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TAX AVOIDANCE, TAX EQUITY, AND TAX REVENUES: THE IMPACT OF MARGINAL INCOME TAX RATE CHANGES IN THE UNITED STATES, 1954-82

A STUDY

PREPARED FOR THE USE OF THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

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LETTER OF TRANSMITTAL

OCTOBER 9, 1984.

To the Members of the Joint Economic Committee:

I am pleased to transmit a Joint Economic Committee study entitled "Tax Avoidance, Tax Equity, and Tax Revenues: The Impact of Marginal Income Tax Rate Changes in the United States, 1954–82," prepared by Dr. Richard K. Vedder and Philippe Watel of Ohio University.

The study demonstrates that marginal tax rates exert a powerful influence upon human behavior. Significant changes in marginal tax rates are found to induce very strong responses among affected taxpayers.

This study of taxpayer behavior over three decades clearly shows that high marginal tax rates are counterproductive, even from the view of the tax collector. Excessive marginal tax rates are very closely correlated with a wide spectrum of tax avoidance activities. Reduction in high marginal tax rates are found to increase the taxable income and tax payments of the wealthy.

Contrary to the assertions of those who criticize the Reagan tax cuts as a giveaway to the rich, under its provisions the wealthy have borne a larger share of the tax burden. Others have tried to dismiss this as a fluke. But this study not only looks at 1982 IRS data, it analyzes data since 1954 with highly sophisticated econometric analysis. This study proves that the 1982 results were not a fluke, but merely one example of a pattern that has repeated itself many times. High marginal tax rates are not only economically destructive, but also shrink the tax base. Conversely, tax rate reductions can expand the economy and the tax base.

The views expressed herein are those of the authors and not necessarily those of the Joint Economic Committee or its members.

Sincerely,

ROGER W. JEPSEN,
Chairman, Joint Economic Committee.

FOREWORD

By Senator Roger W. Jepsen

The Reagan economic policies begun in 1981 have been unfairly attacked by critics as favoring the rich at the expense of the poor and middle income groups. While a multitude of evidence (e.g., on real wage growth, on declining inflation, on the falling "misery index," on the improved economic status of our senior citizens) refutes these claims, the myth continues that "Reaganomics is unfair to the poor."

Nowhere is that myth more pronounced than with respect to the Economic Recovery Tax Act of 1981. Critics of President Reagan argue that the tax cut went mostly to the rich, providing only "crumbs" to the poor and middle income Americans. The facts resoundingly refute this view, as this study by former JEC staff member Richard Vedder and Philippe Watel amply demonstrates.

Earlier evidence from 1982 tax returns showed that taxes paid by high income groups rose significantly over 1981 levels, but that taxes paid by lower income groups fell, so that the rich assumed more of the total income tax burden after they received a substantial reduction in rates (with the top marginal rate falling from 70 to 50 percent). Critics claimed that the 1982 evidence did not prove very much, in large part because 1982 was an unusual, atypical year.

This study uses careful statistical tests of income and related data for the entire history of the Internal Revenue Code of 1954. It concludes that the 1982 response was very typical and predictable, and that the 1981 tax cut in fact reduced tax burdens in a real sense on the poor while increasing tax payments by the rich. Critics of the 1981 tax cut have ignored the substantial incentive effects of the marginal rate reductions; these effects have led upper income Americans to take some of their money out of unproductive tax shelters and possibly even the underground economy and put it into the taxable economy, thereby paying a larger share of the tax burden. The tax rate reductions brought rates down from near confiscatory levels, leading the rich to feel that they could now afford to pay taxes.

The evidence here suggests that reductions in the highest marginal tax rates on either ordinary or capital gains income lead to such a broadening of the tax base that revenues from upper income Americans actually rise after taxes are cut. In this regard, the 1981 tax cut followed the pattern of the 1964-65 Kennedy tax cut and the 1978 Steiger amendment that lowered capital gains tax rates dramatically. The statistical results suggest that a 10 percent reduction in marginal tax rates on both ordinary and capital gains income would, on average, lead to an increase of about 8.7 percent

in the tax revenues received from Americans earning more than $50,000 income (in 1967 dollars).

These findings suggest that the Reagan tax cut of 1981 had at least four positive effects. First, higher income Americans voluntarily left tax shelters and loopholes more after the tax cut than in the Carter-Mondale years, thereby paying more taxes. Second, the big rate reductions for higher income groups actually served to increase the tax payments of the rich relative to the poor, and served to reduce the budget deficit from what it would have been had the rich not received significant tax relief.

Third, economic activity and taxpayer compliance expanded substantially, promoting the objectives of greater economic growth and improved tax administration. Fourth, horizontal inequities—where persons of equal incomes pay widely different amounts of tax—were reduced as well.

In short, the study suggests that the data for 1982 are no "fluke." The Reagan tax cut was a resounding success, stimulating productive economic behavior, promoting fairness and equity, and reducing the growing problems of tax avoidance and evasion.

On a more personal level, this study reaffirms the wisdom of the Joint Economic Committee as expressed in its bipartisan and unanimous annual reports of 1979 and 1980, which helped lay the groundwork in Congress for passage of the Reagan tax bill. I am pleased to have been part of those JEC reports, and I am proud of my own enthusiastic support for this historic tax reduction.

The benefits of the tax cut go well beyond the gains from the current economic boom, the biggest in decades. The tax cut not only promoted output growth, but also lasting improvements in productivity, tax equity, and taxpayer compliance. The happy lessons we have learned from this experience must be remembered as we plan further reforms in our system of income taxation.

CONTENTS

TAX AVOIDANCE, TAX EQUITY, AND TAX REVENUES: THE IMPACT OF MARGINAL INCOME TAX RATE CHANGES IN THE UNITED STATES, 1954–82

By Richard K. Vedder* and Philippe Watel**

I. Introduction

Ever since the founding of the Republic, there has been considerable public discussion and debate on the impact of the Federal tax system on the economic environment and the behavior of its citizens. Since the passage of the Economic Recovery Tax Act of 1981, the debate has accelerated, particularly in election year 1984. Critics of the legislation suggest that it was an ill-conceived tax cut that led to massive budget deficits, and high interest rates, failing miserably in providing the "supply side" incentives promised by President Reagan and other supporters of the legislation. Worst of all, the critics argue, the Reagan tax cut reversed a trend toward redistributive justice in the United States; it was a "rich person's tax cut" that helped the rich at the expense of the poor and oppressed.

There is, of course, another view. That position is that the tax cut spurred the most substantial economic recovery in more than a generation, and that it was a healthy "supply side" recovery led by an investment boom. Moreover, according to this view, tax legislation did materially alter human behavior in a positive direction, increasing productivity and output. Government spending increases, not the tax cut, were the main cause of rising deficits, and in any case the negative impact of deficits is overstated. Most important, according to this perspective, the tax cut actually improved equity if one or two accepts the proposition that "the rich" should shoulder a larger share of the tax burden relative to the poor.

Who is right? Studies have been conducted that provide evidence consistent with either view. The analysis to date, however, largely has involved interpreting the 1981 law and/or empirical evidence from tax returns filed in years 1981 and 1982. Much of the evidence from these studies, however, has been criticized on the grounds that the 1981–82 experience is too short and has such special circumstances associated with it (e.g., the 1982 recession) to make it a good laboratory setting for assessing the economic impact of the tax cut. While we are frankly somewhat skeptical of these claims, we would admit that drawing conclusions on the basis of 1 or 2 years of data does involve some risks in terms of reaching accurate conclusions about the behavioral realities of the tax cut.

With this in mind, we wish to use an entirely different approach in order to see if the 1981–82 evidence is in fact representative, a

Footnotes at end.

"normal" response to marginal tax rate reductions. After first reviewing some of the simple evidence relating to the 1981 tax cut, and the elementary theory of human behavior pertaining to such cuts, we engage in an empirical examination of the impact that changes in marginal income tax rates had over the entire history of the Internal Revenue Code of 1954 (from 1954 through 1982). In particular, we ask this question: Did marginal tax rate reductions tend to lead to greater taxpayer compliance and participation by wealthier Americans, leading both to more tax revenues and greater fairness, as supporters of the Economic Recovery Tax Act of 1981 argue?

In brief, we will answer the above question "yes." The historical evidence is that the widening of the tax base that follows lowering marginal tax rates is so substantial that it leads to an increase in tax revenues received from higher income Americans. This, in turn, reduces budget deficits and leads to an increased proportion of the total tax burden being shouldered by "the rich." At least in the very high tax brackets, America during the last three decades has been in the negatively sloped portion of the Laffer curve, where reduction in marginal rates has brought about greater levels of economic activity, greater tax revenues and greater equity, assuming one accepts the proposition that fairness in taxation is directly proportional to the share of the tax burden paid by high income groups.

In terms of policy, these findings suggest that the 1981 Reagan tax cut was a success with respect to three key objectives: Better taxpayer compliance, improved economic efficiency, and greater taxpayer equity. The notion that the 1981 tax cut was a "rich man's tax bill" is without foundation. Also, the evidence provides some support for reforming the tax system by sharply lowering tax rates further.

II. Marginal Tax Rates, Revenues, and Fairness: The Simple Recent Arithmetic

The recent rekindling of the age old debate on the behavioral impact of taxes has been accompanied by several studies that analyze the impact of the 1981 tax cut. Most prominently on one side of the debate, the Congressional Budget Office analyzed the impact of tax and expenditure changes enacted in 1981 on various income groups.[1] It concluded that the legislation generally conferred additional financial benefits on relatively higher income groups, but on balance had an adverse financial effect on lower income groups.

The CBO study, however, suffered from one fatal methodological flaw in the eyes of the supporters of the 1981 economic legislation: It was based entirely on "static" analysis, and implicitly assumed that changes in tax rates has absolutely no impact on the behavior of human beings. For example, it was assumed that higher income Americans would work and earn exactly the same amount when confronted with 50 percent marginal income tax rates as when confronted with 70 percent rates. Moreover, critics of the CBO study had powerful ammunition to demonstrate how farfetched that assumption was; namely, the actual tax data for 1982 (after the top rate was cut from 70 to 50 percent) compared with pre-tax cut 1981.

In Table 1, the basic evidence on tax payments and the number of taxable returns is presented for very high and very low income Americans, as well as Americans in neither of these two extreme income categories. The table establishes rather clearly, the CBO study notwithstanding—

(1) higher income Americans filed many more taxable returns and paid more taxes in 1982 than 1981;

(2) lower income Americans filed fewer taxable returns and paid less in taxes in 1982 than in 1981;

(3) persons with income between $10,000 and $200,000 (very broadly, "middle income Americans") filed slightly more returns in 1982 than in 1981, but paid slightly less in tax; and

(4) the proportion of the total tax burden paid by higher income Americans rose and the proportion paid by low income Americans fell. In 1981, the "rich" (so defined) paid $2.73 as a group for every $1 in tax paid by the "poor" (so defined); in 1982, that figure rose to $3.86.

TABLE 1.—TAXABLE RETURNS AND REVENUES, BY INCOME CLASS, 1981 AND 1982

Income class	Taxable returns filed [1]		Income tax paid [2]		As percent of total [3]	
	1981	1982	1981	1982	1981	1982
Low income [4]	18,535	17,490	$7,974	$6,967	2.81	2.50
Middle income [5]	57,964	59,044	254,418	244,858	89.54	87.93
High income [6]	136	170	21,737	26,918	7.65	9.67

[1] In thousands.
[2] In millions of dollars.
[3] Total receipts from Federal individual income taxes.
[4] Adjusted gross income from $1 to $9,999.
[5] Adjusted gross income from $10,000 to $199,999.
[6] Adjusted gross income in excess of $200,000.

Source: Authors' calculations from Internal Revenue Service data.

Why did the "rich" pay more in 1982 than in 1981, despite a big tax cut and the onset of a major recession? The answer is that the tax cut lowered marginal rates far more on higher income Americans than on lower income Americans, so the rich responded to tax incentives much more than the non-rich. The maximum marginal rate for those in the highest bracket fell from 70 to 50 percent, a 28.6 percent decline, yet those in lower brackets received only a cut of about one-fourth that amount in 1982. Consequently, the rich changed their behavior considerably, working more and taking income out of shelters or the illegal underground economy, while other Americans confronted with less dramatic rate reductions changed their behavior much less.

Recent research by James Gwartney and James Long suggests that the responsiveness of lower income persons (who face relatively low marginal rates in the first place) to marginal rate changes is distinctly less than for higher income individuals in any case.[2] In particular, tax avoidance strategies are more prevalent among the upper income groups for whom the benefits of such strategies are the greatest. The Gwartney and Long findings are broadly consistent with earlier studies dealing with the tax evasion/avoidance-marginal tax rate relationship, e.g., those of Thomas McCaleb and Charles Clotfeter.[3] Other work on legal tax shelters along similar lines (e.g., by James Long and Frank Scott, and Stephen Woodbury)

is also consistent with the view that the incidence of tax shelters varies directly with the financial gains obtainable from them.[4] In short, even if the 1982 marginal tax rate reduction had been proportional across income classes, research suggests that the high income groups would have been expected to have responded more.

Other studies using the 1981–82 data support the view that the 1981 tax cut led to a greater proportion of the tax burden being shared by the rich. For example, in Joint Economic Committee testimony on June 12, 1984, both James Gwartney and Richard Vedder and Lowell Gallaway presented statistical evidence buttressing the simple arithmetic evidence of Table 1, as did Lawrence Pratt.[5]

III. Explanations for the 1982 Results

Individuals trying to maximize their satisfaction in life will pay taxes as long as the present value of the expected future benefits of paying taxes exceeds the present value of the cost of tax payments. Some persons might perceive the "benefits" of taxpaying to include a sense of well-being associated with paying one's share of the costs of the goods, services, and transfers originating in the public sector. A more cynical (but possibly more accurate) view of the benefits is that such tax payments buy protection from harassment by Federal authorities, harassment that can cost money, mental anguish, and even lead to imprisonment. In weighing these costs, taxpayers must take into account the perceived probability that any given tax strategy will result in some sort of action by the Internal Revenue Service, and also the probability that such action will lead to some form of monetary or non-monetary punishment.

The cost of paying taxes is primarily what economists call the "opportunity cost" associated with the income transferred to the Federal authorities. Money spent paying taxes could be used for other things that provide more direct pleasure for the taxpayer and his or her family. In addition, there are also non-monetary costs, such as the time and frustration involved in conscientiously completing the tax forms.

In reality, the decision facing taxpayers is typically more complex than making a simple choice whether to pay or not to pay taxes. On any given source of income, the taxpayer must decide whether to report the income, try to shelter it from taxation legally, or simply evade taxes by not reporting it. Since upper income persons in particular often have many sources of income, in fact there are a large number of tax decisions that must be made in a typical year. Accordingly, the relevant factor in determining the income foregone from any tax decision is the marginal rate of taxation.

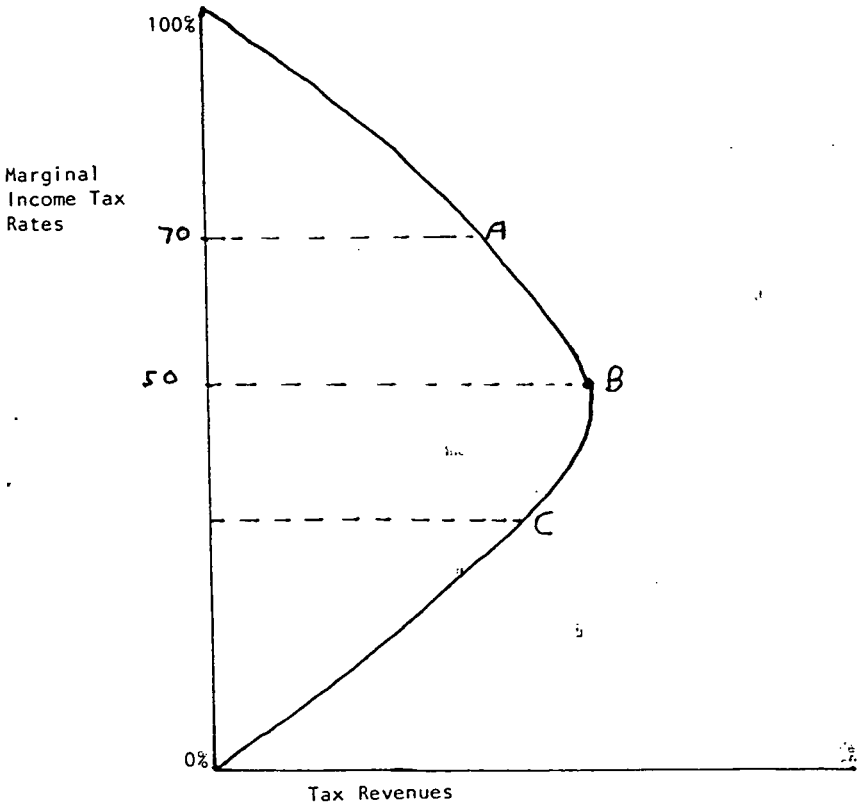
If the perceived costs of paying taxes fall sharply as marginal rates are reduced, it is likely taxpayer avoidance and evasion will fall sharply, increasing the base of taxable income. Moreover, real economic activity should be stimulated by the higher after-tax returns on that activity provided by lower rates.

If the broadening of the tax base associated with a given marginal rate cut is, in percentage terms, greater than the reduction in the rate, total tax revenues will actually rise. The rate-revenue re-

lationship is the basis of the famous (some would say infamous) Laffer curve. (See Figure 1.) Both zero and 100 percent marginal rates yield no income, in the latter case because the rate would stifle all incentive to earn and/or report taxable income. Intermediate rates (1 to 99 percent) will yield revenue, so the Laffer relationship in Figure 1 is probably very roughly correct, although there is considerable dispute as to where the curve actually begins to slope backward—at a 30-, 60- or 90-percent marginal rate. If the simple arithmetic evidence from 1982 is in fact valid, we were in 1981 probably above point B (say point A) with respect to tax revenues for upper income Americans. If the graph merely depicted lower income Americans, however, the picture would be different. These groups, facing lower marginal tax rates, were in the positively sloped portion of the curve, at perhaps point C, so rate reductions lowered revenues received from those groups.

Figure 1

The Laffer Curve



It would seem irrational to be in the backward bending portion of the Laffer curve. Rate reductions would seem to offer all sorts of benefits, both political and economic: more tax revenues and smaller deficits, probably greater real output of goods and services, a happier populace among Americans with higher incomes, even though they would be paying a larger share of the total tax burden, a point that should please the poor. Politicians of every ideology would seem to favor that type of outcome. Why, then, might we have operated with marginal tax rates so high that they actually cost the Treasury money? Three explanations seem plausible. First is the "ignorance" explanation—political leaders were not aware that the disincentive effects of high marginal tax rates were so great, and they simply did not believe we were in the backward bending part of the Laffer curve. Second, there may be some politicians who derive satisfaction from "soaking the rich" even if it produces no revenues and actually increases the tax burden on the poor. It increases, on the surface of things, their credentials as "haters of the rich and protectors of the poor," although in reality that is not the case (since the poor end up paying a larger portion of the tax burden.) Some might call this the "envy factor": soaking the rich is a way of playing to jealous instincts among the less affluent.

Third, James Buchanan and Dwight Lee have developed an elegant argument that suggests politicians have a distinctly shorter time horizon than the general public (given the necessity of running for reelection in the not too distant future). That leads them to be interested in a "short run" Laffer curve that differs from the long run Laffer curve that is the more relevant from the standpoint of maximizing the social welfare.[6]

IV. Criticism of the 1982 Empirical Evidence

Simple arithmetic evidence such as that presented in Table 1 has been criticized on several grounds. For example, John Berry of the Washington Post attacked the evidence, which was first unearthed by columnist Warren Brookes and then cited in the Wall Street Journal.[7] Berry argued, among other things, that the poor paid less in 1982 because they earned less income. The Journal countered by pointing out that the number of taxpayers earning less than $25,000 acutally declined. Joseph Minarik argued that there was a trend over time for the rich to pay a larger share of the tax burden, and the 1982 results merely reflected a continuation of a prevailing trend—the tax cut did nothing more than what would have occurred anyhow. Unfortunately, he provided no methodological basis for reaching that conclusion.[8]

In a thoughtful and reasoned paper, Kenneth Simonson developed a technique for abstracting the effects of inflation-related "bracket creep" from the effects of the tax law changes; doing this, the tax burden of the top 1 percent of taxpayers rose in 1982 (and the bottom 50 percent fell), but the changes were far less dramatic than what Table 1 suggests.[9] Subsequent work by the Institute for Research on the Economics of Taxation suggests caution should be taken in arriving at any conclusions about the distributional and revenue effects of the 1981 tax cut, but that in any case, "the tend-

ency in the debate to think of fairness as synonymous with greater progressivity is misguided." [10]

There is some evidence that lends support to the last point. Polls commissioned by the Advisory Commission on Intergovernmental Relations found a sharp increase in the proportion of Americans who considered the Federal income tax as the most unfair tax during the very years (e.g., 1976 to 1981) that Minarik noted that the tax system was becoming more progressive.[11] Since "fairness" is a highly subjective concept shaped by the value systems of the general population, the assumption that "fairness" and "progressivity" are directly related is in fact highly questionable, as the ACIR polls indicate.

Perhaps the most comprehensive attack on the "supply side" interpretation of the simple evidence was provided by Donald W. Kiefer of the Congressional Research Service, an arm of the Library of Congress.[12] Kiefer argues that the growth in income tax revenues from high income recipients has been robust for many years, the same argument as Minarik used. However, Kiefer goes further and suggests that high income persons engaged in tax planning deferred much of their 1981 income until 1982, when rates were lower, thereby artificially inflating the 1982 incomes of more affluent Americans and creating an illusion of a big "supply side" response that really did not happen. However, if that were the case, there should have been a drop in taxable returns and adjusted gross income in 1981 for higher income Americans (because of massive shifting of income into 1982), and then perhaps another drop in 1983. In fact, the evidence does not support this. For example, the number of returns filed from persons with more than $1,000,000 income rose by nearly 20 percent from 1980 to 1981; to be sure, this was slightly less than the 1980 increase, but the difference was not material. The 59 percent increase in the number of such returns in 1982 cannot mathematically be explained to any large extent in terms of shifting incomes, since the median annual growth in the number of returns from 1975 to 1980, 21.7 percent, was only marginally greater than the observed 1981 increase. It seems very unlikely that more than one-tenth of the rise in the number of returns in that income class can be attributable to such shifting of incomes. We will return to this issue again later.

V. Empirical Evidence: Examining the Number of Tax Returns From Very High Income Americans

The theoretical discussion earlier suggests that taxpayers go through an analysis of costs and benefits in determining whether to pay taxes, or at least whether to pay taxes on all realizable income. The hypothesis that follows is: An increase in marginal tax rates (the taxpayer's cost) leads to a decrease in the number of returns filed in any given income class. To test this hypothesis, we gathered statistics on the number of taxable returns filed by persons with a gross income of more than $1,000,000 for each year from 1954 to 1982; we will call this number of return factor N for those readers preferring symbols. In addition, we gathered information on the maximum marginal tax rate on income (which we

called *R*), a rate that varied from 50 percent (1982) to 91 percent (1954 to 1962).

High income Americans derive considerable income from capital gains, and the marginal tax rate applicable to that income has changed considerably over time, ranging from 20 to nearly 50 percent. The differential marginal rate between capital gains and ordinary income likewise fluctuated. Accordingly, we introduced as a second explanatory factor the maximum marginal rate applicable on capital gains income, which we will call *K*.

Of course, over time incomes of Americans generally rose, reflecting both inflation and economic growth. This factor alone no doubt can explain much of the growth in "millionaires" in the last generation. To take this factor into account, we introduced into the analysis a third explanatory factor, personal income, *Y*, a variable that controls for the impact of "bracket creep" on the number of taxable returns filed.

Last, the business cycle conceivably could impact on the number of returns filed by very high income Americans in a manner only partly reflected in personal income figures. For example, if earnings of wealthy Americans were severely impaired by dividend cuts, end of profit-determined bonuses, etc., during recessions, we would expect the number of returns to fall more than what the personal income figures would suggest. As a non-income measure of business cycle conditions, we used the average annual civilian unemployment rate, *U*.

Thus, our "model" is:

$$(1) \qquad N = f(R, K, Y, U)$$

which in plain English says the number of taxable returns filed by persons with more than $1,000,000 adjusted gross income depends on marginal tax rates on ordinary income, marginal tax rates on capital gains income, personal income itself, and the unemployment rate. Again, it is expected that higher values on the tax rate variables (*R* and *K*) would lower the number of returns, as would higher levels of unemployment *U*. On the other hand, higher income levels, other things equal, should lead to more returns being filed.

Multiple regression analysis, a commonly used econometric statistical technique, was used to analyze the date for the 29 year period 1954 to 1982. All numbers were converted to logarithms, since scatter diagrams indicated that that functional relationship provided a better statistical fit of the data. The results are:

$$(2) \log N = \underset{(0.288)}{-0.5098} \underset{(2.580)}{-0.750} \log R \underset{(9.529)}{-0.725} \log K \underset{(20.526)}{+1.502} \log Y \underset{(2.600)}{-0.279} \log U,$$

$$\bar{R}^2 = .986, \text{ D-W} = 1.91,$$

where the numbers in parentheses are t-values, $\bar{R}^2$ is the coefficient of multiple determination, and D-W is the Durbin-Watson statistic testing for the presence of serial correlation.

The model does an extraordinary job, explaining over 98 percent of the considerable variation (from 201 to over 8,000) in the number

of taxable returns filed from persons with over $1,000,000 income during this period. All the factors in the model behaved in the predicted manner, and are statistically significant at the 1 percent level, meaning that there is less than one chance in 100 that the true relationship is the opposite the one observed. We can also reject the possibility of the results being distorted because of the statistical problem of serial correlation.

The findings suggest that each 1 percent increase in the marginal rate of taxation on either ordinary or capital gains income would lower the number of returns filed by about three-quarters of 1 percent. Thus if the top marginal rate of ordinary income were raised by 10 percent, from 50 to 55 percent, the model predicts a decline in the number of returns of 7.5 percent. Since the capital gains rate is customarily tied to the rate of ordinary income (being 40 percent of that rate presently), a 10 percent increase in ordinary income rates would also mean a 10 percent increase in the capital gains rate (from 20 to 22 percent); the results suggest that that would trigger an additional 7.2 percent reduction in the number of returns filed, so a 10 percent surtax on both forms of income would lead to a decline in the number of returns filed of nearly 15 percent (7.5 plus 7.2). The number of those reporting more than $1,000,000 in adjusted gross income would fall faster than the rate is increased.

The model helps explain several major changes in the number of returns filed observed over the years. For example, in 1970, the number of such taxable returns declined 47 percent, from 1,211 to 642. In the same year, the effective maximum capital gains rate almost doubled, going from 25 to nearly 50 percent. In 1979 (actually late 1978) the maximum capital gains rate fell by more than 40 percent, back to 28 percent as the result of the Steiger Amendment introduced by the late Republican Congressman from Michigan. In the same year, the number of returns jumped dramatically (more than 76 percent). Finally, in 1982, marginal tax rates on ordinary income fell by more than 28 percent and a capital gains rate reduction in effect for part of 1981 became fully effective for the entire year. The number of taxable returns from millionaires (those making over $1,000,000 in adjusted gross income) increased again dramatically, rising by more than one-half.

In short, there is powerful evidence that marginal tax rate reductions do have a strong behavioral impact on the upper income taxpayers. The number of returns is highly sensitive to changing tax rates, more sensitive even than to the business cycle variable, unemployment. The results suggest that a surtax (tax increase) placed on high income groups, as suggested by several prominent political leaders, including former Vice President Mondale, would lead to a sharp increase in tax avoidance or tax evasion by higher income Americans, so much so that the desired revenue and redistributionist objectives likely would not be achieved. The historical evidence suggests that the 1982 surge in the number of returns from very high income persons was an entirely predictable experience, not some sort of "fluke."

VI. Marginal Tax Rates and Tax Revenues

While the above evidence shows clearly that super rich Americans can and do alter their tax base dramatically in response to changes in marginal tax rates, the model can be criticized on several grounds. Most importantly, changes in the number of taxpayers is not the same thing as changes in tax revenues, symbolically *T*. An increase in taxable returns from persons with over $1,000,000 in income of 14 percent under a 10 percent rate reduction, for example, does not demonstrate conclusively that the tax change increased revenues, since the incremental new high income taxpayers might have incomes markedly below of average of others already paying taxes on more than $1,000,000 income. Accordingly, we introduced a second model, where we attempted to explain tax revenues received, not the number of returns.

Second, it might be argued that we previously were looking at only a very, very small strata of society, the "super rich," a group that numbers only a few thousand even in 1982. Even in that year, the group accounted for only about 2.5 percent of all individual income tax receipts. Perhaps it would be better to look at "highly affluent Americans," people who clearly have high incomes, but are a larger sample of the American population than the "super rich."

Third, the earlier findings looked at persons with more than $1,000,000 in income over time, but the value of a million dollars eroded sharply over those years because of inflation. To account for this and the previous concern, we decided to look only at taxpayers with $50,000 or more income in 1967 dollars, using the consumer price index to obtain the nominal income associated with that amount for each year. By the end of the period, prices had nearly tripled from 1967 levels; $50,000 in income in 1967 dollars was about $135,000 in 1982 dollars—clearly a "high income" amount but a long way from $1,000,000, the criterion previously applied.

Fourth, it is possible that there are some lags between changes in tax rates and the generation of taxable income. This is particularly true of ordinary income, which takes time to generate. On the other hand, capital gains income can be realized almost instantly by the simple expedient of selling securities. Accordingly, our new model assumed that this year's tax revenues are dependent on last year's marginal tax rates on ordinary income (symbolically, R_{t-1}), but on this year's marginal tax rate on capital gains.

Fifth, it is at least barely possible that the results relating to the major factors we are interested in (the marginal tax rate variables) are sensitive to other variables included in the model to better approximate the ideal condition of holding constant other factors that influence the number or returns or tax revenues. For example, what if we were to drop the unemployment rate variable and replace it with another factor that might influence tax revenues, say, interest rates (symbolically, *i*)? Economists and politicians are always discussing the role of interest rates, so we included in our revised model the average annual interest rate on 90 day U.S. Treasury bills as an additional variable.

We were not sure, before the fact, of what the tax revenue-interest rate relationship should be: high income people receive interest

incomes so high interest rates might increase the tax base; on the other hand, high income persons own property and business income that might be depressed by the negative impact of high interest rates. Also, high interest rates allow for greater tax deductions, reducing the tax base and tax payments. High interest rates create more tax sheltering opportunities. Again, we might expect some lag between the appearance of change in interest rates and their impact on tax revenues, so we lag the interest rate variable one year.

The revised model is:

$$(3) \qquad \log T = f(\log R_{t-1}, \log K, \log Y, \log i_{t-1})$$

or, in words, tax revenues this year are hypothesized to depend on marginal tax rates last year on ordinary income, on personal income levels this year, on marginal tax rates on capital gains this year, and on last year's prevailing interest on short-term U.S. Government securities.

Again, we expect a negative relationship between the tax rate variables and tax revenues (because of powerful incentive effects of tax changes), a positive relationship between overall personal income and tax revenues, and an uncertain relationship between interest rates and tax revenues. One technical problem arose. The income classes as defined in terms of 1967 dollars did not coincide with the income classes reported in the Internal Revenue Service's Statistics of Income. Accordingly, it was necessary to interpolate, meaning we had to estimate within reported income classes the amount of tax revenues collected. Donald Kiefer in his criticism of Gwartney's work argued that a linear interpolation is inappropriate. Accordingly, we interpolated by using a multiple regression estimation procedure that allowed for a non-linearity in the income-revenue relationship.[13]

Again, the results were extremely robust and supportive of the argument developed above. (See Table 2.) The model explains 99 percent of the variation in tax revenues over the period. The two tax rate variables work precisely as expected and are significant at the 1 percent level. Increases in marginal tax rates for higher income Americans were accompanied by a decline in tax revenues; reductions in the marginal tax rates on either ordinary or capital gains income led to revenue increases, holding income and interest rate levels constant. A 10 percent reduction in marginal tax rates on ordinary income this year would lead to a 7.5 percent increase in tax revenues next year, while a similar reduction in capital gains rates would lead to a 1.1 percent increase in revenues this year. Interestingly, higher interest rates were associated with lower revenues (holding personal income constant), no doubt because of the enhanced sheltering opportunities higher interest payments provide (this finding, however, was statistically significant at only the 90 percent level, meaning there is more than a remote possibility that the observed relationship just occurred by chance).

TABLE 2.—ESTIMATED DETERMINANTS OF TAX RECEIPTS FROM TAXPAYERS WITH MORE THAN $50,000 (1967 DOLLARS) IN ADJUSTED GROSS INCOME, 1955–82

Factor	Regression coefficent	T-value
Constant term	11.5584	9.940
Log R_{t-1}	−0.7541	−3.757
Log Y	0.9562	20.405
Log K	−0.1185	−2.592
Log i_{t-1}	−0.0888	−1.902
R^2=.990, D−W=2.07		

Source: Regression model described in text.

The results confirm the findings of Gwartney and Long—namely, we did operate in the negatively sloped portion of the Laffer curve in this period. The three great tax reductions of the period—the Kennedy tax cut of 1964–65, the Steiger Amendment approved in 1978, and the Reagan tax cut approved in 1981—resulted in the following:

(1) Revenues rose from upper income American taxpayers, reducing budget deficits,

(2) The tax base was widened, reducing problems of horizontal inequity (persons with the same incomes paying differing amounts of tax),

(3) Presumably some the base-widening reflected an expansion in economic activity resulting from the higher incentive effects associated with lower marginal tax rates, and

(4) The increase in revenues from the upper income groups added to tax progressivity; for many Americans, this meant the tax system was becoming fairer and more equitable.

Regarding this last point, it is interesting that the Advisory Commission of Intergovernmental Relation's polling data show the proportion of the population viewing the Federal income tax as the most unfair tax fell slightly after the implementation of the 1981 tax bill.[14] While the decline was small and may not reflect a long-term trend (and even may have resulted from sampling error), it is in harmony with the view that marginal rate reductions on "the rich" lead to results consistent with a popular view of fairness or equity.

VII. The Reagan Tax Cut in Historical Perspective

The thrust of the empirical findings above is that the 1981 tax cut implemented largely beginning in 1982 (although the capital gains reduction was in effect for part of 1981) was not unusual in its behavioral manifestations. People behaved as they had during earlier tax cuts—responding very strongly to the reduction in the cost of paying taxes, taking income out of shelters and engaging in new productive forms of economic activity. In terms of the debate over the 1981 tax cut, the results support the position of journalists such as Warren Brookes and the editorial staff of the Wall Street Journal, and economists such as Gwartney, Richard Rahn, and Paul Craig Roberts. Likewise, they tend to refute the findings of journalists like John Berry and economists such as Joseph Minarik and Donald Kiefer, not to mention a host of political leaders who

argued that the Reagan initiative was a "rich man's tax cut" that "added enormously to the deficit.[15] The results also tend to refute the assertion of some, such as former Internal Revenue Commissioner Sheldon Cohen, that marginal tax rate reductions have only "marginal" impacts on taxpayers avoidance and compliance.[16]

The statistical results developed in the previous sections can be used to provide a more specific analysis of the initial impact of the Economic Recovery Tax Act. For example, the model on the number of returns yielded a very specific relationship between reductions in marginal tax rates and the number of returns filed. From that, it is possible to calculate how much of the increase in the number of returns filed by "super rich" Americans was the result of the reduction in marginal tax rates on ordinary income, the reduction in marginal tax rates on capital gains income, or on other factors (such as inflation that leads to higher nominal income and "bracket creep"). Table 3 shows the results of the calculations resulting from this exercise.

TABLE 3.—ESTIMATED DETERMINANTS OF INCREASE IN TAXABLE RETURNS OVER $1,000,000,[1] 1982

Factor	Increase in returns due to factor	Percent of total increase in taxable returns
Reduction in marginal tax rate on ordinary income	1,512	51.8
Reduction in marginal tax rate on capital gains income [2]	664	22.7
Other factors (e.g., the rise in nominal income levels)	743	25.5

[1] In adjusted gross income.
[2] The capital gains rate fell from 28 percent to 20 percent as of June 10, 1981, although the tax bill did not become law until later. We calculated the "average marginal tax rate" on capital gains income for 1981 to be slightly over 23.5 percent, so the reduction for 1982 was only from 23.5 to 20 percent, not from 28 to 20 percent.

Source: Authors' calculations from regression coefficients in equation (2); see text.

Almost precisely three-quarters of the increase in the number of taxable returns in 1982 can be attributed to reductions in marginal tax rates on ordinary and capital gains income. Moreover, that understates the initial impact of the 1981 act, since the number of returns filed in 1981 was already inflated somewhat by the operation of the capital gains rate reduction for a majority of that year. Thus the 75 percent figure represents a lower bound (overly conservative) estimate of the impact of marginal rate reductions on the increase in taxable returns in 1982.

Perhaps the more interesting results, however, relate to the revenue raised from higher income Americans ($50,000 or more in 1967 dollars). Skeptical readers of this study may wonder whether the very strong results obtained above would disappear with small changes in the model. For example, if we used a linear model (instead of a loglinear one), and choose not to lag the interest rate variable, what do we obtain? The results are materially the same, with the t-values on the critical variables being somewhat lower but still significant at conventionally acceptable levels (5 percent). Running a whole variety of models with somewhat different specifications, the negative relationship between both marginal tax rate variables and revenues received was obtained in every case.

Since the statistical results reported above suggest that there is a lag between implementation of a tax cut on ordinary income and its revenue effects, why was there a big jump in revenues from the

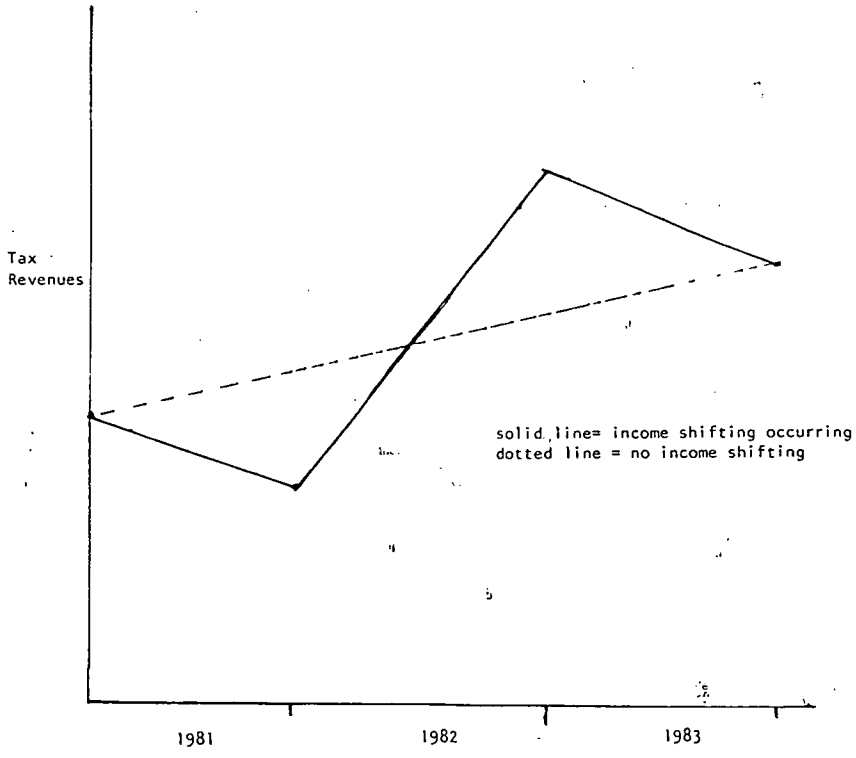
upper income groups in 1982, the same year that the tax cut took effect? There are two reasons. First, when we ran a model with no lags in the marginal tax rate (on ordinary income) variable, the expected negative relationship is obtained, suggesting there is some immediate positive impact of marginal rate reductions. The relationship, however, is less than when the lag of 1 year is introduced; this suggests that there is some initial impact of rate cuts, followed by a stronger impact the following year. Thus the 1982 rate-cut's impact may show up partly in 1982 and partly in 1983. Unfortunately statistical problems (multicolinearity) prevent the introduction of both the immediate and delayed effects of tax cuts into the same model.

Also, it is true that the 1982 tax cut began at the very beginning of the year (for groups that in 1981 were in marginal tax rate brackets above 50 percent) and was known about for several months previous to implementation. Thus the historically observed lags between the implementation of the tax reduction and their behavioral effects may have been much less in this instance. The notion that the tax reduction was anticipated even in 1981 may seem to add credence to the Kiefer position that persons shifted income into 1982 that ordinarily would be reported in 1981. We have no doubt that some of that in fact happened, but if it were extremely widespread, we should have seen a peculiar drop in 1981 income tax payments, which we did not, and also we should see a drop in revenues in 1983 (or at least no growth).

Observe Figure 2, which shows the growth in tax revenues when the tax-induced shifting to other years occurs by a solid line (the Kiefer effect), and the "normal" growth in tax revenues that occurs when no tax law changes occur by a dotted line. Revenues start and end at the same amount, but where the tax strategies dominate, income is deliberately depressed at the beginning (e.g., 1981) and end (e.g., 1983) of the period over what the normal situation would suggest.

Figure 2

Patterns of Income Tax Revenue Growth Under Alternative Tax Strategies



Thus, if the Kiefer effect is strong, 1983 tax revenues from upper income Americans should fall (or at the minimum show no significant growth) from 1982 levels. Since the results are not yet available for 1983, we cannot yet assess this issue entirely, but we can do one thing. Since we know the tax rates, personal income level and interest rate levels prevailing in 1982 and 1983, we can predict what we would expect tax revenues from the upper income group to be for that year by multiplying the regression coefficients (Table 2) by the relevant values of the factors used in the analysis, and add the constant term. Doing that, we learn that expected revenues are $45.4 billion for this group in 1983, an increase of some 16.1 percent over 1982, which is about a 12 percent real revenue growth; this is an increase far greater than the observed real personal income growth in that period and is an estimate inconsistent with Kiefer's reasoning. Therefore, we are highly doubtful that the "Kiefer effect" regarding tax strategies had more than a modest impact on revenue growth in 1982. Still, our findings are conjectural (although educated conjectures); the "final word" will be the 1983 data.

VIII. Conclusions

The empirical results clearly suggest that upper income Americans are acutely influenced by marginal tax rates in making their employment and investment decisions. In the period 1954 to 1982, reductions in marginal tax rates led to an expansion in the tax base that was greater than the rate reduction itself, leading to an expansion of tax revenues received from higher income Americans. At least in the higher income brackets, America operated in the perverse portion of the Laffer curve, where marginal tax rate reductions at the highest levels led to increases in tax revenues (thereby reducing budget deficits), higher economic growth (to the extent the tax base expansion reflected an increase in economic activity), less tax avoidance and evasion (to the extent the tax base expansion reflected a move out of shelters and the underground economy), greater progressivity in the tax system (the "rich" paid a larger share of total tax payments), and greater horizontal equity (since base broadening reduces the incidence of taxpayers with high incomes reporting little income for tax purposes).

This study is limited in its application, is impeded somewhat by some imperfections in the data, and certainly is not a comprehensive treatment of the tax system. Moreover, some evidence of interest (e.g., the 1983 income tax data) is not available. Nonetheless, the findings in this study are extremely consistent with the view that the 1981 tax cut was a resounding success with respect to three criteria usually employed to evaluate tax policy. The tax cut seemed to reduce administrative problems of compliance and avoidance, enhanced economic efficiency and growth, and contributed to a fairer system of taxation in the United States. The results tend to strongly refute the claims of those political leaders who suggest that the 1981 tax cut "favored the rich" and "caused a big budget deficit." If anything, the evidence points to the opposite conclusions.

What do the results say about further tax reform? The historical experience deals with a tax system with marginal rates on ordinary income ranging from 50 to 91 percent, and it is possible that at lower rates the United States may enter quickly into the positive sloped portion of the Laffer curve, meaning rate reductions at the upper levels would not bring about revenue increases. Still the robustness of the historical results leads us to suspect that some further rate reduction can occur without impairing revenues. In any case, the case for tax reduction is strong even if there are negative revenue effects for the Federal Government. In short, the results above strengthen the case for experimenting with a "flat tax" with sharply lower marginal rates and a broader taxable base. Critics of such legislation ignore the enormous sensitivity that upper income Americans have to changes in their tax rates. Any tax reform that ignores that reality will likely worsen rather than improve the lot of all Americans, rich and poor.

FOOTNOTES

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[1] In a staff memorandum of April, 1984, "The Combined Effects of Major Changes in Federal Taxes and Spending Programs Since 1981," prepared for Senator Lawton Chiles.

[2] "Income Tax Avoidance and an Empirical Estimation of the Laffer Curve," workshop paper, Department of Economics, Florida State University, July 1984. See also their paper "Tax Rates, Tax Shelters and the Efficiency of Capital Formation," in Dwight Lee, ed., "Taxation and Capital Markets" (Cambridge, Mass.: Ballinger Publishing Co. for the Pacific Institute for Public Policy Research, forthcoming).

[3] Thomas McCaleb. "Tax Evasion and the Differential Taxation of Labor and Capital Income," Public Finance, No. 2, 1976; Charles T. Clotfelter, "Tax-Induced Distortions and the Business-Pleasure Borderline," American Economic Review, December 1983, and his "Tax Evasion and Tax Rates: An Analysis of Individual Returns," Review of Economics and Statistics, August 1983. The last mentioned Clotfelter study is particularly interesting. Using data from audits of individual tax returns, he notes that the incidence of underreporting varies directly with marginal tax rates, with rather high levels of sensitivity of taxpayers to rate changes.

[4] James E. Long and Frank A. Scott, "The Income Tax and Nonwage Compensation," Review of Economics and Statistics, May 1982, and Stephen A. Woodbury, "Substitution Between Wage and Nonwage Benefits," American Economic Review, March 1983.

[5] See the statements of Lawrence Pratt, "Statement to Congress" and the supplemental paper "CBO Report: Facts for the Occasion" (done for the American Institute of Economic Research); James Gwartney, "Tax Rates, Taxable Income and the Distributional Effects of the Economic Recovery Tax Act of 1981," and Richard Vedder and Lowell Gallaway, "Was the 1981 Tax Cut Fair." The hearing record is soon to be published by the Government Printing Office.

[6] "Politics, Time and the Laffer Curve," Journal of Political Economy, July/August, 1982.

[7] See "Tricklenomics," Wall Street Journal, April 11, 1984, and John Berry, "Tax Cuts Aren't Working as Promised," Washington Post, April 22, 1984.

[8] Joseph Minarik, "The Tax Shares Boomlet," Tax Notes, June 11, 1984.

[9] " 'Supply-Side' Tax Changes: Do They Soak the Rich or Soak It to the Poor," Tax Notes, June 11, 1984.

[10] Institute for Research on the Economics of Taxation, "The Misdirected Debate on the 'Fairness' of the 1981 Tax Reductions," Economic Policy Bulletin, No. 17, August 1, 1984.

[11] For example, in May 1977 the percent of those polled that thought that the Federal income tax was "the worst tax—that is, the least fair," was 28 percent, while in September 1981 it was 36 percent. See Advisory Commission on Intergovernmental Relations, Changing Public Attitudes on Governments and Taxes, S–12 (Washington, D.C., 1983), p. 40.

[12] Donald W. Kiefer, "The 1982 Tax Return Data and Supply-Side Response to the Tax Cut: Manifestation or Mirage" (Congressional Research Service, July 31, 1984).

[13] For each year, we regressed tax revenues for each income group reported in the IRS data against adjusted gross income, using the midpoint of each income class for our estimate of income. We then used the regression results to predict tax revenues within income classes requiring interpolation, using actual revenue data for those income classes for which interpolation was not necessary.

[14] The decline was from 36 percent in September 1981 to 35 percent in May 1983. See Changing Public Attitudes . . . , op cit., p. 1.

[15] Representative statements of the views of Drs. Rahn and Roberts are found in their Joint Economic Committee appearance of June 12, 1984. See Dr. Rahn's "Statement on Fairness and the Economic Recovery Tax Act," and Dr. Roberts' "Fairness and the Economic Recovery Tax Act of 1981."

[16] Mr. Cohen's views were expressed at a hearing of the Senate Committee on Finance, Subcommittee on Internal Revenue Service Oversight, September 17, 1984.