

Report No. 83-115 E

---

THE EFFECTS OF INDEXATION ON TAX REVENUES AND DISTRIBUTIONAL EFFECTS  
OF THE U.S. INDIVIDUAL INCOME TAX SYSTEM: A HISTORICAL SIMULATION

NORTHERN KENTUCKY UNIVERSITY  
LIBRARY

by  
Donald W. Kiefer  
Specialist in Public Finance  
Economics Division



---

**S  
R  
C**

COMPLIMENTS OF  
**Gene Snyder**

June 9, 1983

GOVERNMENT DOCUMENTS  
COLLECTION

HJ 4625 U.S. B

CONGRESSIONAL  
RESEARCH  
SERVICE  
THE LIBRARY  
OF CONGRESS

The Congressional Research Service works exclusively for the Congress, conducting research, analyzing legislation, and providing information at the request of committees, Members, and their staffs.

The Service makes such research available, without partisan bias, in many forms including studies, reports, compilations, digests, and background briefings. Upon request, CRS assists committees in analyzing legislative proposals and issues, and in assessing the possible effects of these proposals and their alternatives. The Service's senior specialists and subject analysts are also available for personal consultations in their respective fields of expertise.

## ABSTRACT

This report compares the actual tax revenues and distribution of the tax burden under the Federal individual income tax from 1971 to 1981 with estimates of what they would have been under the 1971 tax structure if indexed for inflation and under the 1971 tax structure if left unchanged. Policy implications of the comparison are discussed.



## CONTENTS

ABSTRACT.....	iii
I. INTRODUCTION AND SUMMARY.....	1
II. EFFECTS ON TOTAL TAX REVENUE AND EFFECTIVE TAX RATES.....	7
III. EFFECTS ON DISTRIBUTION OF THE TAX BURDEN.....	15
IV. A FURTHER DISCUSSION OF POLICY IMPLICATIONS.....	23
APPENDIX: METHODOLOGY FOR ESTIMATING EFFECTS OF INDEXED AND UNINDEXED 1971 TAX STRUCTURE IN LATER YEARS.....	27

## TABLES

TABLE 1. Two Measures of Income Increases and Inflation: 1971-1981.....	8
TABLE 2. Individual Income Tax Revenue and Effective Tax Rates: Actual and Estimated Assuming Inflation Indexation and No Tax Changes: 1971-1981.....	11
TABLE A1. Actual and Estimated Tax Liability by Income Bracket: 1971.....	30

## FIGURES

FIGURE 1. Effective Tax Rates under Individual Income Tax; Actual and Estimated Assuming Inflation Indexation and No Tax Changes: 1971-1981.....	10
FIGURE 2. Effective Tax Rates by Income Level in 1975: Actual Tax Struc- ture, Indexed 1971 Tax Structure, and Unindexed 1971 Tax Struc- ture.....	16
FIGURE 3. Effective Tax Rates by Income Level in 1978: Actual Tax Struc- ture, Indexed 1971 Tax Structure, and Unindexed 1971 Tax Struc- ture.....	17
FIGURE 4. Effective Tax Rates by Income Level in 1981: Actual Tax Struc- ture, Indexed 1971 Tax Structure, and Unindexed 1971 Tax Struc- ture.....	18



THE EFFECTS OF INDEXATION ON TAX REVENUES AND DISTRIBUTIONAL EFFECTS  
OF THE U.S. INDIVIDUAL INCOME TAX SYSTEM: A HISTORICAL SIMULATION

I. INTRODUCTION AND SUMMARY

Among the many important and controversial provisions of the Economic Recovery Tax Act of 1981 (ERTA) is the indexation of the Federal individual income tax for the effects of inflation, to begin in 1985. 1/ Under this provision the rate brackets, the zero-bracket amount, and the personal exemptions will be adjusted 2/ by the annual percentage change in the consumer price index for all urban consumers (CPI-U) computed on the basis of the fiscal year (October 1 to September 30) ending prior to the tax year. 3/

This provision has become very controversial, and much attention has been focused on the implications of indexation for growth in Federal tax receipts and for the distribution of the tax burden across income classes. This report attempts to contribute to consideration of these issues by examining what would have happened if indexation had been in effect during a recent historical period. The historical period used in the analysis is 1971 through 1981. The desire was to use a period of approximately a decade; 1971 was chosen as the base

---

1/ See Economic Recovery Tax Act of 1981, P.L. 97-34, Sec. 104.

2/ These adjustments do not correct for the distortion which inflation causes in the measurement of income, that is, the taxation of the nominal return to capital rather than the real (inflation-adjusted) return. This issue is not addressed in this report.

3/ For example, the indexation adjustment for 1985 will be based on the percentage change in the CPI-U from fiscal year 1983 to fiscal year 1984.

year, rather than 1970, because the 1968-1970 surtax was in effect in 1970. The intention was to simulate the indexation of a "typical" tax structure, so the first year after the elimination of the surtax was chosen. The last year for which Federal individual income tax distribution data have been published is 1981.

Before summarizing the results of the analysis two definitional issues need to be addressed. The first involves what is meant by the terms "tax increase" and "tax decrease." In a consideration of long-term growth or trends in the economy, or in a consideration of the overall allocation of economic resources, the "level of taxation" refers to the percentage of income claimed by taxes. In this context, if the effective tax rate (the amount of taxes divided by the amount of income) increases, it would be interpreted as a tax increase, and vice versa. This is a different meaning, however, than is usually attached to the terms "tax increase" or "tax decrease" in a legislative context. "Tax decrease" in the legislative context refers to a change in tax law which will reduce tax liabilities from those imposed under the statute prior to the change.

Under a progressive tax structure the overall average effective tax rate will rise as incomes increase even if no change in tax law has occurred. This increasing effective tax rate would be interpreted as a tax increase in an economic sense, but not in a legislative sense. It is possible, therefore, for taxes simultaneously to increase in the economic sense, but to be reduced in the legislative or statutory sense. This would occur if legislation had been enacted to "cut taxes" but the "tax reduction" were not large enough to offset the increase in effective tax rates resulting from income growth. Since the purpose of indexation is to offset the tax-increasing effects of inflation, the appropriate standard to use in the evaluation of indexation is changes in the



effective tax rate. Hence, in this report the terms "tax increase" or "tax decrease" refer to increases or decreases in effective tax rates. When necessary to avoid confusion, changes in effective tax rates will be distinguished from statutory or legislated tax changes.

The second definitional issue involves the distributional effects of taxation. Some studies of the distributional effects of indexation make much of the effect of inflation in an unindexed tax system of increasing taxes proportionately more on lower-income taxpayers than on upper-income taxpayers. But the primary consideration in studying the distributional effects of taxation is the impact of the tax system on the distribution of income. Similarly, the important distributional issue regarding a change in taxation is whether it makes the distribution of income (aftertax) more or less equal. In this regard, one can easily be misled by focusing on percentage changes in tax liability. This is because at low-income levels, where effective tax rates are low, large proportionate changes in effective tax rates have relatively small effects on aftertax incomes; the opposite is true at upper-income levels. Thus, a tax increase which raises tax liability proportionately more on lower-income taxpayers can, nonetheless, make the tax system more progressive by further reducing the inequality in the aftertax income distribution. <sup>4/</sup> For this reason,

---

<sup>4/</sup> This can easily be shown by example. Assume initially two taxpayers have pretax incomes of \$1,000 and \$10,000 and pay in taxes \$200 and \$5,000 respectively. Since their aftertax incomes are \$800 and \$5,000, the tax system reduces the disparity in their incomes from 10 to 1 to a ratio of 6.25 to 1. Thus, the tax system reduces inequality and would be regarded as progressive. Now assume a tax increase raises taxes \$20 on the low-income taxpayer and \$320 on the upper-income individual. This represents a 10-percent tax increase on the low-income taxpayer and only a 6.4 percent increase for the high-income person. However, aftertax incomes change to \$780 and \$4,680, respectively, a ratio of 6 to 1. Thus, this tax change further reduces income inequality and makes the tax system more progressive.

in assessing the distributional effects of tax changes this study concentrates on the effects on the distribution of aftertax income rather than on proportionate changes in tax liabilities.

Section II of the paper compares the actual revenue produced by the Federal individual income tax over the period 1971 through 1981 with estimates of the revenue which would have been produced by (1) the 1971 tax structure if it were fully indexed for inflation during this period and (2) the 1971 tax if it had remained unchanged. The results are also presented in terms of effective tax rates. The actual effective individual income tax rate increased 25 percent, from 11.2 percent in 1971 to 14.0 percent in 1981. Thus, the several statutory "tax cuts" enacted during this period did not fully offset the tax-increasing effects of rising income in a progressive tax system.

Estimates for the 1971 tax structure indexed for inflation indicate that the effective tax rate would have risen somewhat, peaking in 1980, but would have ended the period only slightly higher than it began (less than a 4-percent increase overall). Tax revenues under the indexed 1971 tax structure would have been very similar to actual tax collections through 1975. After 1975, however, increases in income were allowed to increase the effective tax rate, so actual tax collections rose substantially above those which would have been received from an indexed tax system. Actual tax collections in 1981 were approximately \$50 billion higher than they would have been under the 1971 income tax indexed for inflation.

If the individual income tax structure had been left unchanged from 1971 to 1981 (neither statutory "tax cuts" nor indexation), estimates presented in Section II indicate the effective tax rate would have increased by about 44 percent (from 11.2 percent to 16.1 percent). Hence the actual tax changes which

were implemented during this period offset a little less than half of the automatic tax increase which would have occurred under an unchanged tax system.

Section III of the paper compares the actual distribution of the Federal individual income tax by income level with estimates of the distribution which would have occurred (1) under the 1971 income tax structure if it were fully indexed for inflation and (2) the 1971 tax structure if it had remained unchanged. The focus of the comparison is on the income brackets between \$0 and \$100,000, which contain over 99 percent of all tax returns filed. To facilitate the comparisons the two alternative tax systems were adjusted in a distributionally neutral manner to raise the same amount of revenue as the actual tax structures each year. This enables separating the effects of the different distributions of the tax burdens from the effects of different overall tax levels.

The distribution of the tax burden under the unindexed 1971 tax system would have been more progressive than under the indexed 1971 tax system. Thus, bracket creep (the increase in taxes resulting from inflation under an unchanged tax system) has its largest effects in the upper-middle and upper income ranges (the effect diminishes, however, in the very highest income brackets which are above the range studied in this report). It may be concluded, therefore, that an unindexed tax system increases the progressivity of the tax system for the vast majority of taxpayers. Comparison of the actual tax structure each year with the two alternative systems reveals that the tax revisions enacted during the 1970s may have offset some of this higher progressivity in the upper-income brackets, but they further increased tax progressivity in the lower-income brackets.

Section IV provides a discussion of policy implications. The unindexed individual income tax which we have had has been amended frequently. While it is possible that an indexed tax system would be amended less frequently, this

is not a certain outcome. The revenue increases from the individual income tax during the late 1970s would have required changes in an indexed tax structure. Furthermore, indexed tax systems which have been implemented in the States and in other countries have not remained unchanged. This suggests that the choice of tax systems determines the tax structure which will exist only until the next tax revision; it also determines the "starting point" for the next revision, since tax revision is usually an incremental process. The unindexed tax system automatically produces increasing revenue and increasing progressivity in the distribution of the tax burden as incomes increase. With this as the starting point for tax revision, Congress has passed periodic "tax cuts" which have not fully offset either effect (the higher progressivity was more than offset in the lowest income brackets, however).

Indexation for inflation will not keep the effective tax rate and distribution of the tax burden completely stable. Inflation indexation is consistent with a policy decision to permit automatic increases in the level of taxation and in tax progressivity in response to real income increases, but not in response to inflation. If, on the other hand, the desire is to have a tax system which remains completely stable in terms of the average effective tax rate and the distribution of the tax burden (except for legislated tax changes), then the tax system would have to be indexed for all changes in average income, whatever the source of the change.

An appendix to the paper describes and discusses the methodology used in estimating the revenue and distribution of the tax burden under the indexed and unindexed 1971 tax structure. The methodology is different from that which has been used in previous studies. Like all estimation techniques, it is subject to certain unavoidable errors, which are discussed and taken into account in interpretation of the estimation results.

## II. EFFECTS ON TOTAL TAX REVENUE AND EFFECTIVE TAX RATES

This section of the paper compares the actual revenue produced by the Federal individual income tax over the period 1971 through 1981 with estimates of the revenue which would have been produced by (1) the 1971 tax structure if it were fully indexed for inflation, and (2) the 1971 tax if it had remained unchanged during this period. Relevant background data for this analysis are displayed in table 1; the data report percentage increases in two measures of income and inflation during this period.

Per capita personal income increased by 151.4 percent from 1971 to 1981. Average adjusted gross income (AGI) per tax return increased 106.7 percent over the same period. The gap between the growth rates of these two income measures is attributable to two factors. The number of tax returns increased more rapidly than population during this period (27.8 percent versus 10.7 percent) because of an increase in the proportion of tax returns in the single and head of household categories and a decline in the proportion of joint returns filed. The second factor is that aggregate AGI reported on tax returns increased less than total personal income over this period (164.2 percent versus 178.2 percent) because of the increase in the proportion of personal income received in nontaxable forms, for example, transfers and fringe benefits. 5/

---

5/ For further background on this issue see: Steuerle, Eugene and Micheal Hartzmark, Individual Income Taxation, 1947-79, National Tax Journal, June 1981, pp. 145-159.

The consumer price index increased 124.6 percent from 1971 to 1981. The last column in table 1 shows the annual increases in the "inflation tax indexation factor." This "indexation factor" is the annual increase, on the basis of a year extending from October 1 to September 30 and ending prior to the

Table 1. Two Measures of Income Increases and Inflation: 1971-1981

Year	Percentage Annual Increase in:			
	Per Capita Personal Income a/	Adjusted Gross Income Per Tax Return b/	Consumer Price Index a/	Inflation Tax Indexation Factor c/
1971	5.72%	6.22%	4.30%	4.86%
1972	8.39	6.45	3.30	4.63
1973	10.90	6.60	6.23	3.15
1974	8.71	5.99	10.97	5.03
1975	7.19	6.08	9.14	9.35
1976	8.94	7.99	5.77	9.27
1977	9.62	7.43	6.45	6.18
1978	11.30	8.50	7.66	6.07
1979	11.37	8.97	11.26	6.42
1980	9.46	8.70	13.52	8.94
1981	10.78	8.67 p/	10.37	11.13
1971-81	151.42	106.73 p/	124.57	96.53
1971-76	52.59	37.79	40.56	35.44
1976-81	64.77	50.03 p/	59.77	45.10

a/ Author's calculations based on data in Economic Report of the President, February 1983, Tables B-22, B-28, and B-52.

b/ Author's calculations based on data in Statistics of Income: Individual Income Tax Returns, U.S. Department of the Treasury, for years 1970 to 1980, and SOI Bulletin, U.S. Department of the Treasury, Winter 1982-83 for preliminary 1981 data.

c/ Author's calculations based on data provided by Data Resources, Inc. The percentages represent the annual increase, on the basis of a year extending from October 1 to September 30 and ending prior to the stated year, in the Labor Department's experimental consumer price index with a rental equivalent housing component (CPI-U-X1).

p/ Based on preliminary 1981 data.

stated year, in the Labor Department's experimental consumer price index with a rental equivalence housing component (CPI-U-X1). The inflation indexation adjustment in the individual income tax beginning in 1985 will be based on the annual increase in the CPI-U based on the fiscal year (October 1 to September 30) ending prior to the tax year. 6/ Starting with the January 1983 index, the CPI-U is being calculated with a rental equivalence housing component as a replacement for the previous housing cost component based on long-term fixed-rate mortgage costs. This improvement in the calculation of the price index, or at least the timing of its introduction, was stimulated in part by the need for more accurate inflation data for the purpose of tax indexation. 7/ Prior to introduction of the new CPI-U the Labor Department published an experimental index based on a rental equivalence housing cost, labeled CPI-U-X1. This experimental index provides the best historical guide regarding the performance of the CPI-U and is the basis of the calculation of the inflation tax indexation factor in table 1. The indexation factor increased 96.5 percent from 1971 to 1981. The data in table 1 imply that if the consumer price index as previously calculated had been used to index the individual income tax from 1971 to 1981, the effective tax rate would have declined because the CPI increased faster than average AGI. This is not true, however, for the inflation tax indexation factor.

---

6/ For details see General Explanation of the Economic Recovery Tax Act of 1981, Joint Committee on Taxation, December 31, 1981, pp. 38-40.

7/ Statement of BLS Commissioner Norwood on Planned Changes in Homeownership Component of Consumer Price Index, as reproduced in Daily Tax Report, Bureau of National Affairs, Inc., October 27, 1981, pp. X-1 to X-3.

Table 2 reports actual individual income tax revenue and effective tax rates (revenue divided by total adjusted personal income) <sup>8/</sup> for 1971 through 1981, estimates of revenue and effective tax rates under the 1971 tax structure if indexed for inflation (using the inflation tax indexation factor in table 1), and similar estimates assuming the 1971 tax structure were left unchanged over this period. Figure 1 is a graph of the effective tax rates under the three alternative tax systems. Estimates for the indexed and unindexed 1971 tax system were generated by the methodology described and discussed in the appendix.

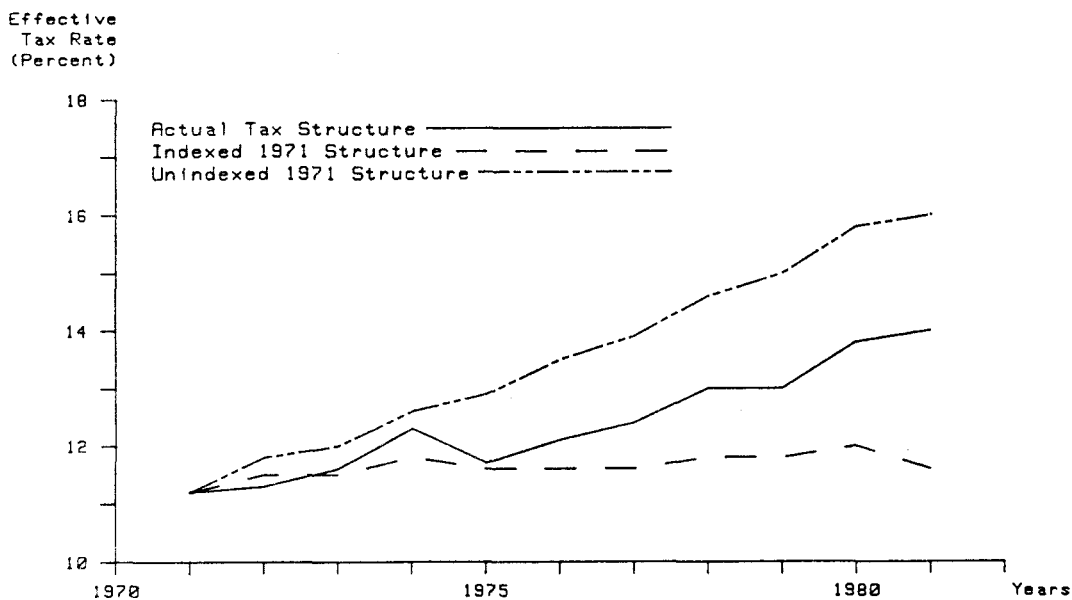


FIGURE 1: Effective Tax Rates Under Individual Income Tax; Actual and Estimated Assuming Inflation Indexation and No Tax Changes: 1971-1981.

<sup>8/</sup> Adjusted personal income is used rather than AGI to provide a more comprehensive income base for the effective tax rate calculation. Adjusted personal income equals personal income less transfer payments, less other labor income, plus personal contributions for social insurance.



Table 2. Individual Income Tax Revenue and Effective Tax Rates:  
Actual and Estimated Assuming Inflation Indexation and No Tax Changes: 1971-1981  
(Revenue in billions of \$; rates in percentages)

Year	Revenue			Effective Tax Rates c/		
	Actual a/	'71 indexed b/	'71 un-indexed b/	Actual	'71 indexed	'71 un-indexed
1971	\$ 85.4	\$ 85.4	\$ 85.4	11.2%	11.2%	11.2%
1972	93.6	95.8	98.0	11.3	11.5	11.8
1973	108.1	107.8	112.0	11.6	11.5	12.0
1974	123.6	119.3	126.8	12.3	11.8	12.6
1975	124.5	123.1	136.7	11.7	11.6	12.9
1976	141.8	135.5	157.7	12.1	11.6	13.5
1977	159.8	150.2	179.9	12.4	11.6	13.9
1978	188.2	170.8	210.6	13.0	11.8	14.6
1979	214.5	196.1	248.6	13.0	11.8	15.0
1980	250.3	217.3	287.0	13.8	12.0	15.8
1981 d/	285.8	237.2	329.7	14.0	11.6	16.1

a/ Source: Statistics of Income: Individual Income Tax Returns, U.S. Department of the Treasury, for years 1971 to 1980, and SOI Bulletin, U.S. Department of the Treasury, Winter 1982-83, for preliminary 1981 data.

b/ Estimated using methodology described in the Appendix.

c/ Effective tax rates equal tax revenue divided by adjusted personal income (personal income less transfer payments, less other labor income, plus personal contributions for social insurance). Adjusted personal income is calculated from data in Survey of Current Business, U.S. Department of Commerce, various issues.

d/ Based on preliminary 1981 data.

The actual effective individual income tax rate increased 25 percent, from 11.2 percent in 1971 to 14.0 percent in 1981. It increased in every year but two. In 1975 it decreased as a result of the combined effects of the 1974-75 recession and the statutory tax cuts in the Tax Reduction Act of 1975. In 1979 the actual effective tax rate remained constant as a result of the statutory tax reductions in the Revenue Act of 1978. Other statutory tax cuts implemented during this period (1972, 1976, 1977, 1978, 1981) did not fully offset the tax-increasing effects of increasing income in a progressive tax system.

Estimates of the effective tax rate under the indexed 1971 tax system indicate that the rate would have risen somewhat, peaking in 1980, but would have ended the period only slightly higher than it began (less than a 4 percent increase overall). Interestingly, actual tax cuts (reductions in the effective tax rate) would have occurred in 1975 and 1981, both recession years. This may assuage the fear of some that tax indexation may be destabilizing because it would provide tax cuts in the years when inflation is the highest and economic restraint would be in order. Because of the lag built into the application of the inflation tax indexation factor under the indexation system enacted in 1981, the indexation-induced tax cuts come in years of slower income growth which follow years of high inflation, which are most likely to be recession years. <sup>9/</sup>

The tax revenues under the actual tax structure and the indexed 1971 system are very similar through 1975. From 1971 through 1975 actual tax revenues were

---

<sup>9/</sup> However, even a tax system which maintains relatively constant effective tax rates over the cycle is destabilizing compared to a tax system with strong "automatic stabilization" properties. See, Kiefer, Donald W., The Automatic Stabilization Effects of the Federal Tax Structure, in The Business Cycle and Public Policy, 1929-80, Joint Economic Committee, U.S. Congress, November 28, 1980, pp. 172-208.

a total of only about \$4 billion higher than they would have been under an indexed 1971 tax system, and in 1975 the two systems would have yielded nearly identical revenues. After 1975, however, increases in income were allowed to increase the effective tax rate without being fully offset by statutory tax cuts. By 1981 income tax revenues were nearly \$50 billion higher than they would have been under the indexed 1971 tax structure; the cumulative total of higher revenues under the actual tax system compared to the indexed 1971 system from 1976 through 1981 exceeded \$130 billion. 10/

These revenue differences, of course, have different implications depending on one's view of the political process. Proponents of tax indexation generally argue that the lower revenue growth of an indexed tax system during a period like 1975 to 1981 would restrain growth in Government spending. Opponents maintain, on the other hand, that if indexation were in place, statutory tax increases would have to be adopted to raise the revenue required for the level of expenditures which was actually financed. Indexation proponents also argue that if Government spending is to be increased (as a percent of GNP), then statutory tax increases ought to be required, rather than being able to rely on automatically rising revenues under an unindexed tax structure.

The estimates in table 2 also imply that if the individual income tax structure had been left unchanged from 1971 to 1981 the effective tax rate would have increased by about 44 percent (from 11.2 percent to 16.1 percent).

---

10/ In this regard the late 1970s apparently was an unusual period. Earlier estimates indicate that from 1960 through 1975 the legislated tax reductions more than offset the tax-increasing effects of inflation. See Sunley, Jr., Emil M. and Joseph A. Pechman, Inflation Adjustment for the Individual Income Tax, Table 5-3, p. 159, in Henry J. Aaron, Ed., Inflation and the Income Tax, the Brookings Institution, 1980, pp. 340.

Hence, the actual tax changes which were implemented during this period offset a little less than half of the automatic tax increase which would have occurred under an unchanged tax system. The estimates indicate that had no tax revisions been adopted since 1971, individual income tax revenues would have been approximately \$44 billion higher in 1981 than actual collections.

### III. EFFECTS ON DISTRIBUTION OF THE TAX BURDEN

This section compares the actual distribution of the Federal individual income tax by income level with estimates of the distributions which would have occurred under (1) the 1971 income tax structure if it were fully indexed for inflation and (2) the 1971 tax if it had remained unchanged. The distributions are compared for 1975, 1978, and 1981. The focus of the comparison is on the overall distribution and on average tax rates by income level. 11/

Estimated effective tax rates (tax liability divided by adjusted gross income) under the three alternative tax structures are graphed in figures 2, 3, and 4 for 1975, 1978, and 1981 respectively. Panel A in each figure shows effective tax rates under each tax system with no adjustments; panel B shows effective tax rates under the tax systems adjusted to raise the same amount of revenue as was actually raised during that year (the adjustments are described below). The estimates were derived using the procedure described and discussed in the appendix. 12/

---

11/ There are other distributional issues surrounding the indexation question which are not incorporated into this analysis. For example, during an inflationary period if the tax system is not indexed those taxpayers who itemize deductions will generally experience smaller tax increases than those who do not itemize. This is not true if the tax system is indexed. Thus, indexation has implications regarding the distribution of the tax burden both among taxpayers at different income levels (vertical equity) and also among taxpayers at the same income level (horizontal equity).

12/ As discussed in the appendix, the estimation procedure is less accurate for income levels above \$100,000, which is the reason for concentrating on the income brackets below this level in the distributional analysis. Over 99 percent of tax returns filed report AGI of less than \$100,000.

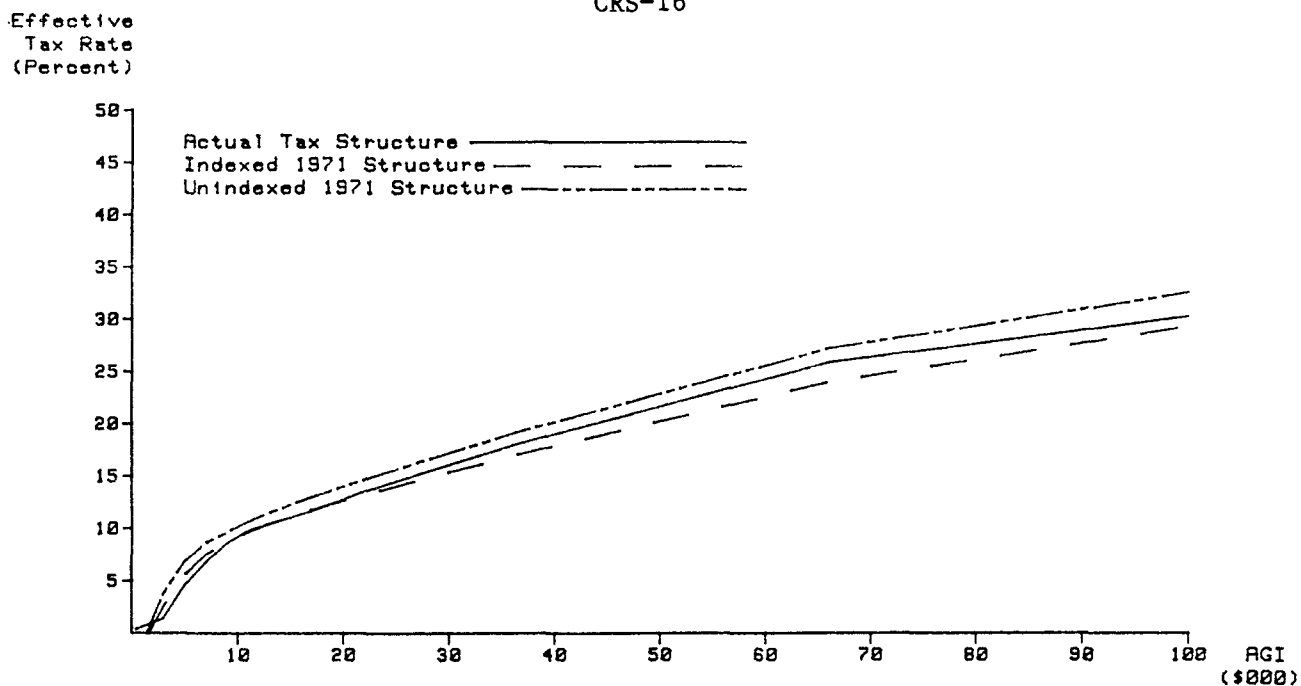


FIGURE 2A: Effective Tax Rates by Income Level in 1975: Actual Tax Structure, Indexed 1971 Tax Structure, and Unindexed 1971 Tax Structure

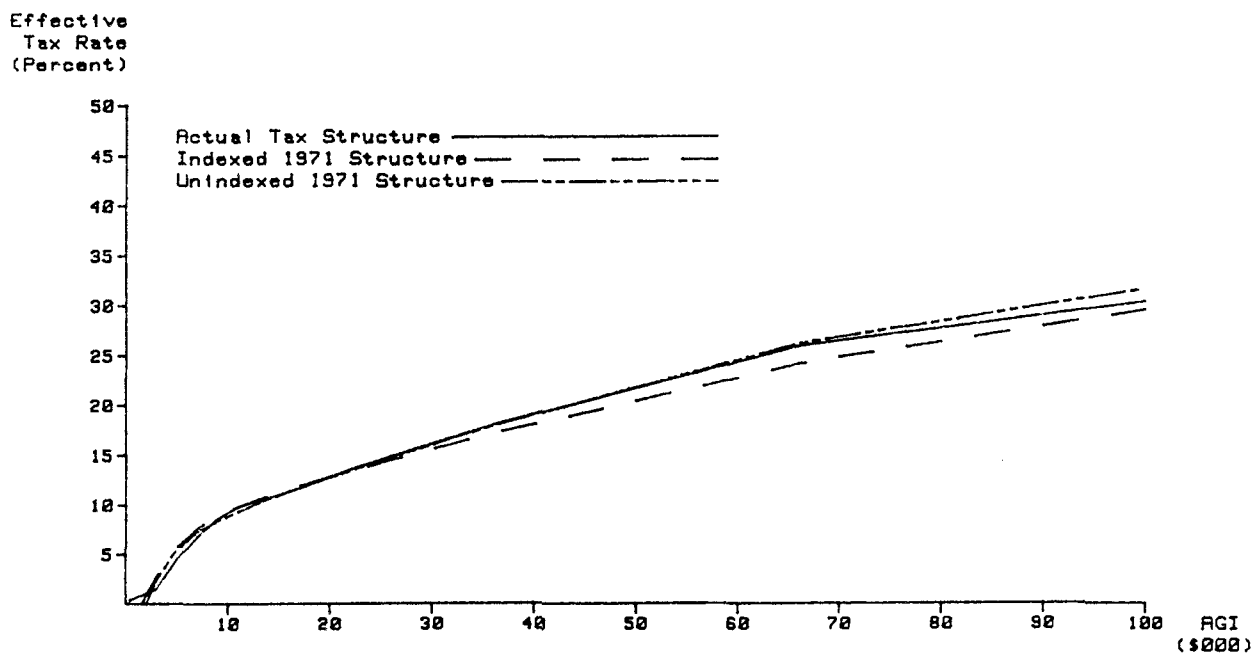


FIGURE 2B: Effective Tax Rates by Income Level in 1975: Actual Tax Structure, Indexed 1971 Tax Structure, and Unindexed 1971 Tax Structure, Adjusted to Raise Equal Total Revenue

Effective  
Tax Rate  
(Percent)

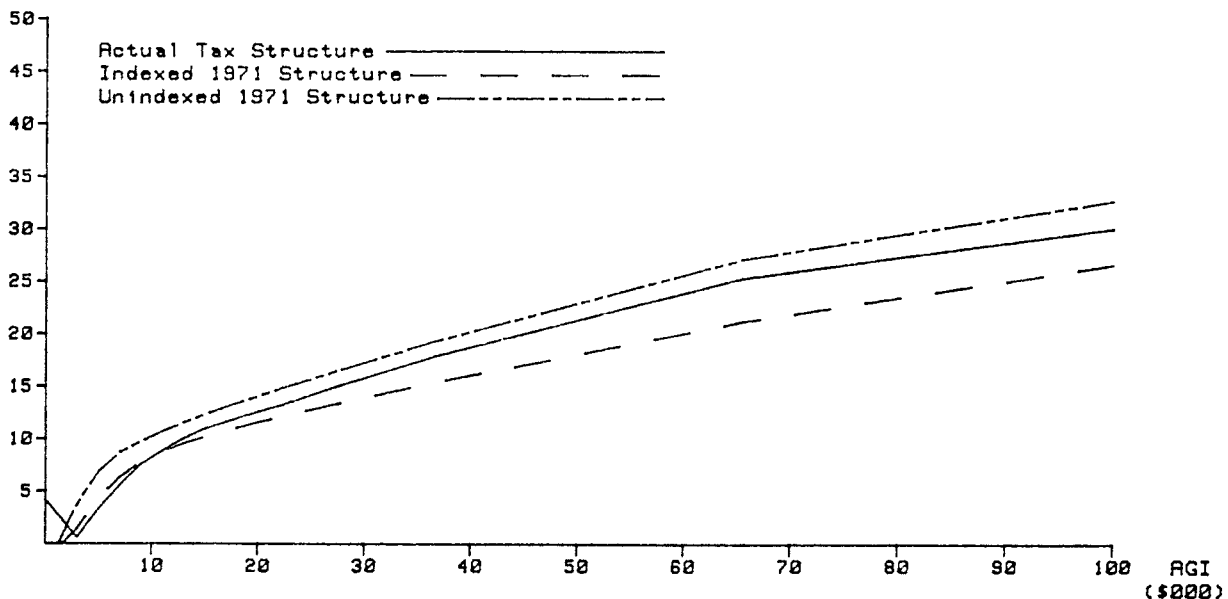


FIGURE 3A: Effective Tax Rates by Income Level in 1978: Actual Tax Structure, Indexed 1971 Tax Structure, and Unindexed 1971 Tax Structure

Effective  
Tax Rate  
(Percent)

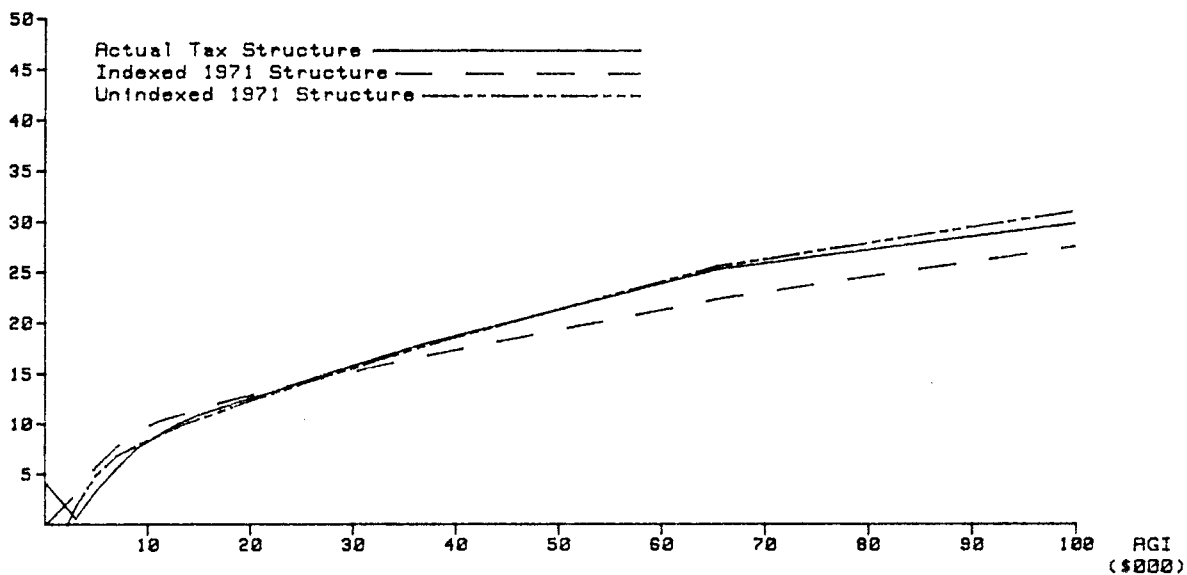


FIGURE 3B: Effective Tax Rates by Income Level in 1978: Actual Tax Structure, Indexed 1971 Tax Structure, and Unindexed 1971 Tax Structure, Adjusted to Raise Equal Total Revenue

Effective  
Tax Rate  
(Percent)

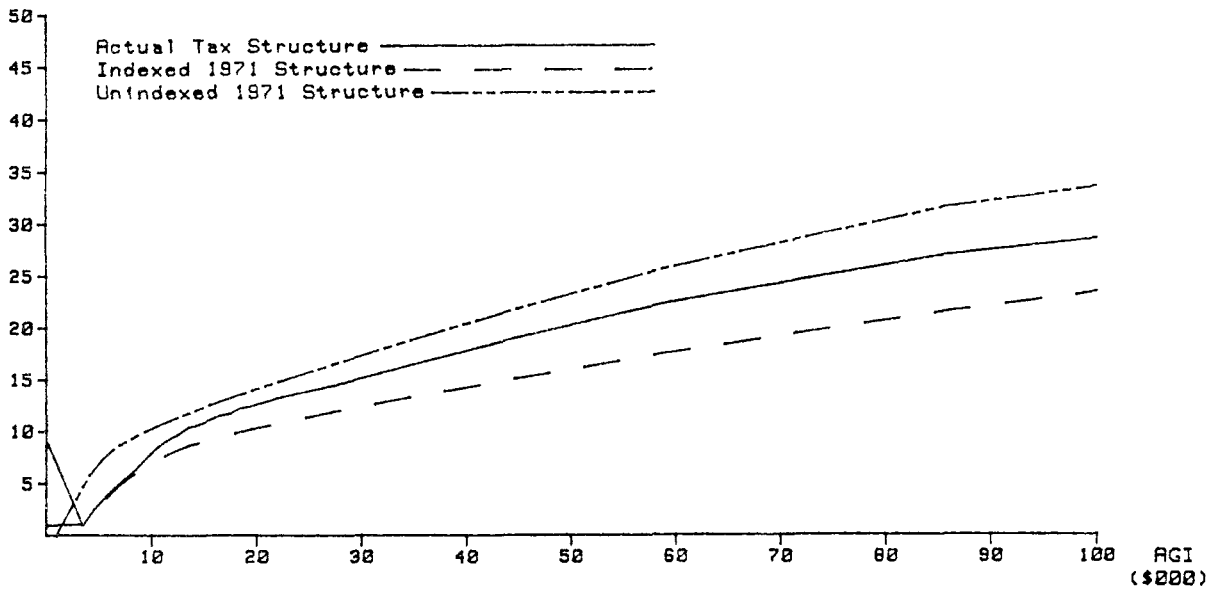


FIGURE 4A: Effective Tax Rates by Income Level in 1981: Actual Tax Structure, Indexed 1971 Tax Structure, and Unindexed 1971 Tax Structure

Effective  
Tax Rate  
(Percent)

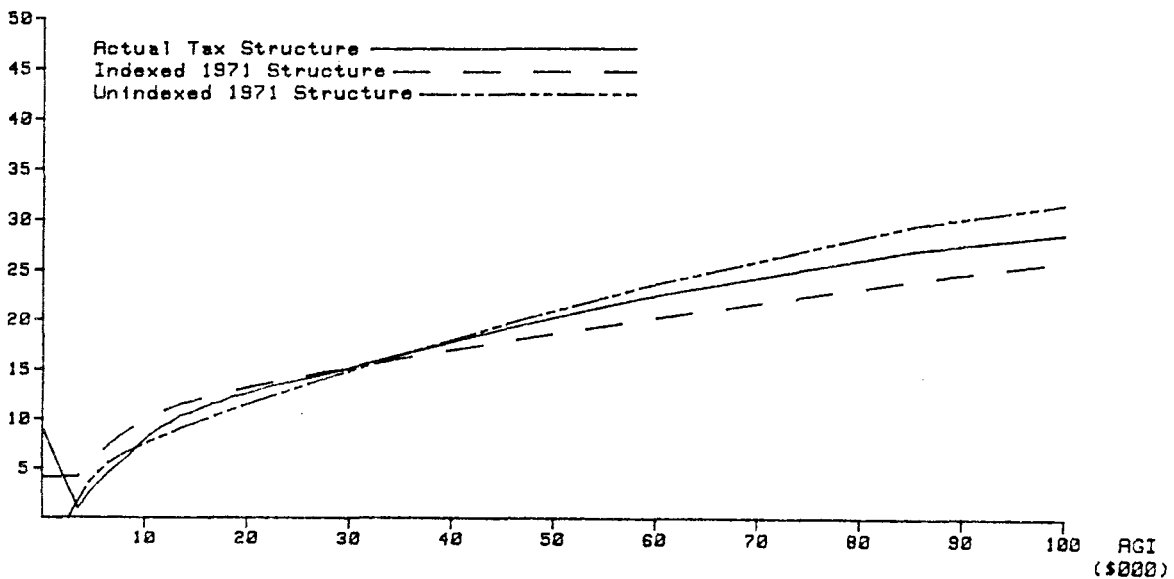


FIGURE 4B: Effective Tax Rates by Income Level in 1981: Actual Tax Structure, Indexed 1971 Tax Structure, and Unindexed 1971 Tax Structure, Adjusted to Raise Equal Total Revenue



The A panels in the three figures tell somewhat similar stories for each year. Average effective tax rates under the tax system imposed each year rise rapidly in the lowest income levels to the neighborhood of 10 percent at an income of \$10,000 to \$15,000, <sup>13/</sup> and then rise gradually to reach a level of approximately 30 percent at the \$100,000 income level (closer to 28 percent in 1981). At the very highest income levels, beyond the income range shown in the graphs, effective tax rates rise to levels between 40 percent and 50 percent, depending on the year and the income level.

The unamended 1971 tax structure would have imposed higher average effective tax rates across the income ranges shown in the figures. Not surprisingly, the gap between the actual effective rates and those under the unchanged 1971 system increases with time as the difference in aggregate revenues under the two systems also increases (see table 2). The indexed 1971 tax system would have imposed slightly higher taxes than the actual tax system at income levels below about \$10,000 in 1975 and 1978, and lower taxes at higher income levels. In 1981 the indexed 1971 tax system would have imposed average taxes which were less than or equal to the actual taxes across all income levels shown in the graphs.

The lines in panel A of each figure are useful in assessing the differences between actual average effective tax rates and those under the two alternative

---

<sup>13/</sup> The graphs for 1978 and 1981 show effective tax rates first declining and then rising in the very lowest income brackets. Rates at these low levels are difficult to interpret, however, since they are affected by taxpayers who report low or negative incomes but pay taxes, primarily under the minimum tax on tax preferences. For purposes of the graphs the lowest income classes have been aggregated so that no income class shows a negative income.

tax systems. They are less useful, however, in studying the distributional differences between the tax structures. This is because the three tax systems in each year would raise different amounts of revenue, and it is difficult to separate the effects of the different distributions of the tax burdens from the effects of the different overall tax levels. To enable focusing on the distributional differences, the two alternative tax systems have been adjusted to raise the the same revenue as the actual tax structure each year, and the adjusted effective tax rate lines are graphed in panel B of each figure.

In analyzing the distributional consequences of the tax system, the focus is on the effects of taxes on the distribution of aftertax income--that is, whether the tax structure makes this distribution more or less unequal. Accordingly, a distributionally neutral tax change would be one which is proportional to aftertax income, across all income levels. This is the type of adjustment that has been applied to the alternative tax structures to attain the lines in panel B of the graphs. The result is lines which show effective tax rates for tax systems which would raise the same amount of total tax revenue, but which would leave the relative distribution of aftertax income the same as the unadjusted tax systems. Thus, the only differences between the three tax systems in each panel B graph are their distributional effects. Again, the relationships in the three graphs are similar, with the differences becoming more pronounced with the passage of time.

The distribution of the tax burden under the unchanged (but adjusted) 1971 tax system is more progressive than under the indexed 1971 tax system. That is, under the equal-revenue versions of the tax systems, effective tax rates are lower in the lower-income brackets and higher in the upper-income brackets under

the unchanged tax system than under the tax system indexed for inflation. <sup>14/</sup>  
An alternative way of stating the same point is that bracket creep (the increase in taxes resulting from inflation under an unchanged tax system) has its largest effects in the upper-middle and upper income ranges (the effect diminishes, however, in the very highest income brackets beyond the range of the graphs). <sup>15/</sup>

The actual tax system in effect each year was more progressive than the indexed 1971 tax system would have been. In the graphs, the actual tax system appears to be less progressive than the unindexed 1971 tax structure at income levels above \$10,000 to \$15,000. However, as discussed in the appendix, the procedure used in this study to estimate tax liabilities under the 1971 tax system in later years has a slight bias which makes it appear somewhat too progressive. As a consequence, the apparent differences in the upper income brackets between the effective tax rates under the actual tax system and under the unchanged 1971 tax system, particularly in 1975 and 1978, could be due to estimation error. At the lower-income levels the actual tax structure is less progressive each year than the unamended 1971 tax system would have been (the estimation bias reinforces this conclusion).

---

<sup>14/</sup> As discussed in the appendix, there is a slight bias in the estimation procedures used in this analysis which causes underestimation of tax liabilities in the lower-income brackets and overestimation in the upper brackets. The bias is more pronounced in estimates for the unindexed 1971 tax system; however, correcting the estimation errors would not change the relationships described here.

<sup>15/</sup> For similar results derived using a different methodology see: Esenwein, Gregg A., Elimination of Federal Income Tax Indexation: Background and Analysis, Report No. 83-41E, Congressional Research Service, Library of Congress, March 10, 1983, especially figure 1, p. 20.

Since the indexed tax system may be regarded as neutral with respect to the effects of inflation, it may be concluded that an unindexed tax system increases the progressivity of the tax system for the vast majority of taxpayers. The tax revisions enacted during the 1970s may have offset some of this increased progressivity in the upper-income brackets, but they further increased tax progressivity in the lower-income brackets.

Just as was the case regarding the effects of inflation and indexation on total tax revenues, the effects on the distribution of the tax burden have different implications depending on one's views and objectives. Those who favor moving toward a more progressive tax system might prefer leaving the tax system unindexed because bracket creep has this effect. Furthermore, the periodic tax revisions adopted during the 1970s, which were at least partially in response to the higher taxes resulting under the unindexed tax system, further increased tax progressivity at least in the lowest tax brackets. <sup>16/</sup> Those who favor a more stable distribution of the tax burden, one which does not automatically become more redistributive in response to inflation, would be likely to favor tax indexation.

---

<sup>16/</sup> This is not true of the tax revision enacted in 1981. See: Esenwein, Gregg A., Distributional Effects of the Economic Recovery Tax Act of 1981: Implications for Indexation, Report No. 83-3E, Congressional Research Service, Library of Congress, January 4, 1983. 30 p.

#### IV. A FURTHER DISCUSSION OF POLICY IMPLICATIONS

The choice of whether or not to index the tax system for inflation is sometimes discussed as if it involves implementing one of two alternative systems--a constant statutory tax structure, whose effects on taxpayers change with inflation, or an indexed tax structure, which changes structurally with inflation but maintains constant effects--and living with it for a long period. This view is at least partially misleading. The unindexed tax system which we have had has not remained unchanged; it has been amended frequently. While it is possible that an indexed tax system would be amended less frequently, this is not a certain outcome. The revenue increases from the individual income tax during the late 1970s would have required changes in an indexed tax structure. Furthermore, indexed tax systems which have been implemented in the States and in other countries have not remained unchanged.

This suggests that the choice of tax systems determines the tax structure which will exist for a short period of time (until the next tax revision) and also determines the "starting point" for the next revision. Tax revision is usually an incremental process; amendments are made to the existing tax system rather than writing an entirely new structure. Thus, different political interests may prefer different starting points for the next round of tax revisions, as well as different tax systems in the interim. As the analysis in the previous sections indicated, the unindexed tax system produces increasing revenue and increased progressivity in the distribution of the tax burden.

With this as the starting point for tax revision, Congress has passed periodic "tax cuts." These tax revisions, however, did not fully offset the effects of inflation on the tax system, so that the overall average effective tax rate (and tax revenue) increased, and so did progressivity.

An indexed tax system would not automatically increase revenues and progressivity in response to inflation. Thus, the starting point for the next tax revision would be a tax system with lower revenue and less progressivity than under an unindexed tax system. Of course, it is possible that the tax revision process could produce the same result regardless of the starting point; an indexed tax system could be amended periodically to increase tax revenues and increase progressivity so that, except for the interim between tax revisions, the long-term average level and distribution of taxes would be the same as if indexation did not exist. Proponents of indexation, however, believe that this would not be the case, that tax revisions with an indexed system as a starting point would produce tax structures which have lower effective tax rates and a more stable distribution of the tax burden.

Of course, it should be realized that, contrary to some rhetoric on the subject, indexation for inflation will not keep the effective tax rate and distribution of the tax burden completely stable. The higher effective tax rate and greater progressivity are caused by increasing income, whether inflation-induced or real. Inflation indexation eliminates only the effects of inflation. During the recent past, inflation has had far larger effects on the tax structure than real income growth. But during a period of low inflation, real income growth could have effects equal to or greater than inflation.

Inflation indexation is consistent with a policy decision to permit automatic increases in the level of taxation and in tax progressivity in response

to real income increases, but not in response to inflation. If, on the other hand, the desire is to have a tax system which remains completely stable in terms of the average effective tax rate and the distribution of the tax burden (except for legislated tax changes), then the tax system would have to be indexed for changes in average income, not inflation. 17/ Such a system of indexation would maintain a relatively constant tax distribution because, at least in the U.S., the distribution of income has remained relatively constant despite substantial increases in average income. 18/

---

17/ For such a proposal see: Tanzi, Vito, A Proposal for a Dynamically Self-Adjusting Personal Income Tax, Public Finance, No. 4, 1966, pp. 507-519. This type of indexation would clearly be appropriate only for the rate brackets, deductions, exemptions, and other fixed dollar amounts in the tax code (type 1 indexation). It would not be appropriate for indexation of the income from capital assets (type 2 indexation).

18/ See Blinder, Alan S., The Level and Distribution of Economic Well-Being, in Martin Feldstein, Ed., The American Economy in Transition, University of Chicago Press, Chicago, 1980, pp. 415-479.





APPENDIX: METHODOLOGY FOR ESTIMATING EFFECTS  
OF INDEXED AND UNINDEXED 1971 TAX STRUCTURE IN LATER YEARS

This appendix describes and discusses the methodology used in this paper to estimate tax liabilities under the indexed and unindexed 1971 tax structure in later years. Ideally, such estimates should be based on data for large samples of taxpayers for each year under study; for each taxpayer for each year the data should include all items required on the 1971 tax return. Estimates such as those used in this study could then be derived by calculating tax liability for each taxpayer each year under the 1971 rules and the 1971 law indexed for inflation. Unfortunately, such a data set is not available, so less precise means have had to be employed.

Previous studies have generally estimated total revenue under an indexed tax system using a single equation which depends on the estimated increase in total real adjusted personal income and an estimated tax elasticity. 19/ Estimates of the distributional effects of indexation have generally been derived by working with taxpayer data from a single base year and "expanding" or "shrinking" the data to represent taxpayers in the later or earlier years. 20/

---

19/ See, for example, Sunley, Jr., Emil M. and Joseph A. Pechman, Inflation Adjustment for the Individual Income Tax, Appendix Table 5-7, footnote a, p. 165, in Henry J. Aaron, Ed., Inflation and the Income Tax, the Brookings Institution, 1980, pp. 340.

20/ For example, the Brookings Tax File data are based on a sample of 1972 Federal income tax returns. The Treasury tax model is based on a sample of 1973 tax returns. The data in the samples are adjusted to attempt to represent taxpayers in later years.

These procedures have obvious limitations because of the difficulties involved in adjusting data for one year to represent another year.

This study used a different methodology which is conceptually simpler but is not free from its own set of limitations (discussed below). The methodology relies on the observed stable relationship across tax brackets between average tax liability and average income under an unchanging tax structure. <sup>21/</sup> The procedure involves fitting an equation to average tax liability and income data across the tax brackets for 1971. The equation is then used, along with actual tax return data for subsequent years, to estimate tax liabilities under the 1971 tax structure (both aggregate and by income class) for the subsequent years.

After trying several equation forms it was determined that the best fit could be obtained by estimating tax liability expressed as a quadratic function of adjusted gross income. Thus, the following equation was to be estimated:

$$T_i = B_1 + B_2 y_i + B_3 y_i^2 + B_4 y_i^3 + B_5 y_i^4 + e_i \quad (1)$$

where  $T_i$  is average tax liability in income class  $i$ ,  $y_i$  is average adjusted gross income in income class  $i$ ,  $B_1$  through  $B_5$  are coefficients, and  $e_i$  is the error term. The actual equation which was estimated, however, was a transformation of equation 1.

The independent variable in this analysis, average adjusted gross income, ranges from very low to very high values. In this circumstance, the standard least squares regression technique, which minimizes the sum of the squared absolute deviations between the estimates and the actual data, will permit very large percentage errors in the upper brackets. For present purposes, minimizing

---

<sup>21/</sup> See, for example, Snowbarger, Marvin and John Kirk, A Cross-Sectional Model of Built-in Flexibility, 1954-1969, National Tax Journal, June 1973, pp. 241-249.

percentage errors across all income brackets is more appropriate. This can be achieved by estimating the following transformed version of equation 1:

$$\frac{1}{T_i} = \frac{1}{B_1} - \frac{B_2}{B_1} \cdot \frac{y_i}{T_i} - \frac{B_3}{B_1} \cdot \frac{y_i^2}{T_i} - \frac{B_4}{B_1} \cdot \frac{y_i^3}{T_i} - \frac{B_5}{B_1} \cdot \frac{y_i^4}{T_i} - \frac{e_i}{B_1} \quad (2)$$

When the estimates from this equation are transformed back into the form of equation 1, they yield an estimating equation in which the expected standard deviation of the error is proportional to the independent variable. 22/

In performing the regressions, it was found that a single equation could not be fit satisfactorily across all of the income brackets. The selected approach was to fit separate equations to three ranges of the income brackets and to splice the equations together. 23/ The resulting estimation equations are as follows: 24/

<u>Income Brackets</u>	<u>Equation</u>
\$0 - \$7,000	$T_i = 4.121 - 0.048y_i + 3.706 \times 10^{-5} y_i^2 - 3.386 \times 10^{-9} y_i^3 + 1.194 \times 10^{-13} y_i^4$ (3)
7,000 - 100,000	$T_i = -154.565 + 0.087y_i + 3.116 \times 10^{-6} y_i^2 - 6.026 \times 10^{-17} y_i^4$ (4)
100,000 and above	$T_i = -8108.138 + 0.437y_i$ (5)

22/ This error pattern is heteroscedastic in terms of the original equation. The transformation to equation 2 is obtained by dividing through equation 1 by T (to which we want the standard deviation of the errors to be proportional) to correct for heteroscedasticity, and dividing by B to make the equation estimable. See, for example, the discussion in Rao, Potluri, and Roger LeRoy Miller, Applied Econometrics, Wadsworth Publishing Company, Belmont, California, 1971, pp. 77-80.

23/ The equations were fit to wider ranges of the income distribution than they are used for in generating the tax estimates to increase the degrees of freedom in the regression procedure and minimizing estimation errors at the income range end points.

24/ The actual regression equations in their transformed state, which are not reported here, had R of .9997, .9929, and .9749, respectively. All coefficients were significant at the .01 level.

The results of applying the estimation procedure to 1971 individual income tax data are shown in table A1. As indicated at the bottom of the table, the weighted average error of the estimates is less than 1 percent. The estimation

Table A1: Actual and Estimated Tax Liability by Income Bracket: 1971

Income Bracket (1)	Average Adjusted Gross Income (2)	a/ Average Tax Liability (3)	Estimated Tax Liability (4)	b/ Percentage Error of Estimate (5)
1	\$ 45.79	\$ 2.00	\$ 2.00	0.07 <u>c/</u>
2	1,489.24	4.25	4.25	0.05
3	2,482.27	67.34	66.12	-1.82
4	3,500.99	158.76	163.05	2.70
5	4,498.70	277.60	279.00	0.51
6	5,491.65	412.46	406.26	-1.50
7	6,496.48	544.03	541.08	-0.54
8	7,484.71	673.90	668.53	-0.80
9	8,497.11	816.73	806.57	-1.24
10	9,495.58	964.69	948.91	-1.64
11	10,497.07	1,088.67	1,097.86	0.84
12	11,494.16	1,233.90	1,252.29	1.49
13	12,485.43	1,396.25	1,411.86	1.12
14	13,493.02	1,570.76	1,580.22	0.60
15	14,492.10	1,744.83	1,753.27	0.48
16	17,092.83	2,232.48	2,232.16	-0.01
17	22,090.96	3,274.11	3,266.41	-0.24
18	27,175.15	4,450.03	4,469.05	0.43
19	37,268.38	7,328.13	7,287.26	-0.56
20	65,963.48	18,073.60	17,980.09	-0.52
21	130,844.24	46,825.18	49,135.95	4.93
22	283,287.43	118,663.13	115,829.53	-2.39
23	671,954.38	313,088.50	285,870.53	-8.69
24	2,086,395.24	957,166.48	904,685.51	-5.48
Average absolute value of percentage error				
Unweighted				1.58
Weighted by Total Tax Payment				0.92

a/ Calculated from data in Statistics of Income: 1971, Individual Income Tax Returns, U.S. Department of the Treasury, 1973.

b/ Estimated using equations 3, 4, and 5 in Appendix text.

c/ Actual average tax liabilities and estimates were carried out to 12 significant digits. Thus, a percentage error may be indicated even though the two-digit estimate shown is exact.

procedure works less well in the highest income brackets, those above \$100,000 of income. Because these brackets have a very small percentage of all tax returns filed, however, the estimation errors in these brackets introduce only a very small error in the aggregate tax liability estimates. Because of the larger errors in these brackets, however, the distributional analysis in section III concentrates on the income brackets below \$100,000.

To estimate tax liabilities under the unamended 1971 tax structure in later years, the tax return data for the later years were used directly in equations 3, 4, and 5. To estimate tax liabilities under the indexed 1971 tax structure, the following equation was used:

$$T_i = I \cdot f\left[\frac{y_i}{I}\right] \quad (6)$$

where  $f\left[\frac{y_i}{I}\right]$  represents the estimating equations (3, 4, and 5), and  $I$  represents the inflation tax indexation factor. For example, from 1971 to 1975 the inflation indexation factor increased 23.95 percent; for 1975  $I$  therefore equals 1.2395. This estimation procedure implicitly assumes that the indexation scheme incorporates complete type 1 indexation; that is, that all fixed dollar amounts in the tax code are indexed. The indexation of the Federal individual income tax adopted in 1981, however, affects only the rate brackets, the zero bracket amount, and the personal exemptions. Indexing these items, however, differs only slightly from complete type 1 indexation in terms of the total revenue effects.

The relative accuracy of this estimation procedure obviously depends on some important assumptions. Essentially, the procedure assumes that if the tax system were not changed structurally, the relationship between adjusted gross income and tax liability at each income level would remain constant. As

indicated previously (see footnote 3), there is research which tends to verify such a constant relationship over past periods. The more important elements of this relationship may be examined for the period under study, however, to ascertain the degree of validity of the underlying assumption.

There are two principal changes which would alter the relationship between average AGI and average tax liability even if the statutory tax structure remained unchanged. The first would be a change in the proportion of the different types of tax returns filed, and the second would be a change in the amount of deductions claimed on the tax returns. Both of these factors changed somewhat during the period under study.

Because the data used in the analysis are for all tax returns--including joint returns, separate returns, returns of heads of households, returns of surviving spouses, and returns of single persons--and because different tax rate structures apply to the different types of tax returns, if the proportions of the various types of returns shifted during the estimation period the relationship between average AGI and average tax liability also could have shifted. Conceptually, this difficulty could be overcome by estimating tax liabilities separately for each type of tax return and then aggregating the results. This approach not only would be computationally more cumbersome, but is not possible for years after 1978 because the tax return data are no longer published by type of return.

There was, indeed, a shift in the proportion of types of tax returns filed between 1971 and 1980 (1981 data on types of tax returns are not yet available). The most significant shift was a reduction in the proportion of joint returns filed and an increase in the proportion of single returns. In 1971 joint returns constituted 57.3 percent of the total and single returns were 34.5 percent; by 1980 the proportions had shifted to 48.2 percent and 41.7 percent, respectively.

This shift would increase the effective tax rate because the tax rate schedule for single taxpayers imposes higher effective tax rates than the schedule for joint returns at comparable income levels. Most of the shift in the proportion of the types of tax returns occurred in the lower income brackets because average adjusted gross income on single returns is substantially lower than on joint returns (\$9,145 versus \$25,371 in 1980). Rough calculations indicate that correcting for this factor in the 1978 estimates for the unamended 1971 tax system would require increasing the estimated effective tax rates by about 1.5 percent at the \$5,000 AGI level, 1.0 percent at \$10,000, 0.5 percent at \$15,000, and no correction would be required at income levels of \$20,000 or above.

The required adjustment would be substantially smaller in the estimates for the indexed 1971 tax system because the joint/single return ratio in any given AGI bracket in a later year (say 1978) differs less from that ratio in the lower AGI brackets in 1971 (which are relevant in calculating the indexed tax liability) than in the same tax bracket in 1971. This is because in any given year the proportion of joint returns is uniformly higher in higher AGI brackets. This pattern also implies that the procedure used for estimating tax liabilities under the indexed tax system (see equation 6) overstates tax liability somewhat because the lower income bracket to which an upper-bracket tax liability is indexed will have a higher proportion of single returns. This is a larger factor in the lower brackets (below \$20,000) where joint returns increase rapidly as a proportion of the total. Thus, for the indexed tax system the bias in the estimating procedure due to a higher proportion of single returns in later years tends to be offset by the bias due to a higher proportion of single returns in the lower income brackets.

The second type of change which could have occurred over the estimation period and would have altered the relationship between AGI and tax liability

even if the statutory tax structure remained unchanged is a change in the amount of deductions which would have been claimed on tax returns. The issue is not the amount of deductions actually claimed on tax returns, which reflects the changes in tax laws over the period, but the amount of deductions which would have been claimed under an unamended tax structure. <sup>25/</sup> Evidence on this trend can be gleaned by examining the trend of expenditures on tax deductible items as a fraction of adjusted personal income. Since medical care costs, State and local taxes, and interest expenses all increased rapidly during the 1970s, it is not surprising that deductible expenditures increased significantly as a fraction of adjusted personal income. Medical care expenditures, State and local taxes, interest expense, and charitable contributions constituted 17.6 of adjusted personal income in 1971, but amounted to 23.0 percent in 1980. <sup>26/</sup> This implies that the procedure for estimating tax liabilities in the later years under the unamended 1971 tax structure overestimates tax liabilities somewhat, because the procedure implicitly assumes that deductions would remain a constant proportion of AGI. This overestimation is very small in the lower income brackets because of the low effective tax rates (increased deductions do not reduce taxes very much), and the lower proportion of returns which itemize deductions. Addition-

---

<sup>25/</sup> In fact, total itemized deductions as a percentage of total AGI on tax returns filed in 1980 was virtually unchanged from the 1971 level. But the constancy resulted from two offsetting changes: an increase in deductions as a fraction of AGI on tax returns claiming itemized deductions, and a decrease in the proportion of returns which itemize. The second change was due to increases in the standard deduction.

<sup>26/</sup> These estimates are based on data published in Survey of Current Business, U.S. Department of Commerce, July 1973, May 1982, and July 1982. Data on total household interest payments and charitable contributions are not regularly reported in the Survey but are published in Ruggles, Richard and Nancy D. Ruggles, Integrated Economic Accounts for the United States, 1947-80, in the May 1982 issue, Table 1.40 p. 33.



ally, the effect is offset in the lower income brackets by the shift in later years to a higher proportion of single tax returns, which have a lower tendency to itemize deductions. The overestimation is larger in the upper income brackets, however, and could reach a level of approximately 2 percent in the highest brackets in 1981. In this case too, the estimation errors are smaller in the estimates of tax liabilities under the indexed 1971 tax system because the indexed tax system would have lower effective tax rates at each level of AGI.

Thus, the procedure used in this study to estimate tax liabilities in later years under the unchanged 1971 tax system somewhat underestimates tax liabilities in the lower income brackets and overestimates tax liabilities in the upper brackets. In a graph of the effective tax rates under the unamended 1971 tax system these biases could be corrected by slightly rotating the effective tax rate line clockwise about a point somewhere in the middle-income brackets. The biases in the estimates for the indexed 1971 tax system are smaller, but probably in the same direction.

No attempt has been made to adjust for these biases in the estimation procedure. Since the magnitudes of the errors are not precisely known, any correction procedures would be somewhat ad hoc, and may not significantly improve the accuracy of the estimates. In aggregate terms, the errors in the lower brackets and upper brackets tend to be offsetting, so the net error may be very small (and is of uncertain direction). Even with regard to the distribution of the tax liabilities across income classes, the corrections which would be called for are quite small and, in most income brackets, probably lie within the normal margins for error in the original estimates. Even though no error correction is applied to the estimates, however, this slight bias should be kept in mind in interpreting the results, particularly for the unamended 1971 tax system. None of the

conclusions stated in the text are believed to be affected by estimation error. The conclusions of this study are generally consistent with those of earlier studies which used different methodologies. 27/

---

27/ See: Sunley and Pechman, op. cit.; Congressional Budget Office, Indexing the Individual Income Tax for Inflation, September 1980, 81 p., and Greytak, David and Richard McHugh, Indexation and the Redistributive Nature of the Individual Income Tax, Southern Economic Journal, October 1980, pp. 502-509.