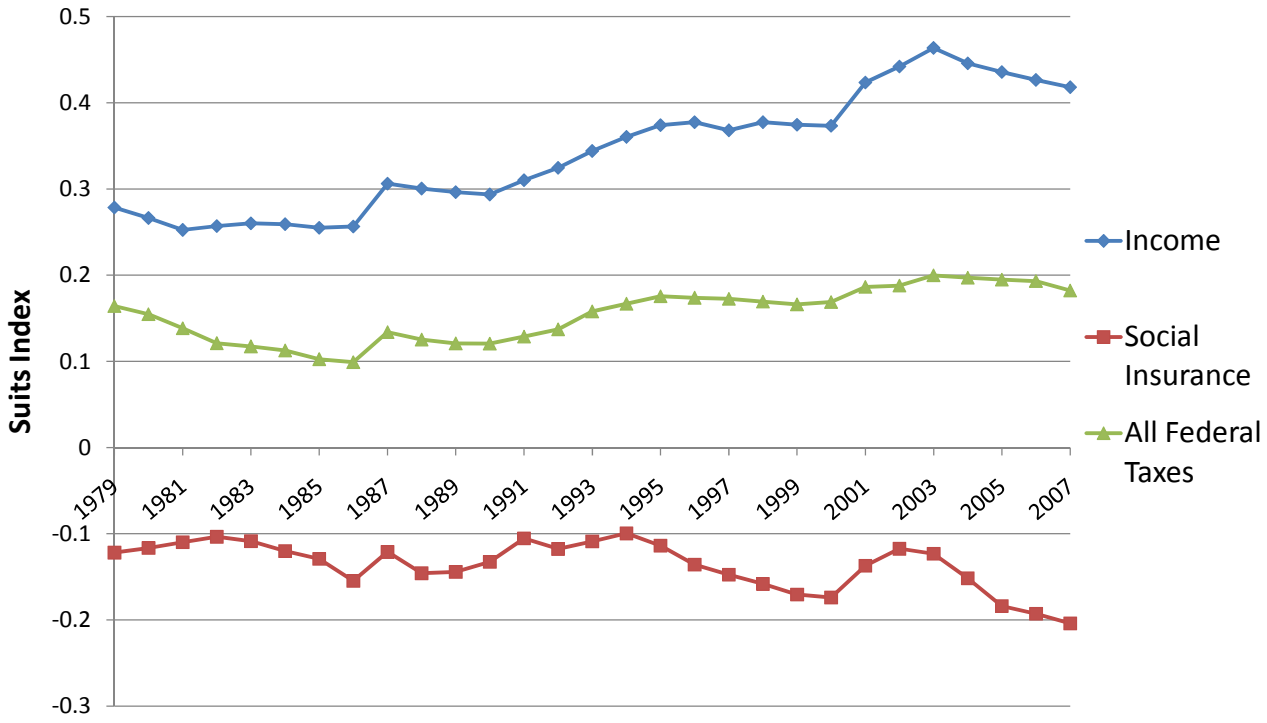


Figure 4. Suits Indices, Selected Federal Taxes, 1979 - 2007

Complete data on the distribution of state and local taxes are available from Citizens for Tax Justice for 1995, 2002, 2007, and 2009, with Suits Indices of -0.11, -0.07, -0.12, and -0.07 respectively. Thus the available data suggest no obvious overall trend in the regressivity of state and local taxes. The unavailability of consistent data on the distribution of state and local taxes makes determination of the trends in the overall U.S. tax system difficult to determine. As Table 2 indicated, total taxes declined in progressivity from 2001 to 2004, and then stayed about the same from 2004 to 2009.

Tax Progressivity and the Bush Tax Cuts

The 2001 and 2003 Bush tax cuts reduced average federal tax rates for all income classes.[7] At the time these cuts were enacted, an analysis of projected tax impacts forecasted that these tax cuts would slightly increase the progressivity of federal taxes up to the mid-2000s, and then slightly decrease progressivity for a few years in the late 2000s (Roach, 2003). The results in Figure 3 show that this projection was correct. Overall, the Bush tax cuts have not caused a major change in the progressivity of the federal tax system as compared to 2001.

The debate over extending the Bush tax cuts normally has focused on whether the cuts should be extended for high-income taxpayers (individuals with incomes over $200,000 and households with incomes over $250,000). Analysis by Citizens for Tax Justice has compared the tax implications of three proposals for extending the Bush tax cuts (CTJ, 2010c):

- President Obama's original plan, which would have extended the tax cuts for all but the richest two percent of taxpayers and included expansion of the Child Tax Credit and the Earned Income Tax Credit;
- Original Republican proposals to make the cuts permanent for all taxpayers, provide for greater reductions in the federal estate and gift tax, and not provide the credit expansions of the Obama plan (CTJ, 2010b);
- The compromise plan which includes a two-year expansion of the Bush tax cuts for all taxpayers, the reductions in the federal estate and gift taxes proposed by the Republican plan, and a two-percent temporary reduction in the payroll tax.

Based on 2009 tax distribution data, we calculate the Suits Index of the entire U.S. tax system under each proposal. Under the original Obama plan the Suits Index is +0.068, under the original Republican proposal the Suits Index would be +0.047, while with the compromise plan the Suits Index would be +0.051. So while the compromise plan is slightly more progressive than the original Republican proposal, the resulting progressivity is much closer to the Republican proposal than the original Obama proposal.

Conclusion and Discussion

Claims that the U.S. tax system has become significantly more or less progressive in recent decades appear to be erroneous. The federal tax system was slightly more progressive in 2007 (Suits Index of -0.18) than it was in 1979 (Suits Index of -0.16). The overall state and local tax system in the United States is clearly regressive, but there seems to be no clear trend in distributional impacts from 1995 to 2009. The overall tax system in the U.S. is progressive, but only slightly as shown in Figure 3. The limited data on the entire tax system indicate a decrease

[7] Citizens for Tax Justice, 2004.

in progressivity of the entire system over the last decade, with Suits Indices of 0.09 in 2001 and 0.06 in 2009. However insufficient data are available to discern any consistent trend in the distribution of the overall U.S. tax system.

In the context of the debate over extending the Bush tax cuts for the wealthy, this analysis demonstrates the importance of considering the progressivity of the overall tax system when evaluating the policy impacts of various proposals. The provisions of the Bush tax cuts mainly affect federal income taxes. Given that the federal income tax is quite progressive, with a Suits Index of over +0.40, under any of the proposals to extend the Bush tax cuts the federal income tax remains clearly progressive. But when we consider the overall U.S. tax system, including the regressivity of state and local taxes, our starting point is a system that is not significantly progressive, with a Suits Index of +0.05 to +0.06. Policies that disproportionally benefit higher-income households, such as eliminating or reducing the federal estate and gift tax, will push the overall system closer to the point of proportionality.

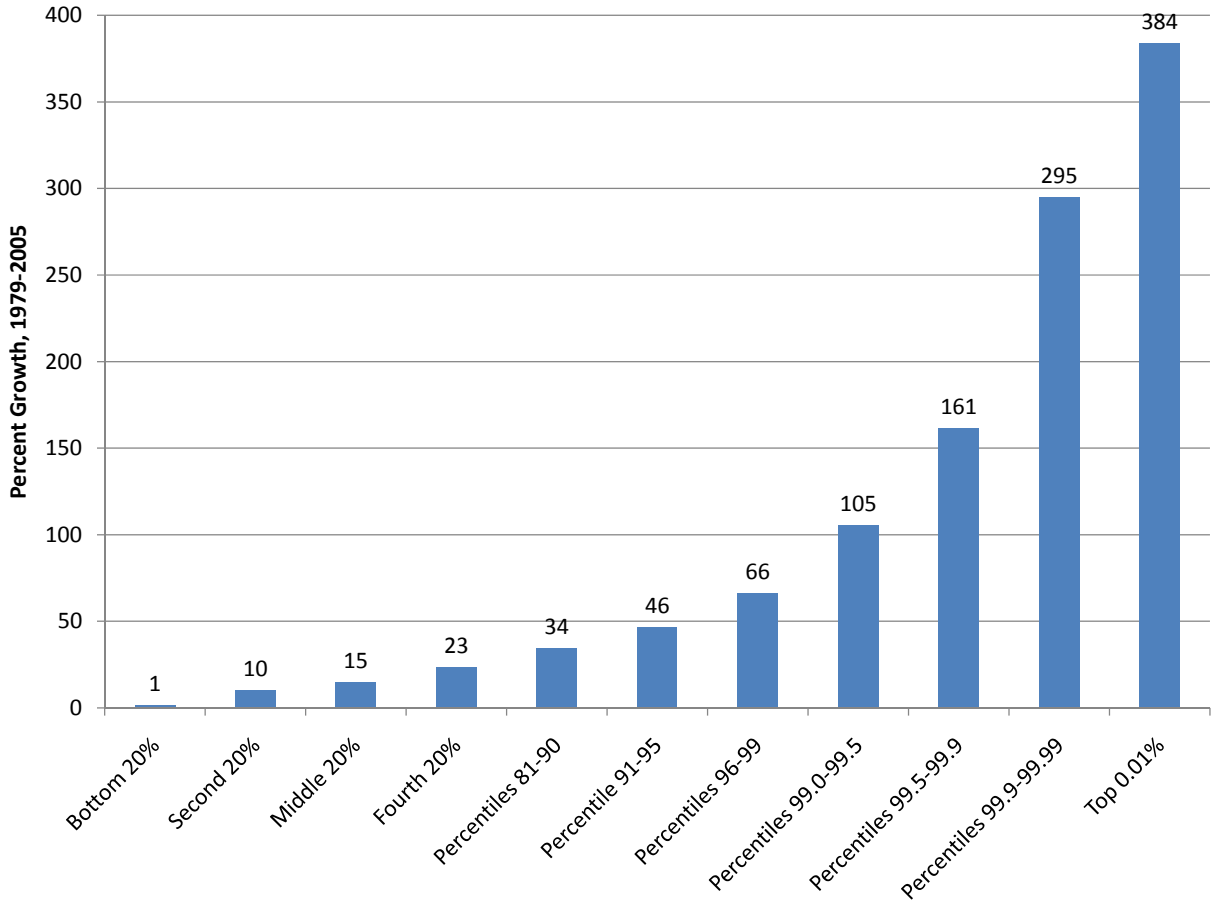
Another contextual point worth considering is that tax policy represents a potential counterbalance to changes in economic inequality. The trend of increasing economic inequality over the last few decades in the United States is well documented. The U.S. Gini coefficient has increased from under 0.40 in the 1970s to around 0.47 in the late 2000s.[8] The growth in income inequality is illustrated more effectively in Figure 5, which shows real income growth from 1979 to 2005 by income class. We see a clear pattern in which the percentage growth in real income increases with each step up the income ladder. Lower-income groups saw very little change in average real incomes, middle-income groups saw modest increases, while the higher-income groups saw dramatic income growth. Further, within the top 1% the income growth was highly skewed towards the very highest groups. Those in the top 0.01% saw income growth that was about four times as high than those that were merely in the 99.0 to 99.5 percentile range.

More recent data indicate that inequality continues to increase. Over the period 2002-2008 the incomes of the top 1% increased by 30% in real terms and the incomes of the top 0.01% increased by 68%. Meanwhile, the average real income of the lower 90% actually fell during this period by about 4% (Shaw and Stone, 2010). The Obama plan to partially extend the Bush tax cuts and provide tax credit expansions would result in a net average tax increase on the top 1%, relative to S. 3773, of about $46,000 (CTJ, 2010b). However, this group saw a real income gain of about $262,000 over the period 2002-2008 (Shaw and Stone, 2010). The bottom 90% that experienced an average real income decline over 2002-2008 would see this partially offset by the tax credit expansions of the Obama plan, but would still be left with a real income decline of about $1,000.

So in the context of recent changes in income inequality, the Obama plan to eliminate the Bush tax cuts for the wealthiest taxpayers would still leave this group with a substantial real income

[8] U.S. Census Bureau, 2010.

gain since 2002. And even with the tax credit expansions under the Obama plan, the vast majority of taxpayers would still be left with real income declines since 2002. Thus the Obama plan would partially reverse the increase in income inequality since 2002 but even in this case the vast majority of all income gains since 2002 will have accrued to the top 1%.



Source: Congressional Budget Office, 2007.

Figure 5. Real Income Growth, by Income Class, 1979-2005

Greater progressivity in the U.S. tax system provides a policy tool that can be used to offset rising income inequality, especially at the highest income levels, as demonstrated in Figure 5. But the data in Table 3 indicate that progressivity in the U.S. tax system levels off at the highest income levels. Thus one policy option that may seem particularly appropriate would be to institute one or more additional marginal tax rates for the highest income earners, above the current top rate of 35%. A proposal to create a new "millionaire" tax bracket on annual incomes

above $1 million was put forward by Senator Chuck Schumer of New York in November 2010, but it failed to garner sufficient support. However, a well-designed tax reform of additional high-income tax brackets could ensure that the overall U.S. tax system maintains progressivity through the highest income levels and partially offsets the dramatic income concentration at the very top.

REFERENCES

Anderson, John E., Atrayee Ghosh Roy, and Paul A. Shoemaker. 2003. "Confidence Intervals for the Suits Index," *National Tax Journal* 56(1):81-90.

Citizens for Tax Justice. 2010a. "All Americans Pay Taxes," April 15, 2010.

Citizens for Tax Justice. 2010b. "Comparing President Obama's Tax Plan and Senate Republicans' Tax Plan," September 17, 2010.

Citizens for Tax Justice. 2010c. "Compromise Tax Cut Plan Tilts Heavily in Favor of the Well-Off," December 7, 2010.

Citizens for Tax Justice. 2004. "Overall Tax Rates Have Flattened Sharply Under Bush," April 14, 2004.

Congressional Budget Office. 2010. "Average Federal Tax Rates in 2007," June 2010.

Congressional Budget Office. 2007. "Historical Effective Federal Tax Rates: 1979 to 2005," December 2007.

Currie, Duncan. 2008. "America Has a Highly Progressive Tax System," *The American*, October 24, 2008.

Dungan, Adrian, and Kyle Mudry. 2010. "Individual Income Tax Rates and Shares, 2007," *Statistics of Income Bulletin*, Winter 2010.

Goodman, Jack. 2005. "Houses, Apartments, and Property Tax Incidence," Joint Center for Housing Studies, Harvard University, February 2005.

Metcalf, Gilbert E. and Don Fullerton. 2002. "The Distribution of Tax Burdens: An Introduction," National Bureau of Economic Research Working Paper 8978.

Piketty, Thomas, and Emmanuel Saez. 2007. "How Progressive is the U.S. Federal Tax System? A Historical and International Perspective," *Journal of Economic Perspectives*, 21(1):3-24.

Roach, Brian. 2003. "Progressive and Regressive Taxation: Who's Really Paying (and Not Paying) their Fair Share?" Global Development and Environment Institute Working Paper 03-10, October 2010.

Shaw, Hannah, and Chad Stone. 2010. "Tax Data Show Richest 1 Percent Took a Hit in 2008, but Income Remained Highly Concentrated at the Top," Center on Budget and Policy Priorities, October 21, 2010.

Suits, Daniel B. 1977. "Measurement of Tax Progressivity," *The American Economic Review*, 67(4):747-752.

United States Census Bureau. 2010. "Selected Measures of Household Income Dispersion: 1967 to 2009," http://www.census.gov/hhes/www/income/data/historical/inequality/taba2.pdf