



The Trouble with Taxing Those at the Top

By Alan D. Viard

Democratic presidential candidates and members of Congress are vying with one another to raise marginal tax rates for high-income earners, particularly the top 1 or 2 percent of taxpayers. A careful review of economic theory and evidence suggests that raising tax rates at the top is an inefficient and undesirable way to generate revenue.

A number of recent proposals would raise individual income tax rates for the 1 or 2 percent of Americans with the highest incomes. Proponents argue that these proposals will generate significant revenue from those who can best afford to pay more while sparing 98 percent of the population any burden. Economic analysis, however, shows that rate increases at the top are likely to impose significantly greater economic harm than other tax increases, with much of the harm falling on those who are not in the top income groups.

High-income Americans already bear a surprisingly large share of the nation's tax burden. Moreover, raising additional revenue from this group would require steep increases in marginal tax rates, which pose large economic distortions relative to revenue raised. Economic models of optimal income taxation indicate that these distortions may make rate increases at high income levels undesirable, even if the government puts a strong emphasis on transferring income to the poor. The conclusion is dramatically strengthened by considering the impact of such rate increases on capital formation, an effect not included in these models. By reducing the capital stock, rate increases at the top drive down wages, imposing costs on workers at all income levels.

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Proposals to Raise Marginal Rates at the Top

Under current law, a married couple with taxable income in the top income tax bracket (above \$349,700 in 2007) pays an income tax of \$94,601 plus 35 percent of the excess of their taxable income over \$349,700. Under this formula, 35 percent is the couple's *marginal* tax rate, the fraction of each additional dollar that is absorbed by tax. The couple's *average* tax rate, the fraction of total taxable income absorbed by tax, is lower because the first \$349,700 falls into lower tax brackets. In addition, qualified dividends and long-term capital gains are subject to a maximum tax rate of 15 percent.

After the 2001 and 2003 tax cuts expire at the end of 2010, the top marginal rate will rise to 39.6 percent. The maximum tax rate on qualified dividends will jump to that same level, while the maximum tax rate on long-term capital gains will rise to 20 percent.

Proposals to raise marginal rates at high income levels are drawing greater interest. House Speaker Nancy Pelosi (D-Calif.) said on January 7, 2007, that repealing the 2001 and 2003 tax cuts for those with incomes above \$500,000 was "not off the table," although it was "not a first resort."¹ On March 22, thirty-eight senators voted for a non-binding amendment to the fiscal 2008 budget

resolution that envisioned raising the marginal tax rate from 35 to 39.6 percent on taxable income in excess of \$1 million. The major Democratic presidential candidates for 2008 have urged that the 2001 and 2003 tax cuts be allowed to expire at the end of 2010 for higher-income taxpayers: John Edwards and Hillary Clinton refer to those with incomes above \$200,000, Barack Obama refers to those with incomes above \$250,000, and Joseph Biden refers to the top 1 percent.² The *Washington Post* has endorsed a 5-percentage-point increase in the rate paid by the top 1 percent of the population.³

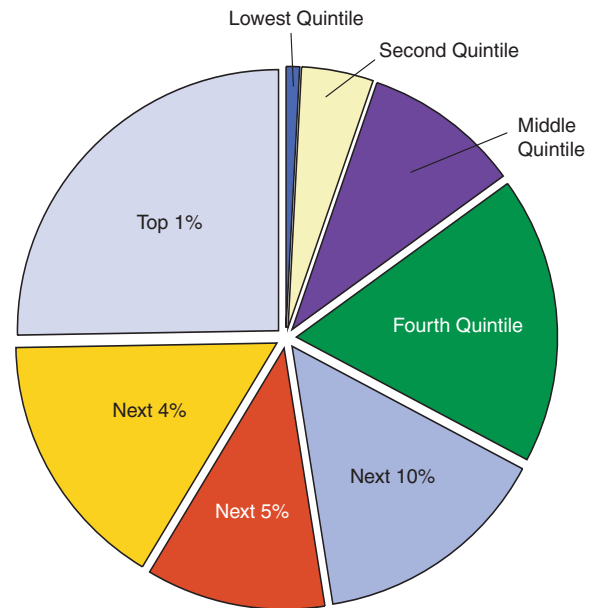
One initiative has received significant publicity, and a variant of it may soon be voted on in Congress: the Urban-Brookings Tax Policy Center has proposed imposing a 4-percentage-point surtax on adjusted gross income above \$200,000 for couples (\$100,000 for singles) to finance the repeal of the individual alternative minimum tax (AMT).⁴ The *New York Times* endorsed this proposal.⁵ Democratic members of the House Ways and Means Committee are reportedly considering a variant of this proposal that would retain the AMT for high-income households and that would apply a 4.3-percentage-point surtax to incomes above \$500,000. This proposal may reach the floor of the House in July.⁶

These various proposals refer to different income groups. It is also unclear in some cases whether references are to taxable income or total income and whether the income thresholds apply to married couples or to single taxpayers. Even the broadest proposals, though, seem to apply to little more than 2 percent of the population. In 2004, for example, tax returns with adjusted gross income in excess of \$200,000 accounted for 2.3 percent of all returns.⁷ Tax returns in the 35 percent bracket accounted for 0.8 percent of all returns.⁸ Also, for 2004, the Congressional Budget Office (CBO), which adjusts incomes based on household size, defined the top 1 percent to include one-person households with total incomes above \$266,800 and four-person households with incomes above \$533,600.⁹

Wealthy Already Bear Large Share of the Tax Burden

To begin, it is worth noting that high-income groups already pay a large share of the federal tax burden. For 2004, the CBO found that the top 1 percent of all taxpayers paid 37 percent of all individual income taxes. The CBO also found that the top 1 percent bore a staggering 59 percent of the corporate income tax burden

FIGURE 1
SHARES OF FEDERAL TAX LIABILITIES,
2004



SOURCE: Congressional Budget Office, *Historical Effective Federal Tax Rates: 1979 to 2004*, December 2006.

(under the assumption that the burden takes the form of lower capital income for individuals). To be sure, this group paid only 4 percent of payroll and other social insurance taxes and only 5 percent of excise taxes. Combining all of these taxes, though, the top 1 percent still bore 25 percent of the federal tax burden. It is not widely recognized that one-quarter of the costs of federal services—such as Social Security, Medicare, national defense, and the FBI—are paid by a mere 1 percent of the population.¹⁰

Figure 1 illustrates the CBO data on the various income groups' share of the federal tax burden. As shown, the next highest 4 percent of the population bore another 16 percent of the tax burden. In contrast, the lowest quintile (the 20 percent of households with the lowest incomes) bore less than 1 percent of the tax burden, and the next quintile bore less than 5 percent.

The 25 percent tax share for the top 1 percent in 2004 was the highest value in recent history, except for a slightly higher ratio in 2000. The rise in the tax share of the top 1 percent partly reflected growth in their share of income. Their share of the federal tax burden nevertheless exceeded their share of national income: they had 16 percent of before-tax income in 2004, but paid 25 percent of the taxes.

Large Marginal-Rate Increases Needed to Raise More Money from the Wealthy

Of course, one still might think that this group could afford to pay more. Even after bearing such a large share of the tax burden, the top 1 percent still retained 14 percent of national after-tax income in 2004. Their average household income was \$1,260,000 before tax and \$868,000 after tax.

Nevertheless, raising significant amounts of revenue from this group would require large hikes in marginal tax rates. Consider the task of raising an additional \$1 trillion over fiscal years 2008 through 2017, which would cover the costs of AMT repeal or reform, with some extra money for other priorities. That would be an increase of only 3 percent over the \$34.5 trillion revenue projected under current law.¹¹

Extrapolating from CBO estimates for smaller rate increases indicates that this money could be raised with an across-the-board rate increase of 2.2 percentage points. But if the increase applied solely to taxable incomes above \$1 million (\$500,000 for singles), marginal rates would need to rise 22 percentage points from their current 35 percent, to 57 percent. If the net were widened to include everyone in the top bracket (couples with taxable incomes above \$349,700), the necessary increase would be 13 percentage points, from 35 to 48 percent. Even if the rate increase also applied to the next highest bracket (couples with taxable incomes above \$195,850), the required increase would still be 10 percentage points.¹² Such rate increases would put marginal rates back to levels not seen in decades; the top rate has been below 40 percent since 1987.

The surtax on adjusted gross income proposed by the Urban-Brookings Tax Policy Center raises more revenue. Because the surtax applies to adjusted gross income rather than to taxable income, itemized deductions—including charitable contributions, state and local taxes, and mortgage interest—cannot be claimed against the surtax. Even so, a surtax of roughly 5 percentage points on incomes above \$200,000 (\$100,000 for singles) would be needed to raise \$1 trillion.

Although high-income taxpayers have a large amount of income, raising significant revenue from them would still require steep increases in marginal tax rates.

To determine the desirability of such rate increases, it is necessary to look at the economic effects of raising marginal tax rates.

Policy Tradeoff

Economic analyses of tax policy usually make two key assumptions. First, they assume that policymakers attach a lower value to a dollar in the hands of a high-income person than to a dollar in the hands of a low-income person, because the former has less need or greater ability to pay. This assumption clearly provides support for raising rates at the top. Second, they assume that individuals can alter their taxable income in response to incentives. This assumption is certainly warranted.

Indeed, under the current U.S. income tax system, taxpayers can respond in a number of ways to lower their taxable income. In addition to working less, they can shift their earnings into tax-free fringe benefits and spend more of their earnings on tax-deductible items.

The fact that taxpayers can alter their taxable income implies that income taxation is distortionary; it imposes an economic burden above and beyond the actual tax payments. For example, suppose that a taxpayer would earn \$1,000 of income if his tax liability did not depend upon his income, but, when told that 40 percent of his income

will be taxed, decides to earn only \$800.¹³ The sacrifices that would be required to earn the last \$200 were worth making when he kept the full \$200, but are not worth making when he keeps only \$120 of the extra income.

The revenue raised by the tax is \$320 (40 percent of \$800), but this tax payment is not the taxpayer's only loss. The taxpayer also bypasses the opportunity to earn the additional \$200. If the sacrifices required to earn the \$200 would, for example, have been worth making for \$160, then the taxpayer has a \$40 loss in addition to the \$320 tax payment. That \$40 loss reflects the distortion inflicted by the tax.

This distortion depends upon the marginal tax rate, the fraction of each additional dollar of income that is absorbed by tax. When a taxpayer with an income of \$500,000 considers whether to earn an additional dollar, the relevant factor is the 35 percent of that dollar that will go toward taxes. The fact that the taxpayer pays

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\$94,601 rather than some other amount on the first \$349,700 is not relevant because that tax liability will not be changed by earning an additional dollar.

Economic analysis indicates that the best taxes are those paid by people who can best afford to pay and those that involve little distortion per dollar of revenue. Unfortunately, there is usually a tradeoff between these criteria. On the one hand, rate increases at the top fall on those with the greatest ability to pay. On the other hand, they turn out to have large distortions per dollar of revenue.

To see this last point, consider a 1-percentage-point rate increase in the top tax bracket, from 35 to 36 percent. This increases the disincentives for all of the affected taxpayers by 1 percentage point, yet the revenue it raises is less than 1 percent of the affected taxpayers' incomes. For the \$500,000 couple, for example, the 1-percentage-point tax increase applies to only the last \$150,300 of income, the portion that falls into the top bracket; the tax on the first \$349,700 is unchanged at \$94,601. Because the disincentive effects depend upon the marginal tax rate, though, they are

as severe as if the couple had to pay an extra 1 percent on all of its income. (But with one caveat: the rate increase will not cause the taxpayer to reduce his income below \$349,700, since the disincentive then disappears). As a result, the ratio of distortion to revenue can be very high.

For example, suppose that the 1-percentage-point disincentive causes the couple to earn 0.8 percent less income, so that their taxable income falls to \$496,000. The tax increase would then generate a revenue gain of only \$63, as the reduction in taxable income largely offsets the direct effect of the rate increase. Yet, the tax increase imposes a burden of approximately \$1,483 on the couple. The distortion from this tax increase is about \$1,420, reflecting the losses to the couple and the government when the couple forgoes the opportunity to earn the additional income.¹⁴ The distortion-to-revenue ratio is extremely high in this case, since the revenue gain is so small.

Of course, the distortion-to-revenue ratio would be lower for a household further above the \$397,500 threshold, such as one with a \$10 million income. In that case, the rate increase would apply to a larger fraction of the household's income and therefore raise more revenue.

In contrast, suppose that the bottom bracket, which applies to taxable incomes between zero and \$15,650, is increased by 1 percentage point, from 10 to 11 percent. For the taxpayers in that bracket, there is a 1-percentage-point increase in disincentives, and each of those taxpayers pays 1 percent of their income in tax. At the same time, each taxpayer in a higher bracket also pays an additional \$156.50 in tax because the first \$15,650 of income is now taxed at 11 rather than 10 percent. These higher-bracket taxpayers do not, however, face any additional disincentives because there has been no change in their marginal tax rates. For example, those in the top bracket face an unchanged 35 percent disincentive, but each of them pays \$94,757.50 rather than \$94,601 on their first \$349,700 of income.

Searching for the Best Policy

In view of this tradeoff, what is the best policy? As one might expect, it depends upon a judgment about how

much more value should be attached to a dollar for the poor than to a dollar for the rich. It also relies on a factual conclusion about how sensitive taxable income is to incentives and the extent and kind of inequality in society, and on how much revenue the government wants to raise. In 1971, James A. Mirrlees, the 1996 Nobel laureate in economics, made the first computations of the optimal income tax schedule—the schedule that imposes the least total burden on society—under various assumptions about these factors. His work has spawned a vast literature on optimal

income taxation.

The early studies by Mirrlees and others generally concluded that rates should be relatively low at the top, a result that Mirrlees had not expected.¹⁵ These researchers found that the desirable tax schedule either had marginal tax rates that fell as income rose or had marginal rates with an inverted U shape, rising as income moved from low to middle, but falling as incomes moved from middle to high.

They continued to obtain these results even when they assumed that the government's sole goal was to make the worst-off person in society as well-off as possible. This maxi-min goal puts maximum weight on helping the poor. Mirrlees and others found that, although

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some taxpayers should then face high marginal tax rates to finance larger payments to the poor, those at the top should not. Public finance economist Matti Tuomala, for example, computed the optimal tax schedule under a moderate emphasis on helping the poor, and then recomputed the tax rates under the extreme maxi-min assumption. Under the first assumption, the marginal tax rate for the median worker was 37 percent; under the maxi-min approach, that rate jumped to 70 percent, as the government raised more money to aid the poor. But things were much different at the top. Under the first assumption, the marginal rate for the ninety-ninth-percentile worker was a modest 23 percent; under maxi-min, it rose only moderately, to 30 percent.¹⁶

Surveying these results, Alan J. Auerbach of the University of California–Berkeley and James R. Hines Jr. of the University of Michigan spelled out the economic logic:

The intuition is that high marginal rates at high levels of income are very inefficient because they produce so little revenue, while high marginal tax rates at very low levels of income are inequitable because they impose burdens on those with very high social marginal utilities of income. The best compromise may be to raise marginal tax rates at middle income levels, where tax obligations are not imposed on those for whom the burden of higher taxes is most socially costly but where higher tax rates still raise considerable revenue.¹⁷

More recently, some economists, including Peter A. Diamond of the Massachusetts Institute of Technology and Emmanuel Saez, have obtained somewhat different results.¹⁸ They noted that incomes thin out more slowly at high income levels than previous studies assumed. In other words, the number of people in each income range falls more slowly as we move from lower to higher income ranges. For example, the number of people in the \$1 million to \$1.5 million range is not as small relative to the number in the \$500,000 to \$1 million range, as previous authors had assumed.

When incomes thin out more slowly, high tax rates may be more desirable. Consider again the example of a rate increase that applies to income above \$349,700. Recall that the distortion-to-revenue ratio is high for taxpayers with incomes not far above \$349,700, such as the \$500,000 couple previously considered. In contrast, the distortion-to-revenue ratio is lower for taxpayers

with incomes far above \$349,700, such as those at \$10 million. When incomes thin out slowly, more of the people with incomes above \$349,700 have incomes far above that amount, while fewer have incomes barely above that amount. The overall distortion-to-revenue ratio is then lower and there is a stronger case for higher tax rates.

In his 2001 paper, Saez presented a simple formula for the tax rate at the highest income levels that depends upon three key values: the rate at which incomes thin out at the top, the relative weight put on a dollar going to people at the highest incomes, and the sensitivity of taxable income to tax rates.¹⁹

In principle, the sensitivity of taxable income to tax rates can be inferred by observing taxpayers' behavior. In practice, this inference is difficult because many other things that affect taxable income may be changing at the same time as tax rates. For example, incomes rose for high-income taxpayers during the 1980s, when marginal tax rates were lowered at the top, which some interpreted as evidence that tax rates had powerful effects. But incomes also rose for high-income taxpayers during the 1990s, when marginal tax rates were raised at the top, which some interpreted as evidence that tax rates had no effect. It actually appears that a variety of economic forces were widening income inequality throughout both decades, casting doubt on all of these conclusions.

Many economists have examined the responsiveness of taxable income to tax rates in a statistical framework that controls for changes in some of the other factors. A recent study of household data by Saez and Jon Gruber is particularly useful because they consider federal and state tax changes throughout the 1980s, and they control for the widening of the income distribution, although they note that their results are still imprecise. They estimate that an increase of 1 percent in the fraction of taxable income that the taxpayer can keep results in a 0.48 to 0.57 percent increase in taxable income for high-income taxpayers, representing greater sensitivity than they find for low- and middle-income taxpayers. Based on this estimate, Gruber and Saez found that, even if the weight the government puts on a dollar goes to zero as income becomes very large, the tax rate at the top should be 49 percent. (The current system is probably close to that point when state income taxes, excise taxes, and Medicare taxes are added to the individual income tax.) Saez and Gruber note that their estimates “consistently support” the proposition that behavioral responses are larger at higher income levels, implying that “redistribution

should not take place through an increasing pattern of marginal rates.”²⁰

Of course, given the imprecision of the estimates, it is hard to pin down exactly what the marginal rate should be in these models. Moreover, any such endeavor would be misplaced because these models overlook a critical feature of the economy.

The Missing Element: Capital Formation

The optimal income tax models share a crucial limitation: because the models ignore the passage of time, there is no capital accumulation. As Diamond notes, “There is not a simple route between the Mirrlees model and policy implications for annual income taxes . . . covering both capital and labor income.”²¹

Although this literature refers to the optimal *income* tax, the analysis actually examines the optimal *wage* or *consumption* tax. Its analysis may apply to proposals to remove the cap on the Social Security payroll and self-employment taxes. (Caution is still warranted, though, since self-employment taxes apply to some capital income.) It cannot, however, be applied to increases in top income tax rates, particularly when the proposals also increase the tax rate on qualified dividends and long-term capital gains.

The presence of capital income cannot be ignored in setting tax rates for high-income groups because those groups receive large amounts of capital income. In 2004, the top 1 percent received 59 percent of the country’s capital income, according to the CBO.

The presence of capital income taxation has two implications for the setting of marginal tax rates. First, the long-run sensitivity of the taxable income to tax rates, and hence the size of the distortions, is higher. Second, raising marginal tax rates at the top places a burden on workers at lower income levels, even though such workers do not make additional tax payments.

The distortion of capital taxation replicates and adds to, rather than replaces, the distortion that would arise from taxing labor income. It is sometimes thought that neutrality calls for taxing capital and labor income at the same rate, or at least that one must balance the distortion from taxing labor income against the distinct distortion from taxing capital income. These views are mistaken. When a worker saves some of his earnings, the capital income tax

is itself a penalty on work because it can be avoided if the person does not work today and therefore has nothing to save.²² Also, the distortion from capital taxation compounds throughout the taxpayer’s lifetime: the longer the interval between the initial saving and the ultimate consumption, the more capital income there is to be taxed.²³

These additional distortions are not captured by the statistical studies that estimate the response of taxable income to tax rates, such as the study by Gruber and Saez. These studies estimate the relationship between a particular year’s tax rate and the taxable income in that year. The studies inescapably exclude the effect on capital formation because the process of acquiring additional capital, and thereby increasing capital income, takes place over an extended period of time.

Concerning the second implication, the decline in

capital accumulation drives down wages. With less capital in the economy, workers are less productive and their wages fall. As a result, tax increases at the top no longer affect only those at the top. Even if policy gives zero weight to each dollar going to the top, zero is not the right value to use in the Saez formula. The capital tax places a long-run burden on all workers, even those at the very bottom of the income distribution.²⁴

It is almost impossible to assess the impact of the savings effects through statistical studies given the variety of other factors affecting saving. Economists generally have relied on simulations of models that assume optimizing behavior. Unfortunately, most simulations of tax cuts do not address the savings effects. Some simulations are limited to economic effects during the first ten years, thus missing the important long-run impacts. Most simulations do not specifically consider the tax increases that apply only to the top of the income distribution.

A prominent exception is the dynamic analysis released by the Treasury Department in July 2006, which considered, among other things, the effects of permanently extending the dividend and capital gains tax reductions. Extending these cuts has a revenue loss of about 0.2 percent of GDP.²⁵ Under the assumption that the extension of these tax cuts is financed by deficits during the first six years and then is financed by an across-the-board increase in income tax rates, the Treasury estimates that real gross national product would increase by 0.2 to 0.3 percent in the long run. The production assumptions in the study

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imply that workers would experience a similar percentage increase in their wages in the long run.²⁶ Extending the tax cuts on dividends and capital gains therefore provides workers a long-run increase in wages that is large relative to the revenue loss. Conversely, raising these taxes would impose a large long-run burden on workers.

A potential weakness of such simulations is that they assume, rather than prove, that saving decisions are made in a rational optimizing manner. It is difficult to know how these decisions are actually made. Still, under almost any assumptions, saving will be reduced by imposing tax penalties on savings that apply to the groups that are doing the most saving. Even if, for example, each household saves a stable fraction of its income, with no regard for incentives, taxes that apply most heavily to those at the highest incomes would still tend to reduce saving, simply because the fraction that these households save is higher.

Under income taxation, then, rate increases at the top are particularly harmful due to the impact on capital formation. Under consumption taxation, that disadvantage would largely or completely disappear, although the problems noted earlier would be applicable. Because it is more economically efficient than income taxation, consumption taxation would actually allow greater scope for redistribution.²⁷

Difficult Tradeoffs

Proposals to raise marginal income tax rates for the top 1 or 2 percent have received increasing political attention. Despite the political attractiveness of these proposals, economic analysis suggests that such marginal rate increases are inefficient and undesirable ways to raise revenue. By impeding capital formation, such rate increases impose burdens on workers at all income levels.

This analysis also has implications for the long-run fiscal imbalance implied by the projected rapid growth of Social Security, Medicare, and Medicaid. Since slowing these programs' growth would reduce benefits for the middle class, an easier solution may seem preferable. Why not let these programs grow unchecked while taxing the wealthy to cover their costs? Unfortunately, this analysis reveals that the latter strategy would be economically harmful and would also impose burdens on the middle class. Taxing the rich is not a shortcut around the difficult tradeoffs imposed by the fiscal imbalance.

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Notes

1. Quoted in Martin A. Sullivan, "Will Tight Budgets Spark Class Warfare?" *Tax Notes*, January 15, 2007, 127.

2. Edmund L. Andrews, "2008 Democrats Propose a Ceiling on Bush Tax Cuts," *New York Times*, April 21, 2007. John Edwards has proposed that the tax cuts be repealed for the targeted income group prior to the cuts' scheduled expiration at the end of 2010.

3. Editorial, "Seize the Chance," *Washington Post*, December 24, 2006.

4. Len Burman and Greg Leiserson, "A Simple, Progressive Replacement for the AMT," *Tax Notes*, June 4, 2007, 945–55.

5. Editorial, "Fixing the Alternative Tax," *New York Times*, May 28, 2007.

6. Lori Montgomery, "Democrats Seek Formula to Blunt AMT," *Washington Post*, June 8, 2007.

7. See Michael Parisi and Scott Hollenbeck, "Individual Income Tax Returns, 2004," *Statistics of Income Bulletin* (Fall 2006): 8–46, table 1.

8. See Kyle Mudry and Justin Bryan, "Individual Income Tax Rates and Shares, 2004," *Statistics of Income Bulletin* (Winter 2006–2007): 21–60, table 1.

9. Congressional Budget Office (CBO), *Historical Effective Federal Tax Rates, 1979 to 2004* (Washington, DC: CBO, December 2006).

10. *Ibid.*

11. CBO, *An Analysis of the President's Budgetary Proposals for Fiscal Year 2008* (Washington, DC: CBO, March 2007), 46.

12. CBO, *Budget Options* (Washington, DC: CBO, February 2007), 255. The numbers in the text are linear extrapolations based on CBO revenue estimates for 1-percentage-point or 5-percentage-point increases in the relevant marginal rates.

13. This would be the approximate response if each 1-percent reduction in the fraction of income that the taxpayer can keep causes a reduction of approximately 0.5 percent in income, a response supported by some statistical evidence.

14. The assumed reduction in taxable income is consistent with the sensitivity assumed in note 13. To compute the revenue effect, set aside the tax on the first \$349,700 of income, which is unchanged, and note that the 35 percent tax raises \$52,605 (35 percent of \$150,300), while the 36 percent rate raises \$52,668 (36 percent of \$146,300). To obtain the approximate burden on the couple, note that they bear a burden of \$1,463 from the extra tax on the \$146,300 that they continue to earn, plus a burden up to \$40 from forgoing the additional \$4,000. The couple loses the \$2,600 of disposable income by not earning this money, but avoids the associated sacrifices of earning the income, which must be valued somewhere between

\$2,560 (for which they are not willing to make the sacrifices) and \$2,600 (for which they are).

15. James A. Mirrlees, "An Exploration in the Theory of Optimum Income Taxation," *Review of Economic Studies* 38, no. 2 (April 1971): 175–208.

16. See Matti Tuomala, *Optimal Income Taxation and Redistribution* (Oxford: Clarendon Press, 1990), 96–99, table 6.1 (case 4) and table 6.3 (case 1). For similar results, see Anthony B. Atkinson and Joseph E. Stiglitz, *Lectures on Public Economics* (New York: McGraw-Hill, 1980), 419–21; and Gareth D. Myles, *Public Economics* (Cambridge: Cambridge University Press, 1995), 156–59.

17. Alan J. Auerbach and James R. Hines Jr., "Taxation and Economic Efficiency," *Handbook of Public Economics*, vol. 3, ed. Alan J. Auerbach and Martin Feldstein (Amsterdam: Elsevier Science B.V., 2002), 1382.

18. Peter A. Diamond, "Optimal Income Taxation: An Example with a U-Shaped Pattern of Optimal Marginal Tax Rates," *American Economic Review* 88, no. 1 (March 1998): 83–95; and Emmanuel Saez, "Using Elasticities to Derive Optimal Income Tax Rates," *Review of Economic Studies* 68, no. 1 (January 2001): 205–29.

19. Emmanuel Saez, "Using Elasticities to Derive Optimal Income Tax Rates," 212.

20. See table 9 and the discussion on pages 27–28 in Jon Gruber and Emmanuel Saez, "The Elasticity of Taxable Income: Evidence and Implications," *Journal of Public Economics* 84, no. 1 (April 2002): 1–32.

21. Peter A. Diamond, "Optimal Income Taxation: An Example with a U-Shaped Pattern of Optimal Marginal Tax Rates," 93.

22. This point is emphasized in David A. Weisbach, "The Case for a Consumption Tax," *Tax Notes*, March 20, 2006, 1357–59; and in Alan D. Viard, "McMahon Off Base on Consumption Tax," *Tax Notes*, April 10, 2006, 247–49.

23. This point is emphasized in Kenneth L. Judd, "The Impact of Tax Reform in Modern Dynamic Economies," in *Transition Costs of Fundamental Tax Reform*, ed. Kevin A. Hassett and R. Glenn Hubbard (Washington, DC: AEI Press, 2001), 5–53, available at www.aei.org/book264/.

24. This analysis assumes that a reduction in the saving done by Americans, caused by an increase in individual income tax rates, will result in a reduction in the amount of saving invested in plant, equipment, and technical know-how inside the United States. (The latter is what affects the wages of American workers.) In an open economy, the two types of saving need not be equal, but the two are likely to move together. The United States uses about 30 percent of world investment, so even if increased savings by Americans flowed perfectly smoothly into a world capital market that impartially boosted investment everywhere on the planet, 30 percent of the funds would end up in the United States. In any event, there are a variety of barriers that would keep some of the funds at home.

25. CBO, *An Analysis of the President's Budgetary Proposals for Fiscal Year 2008*, 4, 6.

26. Office of Tax Analysis, U.S. Department of the Treasury, *A Dynamic Analysis of Permanent Extension of the President's Tax Relief* (Washington, DC: Department of the Treasury, July 2006), 20. The estimates show a long-run increase in the capital stock of 0.7 percent and a reduction in labor supply of 0.1 percent, implying an increase of 0.8 percent in the capital-labor ratio. The production function assumed in the study implies that real wages increase by 0.34 times the change in the capital-labor ratio, which thus implies an increase in wages between 0.2 and 0.3 percent.

27. Consumption taxation can be made as progressive as income taxation. See President's Advisory Panel on Federal Tax Reform, *Simple, Fair and Pro-Growth: Proposals to Fix America's Tax System* (Washington, DC: President's Advisory Panel on Federal Tax Reform, November 2005), 185–90.