Policy Analysis

Cato Institute Policy Analysis No. 39: Indexation and the Inflation Tax

July 12, 1984

Michael R. Baye, Dan Black

Michael R. Baye and Dan A. Black are assistant professors of economics at the University of Kentucky.

Executive Summary

In 1913, following the passage of the Sixteenth Amendment to the United States Constitution, only one-half of 1 percent of the population paid any individual income tax. The tax form was two pages long, and it was accompanied by two pages of simple instructions. At that time the highest marginal tax rate was only 7 percent for those fortunate enough to earn the princely sum of $500,000 a year, which is the equivalent today of an annual income of over $2 million.[1]

Today, even after the tax reductions of the Economic Recovery Act of 1981, about 80 percent of the population file income tax returns. It is not uncommon for a taxpayer to fill out 15 to 20 pages of forms, while reading several hundred pages of IRS instructions, government publications, and privately purchased tax guides. For those families with a taxable income of over $106,000, the marginal rate is 50 percent. In addition the first $32,800 of wage payments are subject to the social security (FICA) taxes, which require employers to "contribute" 7 percent and employees to "contribute" 6.7 percent of wage income .

In addition to legislative changes in the tax code following 1913 (there have been nine revisions of the tax code since 1954), inflation has altered fundamentally the structure of the individual income tax. During the last half of the 1970s the inflation rate averaged 8.9 percent annually, and taxpayers moved into higher and higher brackets as nominal incomes increased with inflation. By the end of that decade, middle class Americans were facing marginal income tax brackets that Congress had intended for the wealthy. To combat this so-called bracket creep, Congress in 1981 voted to index personal exemptions and rate brackets, effective in 1985, based on changes in the Consumer Price Index (CPI) for years ending in September of the calendar year preceding the tax year.

Recent concerns about the $200 billion budget deficit and the inability of Congress and the Reagan administration to agree on expenditure reductions of that magnitude have led many observers to suggest tax increases to reduce the deficit. Because few elective officials want to be held responsible for tax increases, there has been considerable talk about eliminating the indexation of the personal income tax that is due to begin in 1985. This measure would result in an indirect tax increase. In addition to increasing tax revenues through the inflation tax, the repeal of indexation would have several arbitrary effects. By pushing more and more taxpayers into higher tax brackets, inflation would magnify the tax distortions created by the progressive personal income tax. In addition it would provide an incentive for government to inflate the currency, while most Americans prefer stable prices.

This analysis examines in some detail the effects of inflation without an indexed tax system, and it provides evidence that the inflation tax is not a satisfactory means of raising federal revenues. More specifically, our analysis focuses on the history of the inflation tax and provides projections of the inflation tax through 1990 in the event that current indexation laws are repealed.

Our evidence indicates that the inflation tax grew tenfold during the 1970s. By 1980 the average American family needed roughly 50 percent more income than in 1958 just to be able to pay the inflation tax. Moreover, the inflation tax is not uniformly paid by individuals in different income classes. While inflation pushes the poor and middle class into higher tax brackets, the wealthy remain in the 50 percent bracket. Our projections through 1990 suggest that the real tax bill of a family with $5,000 in taxable income in 1985 will increase by 92.8 percent in just five years under an unindexed tax system and a 10 percent annual inflation rate. In contrast, the real tax bill of a family with $200,000 in taxable income will increase only 8.7 percent under the same conditions of five years of 10 percent inflation.

The Inflation Tax, 1947 to 1980

An inflation tax has two preconditions: inflation and a nonindexed, progressive tax. When Americans speak of inflation, they typically mean changes in the CPI. The CPI is a simple price index, published monthly by the Bureau of Labor Statistics, and measures the cost of purchasing the same group of commodities from month to month. Because the CPI measures the cost of buying a fixed market basket, it contains what economists call a substitution bias. [2]

The substitution bias results because consumers substitute lower-priced goods for higher-priced ones over time. During the 1970s, for example, consumers substituted energy-efficient cars for their gas guzzlers as the price of gasoline skyrocketed after the Arab oil embargo of 1973. As a result of this substitution, the CPI, being based upon the old consumption patterns of consumers, placed too much emphasis on changes in energy prices. This means that changes in the CPI overstated changes in the true cost of living during the 1970s.[3]

Indeed the substitution bias causes the CPI to always over- state the true cost of living. When measuring the magnitude of the inflation tax, as we do in this study, it is important to use the true-cost-of-living index rather the inflated CPI. It also should be noted that government bases cost-of-living adjustments on changes in the CPI. As a result, the government actually overadjusts the income of individuals receiving cost-of-living adjustments. It has been estimated by the General Accounting Office that a 1 percent error in the measurement of inflation can lead to $2 billion in government overpayments each year.[4] Because taxpayers ultimately foot the bill for such overpayments, one cost of inflation is the increased burden on taxpayers to finance these overpayments. With a growing $200 billion budget deficit, Congress should seriously consider indexing entitlement programs to the true cost-of-living index rather than the CPI.

The major cost to households of inflation, however, stems from the progressive personal income tax, and this cost is generally referred to as the inflation tax or bracket creep. When tax payments are tied to nominal values of income, inflation moves taxpayers into higher and higher tax brackets. Thus progressivity, initially designed to make the tax system fair, provides tax increases without explicit congressional and presidential action. Although Congress and the president have frequently changed the tax code in attempts to reduce the burden associated with bracket creep, their actions have been piecemeal at best.

Although most people are familiar with the notion of bracket creep, we believe that they would be surprised by its magnitude. To provide a measure of the inflation tax, we used standard econometric techniques to estimate family consumption patterns.[5] We obtained the true cost-of-living index exclusive of changes in taxes for the average American family between 1947 and 1980. (Owing to date limitations we were unable to obtain figures for the period following the Economic Recovery Act of 1981.) We then used reported figures on the average marginal tax rates, including individual income tax and FICA payments, for Americans during this period.[6] This allowed us to calculate the true cost-of-living index, including the effect of bracket creep. Our results are reported in tables 1 through 3.

Table 1
True Cost-of-Living Index Exclusive of Taxes, 1947 to 1980

Year	Index	Year	Index	Year	Index
1947	78.5	1959	101.6	1970	131.8
1948	83.0	1960	103.1	1971	137.0
1949	82.2	1961	104.3	1972	141.9

1950	83.7	1962	105.6	1973	151.6
1951	89.4	1963	106.9	1974	167.1
1952	91.2	1964	108.2	1975	178.4
1953	92.5	1965	110.0	1976	186.7
1954	93.3	1966	113.3	1977	197.1
1955	93.5	1967	116.0	1978	211.7
1956	94.9	1968	120.4	1979	231.8
1957	97.8	1969	125.8	1980	255.3
1958	100.0				

Table 1 presents the true cost-of-living index, exclusive of taxes, for the period between 1947 and 1980. The figures are based in terms of 1958 dollars, so that ignoring taxes, the average American family required 155.3 percent more income in 1980 than in 1958 to afford the 1958 standard of living. This statistic reflects the pure effects of inflation, and is similar to the reported CPI figures, with the exception that our figures are based on the true index that allows for substitutions among commodities as relative prices change over time.

Table 2
True Cost-of-Living Index Inclusive of Taxes, 1947 to 1980

Year	Index	Year	Index	Year	Index
1947	77.5	1959	103.0	1970	137.2
1948	77.2	1960	104.6	1971	141.8
1949	76.0	1961	106.4	1972	148.1
1950	79.5	1962	108.2	1973	162.1
1951	89.2	1963	110.2	1974	182.3
1952	93.3	1964	107.6	1975	195.0
1953	94.4	1965	108.2	1976	207.7
1954	91.9	1966	113.7	1977	222.3
1955	93.2	1967	117.2	1978	249.6
1956	95.0	1968	127.2	1979	268.7
1957	98.3	1969	134.7	1980	303.4
1958	100.0				

The rapid increase in the true cost of living exclusive of taxes during the 1970s is attributable largely to the expansionary monetary policy during the period. We cannot overemphasize that the numbers reported in table 1 do not reflect changes in the total cost of living during the period because they ignore the effects of bracket creep. Table 2, however, does include the additional cost to Americans owing to increases in the burden of taxation. According to this table, the average American family in 1980 required 203.4 percent more income than in 1958 to afford the 1958 standard of living after we correct for increases in federal taxes. This suggests that in 1980 one-sixth of the income of the average American family was spent paying the higher tax bill owing to the inflation tax brought on by the unindexed tax system. Note that between 1976 and 1980 the true cost-of-living index inclusive of taxes increased by nearly 100 points. This growth was significantly larger than the growth in the true cost-of-living index exclusive of taxes during the period, which indicates a relatively large inflation tax for the period.

Table 3
Inflation Tax as Percentage of 1958 Gross Income, 1947 to 1980

Year	tax	Year	tax	Year	tax

1947	-1.0	1959	1.4	1970	
1948	-5.8	1960		1971	
1949	-6.2	1961		1972	
1950	-4.2	1962		1973	
1951	-0.2	1963		1974	
1952	2.1	1964		1975	
1953	1.9	1965		1976	
1954	-1.4	1966		1977	
1955	-0.3	1967		1978	
1956	0.1	1968		1979	
1957	0.5	1969		1980	
1958	0.0				

A more detailed depiction of the inflation tax is provided in table 3, where the inflation tax is reported for the 1947-80 period. These figures give the inflation tax as a fraction of 1958 (constant standard of living) dollars.[7] The years for which the numbers are positive indicate that the average American family faced a greater burden of taxation than in 1958; negative values indicate that the burden of taxation was less in that year than in 1958. The closer the value to zero, the smaller was the inflation tax. It is interesting to note that the inflation tax was extremely small prior to 1968. In 1967, for example, the inflation tax amounted to only 1.2 percent of 1958 income, and before that time the tax never exceeded 3.3 percent of 1958 income (which it achieved in 1963, just prior to the Kennedy tax cuts of 1964). Between 1968 and 1972 the inflation tax averaged 6.4 percent of 1958 income. This was clearly an increase over previous years, but still significantly less than the years that followed. Between 1976 and 1980 the inflation tax grew to an average of 33.8 percent of 1958 income, and in 1980 it reached 48.1 percent of 1958 income. In other words, the average American family needed 48.1 percent more income in 1980 than in 1958 just to be able to pay the inflation tax.

Table 4
Rates of Change in Median Income and Cost-of-Living Index Inclusive of Taxes, 1977 to 1980

Year	Change in Median Income (%)	Change in Cost of Living Index Incl. of Taxes (%)	Difference
1977	7.0	7.0	0.0
1978	11.0	12.3	-1.3
1979	9.3	7.7	1.6
1980	7.6	12.9	-5.3

Data on median income from U.S. Bureau of the Census, Money Income of Families in the U.S. (1981).

At this point it is useful to compare recent changes in the tax-adjusted true cost-of-living index with changes in the median income for American families. In table 4 we present the rates of change in median family income, the percentage change in the cost-of-living index inclusive of taxes, and the difference between the two during the Carter administration, 1977-80. In 1977 median income and the tax-adjusted true cost-of-living index both increased by 7 percent. In 1978, however, the cost of living inclusive of taxes increased 1.3 percent more than median income; the median family suffered a fall in its real standard of living. The median family's income, however, increased 1.6 percent more than the tax-adjusted true cost-of- living index the next year, which made up for the previous year's loss. The election year of 1980, though, found the true cost of living inclusive of taxes increasing 5.3 percent more than median family income, which undoubtedly was a factor in President Carter's defeat. The median family experienced a sharp decline in its standard of living.

The tremendous growth of the inflation tax between 1973 and 1980 is attributable to two factors. First, with the exception of the Volcker years, the Federal Reserve pursued a relatively easy money policy during the 1970s. Consequently, the money supply more than doubled during the period. When the growth in the money supply exceeds the growth in real output, inflation results. Note that changes in the cost of living exclusive of taxes -- the traditional measure of inflation -- also doubled during the period.

Second, revisions in the tax code during the 1970s failed to adjust adequately the tax rates as nominal income increased with inflation. As a result, families were pushed into higher and higher tax brackets. The result of the inflation was a nonlegislated tax increase that significantly increased the tax bill of the average American family. The figures that we have presented here tell only the story of the increased tax bills at the federal level; to the extent that states have progressive taxation, the actual inflation tax is larger than reported in our study.

The Projected Inflation Tax, 1985 to 1990

We performed a simulation to illustrate the cost of repealing indexation in terms of bracket creep. The simulation is based on the assumption that the present, nonindexed 1984 tax codes remain in effect for the next 5 years under two alternative inflation scenarios: a 5 percent annual inflation rate and a 10 percent annual inflation rate. We focused on six representative classes of taxable annual income in our simulation: $5,000, $10,000, $20,000, $50,000, $75,000, and $200,000. We assumed that the level of taxable income within each class grows at the inflation rate.

In tables 5 and 6 we present the 1985 tax bills and marginal tax rates for each of the above income classes. For purposes of comparison, the 1990 tax bills and marginal tax rates are presented under the alternative inflation scenarios. In addition, the real (inflation-adjusted) tax bills for 1990, in terms of 1985 dollars, are also presented. For example, consider a family of four with $5.000 in taxable income in 1985 in table

Table 5
1985 and 1990 Family Income Tax Bills Under 5 Percent

Annual Inflation Rate					
1985			1990		
Taxable Income($)	Tax Bill($)	Marginal Tax Rate($)	Nominal Tax Bill($)	Real Tax Bill (1985 $)	Marginal Tax Rate(%)
5,000	176	11	336.77	263.87	12
10,000	819	14	1,223.05	958.29	16
20,000	2,461	16	3,969.41	2,896.63	25
50,000	11,368	38	16,769.91	13,139.66	42
75,000	21,468	42	30,744.50	24,089.12	45
200,000	81,400	50	109,028.16	85,426.42	50

Table 6
1985 and 1990 Family Income Tax Bills under 10 Percent

Annual Inflation Rate					
1985			1990		
Taxable Income($)	Tax Bill($)	Marginal Tax Rate(%)	Nominal Tax Bill($)	Real Tax Bill(1985$)	Marginal Tax Rate(%)
5,000	176	11	546.36	339.25	14
10,000	819	14	1,759.92	1,092.77	18
20,000	2,461	16	5,436.86	3,375.86	25

50,000	11,368	38	23,788.71	14,770.92	42
75,000	21,468	42	42,210.24	26,209.24	49
200,000	81,400	50	142,451.00	88,450.86	50

5. The marginal tax rate for this family is 11 percent, and in 1985 it pays $176 in taxes. After five years of a 5 percent annual inflation rate, the real (in terms of 1985 dollars) tax bill of the family increases to $263.87, even though its nominal income has just kept pace with inflation. Because of the inflation tax, the family's real income is reduced by $87.87 in 1990. Note that under the 10 percent inflation scenario presented in table 6, the real income of the family is reduced by an even greater amount, $163.25.

To examine the burden of the inflation tax, we also calculated the percentage increase in the real tax bills owing to the inflation tax for the alternative income classes. The results are presented in table 7. The inflation tax is remarkably regressive in that the largest real tax increases occur for families with lower incomes. Under both inflation scenarios the percentage change in real taxes paid for a family with $5,000 in taxable income increases by roughly ten times as much as for wealthy individuals in the 50 percent tax bracket. According to table 7, the heaviest burdens of the inflation tax are borne by poor and middle-class Americans. These results are illustrated graphically in figure 1.

As revealed in table 7 the family with $5,000 in taxable income has a 49.9 percent increase in real taxes between 1985 and 1990 under the 5 percent inflation rate. For the family

Table 7
Changes in Real Tax Bills between 1985 and 1990 Under 5 and 10 Percent Annual Inflation Rate

1985	Tax Bill Increase (%)	
5,000	49.9	92.8
10,000	17.0	33.4
20,000	17.7	37.2
50,000	15.6	29.9
75,000	12.2	22.7
200,000	4.9	8.7

Figure 1

Burden of the Inflation Tax

[graph omitted]

with $10,000 in taxable income, the 5 percent inflation rate results in an increase of 17 percent in its real tax bill. For a family with $20,000 of taxable income, though, the increase in the real tax bill owing to the 5 percent inflation rate is slightly higher, 17.7 percent. After the $20,000 mark the percentage increase in the real tax bill declines as income increases, with the family with $200,000 in taxable income experiencing an increase of only 4.9 percent in its real tax bill.

For the 10 percent inflation scenario, the results are qualitatively similar, although the magnitude of the effects is much larger. The percentage increases in the real tax bills of each income class are roughly twice as large for the 10 percent inflation scenario than for the 5 percent scenario. The real tax bill for the family with $5,000 in taxable income increases 92.8 percent; for the family with $10,000 in taxable income, the increase in real taxes is 33.4 percent. Once again, the percentage increase in the real tax bill for the family with $20,000 in taxable income is slightly larger than that for the family with $10,000 in taxable income. And once again, after the $20,000 mark, the percentage increase in the real tax bill declines as income increases.

Presumably the primary reason government has adopted a progressive income tax is because of the "fairness" of the so- called ability-to-pay principle of taxation. Indeed, most