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SUPPLY-SIDE VS. DEMAND-SIDE TAX CUTS AND U.S. ECONOMIC GROWTH, 1951–2004

ABSTRACT: *Supply-side economists claim that a low top marginal income-tax rate accelerates investment, employment, and economic growth. But the economic literature cited to support the supply-side hypothesis provides little to no empirical support for it. And a more comprehensive empirical examination of key parameters of U.S. economic performance in the postwar period, undertaken here, shows no association between low top marginal income-tax rates and high real growth in investment, employment, or GDP. By contrast, the analysis yields strong evidence for the economic-growth benefits of a "demand-side" approach to taxation policy.*

Since the late 1970s, the dispute between "demand-side" and "supply-side" economists has dominated the debate over U.S. tax policy. Both sides acknowledge that tax cuts can stimulate the economy during a downturn, but the two sides view the problem through opposite ends of the telescope.

Demand-siders emphasize the centrality of "aggregate demand" in driving economic expansions and contractions. When demand-siders discuss the potential benefit of cutting taxes during a recession, they therefore emphasize the need to put money in the hands of the vast mass of consumers. More consumer spending, they believe, will, in turn, stimulate increased production, resulting in greater employment, investment, and growth in Gross Domestic Product (GDP). Demand-

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siders therefore favor tax cuts that are weighted toward the middle and lower ranks of earners—those living from paycheck to paycheck—who will naturally tend to spend more of any money they receive from tax reductions.

Supply-siders turn this approach on its head. They see production, or supply, as the main engine of economic growth. Their emphasis is therefore on increasing business investment: in their view, higher rates of investment will lead to higher rates of GDP growth. For supply-siders, a key feature of the tax code is its "incentive effects." By changing economic incentives, they believe, they can change economic behavior by encouraging more business investment on the part of upper-income taxpayers.

Supply-siders speak of lowering marginal tax rates across the board to increase incentives to "work, save, and invest." But the supply-siders' emphasis (and the feature that makes their program controversial) is clearly on lowering the *top* marginal rate, because of its presumed impact on economic growth. While supply-siders commonly argue that tax-rate cuts will increase incentives for "work effort" or productive economic activity across the board, lowering the top marginal rate is, they think, especially important in boosting "capital formation." An American Enterprise Institute book on tax reform, coedited by leading supply-side economist R. Glenn Hubbard, points out that "many fundamental [tax] reform proposals . . . promise economic benefits *by lowering marginal tax rates* and by changing the tax base to bypass those areas of the economy that are particularly costly if taxation distorts them. *The key sector is capital formation, which has long and widely been acknowledged as especially impaired by taxation*" (Hassett and Hubbard 2001, 1, emph. added).

A key contention of supply-side economics, therefore, is that lowering the top marginal income-tax rate increases the rewards for investing in business, which in turn accelerates growth in GDP and employment. According to congressional testimony in 2001 by Hubbard, then Chairman of the Council of Economic Advisers,

> the key to the President's plan is its focus on reducing marginal tax rates. We are now quite familiar with the notion that accumulating physical capital, human capital . . . and new technologies is the heart of sustained economic growth and prosperity. *There is now a large body of evidence* that improving marginal incentives . . . is the key to ensuring these *investments* in our economic future. (U.S. Congress 2001, 7, emph. added.)

President Bush set forth essentially the same supply-side rationale for his tax cutting program on numerous occasions. Cutting the top marginal rate would, he maintained, enhance incentives for investment or, in his usual phrase, capital formation.

> I want Congress to also understand that it's not only important to drop the bottom rate, it's important to drop the top rate as well. By dropping the *top rate*, we encourage growth, *capital formation* and the entrepreneurial spirit. . . . (Bush 2001b, emph. added.)

> And we also drop the top rate, of course, from 39.6 percent to 33 percent. If you pay taxes, you ought to get relief. Everybody who — but everybody benefits, I'm convinced, when the top rate drops because of the effect it will have on the entrepreneurial class in America. . . . And you all can help by explaining clearly to people that reducing the top rate will help with job creation and *capital formation*; and as importantly, will help highlight the American Dream. . . . (Bush 2001a, emph. added.)

> Most small businesses are sole proprietorships, or limited partnerships, or Subchapter S corporations, which means that they pay tax at the individual income tax rate. And so, therefore, when you accelerate rate cuts, you're really *accelerating capital to be invested* by small businesses. And that's what Congress must understand. . . . *Capital expenditure equals jobs, and the more capital accumulation and capital expenditure* we can encourage, the more likely it is somebody is going to find work. . . . And so this plan focuses . . . on *capital accumulation, capital formation,* particularly at the small business sector of the American economy. (Bush 2003b, emph. added.)

> When we cut individual tax rates, we are stimulating capital formation in the small business sector of America. (Bush 2003a.)

Empirical Evidence for the Supply-Side Model

Given the centrality of this argument to the debate over fiscal policy, it is worth asking what the empirical evidence is for the supply-side theory that low top marginal income-tax rates increase economic growth. A review of the "large body" of theoretical literature on the subject shows the empirical evidence supporting this claim to be sparse to nonexistent. As William G. Gale and Peter R. Orszag (2004, 422) note, "empirical studies of the growth effects of actual U.S. tax cuts are relatively rare."

Surprisingly enough, among the few such studies are two by leading supply-side theorist Martin Feldstein that found virtually no net growth from the Reagan supply-side marginal rate cuts of 1981. Feldstein and Douglas W. Elmendorf (1989a, 1) note that "the rapid expansion of a nominal GNP [during the Reagan-era expansion of the 1980s] can be explained by monetary policy without any reference to changes in fiscal and tax policy." They found "no support for the proposition that the recovery reflected an increase in the supply of labor induced by the reduction in personal marginal tax rates." The verdict of leading supply-side economists on the first supply-side experiment, in other words, found no empirical evidence to support a direct relationship between marginal tax-rate cuts and growth. (See also Feldstein and Elmendorf 1989b.)

In recent years, the study most commonly cited by supply-side economists in support of the growth effects of their tax-cutting program is by Eric Engen and Jonathan Skinner (1996). For example, in arguing for making the recent Bush tax cuts permanent, Harvey S. Rosen (2004) cited estimates from the Engen and Skinner article as the main support for his claim that continued low marginal income-tax rates increase growth. Similarly, in a *Wall Street Journal* op-ed backing the Bush supply-side tax policy, Hubbard (2004) cited Engen and Skinner as providing the main evidence that large tax burdens reduce growth.

Engen and Skinner examined time-series data on GDP growth levels, finding no evidence of a positive supply-side effect on growth. According to the authors, "The time-series correlation between marginal tax rates and growth rates yields a decidedly mixed picture; some decades were correlated positively and others negatively" (Engen and Skinner 1996, 625). Then, using a more speculative microeconomic analysis, they argue there are "modest [growth] effects" from tax cuts, but they acknowledged "the uncertainty inherent in nearly every empirical parameter used" in their microeconomic analysis (ibid., 617, 635). Turning to yet another methodology—a review of regression analyses of cross-country data on taxation and growth—they argue that lower tax burdens have a modest growth effect, but acknowledge the many deficiencies in the quality of the international data they use.

Engen and Skinner are addressing an important question: Does a low top marginal tax rate increase the rate of GDP growth? The straightforward approach to answering this question would be to examine actual rates of real GDP growth in the years with low top marginal tax rates. If low top marginal income tax rates are said to increase growth, then it

logically follows that we should see higher rates of real GDP growth in periods when the top marginal income tax rate is low. If low top marginal income tax rates have *not* been associated with high rates of growth in the past, then it hardly seems likely that cuts in the top marginal tax rate will produce high rates of growth in the present or future, and the supply-side case for enacting such cuts is severely attenuated. Engen and Skinner partly attempt to take this approach, examining rates of growth in the six years following the Kennedy-Johnson tax cuts of 1964 and the seven years following the Reagan tax cuts of 1982. Both tax cuts involved across-the-board reductions in marginal income-tax rates, including significant cuts in the top marginal rate. In the Kennedy-Johnson period, Engen and Skinner (1996, 624) found "a robust 4.8 percent" average rate of growth. In the Reagan period, they found "a healthy 3.9 percent" average rate of growth.

However, they conclude that the extent to which tax cuts caused growth is "unclear," in part because of the different states of the economy in the periods before the two tax cuts were enacted (Engen and Skinner 1996, 624). In the two years preceding the Kennedy-Johnson tax cuts, they note, GDP growth averaged more than 5 percent, while in the two years before the Reagan tax cuts, the economy was in recession. Engen and Skinner also cite the presence of other undetermined factors that may account for differential rates of growth, and note as well that it is impossible to separate the presumed supply-side incentive effects of lowering marginal tax rates from the well-established demand-side effects of reducing taxes across the board. How much of the growth effect was owing to supply-side incentives to "work, save, and invest," and how much was simply the result of increasing aggregate demand by putting more money in the hands of consumers? The Engen and Skinner analysis of the Kennedy-Johnson and Reagan tax cuts provides no answer to this question, which is central to evaluating the merits of the supply-side case.

In reality, Engen and Skinner's impression that the evidence is "unclear" is partly because the data are resistant to theoretically inspired supply-side conclusions. If cuts in the top marginal rate were truly associated with high growth rates, then presumably we would have seen stronger growth following the Reagan tax cuts than following the Kennedy-Johnson cuts, since Reagan's cut in the top marginal rate was deeper. Instead, we see the reverse. If one abandons the supply-side hypothesis that lower top marginal income-tax rates are necessarily associated with higher growth rates, much of the lack of clarity disappears.

Having concluded that the results of the time-series analysis of growth rates are "mixed," Engen and Skinner undertake a review of several microeconomic analyses of the relation between taxation, on the one hand, and investment and hiring, on the other. On the basis of this analysis, Engen and Skinner estimate that a 5-percent across-the-board cut in marginal rates should produce a 2.5-percent reduction in overall tax burden (taxes as proportion of GDP), other things being equal. Engen and Skinner (1996, 625) argue that the "more formal econometric methods" embodied in this alternative approach provide clearer answers. But in reality this approach provides less persuasive answers than a straightforward empirical analysis might have done—a problem reflected in the numerous caveats they offer.

Engen and Skinner try to support their conclusions by reviewing cross-country regression studies of the relationship between taxation and growth. But these cross-country analyses suffer from several important problems, some of which Engen and Skinner acknowledge. First, the data on taxation and growth from many countries are unreliable. Second, the U.S. economy differs in key respects from other economies in the developed world (for example, the United States has a much larger domestic market and a much smaller percentage of GDP devoted to exports), to say nothing of the profound differences between the mature U.S. economy and economies in the developing world. Third, as Engen and Skinner point out, the cross-country analyses capture only the effect of overall tax burdens (taxes as a percentage of GDP), and thus present the same problem of sorting out presumed supply-side incentive effects from demand-side effects. Finally, given the questionable reliability of much of the original data, statistical tools such as reduced-cross-section regressions yield relatively weak evidence of any relationships. The conclusion of the cross-country studies seems to be that taxes in general have a slightly inhibiting effect on growth, but Engen and Skinner (1996, 633) acknowledge that "almost all results are fragile in cross-country growth regressions."

Reviewing literature on taxation in relation to investment and hiring, Engen and Skinner develop a speculative set of coefficients that, they suggest, might reflect the impact of marginal tax rates in inhibiting hiring, investment, and economic growth. On the basis of these speculative numbers, Engen and Skinner predict a very modest growth effect from a sizeable hypothetical cut in marginal rates. They estimate the growth effect of their 5-percent tax cut to be between 0.2 and 0.3 per-

cent of GDP annually (but they add that such growth effects can be significant as they are compounded over time).

Engen and Skinner acknowledge "the uncertainty inherent in nearly every parameter used in [their] calculations." In the end, their evidence for a growth effect from a cut in marginal tax rates is far more speculative, and the predicted growth effect much less robust, than one would imagine from the frequent citation of their study by supporters of the supply-side theory. Certainly, the carefully hedged Engen and Skinner study provides little substantiation for the sweeping generalizations that are prevalent in the policy debates over taxation.

Marginal Tax Rates and Investment

This brings us to our second main question: Do cuts in the top marginal personal income tax rate increase investment and hiring? In 2004, the combined Bush tax cuts put an estimated $69 billion in the hands of high-income taxpayers (those with an adjusted gross income of $100,000 or more), compared to the amount these taxpayers would have paid under pre-Bush administration tax law (Tax Policy Center, 2004).

Supply-side theorists predict increased employment growth from cuts in the top marginal income-tax rate primarily due to decisions by entrepreneurs. A small body of literature (Carroll et al. 2000a, 2000b, and 2001) is presented to support the claim that cuts in marginal income-tax rates stimulate more business investment and expansion, and therefore hiring, by entrepreneurs. This literature goes back to a single empirical study of IRS data on the tax returns of a few thousand taxpayers who filed Schedule Cs (sole proprietorship) in both 1985 and 1988—that is, both before and after the Tax Reform Act of 1986 (TRA86), which enacted a major cut in marginal income-tax rates.

For taxation purposes, Schedule C businesses are "pass-through" entities. That is, they pay no corporate tax. Business gains or losses are directly passed through to the business owner's adjusted gross income, and are thus taxed at individual income-tax rates. Therefore, supply-siders theorize, reductions in the top marginal individual income-tax rate will influence the business decisions of sole proprietors: by putting more money in the hands of the business owner, one may increase the incentives for business expansion through investment and hiring. The tax impact on Schedule C businesses could be expected to be similar for Part-

nerships and Subchapter S corporations, which are also pass-through entities for tax purposes. Participants in all three entities might be loosely defined as "entrepreneurs."

This theory clearly lay behind the statement by President Bush, quoted earlier, defending cuts in the top marginal rate on the grounds that they would increase investment by small businesses. Moreover, Rosen (2004), also on Bush's Council of Economic Advisers, cited the literature based on this study (of which he was a co-author) in arguing that low marginal rates increase investment—a major reason he gave for making the Bush tax cuts permanent. Hubbard (2001) cited the same literature in his congressional testimony urging approval of the first Bush tax cuts.

Rosen and his colleagues (Carroll et al. 2000a) analyzed the returns of taxpayers who filed Schedule Cs in both 1985 and 1988. Between 1985 and 1988, TRA86 reduced the top marginal personal income tax rate from 50 percent to 28 percent. Carroll et al. argued that Schedule C filers in the higher tax brackets, who therefore benefited from the 1986 top marginal rate cut, were more likely to invest in 1988 than taxpayers in lower brackets who did not benefit from that cut. They concluded that high top marginal tax rates reduce investment by entrepreneurs, and that a lower top marginal rate increases investment.

This conclusion requires close scrutiny. First, the inferences drawn by Carroll et al. from their own data seem, at best, questionable. The analysis focused on a tiny sample of Schedule C filers. Of some 19,255 tax returns examined, only 3,480 taxpayers filed Schedule Cs in both 1985 and 1988, and therefore fit the criteria of the study. Notably, of this small sample of Schedule C businesses, nearly half (49 percent) made no investment in either 1985 or 1988. In addition, the vast majority (80 percent) failed to make an investment in at least one of the two years. Schedule Cs are frequently used as vehicles for "outside income" from such activities as consulting, speaking, or writing. As evidenced by the investment patterns in the Carroll et al. sample, many Schedule C businesses have little in the way of physical capital—other than a home office with a computer and printer. To expect major business expansion to flow from investments in this sector seems highly unlikely.

Second, and most strikingly, in 1988, after the substantial top marginal tax-rate cut of 1986, the number of Schedule C filers in the Carroll et al. sample who made any investment actually *declined* from 45 percent to 40 percent. This hardly adds up to a robust case for the

proposition that cuts in the top marginal income tax rate *increase* business investment.

Carroll et al. acknowledge that these entrepreneurial entities (Schedule C sole proprietorships, Partnerships, and Subchapter S corporations) account for a just small fraction—about 10 percent—of total business investment in the U.S. economy. This figure suggests that even a substantial increase in investment by such entities would have comparatively little impact on overall levels of business investment. A 10 percent increase in investment by Schedule C, Partnership, and Subchapter S filers would translate into just a 1 percent increase in total investment in the economy.

The study of hiring by Schedule Cs (Carroll et al. 2000b) yielded broadly similar results. Between 1985 and 1988, the percentage of high-income business owners who had any employees declined from 43 to 42 percent.

It is surprising that small-business behavior has been a centerpiece of the supply-side case. We should consider what a relatively small pool of taxpayers these high-income "entrepreneurs" represent. According to Internal Revenue Service estimates for 2001, only 21 percent of high-income taxpayers (adjusted gross income of $100,000 or more) filed Schedule Cs with their returns. Among the same upper-income taxpayers, Partnerships and Subchapter S corporations accounted for only another 9 percent of tax returns. That is, about 70 percent of the high-income taxpayers who benefited from the 2001–2003 cuts in the top marginal rate owned no small business entity. Even if the data of the Carroll et al. study supported the conclusions the authors draw, cuts in the top marginal income tax rate would be a very blunt and inefficient instrument for encouraging total business investment or employment in the economy as a whole, since such cuts mostly benefit taxpayers who do not own small businesses.

Given these realities, we would expect to see little investment or hiring effect from cuts in the top marginal income-tax rate, and this indeed proves to be the case.

Back to the Evidence

It is time to return to the straightforward analysis that Engen and Skinner partly attempted, and then rejected in the face of what they called its "mixed" and "unclear" results. Supply-side theorists claim that a low

top marginal income-tax rate leads to higher rates of investment, employment, and GDP growth. If this is indeed the case, then the historical record of U.S. economic performance should yield evidence of this pattern.

We can approach this question in a more definitive way than Engen and Skinner by greatly expanding the time-series data under examination. Engen and Skinner focused their analysis primarily on two small sets of time-series data, the six years following the Kennedy-Johnson tax cuts and the seven years following the Reagan tax cuts (using the two years preceding each episode as a baseline). A more complete data set from the post-World War II period can provide more comprehensive results. To test the supply-side theory, let us examine the interrelationship of key economic indicators for the 54 years between 1951 and 2004.

I have divided the years in period into three equal groupings—"top one-third," "middle one-third," and "bottom one-third"—according to the relative performance of each year in terms of:[1] real GDP growth, top marginal income-tax rates, real growth in personal consumption expenditures, real growth in gross nonresidential fixed investment,[2] employment growth, and unemployment rate.

The choice of 1951 as a starting point was dictated by the following considerations. First, individual income-tax rates were minimal before 1941, and economic growth during the years 1941–1951 were atypical due to the war and its immediate aftermath. Second, 1951–2004 covers a substantial portion of the post-World War II economic era, including three major episodes of tax cutting that affected the top marginal rate. Third, a starting point of 1951 permits us to study 54 individual years and to divide them into three equal-size 18-year groups for each of the relevant economic parameters.

Table 1 summarizes the performance of the U.S. economy in the 18 years when the top marginal income tax rate was lowest (41 percent or less). It shows the number of these years in which the economy reached the "top," "middle," or "bottom" performance level as to real GDP growth, employment growth, the unemployment rate, and real growth in business investment (gross nonresidential fixed investment).

The most critical question is the relationship between low top marginal income-tax rates and real growth in GDP. Supply-side economists have argued that a low top marginal tax rate would lead to high growth in employment and a low unemployment rate. Yet, of the 18 years in

Table 1. Economic performance in the 18 years with the lowest top marginal income-tax rate.*

	Real GDP Growth	Employment Growth	Unemployment Rate	Real Investment Growth**
Years in Top Third	2	2	5	7
Years in Middle Third	11	9	8	6
Years in Bottom Third	5	7	5	5

*Top marginal tax rate of 41 percent or less.
**Real growth in gross nonresidential fixed investment.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts; U.S. Department of Labor, Bureau of Labor Statistics; author's calculations.

which the top marginal income tax rate was lowest, only two were also among the 18 years with the highest real GDP growth. And of the 18 years in which top marginal tax rates were lowest, only two were among the 18 years with the highest employment growth, and only five were among the 18 years with the lowest unemployment rate.

The main mechanism by which a low top marginal income tax rate is said to increase economic growth is by encouraging increased business investment. Yet of the 18 years in which the top marginal tax rate was lowest, only 7 were also among the 18 years with the highest real growth of business investment. Notably, six out of these seven years occurred during the period from 1994 through 1999, immediately after the top marginal income tax rate was *increased* under President Clinton in 1993, from 31.0 percent to 40.8 percent (see data appendix cited in n1 below).[3]

It should be noted that in any given year, exogenous conditions may have contributed to high or low performance on one or more of the major economic variables. But if the supply-side claim is valid, one would expect to see some reflection of the association between "low" top marginal income tax rates and "high" performance in the other economic indicators in a sample of this size. The data yield no such pattern.[4]

An Alternative Theory, and Some Evidence

What of the demand-side model that the supply-siders have sought to displace? According to this model, a main driver of economic growth is consumer demand. Since consumer spending comprises two-thirds of the American economy, it is obvious to demand-siders that a substantial increase in consumer spending is likely to produce a substantial increase in GDP. Demand-siders further argue that while levels of business investment may vary substantially from year to year, consumption is the principal factor that drives the business cycle. As James Tobin (2001a, 4) wrote, "Economy-wide recessions and booms reflect fluctuations in aggregate demand rather than in the economy's productive capacity." Demand-side policies, therefore, "work by stimulating or discouraging spending on goods and services" (ibid.). A demand-side stimulus to the economy can be applied via either fiscal policy (reducing taxes and/or increasing government spending) or monetary policy (reducing interest rates and increasing the supply of money). In either case, the focus is on producing an increased overall demand for goods and services within the economy.

Demand-siders have been skeptical of supply-side claims about the incentive effects of tax cuts for high-income taxpayers. As Tobin (2001b, 4) explained, supply-side

> income tax cuts [are] meant to embody incentives for more productive and innovative behavior. Unfortunately these cuts in tax rates also bring windfalls for behavior that already took place. For example, offering concessions for capital gains on future acquisitions of assets might be socially useful, while reducing taxes on gains realized on holdings bought years ago clearly is not. The test is whether the taxpayer must, in order to benefit, *change* his behavior in the desired supply-side direction. If yes, the touted incentives work. If no, the individual taxpayers' gains have to be defended otherwise, as deserved and just.

For demand-siders, the legitimate economic purpose for tax cuts at a time of economic downturn is "to stimulate the economy by putting more money in the pockets of consumers." This language comes from a statement signed by 100 economists (Economic Policy Institute 2001), including seven Nobel laureates, criticizing the Bush administration's supply-side tax-cut proposals. In characteristic demand-side terms, the statement described the Bush tax cuts as

> too large, too skewed to the wealthy, and [arriving] too late to head off a recession. . . .Instead of an ill-conceived tax cut, the federal government should use this year's surplus to finance a temporary, one-time tax cut or "dividend." We should send a sizeable check this summer to every American, providing the immediate help the faltering economy needs. Compared with the President's tax cut proposal, a temporary dividend would be more equitable, more efficient, and *more appropriately targeted at the economic problem*."

Behind this proposal was the demand-side view that an increase in personal consumption, the major component of aggregate demand, is not only a main driver of GDP growth, but also of business investment and employment. At the core of the demand-side approach is the belief that risk-averse business managers' investment and hiring behavior respond primarily to increased demand for their products and services. Greater consumer demand translates into higher levels of production. To attempt to stimulate business investment in the absence of a growing demand for products and services is, in effect, to "push on a string."

President Bush and his economic team agreed on the need for an economic stimulus in his first term. Part of the announced rationale for the 2001 and 2003 tax cuts was to expand aggregate demand so as to help the economy recover from recession; and, indeed, rates were cut across the board to increase aggregate demand (White House 2002). Yet Bush and the demand-siders differed on three counts. First, the demand-siders rejected the supply-side theory that supply creates demand—the notion that, "if you build it, they will come." Second, the demand-siders objected to the substantial cuts in the top marginal rate, which drained the Treasury of billions in revenue to provide what they saw as unneeded windfall tax benefits to the richest taxpayers. Third, the demand-siders objected to the permanence of the tax cuts, which were bound to result in large federal deficits. The demand-siders who signed the 2001 statement believed it was possible to stimulate consumption, and aggregate demand, via a temporary rather than a more permanent structural change in the tax code.

Whereas Engen and Skinner found "unclear" and "mixed" results for the supply-side hypothesis in their time-series data, a much clearer set of relationships emerges if we examine our more extensive data through the opposite end of the telescope— from a demand-side perspective. Data from the 54 years between 1951 and 2004 provide ample historical evidence for the chief assumption of the demand-side

model—namely, that high growth in consumption is strongly associated with "high" performance on the other major economic variables.

First, consider real growth in GDP. The relationship between high real growth in personal consumption expenditures and high real growth in GDP is to be expected; indeed, it is almost axiomatic. Since consumption amounts to about two-thirds of GDP, increases in consumption and GDP tend to coincide. Fifteen of the 18 years in which growth in personal consumption expenditures were at their highest level were also among the 18 years with the highest GDP growth, as shown in Table 2. Consumption is the largest component of GDP, and so when it grows rapidly, GDP grows with it.

The data also show a strong association between growth in personal consumption expenditures and growth in employment. Eleven of the 18 years in which growth in personal consumption expenditures were at their highest level were also among the 18 years with the highest employment growth. The data show a similar relationship between high real growth in consumption and a low unemployment rate. Half of the 18 years with the highest growth in personal consumption expenditures were also among the18 years with the lowest unemployment rate.

Finally, while the 54-year record shows little association between low top marginal income-tax rates and high rates of business investment, the data do yield a strong association between high growth in consumption and high growth in business investment. Two-thirds of the 18 years of the highest growth in personal consumption expenditures were also among the 18 top years for business investment growth.

Figure 1 below shows the differences between demand-side and supply side perspectives with respect to the key variables in the analysis.

Demand-Side vs. Supply-Side Tax Cuts in Practice

The patterns of economic growth in the U.S. economy between 1951 and 2004 tend to support the demand-side view that personal consumption has a stronger relationship to the performance of the other key economic variables than do the personal investment effects of a low top marginal income-tax rate. This becomes even clearer if we examine more closely the impact of the three major tax reduction programs enacted during the period—the demand-side tax cut of 1964 and the supply-side tax cuts of 1982 and 2003.

The Kennedy-Johnson tax cut of 1964 (often referred to as the

Table 2. Economic performance in the 18 years with the highest real growth in personal consumption expenditures.

	Real GDP Growth	Employment Growth	Unemployment Rate	Real Investment Growth*
Top One-Third	15	11	9	12
Middle One-Third	3	6	4	5
Bottom One-Third	0	1	5	1

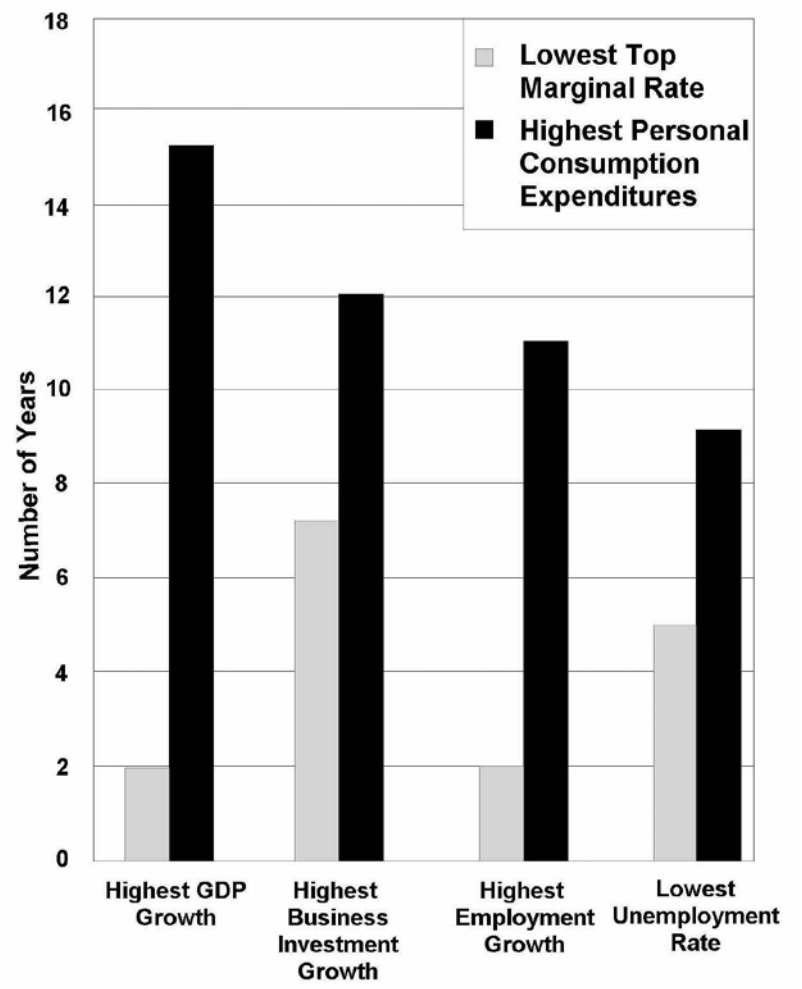
*Real growth in gross nonresidential fixed investment.

Sources: U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts; U.S. Department of Labor, Bureau of Labor Statistics; author's calculations.

"Kennedy tax cut," since it was proposed by President Kennedy and enacted under President Johnson, following Kennedy's assassination) was designed on demand-side premises. Supply-side economists have sometimes cited the Kennedy tax cut as a precedent for the supply-side program, because it included a reduction of the top marginal income tax rate from 87 percent to 70 percent. But the Kennedy economic team, comprising leading neo-Keynesian economists of the day (including Tobin as an influential member in 1961–62), explicitly aimed to expand "aggregate demand." That is, they sought to put more money in the hands of consumers, whose spending would then stimulate higher GDP growth and stronger employment. The demand-side nature of the program can be seen in the structure of the tax reduction. The bulk of the tax cut went to middle- and lower-income taxpayers. *Nearly 60 percent of the tax cut went to taxpayers in the lower 85 percent of the income distribution,* according to contemporary estimates by the congressional Joint Committee on Internal Revenue Taxation (Orszag 2001).

By contrast, the Reagan tax cut implemented in 1982, and the Bush tax cuts fully implemented in 2003, were largely focused on the supply-side objective of reducing the top marginal rate paid by top-bracket taxpayers. Unlike the Kennedy cut, both the Reagan and Bush tax cuts put more money in the hands of taxpayers with the highest incomes.

Figure 1. Correlation between growth in GDP, business investment, employment, and low marginal tax rates vs. high personal consumption expenditures.



According to an analysis by the Congressional Budget Office (1988), *half of Reagan's tax cut went to households in the top 17.5 percent of the income distribution; the vast majority of households (82.5 percent) split the other half.* Moreover, as we have seen, Reagan's tax-cutting program provided substantial additional reductions in the top marginal rate paid by top-bracket taxpayers in 1987 and 1988. The Bush tax cuts were targeted

even more clearly to the upper end of the income scale. The Bush program included a reduction of the top marginal tax rate and substantial reductions in the rates paid on dividends, capital gains, and estate taxes. By 2004, according to the Tax Policy Center (2004), *over half (57.5 percent) of the combined Bush tax cuts went to taxpayers with the top 12.1 percent of incomes; the remainder of the tax cut (42.5 percent) was divided among the lower 87.9 percent of households.*

The Kennedy tax-cutting program resulted in immediate rate reductions in 1964 and 1965. Reagan's tax program included rate cuts in 1982, 1987, and 1988. Bush's tax program brought a substantial cut in rates in 2003. The data show that the Kennedy demand-side tax cuts were clearly associated with stronger performance on the major economic variables than were the supply-side tax cuts under Reagan or Bush:

- The Kennedy tax cuts were associated with an immediate jump in GDP growth in the two years they went into effect (5.8 percent in 1964 and 6.4 percent in 1965).
- The Reagan and Bush tax cuts were associated with middle or low rates of GDP growth in the four years they went into effect (–1.9 percent in 1982, 3.4 percent in 1987, 4.1 percent in 1988, and 3.0 percent in 2003).
- The Kennedy tax cuts were associated with very high growth in business investment (11.9 percent in 1964 and 17.4 percent in 1965).
- The Reagan and Bush tax cuts were associated with middle or low rates of business investment growth in each of the four years they went into effect (–3.8 percent in 1982, –0.1 percent in 1987, 5.2 percent in 1988, and 3.3 percent in 2003).

Possibly a major source of the differential in performance was the relative effect of the tax-cut programs on consumption. The Kennedy tax cuts had the strongest consumption effects:

- The Kennedy tax cuts were associated with high growth in personal consumption in the years they went into effect (6.0 percent in 1964 and 6.3 percent in 1965).
- By contrast, the Reagan and Bush tax cuts were associated with middle or low levels of personal consumption growth in the years they went into effect (1.4 percent in 1982, 3.3 percent in 1987, 4.1 percent in 1988, and 3.3 percent in 2003).

The Kennedy demand-side tax cut provided an illustration of what economists sometimes call a "virtuous cycle." In 1965, the year of the tax cut's full implementation, personal consumption expenditures grew by 6.3 percent in real terms, and business investment (gross nonresidential fixed investment) grew 17.4 percent in real terms, accompanied by strong growth in employment. By contrast, there was little evidence of a virtuous cycle in operation in the years of the Reagan and Bush supply-side tax cuts. Growth in the centerpiece of the supply-side program—business investment—was typically in the low to middle range in the years of the tax cuts. This relatively weak investment growth was accompanied by lackluster growth in GDP and employment.

A case could be made that the Reagan and Bush tax cuts did not provide a substantial increase in aggregate demand because they put less than half of the tax-cut money into the hands of the middle and lower-income consumers who were most likely to spend it. Growth in personal consumption was typically in the low to middle range in the year of each Reagan and Bush tax cut, while growth in personal consumption was in the top range in the two years of the Kennedy tax cuts. And as we have seen, GDP growth in each Kennedy tax-cut year was in the highest range, while GDP growth in the year of each Reagan and Bush cut was invariably in the low to middle range.

What if there was a lag in the immediate economic effects of the tax cuts, so that their impact was not fully felt until the year following their enactment? The data show a similar pattern with regard to GDP growth in the follow-on years:

- The Kennedy tax cuts were associated with very high GDP growth in each of the years after they went into effect (6.4 percent in 1965 and 6.5 percent in 1966).
- The Reagan and Bush tax cuts were associated with substantially lower levels of GDP growth than the Kennedy tax cuts in each of the years after they went into effect (4.5 percent in 1983, 4.1 percent in 1988, 3.5 percent in 1989, and 4.4 percent in 2004).
- The Kennedy tax cuts were associated with high business investment growth in the year following each cut (17.4 percent in 1965 and 12.5 percent in 1966).
- The Reagan tax cuts were associated with low to middle levels of investment growth in the three years immediately following implementation (–1.3 percent in 1983, 5.2 percent in 1988, 5.6 percent in 1989). In 2004, a high investment level—10.5 percent—can best be

understood as a response to the Bush administration's one-year, 50-percent "bonus depreciation" tax deduction for all business investment in 2004. Corporate taxpaying entities that account for roughly 90 percent of all business investment in the economy were primarily responsible for the high rate of business investment in 2004. It would be hard to attribute this investment level to a response by pass-through business owners to the 2003 reduction in the top marginal personal income tax rate, since these business owners account for only 10 percent of all business investment.

Again, the years immediately following the Kennedy tax cut were associated with much higher personal consumption growth than the years immediately following the Reagan and Bush tax cuts:

- The Kennedy tax cuts were associated with high personal consumption growth in the year following implementation (6.3 percent in 1965 and 5.7 percent in 1966).
- The Reagan and Bush tax cuts were associated with high personal consumption growth in only one of the 4 years following implementation (5.7 percent in 1983 vs. 4.1 percent in 1988, 2.8 percent in 1989, and 3.8 percent in 2004).

In short, the historical record provides little to no support for supply-side economists' claim that cuts in the top marginal income tax have, in recent memory, caused improved performance, whether measured in GDP growth, employment growth, or investment growth. By contrast, there is substantial evidence for the demand-side view that high personal consumption expenditures (the largest component of aggregate demand) are associated with high growth in GDP, employment, and investment. The empirical evidence for the effectiveness of demand-side measures in stimulating economic growth remains strong; empirical evidence for positive growth effects of supply-side cuts in the top marginal income tax rate has not been found.

While it could be argued that economic growth, though unimpressive following supply-side tax cuts, might have been lower without them—largely because of the (albeit somewhat muted) demand-side effects of these cuts—neither the existing literature nor the historical record provides evidence to support the theory that cuts in the top marginal rate had a significant positive growth effect. The central claim of the supply-side school—that low top marginal income-tax rates lead

to increased investment, employment, and GDP growth—is not supported by the empirical evidence. Given that cuts in the top marginal income-tax rate have also increased income inequality—and have resulted in large federal deficits—history's verdict on the supply-side program is likely to be unfavorable.

NOTES

1. Sources for data are as follows. GDP growth, growth in real personal consumption expenditures, real business investment growth (real growth in gross nonresidential fixed investment): U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts. Employment growth and unemployment rate: U.S. Department of Labor, Bureau of Labor Statistics. Top marginal income tax rates: Tax Policy Center. For each statistical series, the author classified the 54 years into three 18-year groups described as "top", "middle" and "bottom" performance levels. See data appendix at <http://www.futureofamericandemocracyfoundation.org/chart.html>.
2. Figures for "gross" nonresidential fixed investment provide a better index of the behavioral effect of tax policy changes than the "net" figures, which include depreciation. Gross figures reflect the actual amount of money devoted to business investment in a given year.
3. One possible factor in the 1994–99 investment boom was that the Clinton-era tax program, which included an increase in the top marginal income tax rate, helped to reduce the federal deficit from 1993 onward, and began producing growing surpluses in 1998, as overall economic growth and tax revenue increased. The reduction in the deficit and the subsequent surpluses added substantially to total national saving. This increased level of saving made more money available for investment.
4. A study by William G. Gale and Samara R. Potter (2002) examines the federal tax burden, top income-tax rate, federal spending as percent of GDP, and average per-capita GDP growth rates for long periods in the nineteenth and twentieth centuries. They find no consistent correlation between low taxes and per-capita GDP growth. In particular, they note that the period 1870–1912, when there was no income tax, had the same average per-capita GDP growth (2.2 percent) as the period 1947–1999, when there were substantial income taxes.

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