The Heritage Foundation Backgrounder

Executive Summary

THE CORRECT WAY TO MEASURE THE REVENUE IMPACT OF CHANGES IN TAX RATES

DANIEL J. MITCHELL, PH.D.

The debate between static and dynamic scoring may seem an esoteric inside-the-Beltway squabble, but the choice of how to estimate revenues has important implications. In the short term, better revenue estimating methods would make it easier to implement tax rate reductions. In the long term, shifting to a simple and fair tax code would be expedited if revenue estimators were allowed to consider the beneficial impact of tax reform on economic performance.

When lawmakers consider tax policy changes, Congress's Joint Committee on Taxation (JCT) and the Treasury Department's Office of Tax Analysis (OTA) are responsible for estimating the likely impact on future tax collections; but these estimates assume that tax policy changes—regardless of their magnitude—have no impact on the economy's performance. As a result, these "official" estimates commonly overstate both the amount of tax revenue that will be generated by tax increases and the amount of revenue the government will "lose" due to tax rate reductions. This static methodology has been widely criticized because it provides policy-makers with inaccurate numbers and creates a bias against lower tax rates.

Dynamic analysis—sometimes referred to as reality-based scoring—is based on the commonsense assumption that taxes do affect the economy. Dynamic scoring recognizes, for instance, that higher tax rates discourage work, saving, and investment. Because of these negative "feedback effects," tax rate increases will generate less revenue than predicted by static estimates. Conversely, because lower tax rates increase economic growth and result in more jobs, higher wages, and bigger profits, dynamic scoring will show that certain tax cuts will be at least partially self-financing. This more accurate methodology should be used instead of static scoring.

Because dynamic scoring would make tax rate reductions more attractive, opponents of tax cuts want to maintain the current system of static scoring. An objective examination of the historical evidence, however, demonstrates that dynamic scoring gives policymakers more accurate information.

Dynamic scoring does not predetermine outcomes; it simply ensures that lawmakers will have the most comprehensive data when making decisions. When taking steps to modernize and correct the revenue-estimating process, policymakers should consider the following points:

- **Learn from history.** Static scoring routinely overestimates how much revenue will be generated by tax increases. The 1990 luxury tax, the income tax rate increases of 1990 and 1993, and the 1986 capital gains tax rate increase are all examples in which revenues fell far short of static predictions. Conversely, the 1981 Reagan tax cuts, the 1978 capital gains tax reduction, the Kennedy tax cuts of the 1960s, the 1986 Tax Reform Act, and the 1997 capital gains tax cut all demonstrate how pro-growth tax changes generate revenue feedback.

- **Don't make the perfect the enemy of the good.** It is impossible to predict all the effects of any single change in government policy. The fact that dynamic scoring cannot pinpoint all the multiyear effects of a change in tax policy, however, is not an argument for maintaining a static process that guarantees an answer that is wrong and farther from the truth.

- **Not all tax cuts are created equal.** The higher the tax rate, the bigger the supply-side response when the rate is reduced. Likewise, since capital is more mobile than labor, reducing tax rates on capital will have a greater impact than similar tax reductions on labor income. And some tax cuts, such as credits and rebates, will have little or no revenue feedback effects since incentives to engage in productive behavior remain unchanged.

- **Open the process to public scrutiny.** Even though they are the ones who pay the bills, tax-payers today are not allowed to examine the static models and methodology used by the JCT and OTA. Even if the revenue-estimating process is not improved, policymakers should insist on full disclosure. If policymakers adopt dynamic scoring, an open process will keep the system honest by inhibiting those who are tempted to overstate or understate the dynamic impact of tax policy changes.

- **The goal of tax policy is to maximize economic growth, not tax revenues.** For years, budget deficits and surpluses have played a big role in the political debate. As a result, some tax policy proposals, such as reductions in the capital gains tax, are judged primarily by their effect on tax collections. Yet there is no evidence that fiscal balance has any impact on the economy. Putting revenue maximization ahead of sound tax policy is therefore a misguided approach and should be discarded.

- **Include estimates of private and governmental compliance costs.** According to the Tax Foundation, the current tax system imposes $194 billion in compliance costs on the productive sector of the economy. In addition to these costs to the private sector for lawyers, lobbyists, accountants, tax preparers, and lost man-hours, approximately $13 billion in direct government expenditures is associated with taxation. Yet in calculating projected gains and losses, revenue estimators confess that "staff does not estimate the administrative costs incurred by either the IRS or taxpayers that may result from proposed legislation."

To make America's economy more competitive and to boost the economy's performance, tax policy will have to change. In the short term, immediate tax rate reductions are needed to boost growth; in the long term, the entire tax code should be replaced by a simple, flat tax. But these pro-growth changes will be harder to achieve if revenue estimators continue to use outdated and inaccurate static models. Dynamic revenue estimates would provide policymakers with more accurate information. Dynamic forecasting is based on a proper understanding of how the economy works, and history has shown this approach to be far more realistic and accurate than static estimates.

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The debate between static and dynamic scoring may seem an esoteric inside-the-Beltway squabble, but the choice of how to estimate revenues has important implications. In the short term, better revenue estimating methods would make it easier to implement tax rate reductions.[1] In the long term, shifting to a simple and fair tax code would be expedited if revenue estimators were allowed to consider the beneficial impact of tax reform on economic performance.

When lawmakers consider tax policy changes, Congress's Joint Committee on Taxation (JCT) and the Treasury Department's Office of Tax Analysis (OTA) are responsible for estimating the likely impact on future tax collections; but these estimates assume that tax policy changes—regardless of their magnitude—have no impact on the economy's performance. As a result, these "official" estimates commonly overstate both the amount of tax revenue that will be generated by tax increases and

the amount of revenue the government will "lose" due to tax rate reductions. This static methodology has been widely criticized because it provides policymakers with inaccurate numbers and creates a bias against lower tax rates.

Though defenders of the status quo argue that dynamic effects *are* incorporated into revenue forecasts, this claim is only correct for "microeconomic" changes.[2] If asked to estimate the revenue impact of a change in the gasoline tax, for instance, the current process attempts to measure the

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1. Harvard Professor Martin Feldstein, former chairman of the Council of Economic Advisers, estimated that repeal of the higher tax rates approved in 1993 would result in a revenue loss of less than $10 billion, or less than one-third of the static estimate. See Martin Feldstein, "The Case for Dynamic Analysis," *The Wall Street Journal*, December 14, 1994.

2. For good descriptions of the current revenue estimating process, see joint hearing, *Review of Congressional Budget Cost Estimating*, Committee on the Budget, U.S. House of Representatives, and Committee on the Budget, U.S. Senate, Serial No. 104–1, January 10, 1995, and Jane G. Gravelle, "Dynamic Revenue Estimating," *CRS Report for Congress*, Congressional Research Service, December 14, 1994.

degree to which the change in the tax will affect the amount of gasoline purchased. Likewise, changes in income tax rates will include some calculation of tax avoidance behavior.[3]

Missing from the equation, however, is any effort to capture the revenue effects caused by changes in macroeconomic variables. Within the static system, revenue estimators assume that economic growth, job creation, and income will remain unchanged regardless of how much taxes are reduced or increased. The OTA, for example, in a 1995 analysis of the flat tax wrote that

> No attempt is made to estimate the tax-induced behavioral responses of either individuals or corporations. Following the standard revenue estimating conventions used by both the Office of Tax Analysis and the Joint Committee on Taxation, the macroeconomic aggregates, such as the level of compensation, prices, employment, and gross domestic product, have been assumed to be unchanged by the proposal.[4]

These assumptions effectively require the Treasury Department and the Joint Committee on Taxation to ignore the real world. This approach may be reasonable for minor alterations of the tax code, but it certainly produces inaccurate answers when examining significant, substantive policy proposals. If asked to predict what would happen if tax rates were doubled, for instance, revenue estimators would assume that tax collections, with some minor modifications, would double as well.

The absurdity of this approach became clear in 1988 when Senator Robert Packwood (R–OR), then ranking Republican on the Finance Committee, asked the JCT to estimate the revenue impact if the government confiscated all income over $200,000 annually. The revenue estimators at JCT responded that such a tax would raise $104 billion the first year, $204 billion the second year, $232 billion the third year, and $263 billion and $299 billion in the fourth and fifth years, respectively.[5] Needless to say, this was a nonsensical estimate. As Senator Packwood noted, the JCT's calculation "assumes people will work if they have to pay all their money to the Government. They will work forever and pay all of the money to the Government when clearly anyone in their right mind will not."[6]

Another example of the flaws and inconsistency resulting from bad methodology is the JCT's analysis of the death tax during last year's tax bill. The "scoring" of the death tax provisions of the President's plan by the staff of the joint committee changed dramatically between April 3 and May 4, 2001.[7] On April 3, it was estimated that the phase-out of federal death taxes would lower revenue by (or, as opponents of tax cuts say, would "cost") about $186 billion over the 10-year period from 2002 through 2011. By May 4, one month later, the estimate for the costs of the phaseout of death taxes was $306 billion.

This dramatic revision came as a great surprise and devastated plans by the House leadership and President Bush to repeal death taxes permanently. In fact, it appeared just a week before the Ways and Means Committee was scheduled to report the President's tax plan to the full House. Not only did this

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3. When estimating the effect of higher tax rates in 1993, the Joint Committee on Taxation examined several non-macroeconomic factors, such as "shifting from investments which yield interest and dividend income, taxed at the new higher rates, into investments that provide capital appreciation, which is taxed at unchanged lower rates. Also considered were shifts from taxable to tax-exempt assets, conversion to C Corporation business form, conversion of wage income into tax-deferred compensation or tax-exempt fringe benefits, and increased noncompliance and avoidance." All these factors, however, reduced the pure static revenue loss by only 7 percent over the five-year period. See *Methodology and Issues in the Revenue Estimating Process*, Staff Paper, Joint Committee on Taxation, January 24, 1995.

4. U.S. Department of the Treasury, Office of Tax Analysis, "Preliminary Analysis of a Flat Rate Consumption Tax," March 10, 1995.

5. Letter to Senator Robert Packwood from Joint Committee on Taxation, November 15, 1988.

6. *Congressional Record*, November 14, 1989, p. S15534.

7. See Joint Committee on Taxation, *Estimated Revenue Effects of H.R. 8, the "Death Tax Elimination Act of 2001," as reported by the Committee on Ways and Means*, JCX–23–01, and *Estimated Revenue Effects of the President's Fiscal Year 2002 Budget Proposal*, JCX–31–01.

The Heritage Foundation
Backgrounder

additional amount put the total cost of the bill well beyond the congressional budget resolution and the President's own budget proposal, but it also forced the bill writers to create the oddest loophole in recent tax history: All of the changes in tax policy made by the law were to be reversed in 2011.[8]

In their defense, the staff of the joint committee argued that their higher score assumed a "dynamic" response by taxpayers to death tax repeal. The JCT staff argued that high-income taxpayers would transfer income-producing assets to their children, who would pay taxes at lower marginal rates if the gift tax was repealed. Thus, the real cost of the estate tax should include taxpayer responses.

Even though this anticipated taxpayer response is based on sheer speculation by the JCT staff, it is a realistic consideration; but the JCT staff should also have included in their revenue estimates any effects from *positive* taxpayer behavior (such as more and better investment, harder work, lower taxpayer compliance costs). Had they done so, the total "cost" of the death tax repeal—and, indeed, all of the provisions of President Bush's tax plan—would have been significantly less. In fact, Heritage economists have estimated that the President's overall tax plan has an economic feedback of about 33 percent, which reduces the revenue loss of the plan by $568 billion—more than enough to pay for full death tax repeal.[9]

It appears that the bureaucrats who made critical decisions in calculating revenue estimates—both in response to Senator Packwood and with regard to "scoring" the death tax—put ideology ahead of logic and evidence, and they should have been penalized.[10] But there are others who should share the blame for the mismanagement of the revenue-estimating process. The Joint Committee on Taxation staff serves at the pleasure of the committee's chairman, yet no significant changes in methodology were made when Republicans took control of Congress in 1995. Likewise, the Office of Tax Analysis staff theoretically is controlled by presidentially appointed officials at the Treasury Department,[11] yet there is no indication that meaningful reform in the system is being implemented.

DYNAMIC SCORING: THE THEORETICAL ARGUMENT

The Laffer curve depicted in Chart 1 demonstrates the links between tax rates, economic performance, and tax collections. As shown in Chart 1, the government collects no revenue if tax rates are set at zero; but a 100 percent tax rate also generates no revenue because it eliminates all incentive to earn income—not to mention what happens when the economy grinds to a halt. Consider what will happen, though, if the government imposes a modest tax rate of, for example, 10 percent. With a low, flat rate, very few people will have an incentive to avoid taxes, so the economy will do well and the government will collect about one-tenth of the income earned.

As tax rates rise, however, taxpayers gradually become discouraged and businesses discover that it is not profitable to employ as many people. These factors combine to reduce earnings—and therefore lead to a reduction in taxable income. Dynamic scoring captures this relationship, but static scoring ignores the changes in income caused by higher tax rates.

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8. CCH Editorial Staff, *2002 U.S. Master Estate and Gift Tax Guide* (Chicago: CCH Incorporated, 2001), p. 8. In 2011, the estate and gift tax rates return to what they were in 2002 and 2003.

9. D. Mark Wilson and William W. Beach, "The Economic Impact of President Bush's Tax Relief Plan," Heritage Foundation *Center for Data Analysis Report* No. CDA01–01Rev, April 27, 2001, p. 13, Appendix B.

10. The Joint Committee on Taxation learned an important lesson from this episode. When Senator Packwood made a similar request in 1994, the committee responded by reporting the amount of after-tax income over $200,000 while noting that "If the 100-percent tax rate were to be in effect for a substantial period of time, so that taxpayers would have no rational hope of avoiding or evading the 100-percent tax in the out-years by deferring income to lower rate years or using other tax avoidance or deferral plans, then in our judgment there would be a substantial reduction in income-producing activity in the economy and, thus, a significant reduction in tax receipts to the Federal government." Letter to Senator Packwood, October 12, 1994.

11. Unlike JCT staff, those who work at OTA have civil service protection. This fact makes it more difficult—but not impossible—to implement changes.

As long as tax rates are not excessive, the increase in revenue associated with the higher tax rate exceeds the revenue loss caused by lower levels of income. However, the Laffer curve also demonstrates that there is a point at which the tax rate reaches a revenue-maximizing level. Any attempt to raise tax rates beyond this level will reduce revenues because the fall in taxable income will have a greater impact on tax collections than the higher rate has. Static scoring, once again, is unable to measure this revenue reduction because of the untenable assumption that tax burdens have no impact on economic output.

It is very important to recognize, however, that the revenue-maximizing tax rate is not the growth-maximizing tax rate. Indeed, it is quite likely that there is a large gap between these two tax rates. It is possible, for instance, that the revenue-maximizing rate on labor income is more than 30 percent—particularly for middle-income workers who presumably do not have much discretion over the timing and composition of their remuneration. Yet a 30 percent tax rate will discourage work, saving, and investment. Excessive tax rates also allow more government spending. The combination of these factors explains why lawmakers should seek to keep tax rates below the revenue-maximizing level.

DYNAMIC SCORING:
THE PRACTICAL ARGUMENT

In simple terms, dynamic scoring means that revenue estimates would be designed to measure how any changes in overall economic conditions will affect tax collections. Rather than deliberately ignoring these variables, as is the convention today, revenue estimators—or experts designated for this purpose—would consider whether a change in policy would be likely to affect the economy, the level of compensation, prices, employment, and gross

Chart 1   B1544

The Laffer Curve
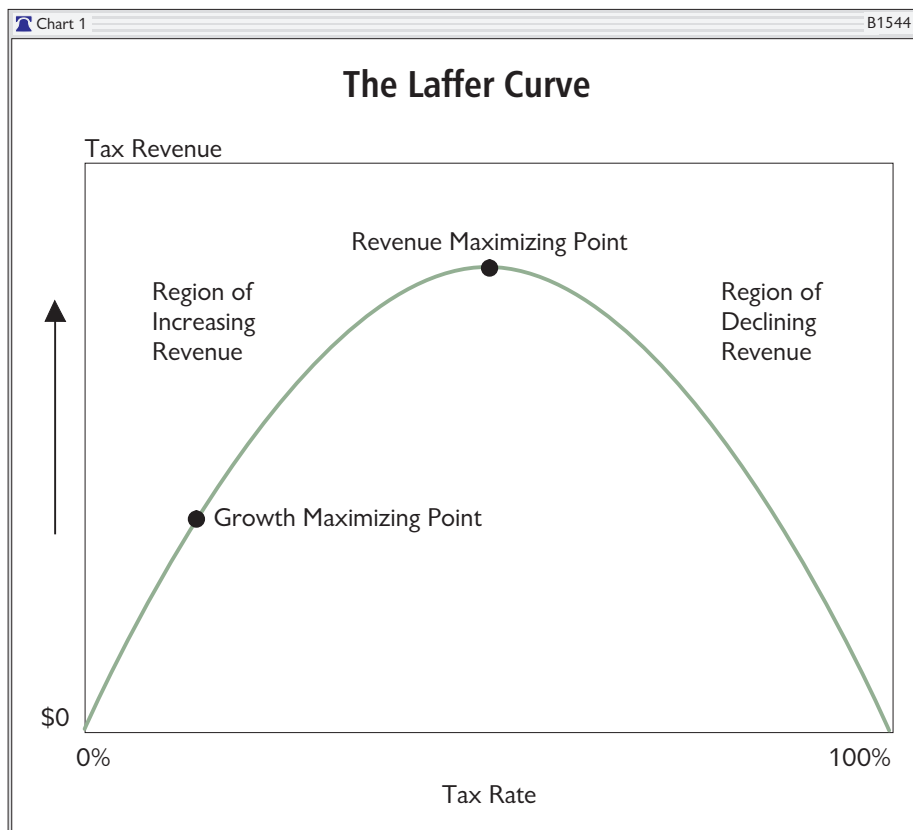
domestic product (GDP). If one or more of these variables are likely to be affected, estimates would be calculated for the amount of revenue feedback or loss.

Two steps are needed to prepare a dynamic estimate. The first is measuring how changes in economic output affect the budget. Fortunately, this is not a challenging task. The government already publishes "sensitivity tables" that illustrate the effect of alternative economic scenarios on government finances. According to the Office of Management and Budget, for instance, a one percentage point drop in economic growth during the 10-year period from 2003–2012 would reduce tax revenues by nearly $1.7 trillion and increase government spending by more than $200 billion.[12] (See Chart 2.)

The second step is estimating how a tax policy change will affect the economy. This is the hard part. What would happen, for instance, if lawmakers eliminated the capital gains tax? Would the economy grow two-tenths of a percent faster each
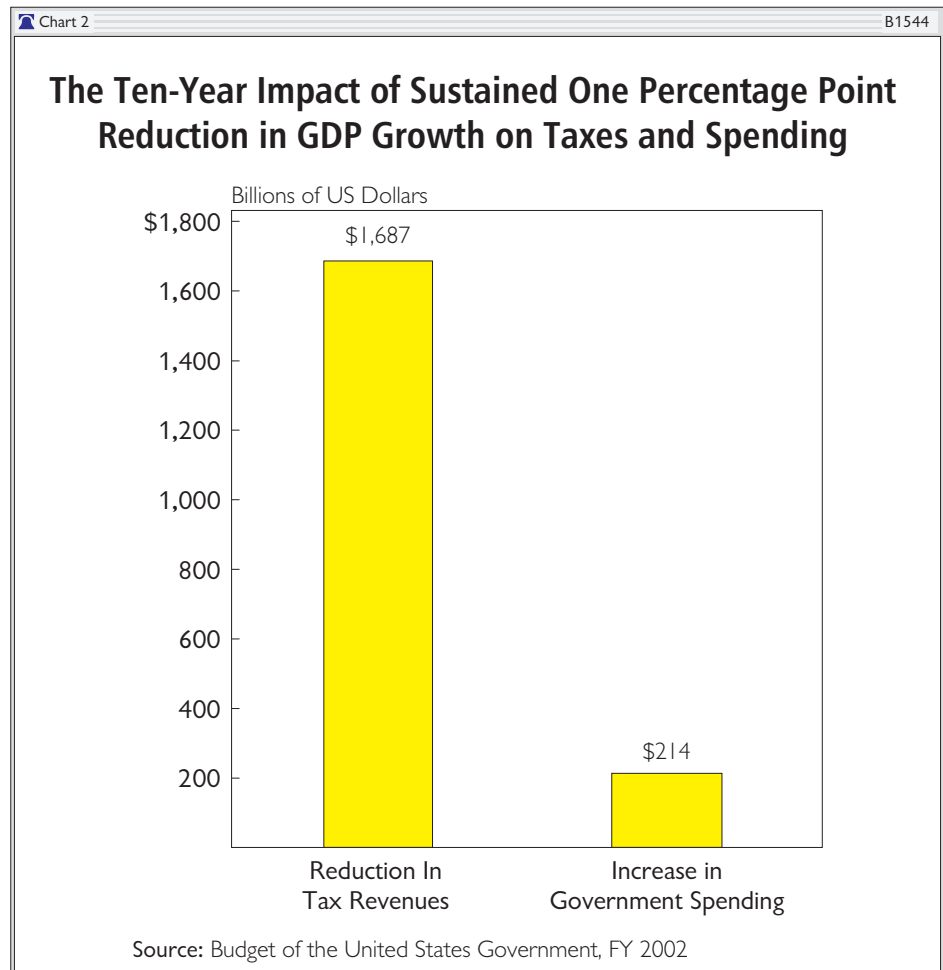
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12. See *http://w3.access.gpo.gov/usbudget/fy2003/pdf/spec.pdf*.

year? Or three-tenths? If the top tax rate fell to 28 percent, how much bigger would the economy be after five years compared to a baseline forecast that assumes tax rates remain unchanged? And what would happen if the Internal Revenue Code were replaced with a simple and fair flat tax? After 10 years, would the economy be 7 percent greater than it would have been without a flat tax? Or would it be 12 percent larger?

Some argue that the inability to provide precise answers to these questions makes dynamic scoring impractical. Yet this assertion makes the perfect the enemy of the good. Dynamic scoring may never generate perfect answers, but the results will be much closer to the truth than the easy to calculate but grossly flawed numbers produced by static scoring. Indeed, it is quite likely that dynamic forecasting would require the JCT and OTA to estimate a range of results instead of producing a single number; but contrary to conventional wisdom, this approach would be a positive development since it would force lawmakers to recognize that fiscal policy decisions have a real impact on private-sector activity.

DYNAMIC SCORING: A NEUTRAL PROCESS TO FIND HONEST ANSWERS

Contrary to popular misconception, dynamic scoring does not mean that tax cuts necessarily "pay for themselves." The degree of revenue feedback depends on the tax rate that is being reduced and the amount by which it is being reduced. Only in extremely rare circumstances would a tax rate reduction generate enough economic activity to offset all of the revenue loss associated with the lower

Chart 2   B1544

The Ten-Year Impact of Sustained One Percentage Point Reduction in GDP Growth on Taxes and Spending

Billions of US Dollars

Reduction In Tax Revenues: $1,687

Increase in Government Spending: $214

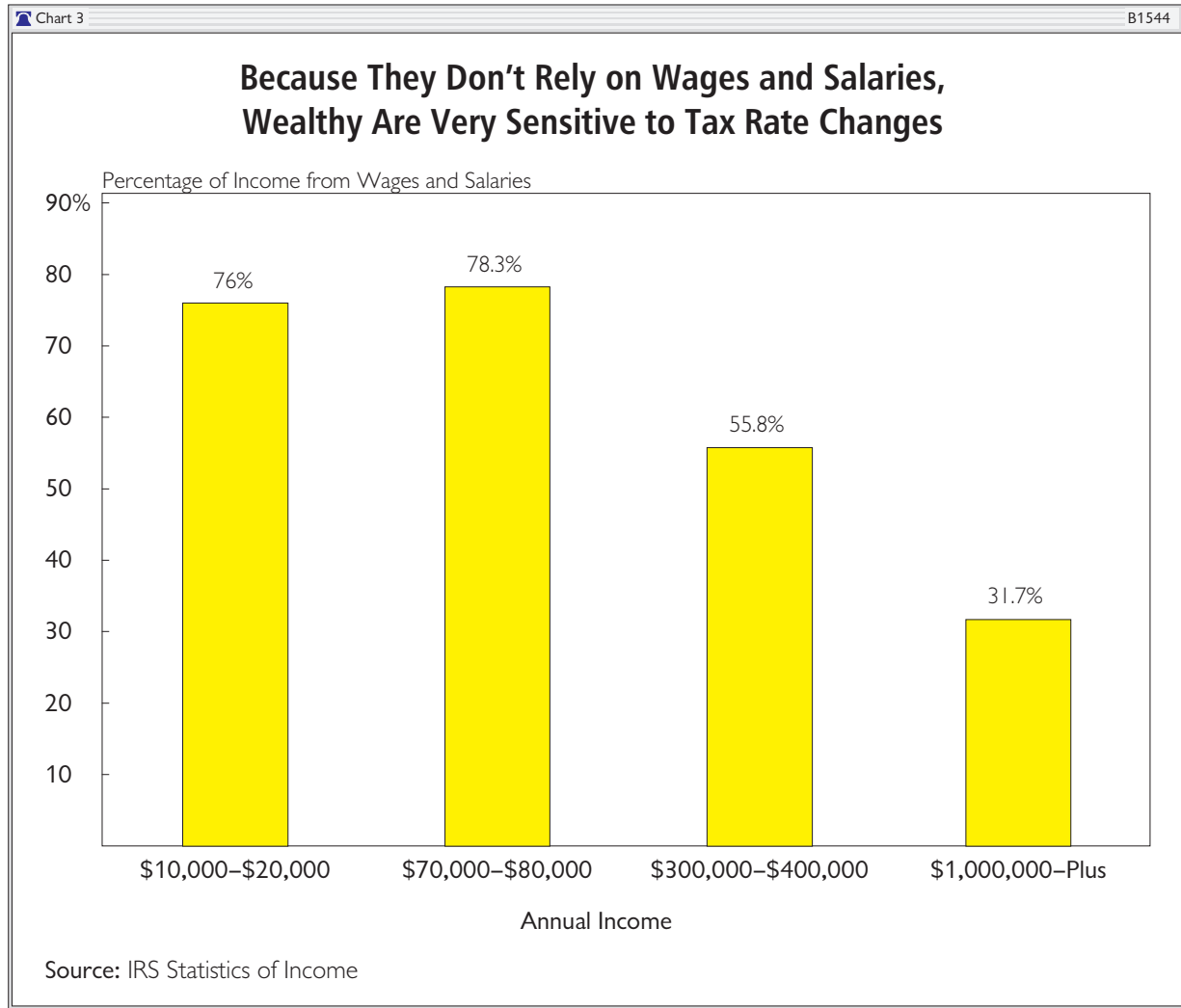**Source:** Budget of the United States Government, FY 2002

rate, and if that did occur, the full impact of the reduction would probably not be felt for several years.

Nevertheless, there *are* some tax cuts that might "pay for themselves," including the following.

Reductions in confiscatory income tax rates. Wealthy taxpayers are particularly sensitive to high tax rates. Not only can they afford the best tax lawyers, accountants, and financial planners, but they also receive most of their income in the form of dividends, interest, capital gains, and other business income. (See Chart 3.) When tax rates become too onerous, these taxpayers can shift their assets to tax-free status, move their money offshore, or take other steps to alter the timing or composition of their income.[13] According to research by James Poterba of the Massachusetts Institute of Technol-

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13. This activity was especially evident at the end of 1992 when corporate executives, sports figures, and the future First Lady all arranged to realize income in 1992 that normally would have been received in 1993. The reason, of course, was to avoid the widely expected higher tax rates that were supported by President-elect Bill Clinton.

Chart 3   B1544

Because They Don't Rely on Wages and Salaries, Wealthy Are Very Sensitive to Tax Rate Changes

Percentage of Income from Wages and Salaries

Annual Income	Percentage
$10,000–$20,000	76%
$70,000–$80,000	78.3%
$300,000–$400,000	55.8%
$1,000,000–Plus	31.7%

Source: IRS Statistics of Income

ogy, lower tax rates on the richest 0.5 percent would generate higher rather than lower tax revenues.[14]

Death taxes. The government confiscates 50 percent of a person's assets in excess of $3.5 million upon death.[15] Those who have the wherewithal to build up businesses and portfolios of this value, however, typically are also aware of ways to protect their families' wealth from the government.[16] For this reason, even though the estate tax collects

about $28 billion annually,[17] it is estimated that the government actually loses money due to reduced income tax collections that result from aggressive estate planning through which, years before their death, wealthy taxpayers transfer funds, cease working, set up trusts, give to charity, and take other steps to reduce the tax value of their assets.[18]

Capital gains taxes. Revenue estimators from both Congress and the Administration acknowledge that lower capital gains taxes will boost sales

14. Alan Murray, "Dole Seeking Credible Economic Plan," *The Wall Street Journal*, July 29, 1996.

15. Or the federal government takes $2.5 million after the application of a tax credit that effectively excludes $1.0 million in otherwise taxable estate. For details on the estate tax's rates and exclusion amounts, see CCH Editorial Staff, *2002 U.S. Master Estate and Gift Tax Guide*, pp. 8–14.

16. For more information on federal death taxes, see William W. Beach, "The Case for Repealing the Estate Tax," Heritage Foundation *Backgrounder* No. 1091, August 21, 1996.

17. *Economic Report of the President, Transmitted to the Congress, February 2002* (Washington, D.C.: U.S. Government Printing Office, 2002), p. 416, Table B–81.

(or realizations) of stock, bonds, real estate, and other assets. This "unlocking effect" alone may be large enough to produce a net revenue increase within the first year or two following a capital gains tax rate reduction.[19]

Unfortunately, both the JCT and the OTA fail to calculate what happens when a lower capital gains tax increases both the amount of investment and the efficiency of investment. Both of these factors lead to more economic growth—and higher corporate income taxes, personal income taxes, and payroll taxes. If the revenue estimates included the effects of higher growth, they almost surely would show a significant revenue gain in subsequent years as well.

Tax rates that are so punitive that they actually lose revenue certainly should be reduced. The lower rate would please conservatives who want to promote economic growth as well as liberals who want the government to collect more money.[20]

It is important to recognize, however, that there is a huge difference between the revenue-maximizing tax rate and the economic growth-maximizing optimal tax rate. Largely because of hefty value-added taxes (a form of national sales tax), many countries in Europe take a much higher percentage of their citizens' money than America does.[21] These nations may be near the revenue-maximizing point of the Laffer curve, but this income comes at a heavy price. European countries, compared to the United States, suffer from higher unemployment, slower growth, larger budget deficits, and lower incomes.[22]

CHOOSING A TOOL FOR MEASURING TAX IMPACT

Because dynamic scoring would make tax rate reductions more attractive, opponents of tax cuts want to maintain the current system of static scoring. An objective examination of the historical evidence, however, demonstrates that dynamic scoring gives policymakers more accurate information.[23] Dynamic scoring does not predetermine outcomes; it simply ensures that lawmakers will have the most comprehensive data when making decisions.

When taking steps to modernize and correct the revenue-estimating process, policymakers should consider the following points:

- **Learn from history.** Static scoring routinely overestimates how much revenue will be generated by tax increases. The 1990 luxury tax, the income tax rate increases of 1990 and 1993, and the 1986 capital gains tax rate increase are all examples in which revenues fell far short of static predictions. Conversely, the 1981 Reagan tax cuts, the 1978 capital gains tax reduction, the Kennedy tax cuts of the 1960s, the 1986 Tax Reform Act, and the 1997 capital gains tax cut all demonstrate how pro-growth tax changes will generate revenue feedback.[24]

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18. B. Douglas Bernheim, "Does the Estate Tax Raise Revenue?" in Lawrence H. Summers, ed., *Tax Policy and the Economy*, Vol. 1 (Cambridge, Mass.: National Bureau of Economic Research, MIT Press, 1987).

19. Jane Gravelle, "Dynamic Revenue Estimating," Congressional Research Service Report 94–1000 (December 14, 1994).

20. This may be a rash assumption. In his insightful book *Getting It Right* (Cambridge, Mass.: MIT Press, 1996), Harvard economist Robert Barro polled liberal friends and colleagues and was surprised to find that many of them favored keeping tax rates high even if the government collected fewer taxes.

21. For further information on value-added taxes, see Daniel J. Mitchell, "How a Value Added Tax Would Harm the U.S. Economy," Heritage Foundation *Backgrounder* No. 940, May 11, 1993.

22. See Daniel J. Mitchell, "The Adverse Impact of Tax Harmonization and Information Exchange on the U.S. Economy," *Prosperitas*, Vol. 1, Issue 4 (November 2001), at *http://www.freedomandprosperity.org/Papers/taxharm/taxharm.pdf*.

23. An opponent of tax rate reductions admitted that the revenue feedback effect of lower tax rates was 35 percent. See Lawrence Chimerine, "Return of the Supply-Siders," *The Washington Post*, July 23, 1996.

24. For a detailed analysis of the positive effects of lower tax rates, see Daniel J. Mitchell, "Lowering Marginal Tax Rates: The Key to Pro-Growth Tax Relief," Heritage Foundation *Backgrounder* No. 1443, May 22, 2001.

static process that guarantees an answer that is wrong and farther from the truth.

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HISTORICAL EXAMPLES

The strong theoretical argument for dynamic scoring is buttressed by a great deal of historical evidence. The United States has experienced significant shifts in tax policy over the years, and the historical record both demonstrates the shortcomings of static analysis and provides ample proof that the revenue-estimating process should be modernized.

Before looking at specific examples, however, it may be useful to look at the broad picture. As Chart 4 illustrates, tax revenues traditionally have consumed about 19 percent of America's economic output.[30] This relationship has been remarkably stable even though tax rates have shifted by large amounts. At times, the top income tax rate has exceeded 90 percent, while at other times it has fallen to less than 30 percent.

Chart 4 also shows income tax collections as a percentage of GDP. As is the case with total tax revenues, income tax collections are remarkably stable, hovering around 9 percent of GDP. It also is worth noting that the economy slumped during the three

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25. Tax cuts also stimulate the economy according to Keynesian theory, but the analysis is based on stimulating consumer spending by putting dollars back in people's pockets while ignoring the offsetting effect that occurs when government borrowing reduces private investment spending by a similar amount.

26. Joint Economic Committee, "Fiscal Policy Choices: Examining the Empirical Evidence," November 2001, at *http://www.house.gov/jec/fiscalpolicy.pdf*.

27. Scott Moody, "The Cost of Tax Compliance," Tax Foundation, February 2002, at *http://www.taxfoundation.org/compliance2002.html*.

28. Arthur Hall, "Growth of Government Tax Industry Parallels Growth of Federal Tax Code," Tax Foundation *Special Report* No. 39, September 1994.

29. *Discussion of Revenue Estimation Methodology and Process*, Joint Committee on Taxation, JCS–14–92, August 13, 1992.

30. "Return of the Tax Olympiad," *The Wall Street Journal*, May 7, 1993.

Chart 4   B1544

Higher Tax Rates Don't Raise More Revenue

Percentage

Top Tax Rate

Federal Taxes as Percent of GDP

Income Taxes as Percent of GDP

1948   1952   1956   1960   1964   1968   1972   1976   1980   1984   1988   1992   1996   2000

Sources: The Tax Foundation; Council of Economic Advisors _Economic Report of the President: 2002_ (Washington DC: GPO 2002).
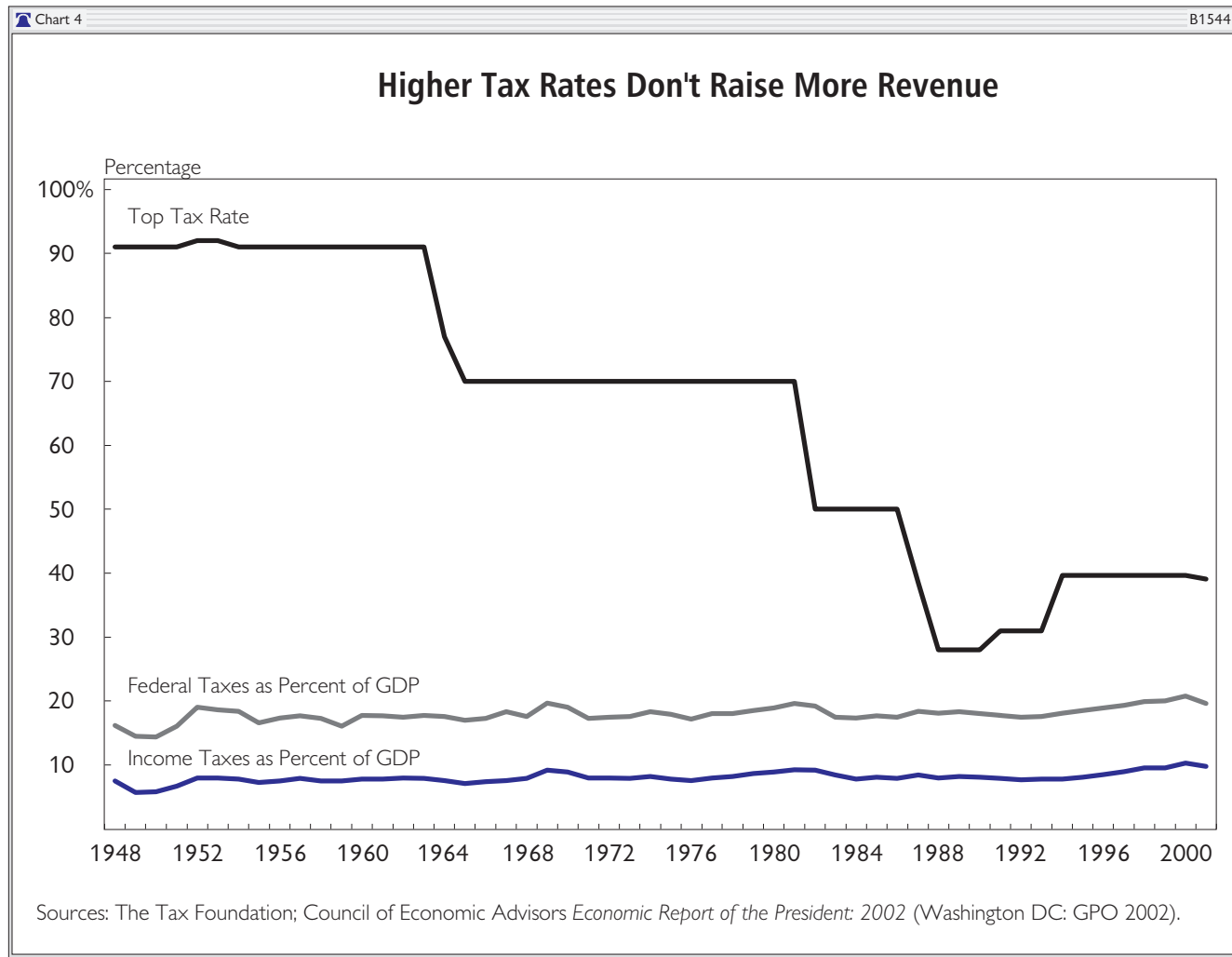
years in which income tax revenues climbed above that level: in 1969, 1981, and 2000.[31]

The Tax Cuts of the 1920s. Income tax rates were slashed dramatically during the 1920s, with the top rate falling from 73 percent to 24 percent.[32] The economy boomed, growing at an average annual rate of 6 percent between 1921 and 1929.[33] Personal income tax revenues increased substantially, rising from $719 million in 1921 to $1,160 million in 1928.[34] This 61 percent increase in revenue occurred at a time of no inflation. As Chart 5 shows, the percentage of the tax burden borne by

the rich jumped dramatically, climbing from 44.2 percent in 1921 to 78.4 percent in 1928. These results, not surprisingly, would not have been predicted by static analysis.

The Kennedy Tax Cuts. Lower taxes on savings and investment were approved in 1962, followed by across-the-board tax rate reductions in 1964. Economic growth improved, with GDP increasing at an average annual rate of 5 percent between 1961 and 1968.[35] The Kennedy tax cuts triggered record expansion, and revenues grew by 62 percent over the seven-year period.[36]
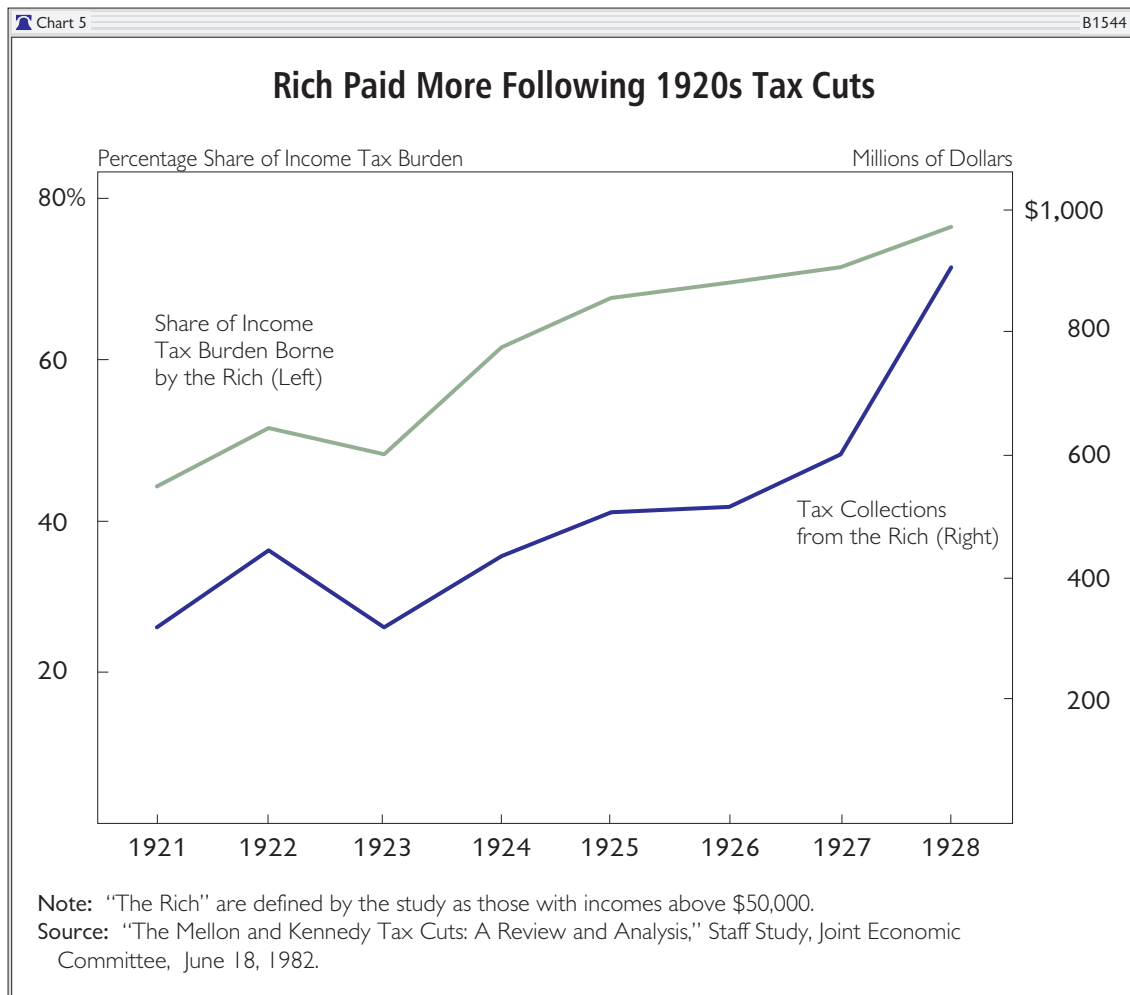
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31. Congressional Budget Office figures, available at _http://www.cbo.gov/showdoc.cfm?index=1821&sequence=0&from=7#t4_.

32. Tax Foundation, _Facts and Figures on Government Finance, 1988–1989 Edition_ (Baltimore, Md.: Johns Hopkins University Press, 1988).

33. U.S. Bureau of the Census, _Historical Statistics of the United States: Colonial Times to 1970, Part 1_, 1976.

34. Christopher Frenze, "The Mellon and Kennedy Tax Cuts: A Review and Analysis," Staff Study, Joint Economic Committee, June 18, 1982.

35. Council of Economic Advisers, _Economic Report of the President, 1996_, February 1996.

Backgrounder

Chart 5   B1544

Rich Paid More Following 1920s Tax Cuts

Percentage Share of Income Tax Burden   Millions of Dollars

Share of Income
Tax Burden Borne
by the Rich (Left)

Tax Collections
from the Rich (Right)

1921 1922 1923 1924 1925 1926 1927 1928

Note: "The Rich" are defined by the study as those with incomes above $50,000.
Source: "The Mellon and Kennedy Tax Cuts: A Review and Analysis," Staff Study, Joint Economic
   Committee, June 18, 1982.

One of the most compelling pieces of evidence for a supply-side strategy is the way different income groups responded to lower tax rates. As seen in Chart 6, wealthy taxpayers wound up paying significantly more tax revenues after their tax rates were reduced—exactly as dynamic forecasting would have predicted.

The 1978 Capital Gains Tax Cut. The more control a taxpayer has over a taxable activity, the more pronounced the supply-side effect. Capital gains taxes are the best example of this phenomenon, because a taxpayer can avoid the tax by not selling assets. In 1968, legislation was approved that rai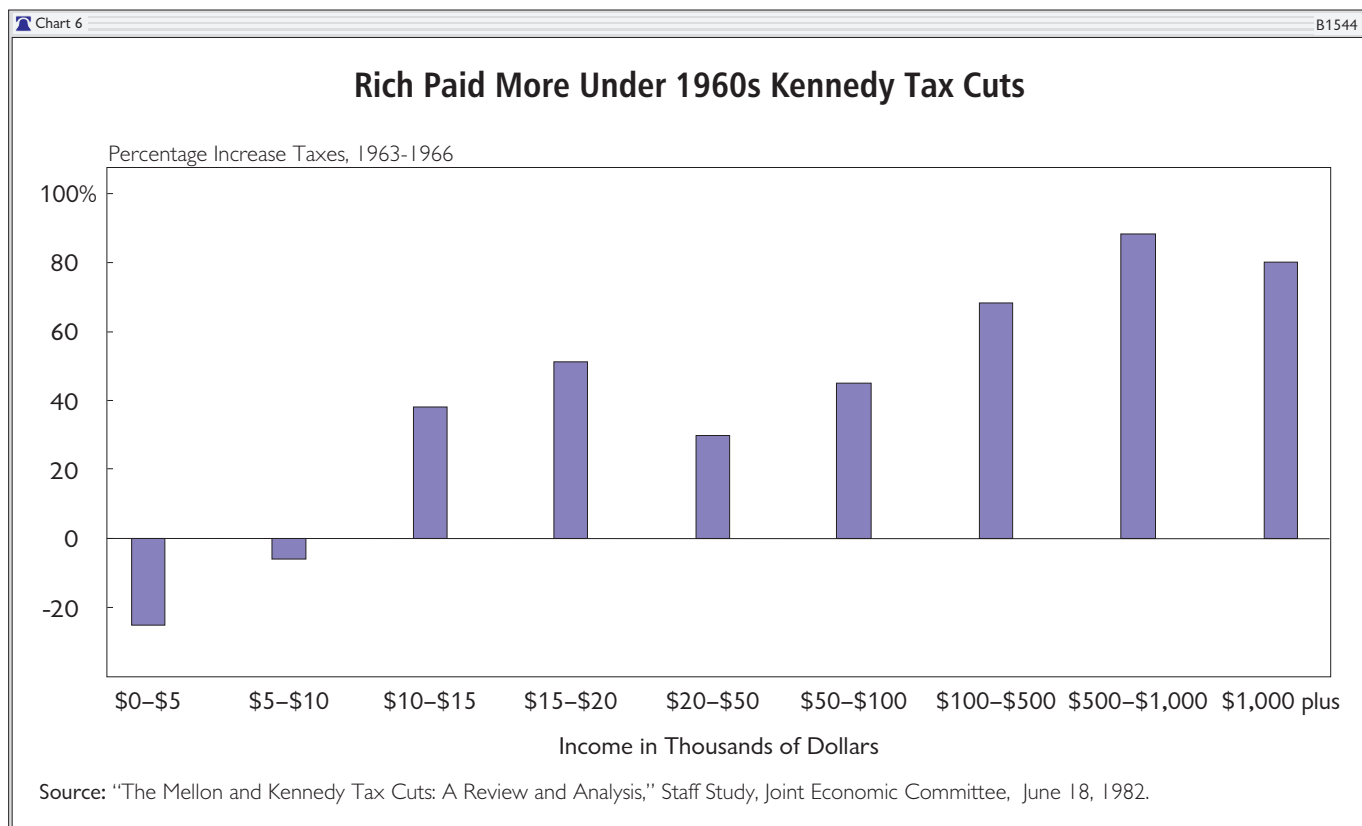sed the capital gains tax from 25 percent to 49 percent. (Effective tax rates almost always were higher—sometimes over 100 percent—since the government did not, and still does not, allow taxpayers to adjust asset prices for inflation.) Not surprisingly, capital gains revenues were sluggish throughout the 1970s. In 1978, however, the rate was reduced to 28 percent.[37] The very next year, revenues jumped 45 percent.[38] Capital gains tax revenues continued to rise, climbing even more when the Reagan tax cuts lowered the rate even further, down to 20 percent in 1981.

Windfall Profits Tax. During the Carter Administration, a heavy tax was imposed on crude oil. The Joint Committee on Taxation estimated in 1979

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36. Office of Management and Budget, *Budget of the United States Government, Fiscal Year 1997, Historical Tables*, 1996.

37. Bruce Bartlett, "The Case for Ending the Capital Gains Tax," *Financial Analysts Journal*, May–June 1985.

38. Lawrence B. Lindsey, *The Growth Experiment: How the New Tax Policy Is Transforming the U.S. Economy* (New York: Basic Books, 1990).

Chart 6   B1544

Rich Paid More Under 1960s Kennedy Tax Cuts

Percentage Increase Taxes, 1963-1966

Income in Thousands of Dollars

Source: "The Mellon and Kennedy Tax Cuts: A Review and Analysis," Staff Study, Joint Economic Committee, June 18, 1982.

that the tax would collect $184.5 billion between 1980 and 1985, but it brought in just $77.7 billion.[39] To be fair, the huge revenue gap probably was due to President Reagan's decision to decontrol oil prices, something the JCT could not have predicted in 1979. At the same time, however, foreknowledge of this move may have caused the revenue estimators to make an even bigger mistake, since most opponents of market-oriented policy believed that restoring competition to the petroleum market would cause oil prices to skyrocket.[40]

The Reagan Tax Cuts. Campaigning on across-the-board tax cuts, Ronald Reagan took office at a time when the economy was in horrible shape. The economy was in the middle of a severe double-dip recession. Inflation was running at double-digit rates, unemployment was rising, and interest rates

had climbed to more than 20 percent.[41] Critics claimed the tax cuts would be inflationary and would do nothing to boost growth, but just the opposite occurred. Americans did not receive a net tax cut until sometime between July 1982 and January 1983 because previously legislated payroll tax increases and bracket creep offset the portions of the tax cut that took effect in 1981 and 1982.[42] However, once the tax cuts did take effect, they initiated the longest peacetime economic expansion up to that point in the nation's history.[43]

The most comprehensive analysis of the revenue effect of the Reagan tax cuts shows two things: The lower tax rates on the rich more than paid for themselves, and there were substantial feedback effects from lower tax rates on other income classes as well. (See Chart 7.)
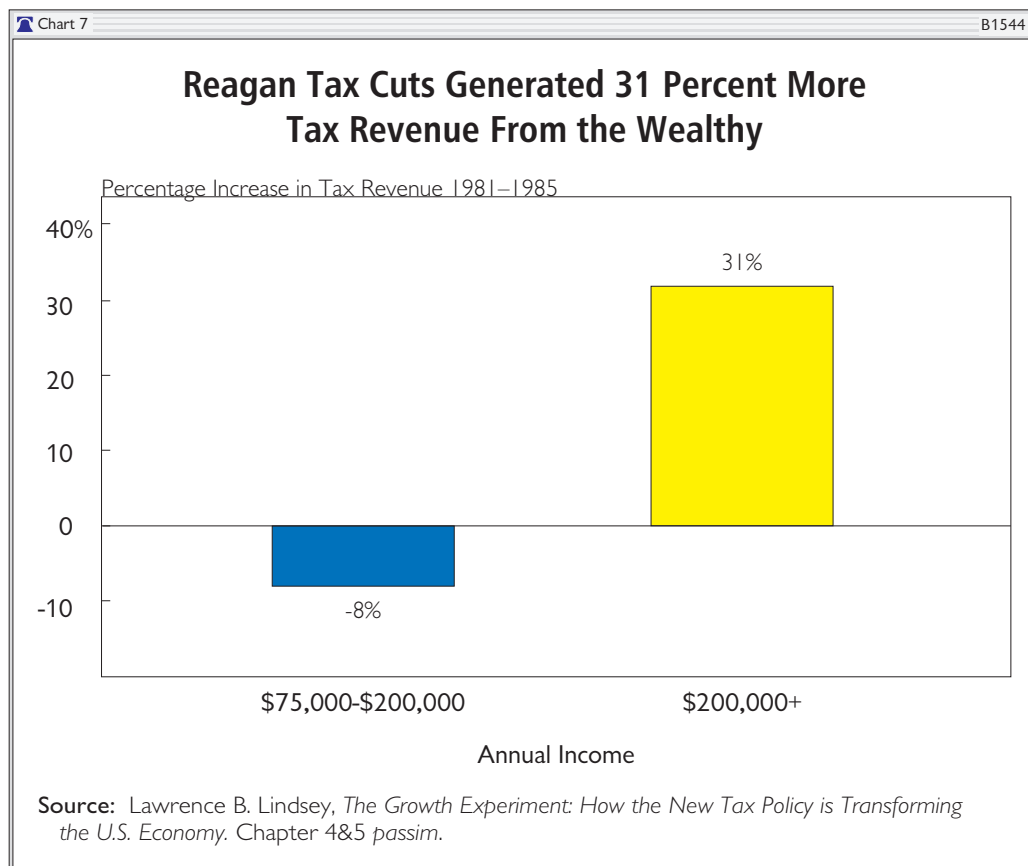
39. Bruce Bartlett, "Static Scoring Gets It Wrong," *The Wall Street Journal*, December 14, 1994.

40. For a thorough discussion of this issue, see S. Fred Singer, ed., *Free Market Energy: The Way to Benefit Consumers* (New York: Universe Books, 1984).

41. Council of Economic Advisers, *Economic Report of the President, 1996.*

42. Lindsey, *The Growth Experiment.*

43. Robert Bartley, *The Seven Fat Years* (New York: The Free Press, 1992).

Chart 7 B1544

Reagan Tax Cuts Generated 31 Percent More Tax Revenue From the Wealthy

Percentage Increase in Tax Revenue 1981–1985

31%

-8%

$75,000-$200,000 $200,000+

Annual Income

Source: Lawrence B. Lindsey, *The Growth Experiment: How the New Tax Policy is Transforming the U.S. Economy.* Chapter 4&5 *passim.*

The 1986 Tax Reform Act. This legislation provides one of the best examples of why dynamic forecasting is needed. The Tax Reform Act lowered tax rates on individual income and increased the tax burden on corporate income.[46] According to the static estimates, the shift in taxes should have amounted to more than $100 billion in revenues over the five-year period. Actual tax collections, however, showed a very clear and pronounced supply-side effect. As taxpayers responded to lower rates, individual income tax revenues grew faster than expected—nearly 6 percent above projections. The higher tax burden on corporate income, meanwhile, had the opposite effect; corporate income tax receipts were very sluggish, falling nearly 25 percent below the static estimates.[47]

Defenders of high tax rates condemn the Reagan program, noting that tax revenues in the early 1980s were well below the Administration's original projections, but this reasoning is seriously flawed. First, it blames the tax cuts for the second half of the double-dip recession of 1980–1982, a drop in the economy that actually began before the tax cut was initiated. Second, it fails to recognize the irony in the fact that two-thirds of the revenue shortfall occurred because inflation was reduced much faster than was originally thought.[44] Significantly, the forecast of the Democrat-controlled Congressional Budget Office closely matched the Administration's.[45]

The divergent responses of personal and corporate income tax collections are critical. Proponents of static forecasting often argue that the dynamic correlations between tax rates and the state of the economy are merely coincidental. For example, they deny that the booming economy and rapid revenue growth of the 1920s, 1960s, and 1980s had anything to do with lower tax rates. Conversely, they hold that the economy's poor performance during the 1930s, 1970s, and early 1990s is simply

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44. Gary Robbins and Aldona Robbins, "Cooking the Books: Exposing the Tax and Spend Bias of Government Forecasts," Institute for Policy Innovation *Policy Report* No. 129, February 1995.

45. Bruce Bartlett, "Premature Ambush of Tax Cut Scorecard," *The Washington Times*, August 5, 1996.

46. Taxes on business are an illusion. Even when collected at the corporate level, all taxes ultimately are paid by individuals. When government imposes taxes on a "corporation," the real effect is lower profits for shareholders, lower wages for workers, and higher prices for consumers.

47. Robbins and Robbins, "Cooking the Books."

a matter of bad fortune, completely unrelated to higher tax rates. These arguments fall apart when analyzing the Tax Reform Act, since it is inconsistent to blame sluggish corporate tax collections on a weak economy while at the same time claiming that increased personal tax collections are the result of a strong economy.

The 1986 Capital Gains Tax Rate Increase. When, as part of the Tax Reform Act of 1986, policymakers increased the capital gains tax from 20 percent to 28 percent, two noteworthy things happened: Capital gains realizations (asset sales) and revenues soared before the tax rate increase took effect and then collapsed by more than 50 percent when the higher rate took effect.[48] Nevertheless, when the Congressional Budget Office put together its revenue baseline in 1990, it assumed that capital gains realizations would grow at the same rate they did during the early 1980s when the tax rate was low.

This assumption proved to be a huge error. In fact, the high capital gains tax discouraged asset sales, and realizations were stagnant—usually less than half of CBO's projections.[49] Moreover, the Joint Committee on Taxation used this inflated baseline in 1990 to put together static revenue estimates suggesting that a reduction in the rate would lose money and primarily benefit the wealthy. To the contrary, the 1986 increase in the capital gains tax rate actually hurt middle-income taxpayers more than the rich, since the tax rate on their gains rose from 14 percent to 28 percent.[50]

The Luxury Tax. The 1990 budget agreement included provisions imposing excise taxes on products thought to be purchased by the "rich," including luxury boats and private airplanes. These taxes backfired so badly that Congress repealed them. Actual collections from the boat tax reached only $32.5 million, according to the Treasury Department—far below the $53 million originally forecast.[51] The Joint Committee on Taxation, meanwhile, admitted that the airplane tax collected just 10 percent of the static estimate.[52]

Defenders of the tax have argued that the revenue shortfall was coincidental,[53] but the effects of the luxury tax were in fact even worse than these numbers indicate. When boat builders lost their jobs and boatyards shut down, the federal government lost income and payroll taxes and also had to pay out unemployment benefits.[54] The static estimates recognized that some people could lose their jobs as a result of the tax but assumed that those workers would immediately get jobs paying the same wage someplace else.[55] Life in the real world, unfortunately, does not operate in accord with the assumptions of static blackboard models.

The 1990 Bush Tax Rate Increase. In 1990, President George H. W. Bush reneged on his no-new-taxes promise and signed into law a major tax increase, including an increase in the top rate from 28 percent to 31 percent. Rather than bringing in new revenues, however, the government began to collect less revenue than was projected before tax rates were increased.[56] In 1991 alone, revenues fell by more than $6 for every $1 the tax increase was supposed to generate.[57]

Defenders of static scoring admit this happened but blame the stagnant economy for the drop in

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48. Christopher Frenze, "Capital Gains and the Revenue Estimation Process," *Economic Update*, Joint Economic Committee, September 1995.

49. Christopher Frenze, "Massive CBO Errors in Capital Gains Projections," *Policy Analysis*, Joint Economic Committee, February 1992.

50. Alvin Rabushka, "Ten Myths About Higher Taxes," *Essays in Public Policy* (Stanford, Cal.: Hoover Institution, 1993).

51. Lucinda Harper and David Wessel, "A Primer: What Congress Will Face in Debate Over Taxes and Revenue," *The Wall Street Journal*, December 27, 1994.

52. *Methodology and Issues in the Revenue Estimating Process*.

53. U.S. General Accounting Office, *Luxury Excise Tax Issues and Estimated Effects*, GAO/GGD–92–9, February 1992.

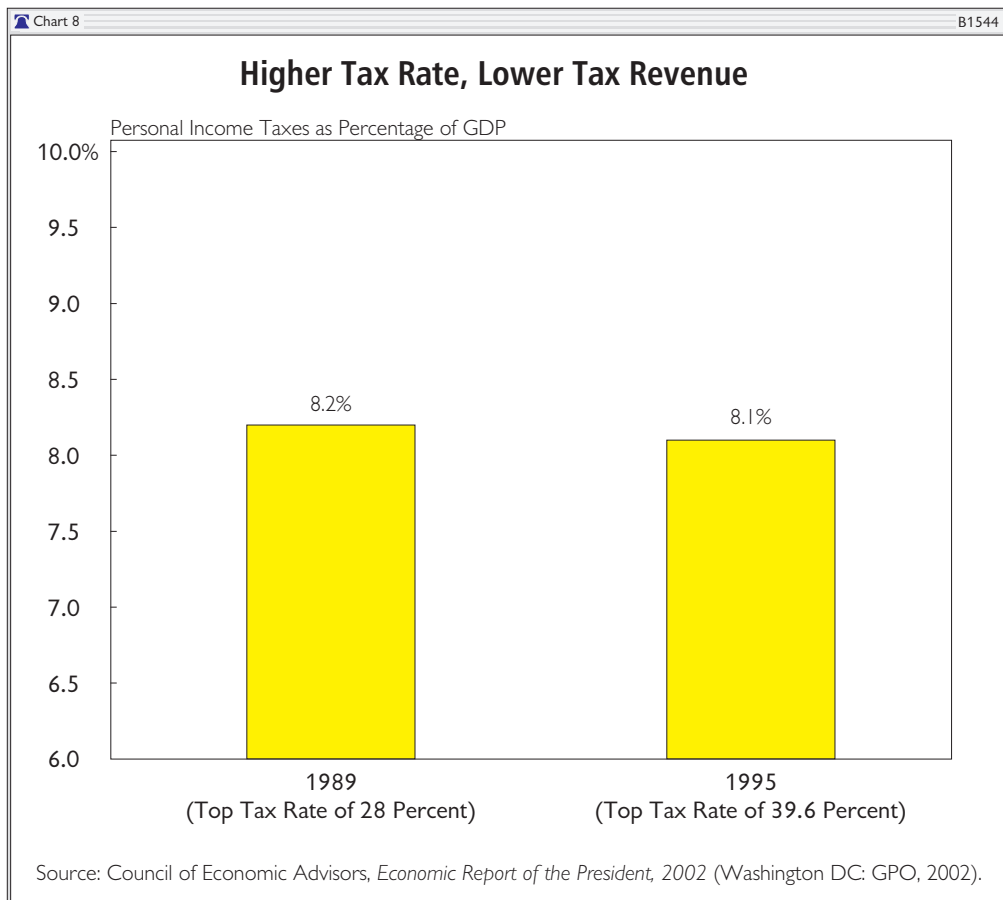54. Joint Economic Committee, *1992 Annual Report*, April 1992.

55. J. D. Foster, "The Prospects for Improving Official Revenue Estimates," Tax Foundation *Special Brief*, February 1995.

56. Office of Management and Budget, *Mid-Session Review of the Budget*, July 16, 1990, and *Budget of the United States Government, FY1997*, *Historical Tables,* 1996.

revenues. Since the tax increase certainly played a significant role in the economic slump, however, this excuse rings hollow. Even if one accepts the unlikely assumption that the tax increase had nothing to do with the recession, other compelling numbers demonstrate the dynamic effect. In 1991, income tax receipts from those making more than $200,000 fell by more than 6 percent,[58] but tax collections from those making less than that rose by 1 percent. In other words, the government wound up collecting less in revenue from the taxpayers who were slapped with higher tax rates and more from those whose tax rates did not go up.

Chart 8   B1544

Higher Tax Rate, Lower Tax Revenue

Personal Income Taxes as Percentage of GDP

Year	Value
1989 (Top Tax Rate of 28 Percent)	8.2%
1995 (Top Tax Rate of 39.6 Percent)	8.1%

Source: Council of Economic Advisors, *Economic Report of the President, 2002* (Washington DC: GPO, 2002).

The 1993 Clinton Tax Rate Increase. Without a vote to spare in either the House or the Senate, during his first year in office, President Clinton imposed the largest tax increase in history. His increase in the top tax rate from 31 percent to 39.6 percent[59] was the biggest jump since Herbert Hoover boosted the rate from 25 percent to 63 percent in 1930. Harvard economist Martin Feldstein estimates that the tax rate increase raised only one-third of the anticipated revenue.[60] The combined effect of the Bush and Clinton tax rate increases was utter disaster.

Some have argued that the Clinton tax increase must have succeeded since the budget shifted from deficit to surplus in the late 1990s, but the Clinton Administration's own budget figures dispel this myth. In January 1995, almost 18 months after the tax increase was enacted, President Clinton's Office of Management and Budget projected that future budget deficits would remain above $200 billion—and climb in all subsequent years.[61] Needless to say, if the Clinton Administration admitted in 1995 that the tax increase would not lead to a balanced budget, it would be groundless to make that claim today.

What really happened? As always, it is difficult to provide a precise answer, but the fiscal restraint imposed by the newly elected Republican Congress, combined with pro-growth capital gains tax cuts and private-sector initiative, clearly were the

57. U.S. General Accounting Office, *1991 Budget Estimates: What Went Wrong*, GAO/OCG–92–1, January 1992.

58. Paul Gigot, "Oops! Weren't We Going to Soak the Rich?" *The Wall Street Journal*, July 9, 1993.

59. He also lifted the cap on the amount of income subject to the Medicare 2.9 percent payroll tax. This means that the effective top rate was really 42.5 percent.

60. Martin Feldstein, "What the '93 Tax Increases Really Did," *The Wall Street Journal*, October 25, 1995.

61. See *http://w3.access.gpo.gov/usbudget/fy1996/bud96p.pdf*.

main factors in balancing the budget. In other words, the budget was balanced because government policy shifted away from President Clinton's original approach.

The 1997 Capital Gains Tax Rate Reduction. The 1997 capital gains tax cut is the most recent example of the negative impact of static scoring. The Joint Committee on Taxation estimated that reducing the capital gains tax from 28 percent to 20 percent would "cost" the government $21 billion over the next 10 years.[62] The JCT did estimate that revenues would increase in the first two years because the lower rate would encourage more asset sales, but there was no attempt to measure the higher revenues that would be generated because of better economic performance.

In reality, capital gains tax revenue skyrocketed, climbing from $62 billion in 1996 to more than $100 billion in 1999.[63] But this figure is only a partial measure of the JCT's failure to grasp economic realities. In addition to mis-measuring the impact of a capital gains tax cut on financial markets, the JCT failed to estimate the impact of a lower capital gains tax cut on the overall economy. In other words, the lower capital gains tax rate not only boosted revenues from the capital gains tax, but also indirectly increased personal income tax, corporate income tax, and payroll tax revenues.[64] None of these results were incorporated in the JCT estimate.

REVENUE ESTIMATES AND THE FLAT TAX

The perils and pitfalls of static forecasting are clearly evident in the tax reform debate. House Majority Leader Richard Armey (R–TX) resuscitated the idea of moving to a simple and fair one-rate tax system in the mid-1990s. Almost immediately, the Clinton Administration attacked the proposal. Shortly before the 1994 mid-term elections, the press reported a Treasury Department estimate that the flat tax would require a rate of 25.8 percent to be revenue neutral.[65] Six months later, the Administration criticized the flat tax yet again, but this time charged that the rate would have to be 22.9 percent to avoid increasing the deficit.[66] In 1996, the Treasury Department issued its third static estimate of the flat tax, this time claiming that the revenue neutral rate would be 20.8 percent.[67]

The Clinton Administration's inability to settle on a single rate was rather instructive. It demonstrated that even static revenue estimates, which involve more simplistic calculations than dynamic scoring, are far from exact. Not surprisingly, dynamic estimates, using more sophisticated econometric and modeling techniques, find that growth increases significantly with a flat tax. This additional growth, as illustrated earlier, results in substantial revenue increases.

An important question, of course, is who benefits from the economy's expansion. Representative Armey and Senate co-sponsor Richard Shelby (R–AL) believe that taxpayers should reap the benefit of faster growth. As a result, their plan would reduce the flat rate to 17 percent in the third year.

Numerous studies support the contention that the economy will expand dramatically if the existing tax code is replaced by a single-rate flat tax. For example:

- Professor Dale Jorgenson, chairman of the Economics Department at Harvard, testified before the National Commission on Economic Growth and Tax Reform that a single-rate system could boost the economy by 15 percent or more within a decade.[68]

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62. See *http://www.house.gov/jct/x-39-97.pdf*.

63. Stephen Moore and Phil Kerpen, "A Capital Gains Tax Cut: The Key to Economic Recovery," Institute for Policy Innovation *Policy Report* No. 164, October 2001.

64. See "Capital Gains Taxes and the Economy: A Retrospective Look," Standard & Poor's DRI, Lexington, Mass., June 1999.

65. "Treasury Analysis Finds GOP 'Flat Tax' Too Costly," *The Washington Post*, October 31, 1994.

66. U.S. Department of the Treasury, "A Preliminary Analysis of a Flat Rate Consumption tax," April 1995.

67. U.S. Department of the Treasury, "An Analysis of the New Armey–Shelby Flat Tax Proposal," January 1996.

68. Dale Jorgenson, "The Economic Impact of Fundamental Tax Reform," testimony before the Committee on Ways and Means, U.S. House of Representatives, June 6, 1995.

QUESTIONS AND ANSWERS ABOUT DYNAMIC SCORING

Q: Will lower tax rates reduce the underground economy, and will dynamic forecasting reflect this shift?

A: Yes, but probably not enough to affect revenue forecasts. By definition, measuring the size of the underground economy is difficult. Those who have tried have produced estimates ranging from a low of 5 percent of GDP to a high of more than 25 percent of GDP.[1]

An added problem is that it is uncertain how much of the underground economy exists for the purpose of evading taxes. It is safe to assume that most drug dealers, bookies, and prostitutes do not pay taxes, but that will not change if tax rates are lowered. For activities that are legal, however, lower tax rates could reduce tax evasion. The American Bar Association conducted a three-year study, which concluded that lower tax rates encourage greater compliance.[2]

Q: What safeguards would be needed to ensure that the party in power did not abuse dynamic forecasts?

A: This is a legitimate concern. Politicians often exaggerate the benefits of legislation they support, and it does not take a wild imagination to envision a scenario in which revenue estimators are pressured to produce excessively optimistic numbers. The Congressional Budget Office, for instance, was often accused of tailoring its figures to help the Democrats when they were in the majority.[3]

This is why public disclosure of the model and methodology used to calculate estimates is so important. If outside experts were allowed to review all decisions, the potential for mischief would shrink dramatically.[4]

Q: Should there be dynamic forecasts of spending legislation?

A: If the scientific evidence is clear, the answer is yes. Considerable research has been done to show that government spending, particularly for consumption items, is a drag on economic growth.[5] Incorporating this new research into budget analysis would help policymakers make proper decisions.

As with dynamic scoring of tax legislation, full disclosure is critical. The Congressional Budget Office, for instance, used a version of dynamic scoring during the debate over the 1995 Balanced Budget Act; but in predicting that dramatic reductions in interest rates would follow the enactment of legislation to reduce budget deficits,[6] the CBO was almost surely wrong.[7] If the CBO had to publish its analyses and defend them before outside experts, estimators would be forced to refine and improve their techniques.

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1. Paul Starobin, "The Economy You Can't See," *National Journal*, June 18, 1994.

2. American Bar Association, Commission on Taxpayer Compliance, *Report and Recommendations*, July 1987.

3. Edward McFadden, "Clinton's Funny-Number Factory," *The American Spectator*, November 1992.

4. Section 4 of H. Con. Res. 170, introduced by Representative Tom Campbell (R–CA), would require both the Congressional Budget Office and the Joint Committee on Taxation to divulge their methodology.

5. Eric M. Engen and Jonathan Skinner, "Fiscal Policy and Economic Growth," National Bureau of Economic Research *Working Paper Series* No. 4223, December 1992; Daniel Landau, "Government Expenditure and Economic Growth: A Cross-Country Survey," *Southern Economic Journal*, Vol. 49 (January 1983), pp. 783–792; John McCallum and Andre Blais, "Government, Special Interest Groups, and Economic Growth," *Public Choice*, Vol. 54 (1987).

6. Congressional Budget Office, "Economic and Budget Outlook, December 1995 Update," CBO Memorandum, December 1995.

7. Daniel Mitchell, "The Deficit Hawks Lay an Egg," *The Wall Street Journal*, July 23, 1996.

- University of California professor Alan Auerbach, formerly an economist with the Joint Committee on Taxation, estimates that the economy would be 5.7 percent larger within five years with a flat tax.[69]

- In another study, Auerbach and four colleagues concluded that the economy would be 7.5 percent larger in the long run following tax reform.[70]

- Stanford University economist Michael Boskin, a former chairman of the Council of Economic Advisers, has testified that a flat tax would boost growth by 10 percent within ten years.[71]

- Even *without* growth effects, two former Treasury Department economists estimate that a flat tax would be revenue neutral at 17 percent.[72]

- Boston University economist Laurence J. Kotlikoff estimates that a move to a single-rate tax that does not double-tax capital would raise living standards by between 7 percent and 14 percent.[73]

- A study by two academic economists found that a 17 percent flat tax would boost growth so much that tax revenues would increase by 1.8 percentage points.[74]

- Finally, the Joint Committee on Taxation sponsored a symposium to examine the impact of tax reform. Every economist/forecaster who participated in the conference estimated that tax reform would increase investment and boost economic growth.[75] Yet the JCT refuses to reflect this consensus in its revenue estimates.

CONCLUSION

To make America's economy more competitive and boost the economy's performance, tax policy will have to change. In the short term, immediate tax rate reductions are needed to boost growth; in the long term, the entire tax code should be replaced by a simple, flat tax. But these pro-growth changes will be harder to achieve if revenue estimators continue to use outdated and inaccurate static models.

Dynamic revenue estimates, by contrast, would provide policymakers with more accurate information. Dynamic forecasting is based on a proper understanding of how the economy works, and history has shown this approach to be far more realistic and accurate than static estimates.

—Daniel J. Mitchell, Ph. D., is McKenna Senior Fellow in Political Economy in the Thomas A. Roe Institute for Economic Policy Studies at The Heritage Foundation.

69. Alan Auerbach, "Tax Reform, Capital Allocation, Efficiency and Growth," unpublished draft, December 21, 1995, prepared for Brookings Institution Conference on Fundamental Tax Reform, February 15–16, 1996.

70. Alan Auerbach, David Altig, Laurence Kotlikoff, Kent Smetters, and Jan Walliser, "Simulating U.S. Tax Reform," National Bureau of Economic Research *Working Paper* No. 6248, October 1997.

71. Michael Boskin, "A Framework for the Tax Reform Debate," testimony before the Committee on Ways and Means, U.S. House of Representatives, June 6, 1995.

72. Gary Robbins and Aldona Robbins, "Which Tax Reform Plan? Developing Consistent Tax Bases for Broad-Based Tax Reform," Institute for Policy Innovation *Policy Report* No. 135, January 1996.

73. Laurence J. Kotlikoff, "The Economic Impact of Replacing Federal Income Taxes with a Sales Tax," Cato Institute *Policy Analysis* No. 193, April 15, 1993.

74. Barry J. Seldon and Roy G. Boyd, "The Economic Effects of a Flat Tax," National Center for Policy Analysis *Policy Report* No. 205, June 1996.

75. See *http://www.house.gov/jct/s-21-97.pdf*.