BUSINESS REVIEW

Federal Reserve Bank of Philadelphia

ISSN 0007-7011

Did the Tax Cut Really Cut Taxes?

looking at tax policy

The Merits of Efficient Taxation

1981

NOVEMBER·DECEMBER

EDITOR'S NOTE: LOOKING AT TAX POLICY

The national debate over tax policy reached a seeming climax earlier this year with the passage of a new tax package for individuals and businesses. The aim of the law was to increase incentives to work, save, and invest—to get the economy off its back and growing again. Far from ending the tax debate, however, this legislation appears rather to have spurred it on.

NOVEMBER/DECEMBER 1981

BUSINESS REVIEW

Federal Reserve Bank of Philadelphia
100 North Sixth Street
(on Independence Mall)
Philadelphia, Pennsylvania 19106

The BUSINESS REVIEW is published by the Department of Research every other month. It is edited by John J. Mulhern with the assistance of Michael McNamara. Artwork is directed by Ronald B. Williams. The REVIEW is available without charge.

Please send subscription orders and changes of address to the Department of Research at the above address or telephone (215) 574-6428. Editorial communications also should be sent to the Department of Research or telephone (215) 574-6426. Requests for additional copies should be sent to the Department of Public Services.

* * * * *

The Federal Reserve Bank of Philadelphia is part of the Federal Reserve System—a System which includes twelve regional banks located around the nation as well as the Board of Governors in Washington. The Federal Reserve System was established by Congress in 1913 primarily to manage the nation's monetary affairs. Supporting functions include clearing checks, providing coin and currency to the banking system, acting as banker for the Federal government, supervising commercial banks, and enforcing consumer credit protection laws. In keeping with the Federal Reserve Act, the System is an agency of the Congress, independent administratively of the Executive Branch, and insulated from partisan political pressures. The Federal Reserve is self supporting and regularly makes payments to the United States Treasury from its operating surpluses.

The present issue of the BUSINESS REVIEW contains two contributions to the ongoing discussion. Stephen Meyer and Robert Rossana focus on the tax legislation and ask whether it will have its desired effect on individuals. Their answer is that it won't—that since most people will not be paying a smaller tax in years to come despite reductions in rates, the hoped-for incentive gains will not materialize. Only a much larger reduction in tax rates, they suggest, would alter the incentives to any effect. Ira Kaminow points out that beyond the issue of tax reduction lies the question of tax efficiency: how can the tax burden be distributed so as to induce the smallest distortions in economic behavior? He suggests that the social costs of our inefficient tax system are enormous, and he discusses several proposals that could yield large efficiency gains.—*J.J.M.*

Did the Tax Cut Really Cut Taxes?

*By Stephen A. Meyer and Robert J. Rossana**

In response to slowing productivity growth and a public outcry in favor of tax cuts, President Reagan proposed and Congress adopted a package of tax cuts for individuals and businesses. For individuals the major element of the tax package is a twenty-five percent cut in personal income tax rates, spread over three years.[1]

The President's tax proposals were subjected to a lively debate, both in the legislature and in the press. Much of the argument focused on the question of how people would respond to so large a cut in income taxes. Would they save the extra take-home pay or would they spend it? Would people respond to higher after-tax wages by working harder and longer? Would owners of small businesses seek to expand and undertake more investment as their personal tax rates were cut?

Our analysis suggests that the three-year cut in personal income tax rates will have little effect on people's behavior, because few taxpayers will face lower tax rates in 1983 than they did in 1980. We construct estimates of the new tax rates that households in the U.S. will face over the next few years. Our estimates indicate that the tax rate on any given *real* income will not fall from 1980 to 1983. Inflation will continue to push people into higher tax brackets (higher dollar

*Stephen A. Meyer is Senior Economist in the Money and Macroeconomics section of the Research Department. He received his Ph.D. from Yale University.

Robert J. Rossana is Assistant Professor of Economics at the Pennsylvania State University. He was previously Senior Economist at the Philadelphia Fed.

[1]Even though the President and Congress refer to a "twenty-five percent cut" in personal income tax rates, the new law actually provides a *twenty-three* percent cut. On October 1, 1981 tax rates were cut 5%. On July 1, 1982 tax rates will fall by a further 10% from their levels on June 30, 1982. Then on July 1, 1983 tax rates will be cut by 10% more, from their levels on June 30, 1983. Overall this is equivalent to a 23% cut in tax rates from their levels in mid-1981.

income) as fast as the tax rate on any given dollar income falls. When social security taxes are added to personal income taxes, we find that most families will actually wind up facing higher Federal tax rates in 1983 than they did in 1980, if their dollar incomes keep pace with inflation.

The twenty-five percent cut in personal income tax rates over three years, as proposed by President Reagan and enacted by Congress, is more properly described as an attempt to offset built-in tax increases caused by inflation than as a real cut in tax rates. Unless inflation from 1981 through 1983 turns out to be much lower than the Administration has projected, Federal income tax rates will be slightly higher (for the same real income) in 1983 than now. Of course Federal income tax rates will be substantially lower in 1983 than they would have been without the tax package adopted earlier this year. Because people with the same real income will face roughly the same tax rates as last year, however, it is unlikely that the personal income tax package adopted in 1981 will induce people to change their real economic behavior from what it is now.

TAXPAYERS FEEL THE PINCH

Many Americans know that their incomes have risen in the past few years, but after paying taxes they feel unable to purchase as much as they could previously. This observation is generally correct. The interaction of inflation with our progressive income tax code, and rising social security taxes, have combined to reduce after-tax real incomes.

Bracket Creep Raises Taxes . . . By social consensus the U.S. constructed an income tax code which requires those with greater ability to pay to shoulder a larger burden in financing the activities of government. As taxable income rises so too does the marginal income tax rate—the extra tax incurred on each extra dollar of taxable income. However, the tax system does not recognize the difference between nominal and real (inflation-adjusted) income. This blind spot then leads to *bracket creep;* as incomes rise just enough to offset the effects of inflation, taxes due on those incomes rise still faster. For example, husbands and wives who filed joint returns in 1980 and who earned a $30,000 taxable income paid $6,238 in Federal income taxes for that year. Now suppose that all prices rise 10 percent. If taxable income also rises by 10 percent (enough to preserve its purchasing power), these households would pay $7,348 in Federal income taxes—an increase in tax payments of nearly *18 percent.* Bracket creep means that real tax payments rise when inflation occurs. This raises the real receipts of the government just as if Congress had passed legislation to raise taxes. These unlegislated tax increases are a major factor accounting for recent declines in real after-tax incomes.

. . . As The Social Security Wage Base Rises. The decline in after-tax incomes has been reinforced by changes in the social security program. This system, designed to provide a part of the retirement income of older Americans, is financed by contributions (taxes) levied upon both firms and workers. Workers who participate in financing this program are then entitled to its benefits during their retirement years. With the program heading for apparent insolvency, Congress has been forced to raise both the tax rate and the wage base upon which taxes are levied (see Table 1). The wage base is the maximum amount of each worker's wage and salary income that is subject to social security tax.

These changes have the effect of raising the tax burden not only because the tax rate has risen, but also because the wage base has risen so sharply between 1978 and 1981. Many people had wage income higher than the old wage base, so they paid no social security tax on part of the income they earned during the year. With the increase in the wage base, many of these individuals now find themselves paying social security tax on their entire wages; as a result they now pay a larger fraction of their total

TABLE 1
SOCIAL SECURITY TAX RATES AND EARNINGS LIMITS

Year	Tax Rate (%)	Wage Earnings Maximum
1978	6.05	17,700
1979	6.13	22,900
1980	6.13	25,900
1981	6.65	29,700
1982	6.70	32,700
1983	6.70	35,700

N.B. This data reflects increases in tax rates and wage income limits scheduled under current law.

TABLE 2
FEDERAL INCOME AND SOCIAL SECURITY TAXES AS A PERCENTAGE OF ADJUSTED GROSS INCOME (AGI)

AGI (1978$)	(%) 1978	1979	1980	1981
13,000	13.8	13.9	14.8	17.4
15,000	15.2	15.3	16.4	18.9
17,000	16.7	16.7	20.5	20.4
19,000	17.6	17.9	19.0	21.6
22,500	18.8	19.4	20.9	22.9
27,500	20.7	21.2	22.7	24.6
40,000	25.7	26.3	28.2	30.1

N.B. These Figures illustrate the rise in taxes paid by presenting *average* tax rates for a family of four with one wage earner. We assume that almost all income is wage income, up to the level of the social security earnings base. For simplicity we present tax rates for families who take the standard deduction. Average tax rates for other families have moved similarly.

1981 average tax rates are shown *before* the tax cut. 1981 income taxes will be cut only 1¼%, (more at very high income levels), so 1981 average tax rates will be only slightly lower than shown here.

earnings in social security taxes. If we combine the effects of bracket creep and higher social security taxes, most of us have indeed experienced an increase in our *real* tax payments during the past few years.

Table 2 shows why taxpayers are now up in arms. The fraction of income taken by the Federal government has risen substantially since 1978. A family of four earning a constant real income of $13,000 in 1978 dollars found that the Federal government's tax bite rose by 26 percent, in real terms, during the past four years. For a $40,000 real income the tax bite rose 17 percent. The results are similar for other income levels. Such is the stuff of which tax rebellions are made.

TAXES AND LABOR SUPPLY: MARGINAL TAX RATES

While most of the public outcry over taxes has focused on the share of income paid in taxes, economists have looked at *marginal* tax rates. (The marginal tax rate is the fraction of one *additional* dollar of income that would be taxed away.) Economists have focused on the marginal tax rate because it is the *marginal* tax rate that affects incentives to work, to save, and to invest (See: Tax Rates And Incentives).

TAX RATES AND INCENTIVES

The debate about the economic effects of this year's tax cuts involved, among other issues, the likely impact of such policies upon incentives to work. Proponents of "supply-side economics" argue that cutting *marginal* tax rates will increase incentives to work, thus raising the labor supply available to firms. How does a tax cut do this?

One incentive that strongly affects people's willingness to work is hourly take-home pay. Cutting *marginal* tax rates increases the take-home pay which one can earn by working *additional* hours. So cutting marginal tax rates increases the real quantity of goods and services that an extra hour of work will buy. That is, giving up an hour of leisure time (and working instead) allows a worker to obtain more goods and services, compared to the amount that she would obtain by sacrificing an hour of leisure when there is a higher marginal tax rate. When *marginal* tax rates are cut, some workers respond to the opportunity to get more consumption than before by working (or becoming willing to work) extra hours. And other people, who were not working, choose to enter the labor force to try to take advantage of the increased after-tax wages.

But a tax cut can increase hourly take-home pay in two ways, which have very different effects on the incentive to work extra hours. If *only* the *marginal* tax rate is cut (leaving unchanged the amount of taxes a worker pays on his *initial* income), then the incentive to work extra hours is strong. One can take advantage of a cut in the marginal tax rate only by working extra hours; working the same hours as before leaves one's after-tax income unchanged. So no one has an incentive to work less. Some workers would be willing to put in more hours, and some the same number of hours, but the total labor supply would *rise*.

However, if *average* tax rates are cut (so that taxes due on a worker's initial income fall), but marginal tax rates are left unchanged, then total labor supply would *fall*. Cutting the average tax rate means that a worker's spendable income rises if she works the same number of hours as initially. She can actually work slightly fewer hours (have more leisure time) and still end up with a somewhat higher after-tax income than before taxes were cut. Not surprisingly, some people choose to work less, and enjoy more leisure activities, when only the *average* tax rate is cut. So the total labor supply would decline.

These two offsetting influences on labor supply suggest that Congress should be careful about how it cuts taxes, if the objective of a tax cut is to induce people to work more. Giving each taxpayer a tax cut by allowing him to calculate his income tax on today's forms, and then subtract $500 from the taxes due, would lower the average tax rate without affecting the marginal tax rate. This would

reduce labor supply. On the other hand, cutting tax rates applicable to each income bracket and at the same time abolishing the personal exemption (now equal to $1,000) could lower marginal tax rates without substantially affecting the average tax rate on a worker's initial income. Doing this would provide a strong incentive to work additional hours, so labor supply would rise.

The tax cut adopted in 1981 actually provides for an across-the-board cut in personal income tax rates. If rates had been cut enough to offset the effects of bracket creep and higher social security taxes, then both marginal *and* average tax rates would fall. How would this have affected labor supply? The evidence suggests that an across-the-board cut in income tax rates would generate a small increase in people's willingness to work.* If this extra labor supply were put to use by employers, then real GNP would rise.

Should the marginal tax rates that are relevant for workers' labor supply decisions include the employee's share of social security taxes? It could be argued that higher social security taxes won't reduce incentives to work, because those taxes buy higher benefits when a worker eventually retires. In reality, however, the social security benefits that any individual stands to receive in the future are not closely related to the social security taxes that she pays today. Rather, future benefits are determined by what Congress chooses to enact at that time. Today's social security taxes pay for today's benefits. Because there is no direct link between social security taxes paid today and the future level of benefits, today's social security taxes affect labor supply decisions in the same ways as today's income taxes. Thus the wage rate which is relevant for the decision about whether or not to work an additional hour is the after-tax wage, net of both income and social security taxes.

The impact of taxes on potential GNP is more properly measured by looking at *effective* marginal tax rates rather than statutory rates. Effective tax rates measure the extra taxes paid, given the tax preferred status of many types of spending or saving, associated with an extra dollar of income from whatever source. These numbers are generally unavailable, but some estimates have recently been constructed which are close to this concept.** These effective rates are generally lower than those which we report, reflecting the fact that additional income is often put into tax shelters which lower effective tax rates. Nonetheless, inspection of these rates over time suggests that there is little reason to expect effective rates to behave differently from our estimates of statutory rates.

*See Footnote 2 to main text.

**See John J. Seater, "Marginal Federal Personal and Corporate Income Tax Rates in the U.S., 1909-1975," *Journal of Monetary Economics* (forthcoming).

Cutting marginal tax rates raises the after-tax wage earned by working additional hours. Proponents of "supply-side" policies argue that workers will respond to higher after-tax wages by working more hours, which will result in greater output of goods and services in the U.S. economy. Although economists do not know just how large this increase in labor supply would be, available studies do indicate some response to changes in tax rates.[2]

[2]See A. Protopapadakis, "Supply-Side Economics: What Chance for Success?" *Business Review*, Federal Reserve Bank of Philadelphia (July/August, 1981) for a discussion of empirical estimates of labor supply responses to changes in tax rates.

On the other hand, *raising* marginal tax rates reduces the incentive to work additional hours. Marginal tax rates have risen even faster than average tax rates over the past four years. The columns for 1978 through 1981 in Table 3 tell the story. A striking example is given by the case of a family of four earning a constant real income of $19,000 per year (in 1978 $). When that family earned $19,000 in 1978 it faced a marginal Federal income tax rate of 25 percent applied to every extra dollar of taxable income. Their total marginal rate (including social security taxes) was the same, as their wage income was likely to be well above the social security maximum for that year. Now let's see how they fare in 1981. With the same family size

TABLE 3
MARGINAL TAX RATES WITHOUT TAX CUT

AGI (1978$)	1978		1979		1980		1981		1982		1983	
	Fed.	Total	Fed.	Total	Fed.	Total	Fed.	Total	Fed.	Total	Fed.	Total
13000	.22	.28	.21	.27	.21	.27	.24	.31	.24	.31	.24	.31
15000	.22	.28	.24	.30	.24	.30	.24	.31	.28	.35	.28	.35
17000	.25	.31	.24	.30	.28	.34	.28	.35	.28	.35	.32	.39
19000	.25	.25	.28	.34	.28	.34	.32	.39	.32	.39	.32	.39
22500	.28	.28	.28	.28	.32	.32	.32	.39	.37	.44	.37	.44
27500	.36	.36	.37	.37	.37	.37	.43	.43	.43	.43	.43	.43
40000	.45	.45	.43	.43	.49	.49	.49	.49	.49	.49	.54	.54

N.B. Fed. = Marginal rate from Federal tax code.
Total = Sum of Federal marginal rate and social security rate.
Data apply to joint return of four person household using standard deduction. Tax rates are rounded to the nearest percent.

and constant real income, that family faces a marginal income tax rate of 32 percent. If an extra dollar of income comes from wages (rather than interest or dividends), the government taxes away almost 39 percent—an increase of 14 percentage points above their 1978 total marginal tax rate![3] Marginal tax rates rose from 1978 to 1981 for other income classes, but by less. Economists worry that increases in marginal tax rates have reduced work effort and investment in new capital equipment, thereby contributing to lagging productivity growth in the United States.

If the new tax package is intended to increase the number of hours people wish to work, it must actually reduce marginal tax rates on wage income. Does President Reagan's tax package really reduce marginal tax rates? We know enough about the details of the tax package adopted this year to construct some good estimates of the marginal tax rates that workers wil face in the next few years.

We constructed estimates of marginal tax rates that households would have faced had there been no tax cuts, as well as estimates of tax rates that will result from the tax package adopted in 1981. (See the APPENDIX for complete details on the method of calculation.) While it is obvious that marginal rates will indeed be lower than they would

[3]Keep in mind that the social security rates are based on wage income which is typically below AGI, so that exactly which income classes are below the social security wage base is not known with precision. Also, Table 1 embodies tax rate and wage base limits which are currently scheduled, but which may change in future legislation.

otherwise have been, the vast majority of U.S. households will still face higher marginal tax rates than they faced in 1980 or in 1978, which is the last year for which detailed tax and income data are available.

Marginal Tax Rates Were Scheduled to Rise . . . Bracket creep and increases in social security taxes will continue between 1981 and 1983. So if no personal income tax cuts had been enacted by the Congress, marginal tax rates would have risen substantially. This is shown in the columns for 1980 through 1983 in Table 3. Families at all income levels would have found themselves facing higher marginal tax rates.

A family with adjusted gross income (AGI) in 1980 equal to $22,500 in 1978 dollars ($26,990 nominal income in 1980) would have faced both higher income tax rates and higher social security tax rates in 1983 if its dollar income grew at the inflation rate. Though no better off in real terms, that family's marginal income tax rate would have risen from 32 percent in 1980 to 37 percent in 1983. The social security tax on an extra dollar of wage income would have risen from zero to 6.7 percent, as both the social security tax rate and the wage base rose. So the total marginal tax rate on an extra dollar of wage income would have risen from 32 percent in 1980 to 43.7 percent in 1983, if the Congress had not passed a tax cut.

Of course Congress did enact a cut in personal income taxes. What will happen to marginal tax rates under the tax program proposed by the President and adopted by Congress?

. . . And Will Rise Even With the 25-Percent Cut. The Treasury Department has issued tax tables which embody the tax cuts proposed by the Reagan Administration and adopted by Congress. Using these we can construct a set of (new) marginal rates and compare these to previous results. Our analysis suggests that when these new rates are compared to those in 1980, most people will find that they really haven't received complete relief from bracket creep, let alone the effects of rising social security taxes.

Two sets of estimates are provided—one for a household using the standard deduction and one for a family which itemizes deductions (see Table 4).

Our results show that for families of four using the standard deduction, no family with an Adjusted Gross Income in the range from $13,000 to $40,000 (in 1978 $) will face a lower personal income tax rate or combined marginal tax rate in 1983 than in 1980. This is true even after taxes are cut in the way suggested by the Reagan administration. For those in the lowest income class ($13,000 1978 dollars), the Reagan program will offset bracket creep and the total marginal rate will be nearly unchanged as well. As incomes rise, the gap between 1980 and 1983 rates will widen, with those in $22,500 class facing a total marginal rate that will be roughly one-quarter higher in 1983 than it was in 1980. Even ignoring social security taxes the Reagan program will not quite offset bracket creep; all but two income groups will face marginal Federal income tax rates in 1983 which exceed 1980 rates.

The comparison is even more dramatic when we look at 1978 and 1983 marginal tax rates for households which claim the standard deduction. The total marginal tax rate will rise substantially for all but the lowest income level, and even for that group the marginal tax rate will rise somewhat. (Compare the 1978 column in Table 3 with the 1983 column in Table 4.)

For those who itemize, the result is much the same. Comparing 1980 with 1983 marginal tax rates, the lowest income group will see a slight decline in its marginal personal income tax rate. All other groups will experience flat or rising marginal tax rates. The same is true when we add in social security taxes. Indeed, those with 1980 incomes of $22,500 (in 1978 $) will find themselves facing a total marginal tax rate which is more than one-third higher in 1983 than it was in 1980.

TABLE 4
MARGINAL TAX RATES AFTER REAGAN TAX CUT

Household Of Four Filing Jointly
(Using Standard Deduction)

AGI (1978$)	1980		1981		1982		1983	
	Fed.	Total	Fed.	Total	Fed.	Total	Fed.	Total
13000	.21	.27	.22	.29	.22	.29	.22	.29
15000	.24	.30	.22	.29	.25	.32	.25	.32
17000	.28	.34	.25	.32	.25	.32	.28	.35
19000	.28	.34	.28	.35	.28	.34	.28	.35
22500	.32	.32	.28	.35	.33	.40	.33	.40
27500	.37	.37	.39	.39	.39	.39	.39	.39
40000	.39	.39	.44	.44	.44	.44	.49	.49

Household of Four Filing Jointly
(Itemizing Deductions)

AGI (1978$)	1980		1981		1982		1983	
	Fed.	Total	Fed.	Total	Fed.	Total	Fed.	Total
13000	.18	.24	.16	.23	.16	.23	.16	.23
15000	.18	.24	.19	.26	.19	.26	.19	.26
17000	.21	.27	.19	.26	.22	.29	.22	.29
19000	.21	.27	.22	.29	.22	.29	.25	.32
22500	.24	.24	.25	.32	.25	.32	.28	.35
27500	.32	.32	.28	.28	.33	.33	.33	.33
40000	.43	.43	.39	.39	.39	.39	.44	.44

N.B. Tax rates are rounded to the nearest percent.

We see the same results when we compare 1983 tax rates with 1978 rates.[4] Marginal tax rates will rise for all families who itemize deductions, except those in the lowest income class.

Our conclusions about marginal tax rates from 1981 through 1983 depend upon projections of inflation, as explained in the APPENDIX. If inflation turns out to be less

[4]In 1978, for those itemizing deductions, marginal tax rates with totals in parentheses are: $13000-.19 (.25), $15000-.19 (.25), $17000-.22 (.28), $19000-.22 (.22), $22500-.25 (.25), $27500-.28 (.28), $40000-.39 (.39).

than we have projected, then people will not be pushed into higher tax brackets as rapidly as we have calculated, so marginal tax rates for families with constant real income (before tax) actually might fall from 1981 to 1983. On the other hand, if inflation were to continue at its current rate, then marginal tax rates would rise *more* than shown here. Our calculations are based on virtually the same total inflation during 1981 through 1983 as that projected by the Reagan administration in its fiscal 1982 budget proposals.

We have not estimated marginal tax rates for those families with really high incomes, because the tax code provisions which apply to those families are so complicated. Various tax shelters tend to reduce the true tax rates faced by high income families. On the other hand, interest and dividend income earned by these same people has been taxed at higher rates than wage income, which tends to raise their marginal tax rates. The new tax legislation adopted in 1981 affects very high income families in two ways. First, the top tax rate on interest and dividend income is reduced from 70 percent to 50 percent. Second, the top tax rate on wage and salary income is *not* cut; it remains at 50 percent. So those who have very high incomes will definitely face a lower marginal tax rate on their interest and dividend income in 1983 than they did in 1980. As with the rest of us, however, high income families will find no cut in the marginal tax rate on their *wage* income.

THE BOTTOM LINE

A program of cutting marginal tax rates could have a substantial impact upon productivity growth and potential output, if it succeeded in stimulating labor supply in response to higher after-tax real wages. To do this, and thus achieve some of the objectives set out by its advocates, the Reagan program would have to cut tax rates to offset bracket creep and social security tax hikes, and then some. This year's tax cuts are not big enough to do so.

The 1981 tax cuts certainly do cut rates from levels that would otherwise be achieved, but not by enough to lower marginal tax rates from current levels. Most taxpayers will find that the trend of rising taxes will continue. Except for one income group, every other household studied here is going to face a higher total marginal tax rate in 1983 than it did in 1978 and 1980.[5] Insofar as rising taxes are reducing productivity growth, they still will be, although to a lesser extent. We find that the Reagan tax cuts can only be viewed as an imperfect attempt to offset bracket creep.

Perhaps the most important aspect of the tax package adopted in 1981 is the decision to *index* the tax code beginning in 1985.[6] If done properly, indexing can prevent bracket creep and thus automatically prevent declines in labor supply and potential GNP caused by rising marginal tax rates. Although Congress adopted the indexing provision with little debate, it is clearly one of the most significant changes in the personal tax code in recent memory.

Did this year's tax cut really cut taxes? Tax rates will be lower than they would otherwise have been. Tax rates on a constant *real* income will be higher in 1983 than they were in 1980, however. Bracket creep and higher social security taxes will more than offset the 25-percent reduction in income tax rates. Most families will find themselves facing *higher* marginal tax rates in 1983 than they did in 1980.

---

[5]The *share* of personal income going to Federal taxes will also rise slightly through 1983. The share of *GNP* going to Federal taxes will decline slightly, however, because *corporate* taxes are cut by the 1981 tax law.

[6]Each year from 1985 on, income tax brackets are to be adjusted by the percentage increase in prices that occurred during the year ending the previous September 30.

APPENDIX . . .

. . . CONSTRUCTING MARGINAL INCOME TAX RATES

For the purpose of constructing marginal personal income tax rates, we require detailed information on taxes paid, deductions, and adjusted gross income (AGI) for U.S. households. The last year for which such data are available is 1978. This information is provided by the Internal Revenue Service in a publication entitled "Individual Income Tax Returns, 1978 Statistics of Income," Publication 79 (3-81).

Choosing seven AGI classes where husbands and wives filed joint returns, we define the AGI of the typical households in each group to be the mid-point of the AGI range for that class. For example, AGI is assumed to be $13000 in 1978 for households in the $12000-$14000 AGI class found in the "Statistics of Income."

Exemptions claimed per return averaged 3.7, so for simplicity we assumed that each household claims four exemptions.

For a household of four that does not itemize deductions, Taxable Income (TI) is computed using the formula

(1) $\quad AGI - 4 \cdot (\$/EXEMPTION) = TI$

Given TI, we can refer to the tax table to obtain the relevant marginal, statutory tax rate. Dollars per exemption were $750 in 1978 and $1000 in 1979 and beyond.

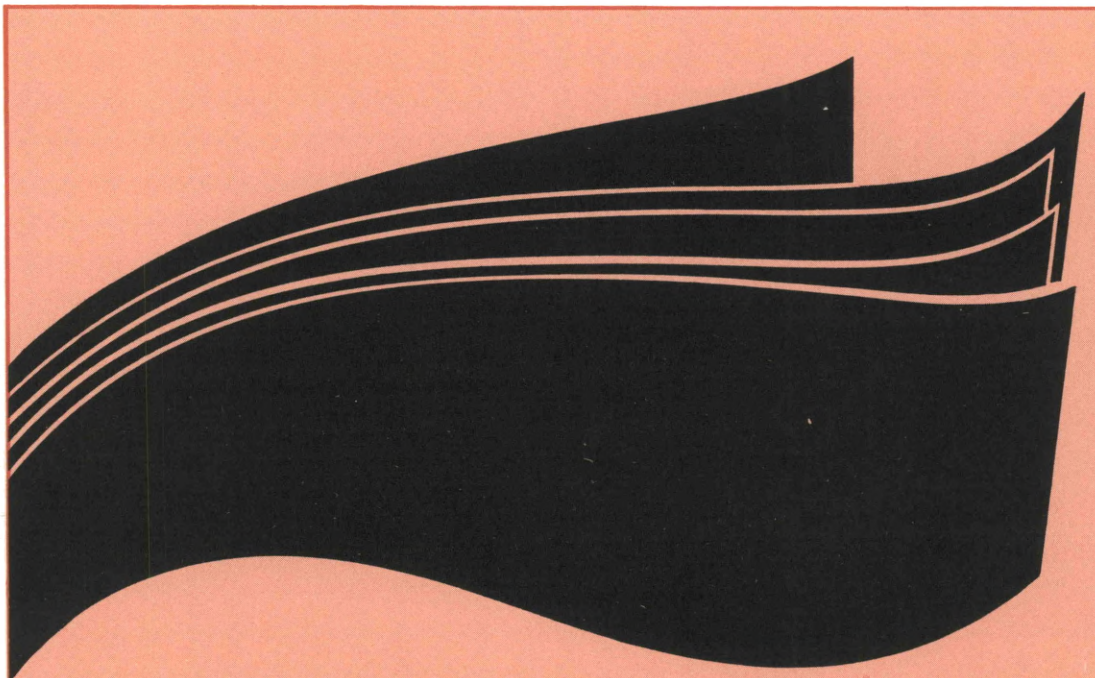
For those who itemize, we can use the "Statistics of Income" to find deductions per itemized return (D) in 1978. We arrive at TI using the formula

(2) $\quad AGI - (D-ZB) - 4 \cdot (\$/EXEMPTION) = TI$

where ZB is the zero bracket amount (the amount of taxable income at the zero percent rate). For joint returns, zero bracket amounts are $3200 in 1978 and $3400 for 1979 onward.

Finally, to compute the marginal tax rates for years subsequent to 1978, we raised 1978 AGI and D at the inflation rate (actual or forecasted), applied formula (1) or (2) and then took the resulting TI figures into the tax tables to find the reported marginal tax rates. Tax rates under the Reagan program were obtained from tax tables provided by the Treasury Department. To measure inflation we used the actual or projected rate of growth of the implicit deflator of personal consumption expenditures (a good measure of inflation). Inflation projections for 1981 to 1983 were obtained from recent economic forecasts made by Data Resources, Inc. Projected inflation rates are 8.8 percent in 1981, 8.7 percent in 1982, and 7.8 percent in 1983. In any given year these rates differ from the Administration's forecast, but over the whole 3 years our assumptions about inflation are virtually identical with those the Reagan Administration used in its fiscal 1982 budget proposals.

We have ignored state and local income taxes in making these estimates. The reported tax rates are those for Federal taxes alone. Including state and local taxes would raise the total marginal tax rates faced by workers. Unless state and local income tax rates were to fall between 1980 and 1983, however, our conclusions about the *changes* in marginal tax rates would be unaffected by including state and local income taxes.



PHILADELPHIA FED
Research PAPERS

The Philadelphia Fed's Department of Research occasionally publishes research papers written by staff economists. These papers deal with local, national, and international economics and finance. Most of them are intended for professional researchers and therefore are relatively technical.

For a complete list of RESEARCH PAPERS currently available, write to RESEARCH PAPERS, Department of Research, Federal Reserve Bank of Philadelphia, 100 North Sixth Street, Philadelphia, Pennsylvania 19106.

The Merits of Efficient Taxation

*By Ira P. Kaminow**

The old foundations of American tax policy have become suspect. Taxes that once promised to finance a great society are routinely criticized for destroying incentives to work and save. And interest in the distribution of tax burdens between rich and poor has, by all appearances, diminished considerably in the past several years. For the moment at least, incentives have replaced equity as the key concern of the tax-reform debate. But many economists believe the incentives issue is overemphasized and would prefer to focus more attention on tax efficiency.

An efficient tax system permits society to meet private and public demands without incurring unnecessary costs—costs which economists label the excess burden of taxation. The *direct* burdens of a tax are the resources lost by the private sector to the government; the *excess burden* is the loss to all of society because resources are wasted and misused in an attempt to avoid taxes. Tax incentives to encourage labor and investment are efficient only to the extent that they lead to the kinds of work-effort and capital that produce the goods we want, when we want them, and at minimum cost. Otherwise, these incentives contribute to the excess burdens of wasted and misused resources.

One recent study concluded, for instance, that though half of all saving in America escapes taxation (or is very lightly taxed), these tax breaks are so ill-conceived on efficiency grounds that they have done nothing to make society better off on the whole. In contrast, estimates of the potential gains from a truly efficient tax system range into the hundreds of billions of dollars. Unfortunately, many of the proposals recently under discussion in the tax-reform debate failed to give due weight to efficiency matters.

*Ira P. Kaminow, formerly Vice President and Economic Advisor at the Federal Reserve Bank of Philadelphia, is Director of Economic Studies for The Government Research Corporation, Washington, D.C.

BURDENS AND EXCESS BURDENS

On average, each man, woman, and child in the nation pays Uncle Sam about $3,000 in taxes each year—$3,000 that cannot be spent for rent, food, movies, and bicycles. This is the direct burden, per individual, of the $700-billion Federal tax take. It is part of the finance necessary to pay for what government buys. And while taxes can be reduced if government substitutes other kinds of finance (borrowing or printing money), the burden of government can only be reduced if government spending itself is reduced. A missile does not take less steel, nor a public hospital fewer bricks, if taxes are lower. Shifting government finance among taxes, borrowing, and printing-press money may shift the burdens of government, but it cannot reduce these burdens.

The situation is quite different in the case of the so-called excess burden of taxation. To raise $700 billion a year in revenues, we have developed a complex tax structure that can distort incentives so that what is socially productive often leads to private loss and what is socially inefficient can be privately profitable. This reflects the excess burden of taxation—the burden over and above the necessary shift of resources to the government to finance expenditures. Excess burden includes, for example, work that isn't done because after-tax wage rates are so low, and savings that people forgo in the face of a negligible after-tax return.

The direct burden of taxes may or may not be worthwhile.[1] It all depends on how wisely the government uses the resources. But the excess burden is a dead-weight loss to the economy at large because it reflects a loss to some with no offsetting gain to others, so that society is a net loser. In economists' jargon, the lower the excess burden, the more efficient the tax system and the economy.

Tax efficiency is an old concept that involves careful distinctions between tax revenues and tax structures—that is, between how *much* we collect in taxes and *how* we collect taxes. One useful way to clarify this concept is to compare two kinds of taxes—a lump-sum tax and a tax on income. Unlike an income tax, a lump-sum tax is a flat assessment levied without regard to any measure of economic activity or well-being. Since a lump-sum tax is not tied to people's economic behavior, it imposes no burden beyond the revenue they forgo; there are no high tax rates to discourage work or savings or otherwise impose excess burdens. The direct burden of a lump-sum tax, however, could be extraordinarily heavy and unfair. An equally distributed assessment would mean a tax bite of roughly $12,000 for a family of four, regardless of income or wealth, assuming today's government revenue levels. So most people consider a lump-sum scheme impractical on equity grounds. But, practical or not, the likely effects of such a tax are highly instructive.

Most of us, if slapped with a flat $12,000 tax bill, would try to increase earnings through overtime work, a second family income, or some other means, in order to cushion the tax burden. Contrary to some of today's fashionable rhetoric, high taxes *encourage* work and other productive efforts. And this is as it should be. When people demand more from government, whether because of external events such as war or because of changing perceptions of government's role in society, they should meet at least some of the bigger tax burden by increasing production. The rest will be met by cutting back on private consumption. The combination of additional effort and less private consumption corresponds to the higher total burden of increased government spending.

[1] Spending, taxation, debt, and inflation are highly interrelated, and the costs and benefits of government can be determined only after the size and mix of the four have been analyzed as a unit. This article focuses on the burdens of taxes and devotes little analysis to the costs of inflation and government debt or the benefits of government spending.

Higher tax burdens should also encourage high levels of savings in a lump-sum tax world. We save, for example, to buy homes and cars, to go on vacation, and to fit our children with braces. And we also could save to pay taxes. If lump-sum assessments are expected to come due during retirement, we have to put something aside today to prepare for them. Expectations of higher future tax burdens, just like expectations of increases in other future expenses, should trigger higher private saving.

Imagine now that the hypothetical lump-sum tax is replaced by an income tax (while government spending levels remain the same). In moving from a lump-sum to an income tax, incentives to work and save will be less, since wages and interest payments will be lower on an after-tax basis. Not only do we lose, for private use, the resources transferred to the government (just as we do under the lump-sum tax), but production is lost because of the disincentives. The value of this lost output is part of the measure of the excess burden of the income tax. But the income tax is in no way unique in generating an excess burden. Every tax levied on a useful economic activity imposes an excess burden on society by discouraging that activity.[2]

An efficient tax system will try to keep these distortions to a minimum. But, contrary to what some popular discussions seem to imply, designing such a structure does not involve recreating patterns of work and savings as though government spending didn't exist. Rather the task is to approximate—with due account to fairness and other social objectives—private behavior that would exist under a lump-sum tax. In other words, the tax system should be designed to minimize the impact of tax *distortions* (not of taxes) on private economic decisions. This idea has some rather powerful and diverse implications for evaluating the efficiency of our current tax system and of popular tax-cut proposals.

Consider, for example, the debate surrounding the likely success of supply-side tax cuts. These cuts are aimed at reducing tax rates in the hope of encouraging additional work and saving. Opponents of the cuts are quick to point out that most statistical studies conclude that high taxes have had little or no impact on work or production. Cuts in taxes, they argue, cannot restore what high rates have not taken away.

But there is another way to interpret this evidence. We've just argued that high taxes should increase work effort, production, and savings if they are to efficiently meet large demands for government services. So evidence that our income tax has had little impact on saving and labor supply need not mean that the tax is innocuous. To the contrary, it points directly to the *excess burden* of the tax. When the tax burden grows into the hundreds of billions, we should be working and saving more so that we can pay the tax without unduly sacrificing our private standards of living. That we have not suggests that the overall burden of the income tax rates has entirely offset the tendency to work and save more when our tax obligations increase. This implies that the overall burden of the income tax on our economic well-being must be quite high.

EXCESS BURDENS AND SOME POPULAR TAX PROPOSALS

America's search for a more incentive-oriented tax structure has come down to a number of variations on two major themes: reduce the high marginal tax rates that have weakened incentives to work and to invest, and make additional tax cuts designed specifically to encourage business investment and private saving. Unfortunately, these proposals and their variants are too often evaluated only in terms of their likely impacts on work, saving, and investment. This focus can be extremely misleading.

[2]Taxes on harmful activities provide an excess gain. The use of taxes to discourage undesirable activities is another long-standing issue in tax theory.

Even when taxes have no apparent impact on work, saving, or investment, they can still impose substantial excess burdens. And work, saving, and investment that are used inefficiently or that produce goods no one wants are not very helpful.

Personal Tax Rate Cuts. In 1978, Congressman Jack Kemp and Senator William Roth proposed an across-the-board cut in personal income tax rates of 10 percent a year for three consecutive years. Since then, the idea of a cut in tax rates has moved steadily toward the center stage of American politics. In July, the Congress passed President Reagan's program, which reduces tax rates 25 percent over the next three years.

Some students of tax theory favor a still bolder approach to tax-rate reductions. The idea is to lower the *top* tax rate dramatically, and it's most closely identified with Nobel laureate Milton Friedman, who proposes limiting the top rate to a mere 25 percent.[3] Friedman predicts that slashing the top rate would ease the worst of the income tax's excess burden with little or no revenue loss. He points out that in 1977 only about 13 percent of all Federal revenue came from rates above the 25-percent mark. And with the top rate cut by almost two-thirds from the present 70 percent, the incentives to use revenue-draining tax shelters would decline, perhaps bringing the government even more revenues.

A recent study by Jerry A. Hausman attempted to compare the excess burden under the 1980 tax system with that under the Kemp-Roth scheme and under variants of the Friedman proposal.[4] Some of the estimates are quite interesting. The average married man in Hausman's sample now pays a tax of $1,077. In addition, as a result of tax-induced disincentives to work, he bears an excess burden of $235 or 21.8 percent of his tax bill. Under the Kemp-Roth scheme, the average married man's tax bill would fall to $833; but because his tax *rate* also would fall (by 30 percent), disincentives to work would drop and his excess burden would be only $128. If fully implemented, the Kemp-Roth proposal would yield less revenue than last year's tax law. Therefore, for any given level of government spending, the Kemp-Roth proposal would require a larger government debt or more inflationary printing-press money than would the 1980 law. But both government debt and inflation can impose their own costs and excess burdens on society. So a full comparison of Kemp-Roth with the 1980 tax code would require some measure of these additional costs. Unfortunately, Hausman could not easily measure them, and as he points out, this makes it difficult to make the comparison.

Hausman was able to compare the full excess burdens under last year's law and under Friedman-type alternatives. He designed variants of Friedman's proposal which would match tax revenues under the 1980 tax code dollar for dollar. Under one such variant, the first $4,000 of income would be exempt from any tax. All income over $4,000 would be taxed at a rate of 20.7 percent. According to Hausman, this plan would be superior to 1980 law since it would raise the same revenue but would cut the excess burden of labor supply disincentives in half. Hausman also claims that the tax would be at least as progressive as 1980 law, at least for incomes up to $25,000 or so. While *marginal* tax rates under this scheme are not progressive, *average* tax rates are, because the first $4,000 of income is tax free (see A FLAT TAX RATE . . .).

The case that Friedman, Hausman, and others make for the low-top-marginal-tax-rate plan is remarkably persuasive. With little or no loss of revenue, the plan sharply reduces excess burden while keeping the distribution of the direct tax burden roughly unchanged. In short, the plan seems to offer *substantial gains in efficiency at little cost in*

[3] *Newsweek*, August 18, 1980.

[4] Jerry A. Hausman, "Income and Payroll Tax Policy and Labor Supply," National Bureau of Economic Research, Working Paper No. 610, December 1980.

A FLAT TAX RATE CAN YIELD A PROGRESSIVE TAX SYSTEM

Gross Income	Average Tax Rate	
	Current Law	Alternate Proposal*
$ 4,000	.119	0
8,000	.104	.147
16,000	.155	.173
24,000	.172	.188

*First $4,000 of income tax free, 20.7-percent rate on all income above $4,000.

SOURCE: Hausman, "Income and Payroll Tax Policy and Labor Supply."

terms of equity. It is a proposal that should be taken far more seriously in the future, as we try to make further progress toward the ideal tax system.

Savings Incentives. Among the most hotly debated questions of tax policy is how to treat savings. Should income from savings be taxed like other income? Perhaps, as many have suggested, we should eliminate the tax on saving altogether and tax only consumption expenditures. Or maybe savings should be subsidized. The proper tax treatment of savings is one of the most crucial, but difficult, areas to address from an efficiency perspective. The way savings are treated can magnify or reduce the excess burden associated with other taxes—in particular, a tax on wages. Unfortunately, though, a key piece of information necessary for deciding whether to tax savings or even subsidize them has yet to be uncovered.

A straightforward rule for efficient taxation is easy to state: similar activities should be taxed at similar rates. When the tax-rate differential between two similar activities is large, people will shift out of the useful but heavily taxed activity and into the activity subject to little or no tax. The more people try to beat taxes by finding loopholes, the more will private activity be distorted per dollar of revenue raised.

What does this have to do with the efficiency of taxing income from savings? Each of us is faced with the choice among leisure, current consumption, and future consumption (see THE REAL CHOICES overleaf). An efficient tax system will tax these three activities in such a way as to discourage switching among them to beat the tax man. But if wages are taxed, choices will be distorted away from consumption and toward more leisure. People can avoid the wage tax by not working. The efficiency of a savings tax depends on whether the wage tax, in addition to reducing the total amount of consumption, also distorts lifetime consumption *patterns*. If the wage tax does not distort consumption patterns, but merely

THE REAL CHOICES

The focus on the trade-off between consumption and saving can be quite misleading and can understate the true distortions of taxation. Consider, for example, the case of the identical clones Mervyn and Marvin.

Mervyn lives in the most fictitious of all countries. It has neither inflation nor taxes. Mervyn has been earning $2,000 a month since he started working at 25 and will go on doing so until he retires at age 65. Each month, Mervyn spends $1,670 and puts $330 in the bank at 3-percent interest.

Marvin also lives in a fictitious country. It has no inflation and no wage tax, but all interest income is taxed at 50 percent. Like Mervyn, Marvin will work from age 25 to age 65; he earns $2,000, spending $1,670 and saving $330 at 3 percent (before taxes) every month.

Judging by their consumption and saving decisions, Mervyn and Marvin behave identically and the tax on interest income has had no impact on Marvin's choices. But look again. As the example works out, untaxed Mervyn will have enough in the bank to go on spending $1,670 a month until he is 85. Marvin, who has been taxed on his interest income, retires with far less in the bank. Poor Marvin will be able to spend only about $850 a month if he lives to 85.

When Marvin chose to keep saving unchanged despite the tax, he chose, in a more meaningful sense, to bear his entire tax burden during his retirement. If he had wanted to spread the tax burden a little more evenly between his youth and old age, he might have increased his savings to $400 a month. This would allow retirement spending of $1,264 a month to age 85. Even if the tax encourages Marvin to save more, it still can reduce retirement consumption relative to consumption during the working years. The reason is that part of Marvin's saving will go to pay taxes.

The often discussed trade-off between work and leisure misses the point as well. Leisure (the consumption of time) is an end, work is merely a means to acquire and consume goods sold in the marketplace. The real choice is between the two ends: the consumption of time and the consumption of goods. If a wage tax has no effect on the individual's choice between work and leisure, the entire tax burden falls on the consumption of goods (because lower after-tax income will allow the purchase of fewer goods). To distribute the tax burden more evenly between the consumption of time and the consumption of goods, labor supply must increase, and leisure time must fall.

Analyzing the impact of taxes on economic well-being, therefore, requires unraveling taxation's effect on the quantity and mix of consumption. Today's tax problems should be examined in the context of the trade-off among three basic goods: leisure, current consumption, and future consumption. Work, saving, and investment are of only indirect concern.

reduces all consumption expenditures, present and future, by the same percentage, income from saving should not be taxed. The addition of a tax on saving would do nothing but increase excess burden by discouraging savings (hence future consumption) and encouraging current consumption. Another distortion would be added to that created by the wage tax. Lawrence Summers has estimated the excess burden of a tax on savings (assuming that a wage tax has this proportionate effect on present and future consumption) at 10 percent of each year's GNP or an astronomical total cost of $20 trillion.[5]

Suppose, however, that the wage tax not only reduces consumption spending but also redistributes it over time. Perhaps the tax causes us to cut back on future consumption more than current consumption. Then, the wage tax reinforces the distortions of a tax on savings income: both taxes encourage current consumption and discourage saving

[5]Lawrence Summers, "Taxation and Capital Accumulation in a Life Cycle Growth Model," *American Economic Review*, forthcoming.

for the future. Efficient taxation would, under this condition, actually call for a *negative* tax (that is, a subsidy) on saving for future consumption and thereby offset the distortion of the wage tax on consumption patterns.

The final possibility is that the wage tax discourages present consumption proportionately more than it discourages future consumption.[6] Under this circumstance, efficient taxation implies that a tax on saving will discourage saving and restore more of a balance between present and future consumption spending.

The proper tax treatment of savings from an efficiency perspective clearly depends very much on how taxes on wages affect consumption patterns. Unfortunately, we know very little about this issue. Until further research unravels this mystery, it's difficult to say whether savings should be taxed, exempted from tax, or subsidized.

While there is room for debate on the issue of *whether* savings should be taxed, there is no question but that our *current* tax treatment of savings and investment violates the efficiency rule of similar taxes for similar activities. Differences in taxes applying to savings and investment abound, generating high excess burdens as people take advantage of loopholes to avoid taxes. Some examples:

If an individual buys a home for personal use, no taxes are paid on the implicit rental income; if that same individual sells the home to a corporation and rents it back, the business pays taxes on the rental income. Again, distributed corporate profits are taxed twice (once to the corporation as profits and once to the investor as dividends), but only the corporation pays a tax on undistributed profits. Also, because of the investment tax credit on business equipment, the tax rate on investment in equipment is only about 60 percent of the rate on investment in inventories and factories. Finally, taxes on contributions to employee retirement programs are deferred, while taxes on savings account deposits typically are not.

Several statistical studies show that the wide variation in tax rates on similar activities is indeed a major problem in the tax treatment of savings and investment. Don Fullerton, J. B. Shoven, and John Walley conclude that though half of U.S. savings income is untaxed, the excess burden from disparate rates on different kinds of investment and saving *wipes out any efficiency gains.*[7] They estimate that taxing all personal savings at the same rates and eliminating the corporate income tax (to prevent double taxation of corporate profits) would reduce the national excess burden by about $200 billion. Many of the varied proposals recently under discussion to increase savings and investment by reducing taxes on this kind of saving or accelerating depreciation on that kind of investment would, at best, provide only minimal reductions in excess burdens; they could cause excess burdens to rise. Charles Becker and Don Fullerton studied a number of these proposals.[8] Among their conclusions is this statement:

> The plan most successful in terms of generating new savings and capital formation, is among the least sucessful in terms of (effi-

[6]Perhaps, we try to avoid the wage tax during our *working years* by producing more at home and less on the job—more home-cooked meals, more family entertainment and at-home education, less high-priced convenience foods, movies, and outside piano lessons. Avoid the tax man by avoiding the middle man. With many current demands being met at home, relatively more income is available to be saved. Present consumption expenditures fall relatively more than future expenditures.

[7]Don Fullerton, J. B. Shoven, and John Walley, "Dynamic General Equilibrium Impacts of Replacing the U.S. Income Tax with a Progressive Consumption Tax," National Bureau of Economic Research, Conference Paper No. 55, October 1980.

[8]Charles Becker and Don Fullerton, "Income Tax Incentives To Promote Saving," National Bureau of Economic Research, Working Paper No. 487.

> ciency) gains measures. The simulations serve to emphasize . . . that increased capital is only valuable if used properly.

Indeed, tax breaks for certain investments have become so great under the 1981 tax law that it may soon be profitable to buy a machine just for the tax credits it produces, even if it is left idle.

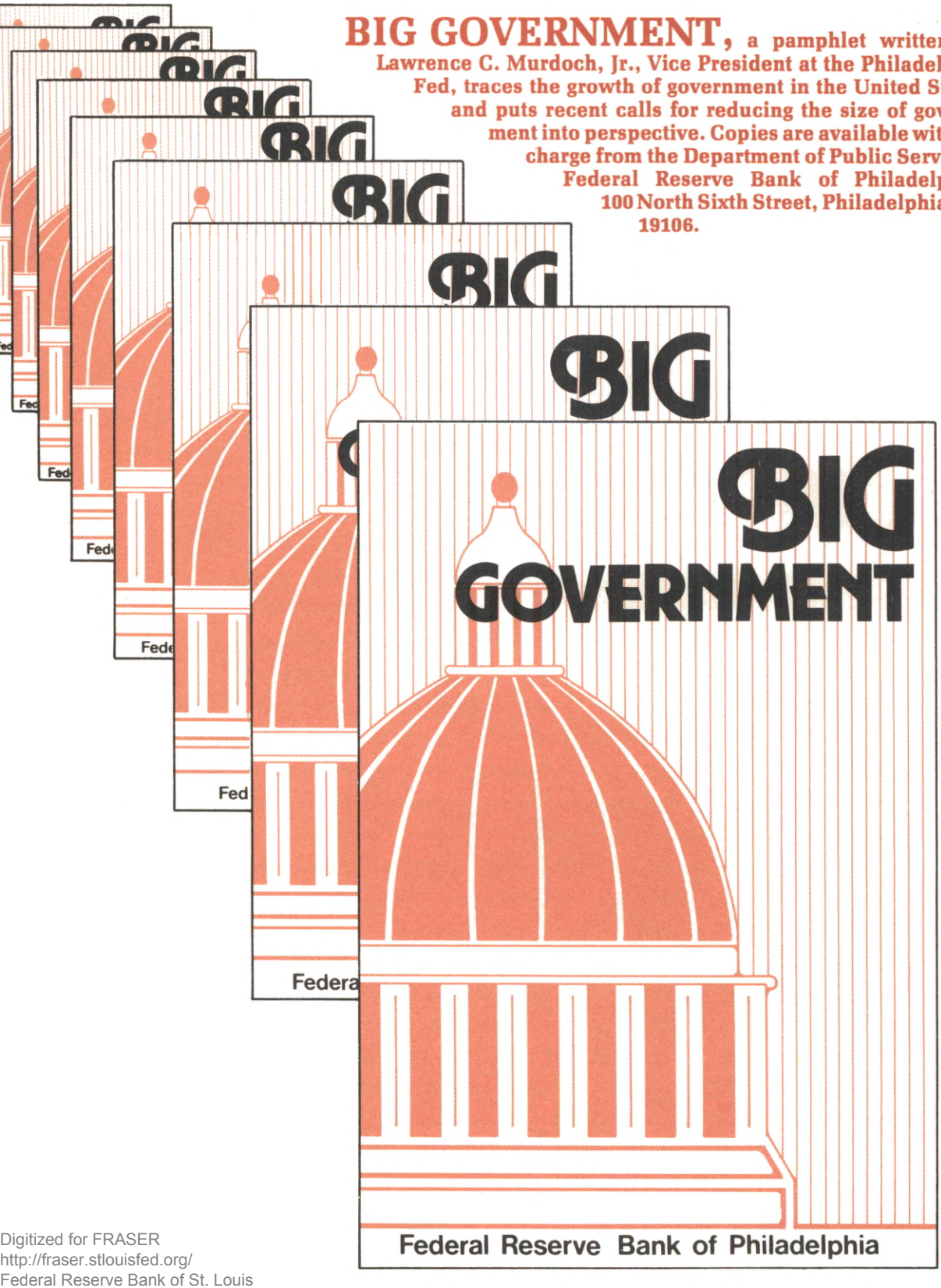
CONCLUSION

A tax system must consider equity if it is to succeed; one that values only efficiency is doomed to failure. But a tax system that ignores efficiency can be quite costly to society. The most popular objectives of tax reform—incentives for work, saving, and investment—often fail to hit the issue of efficiency head-on. At best, they are mere proxies for the true objectives of efficiency—reduction of excess burdens. At worst, they will lead to further inefficiencies.

Economic analysis and research leave many questions about efficient taxation unanswered. Most notable is the issue of whether to tax or subsidize saving, or just leave it alone. But there are some clear cut recommendations for designing a tax system that fall out.

First, very high personal tax rates are highly inefficient. And the top rates can be lowered substantially with no loss in revenue. Equity can be preserved by exempting low income entirely from the tax. A persuasive case can be made that neither fairness nor a requirement for revenue demands a top personal tax rate above 20 or 25 percent.

Second, while we may not know *whether* to tax saving and investment, we do have clear guidelines on *how* to tax them (if they are taxed at all). Here the rule is simple: close tax loopholes by taxing similar activities at similar rates. As a rule of thumb, all investment—whether in private homes, corporate factories, or business machines—should be taxed at the same rate. Otherwise, there will be switches from efficient to inefficient activities. Encouraging only some kinds of investments or saving may not increase them in the aggregate, and even if it does, it may do nothing to reduce the apparently very high excess burden in the U.S. tax system.



BIG GOVERNMENT, a pamphlet written by Lawrence C. Murdoch, Jr., Vice President at the Philadelphia Fed, traces the growth of government in the United States and puts recent calls for reducing the size of government into perspective. Copies are available without charge from the Department of Public Services, Federal Reserve Bank of Philadelphia, 100 North Sixth Street, Philadelphia, PA 19106.

FEDERAL RESERVE BANK OF PHILADELPHIA
BUSINESS REVIEW CONTENTS 1981

BUSINESS REVIEW
Federal Reserve Bank of Philadelphia
100 North Sixth Street
Philadelphia, PA 19106