TAXING CAPITAL GAINS

by

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Co-sponsored by:

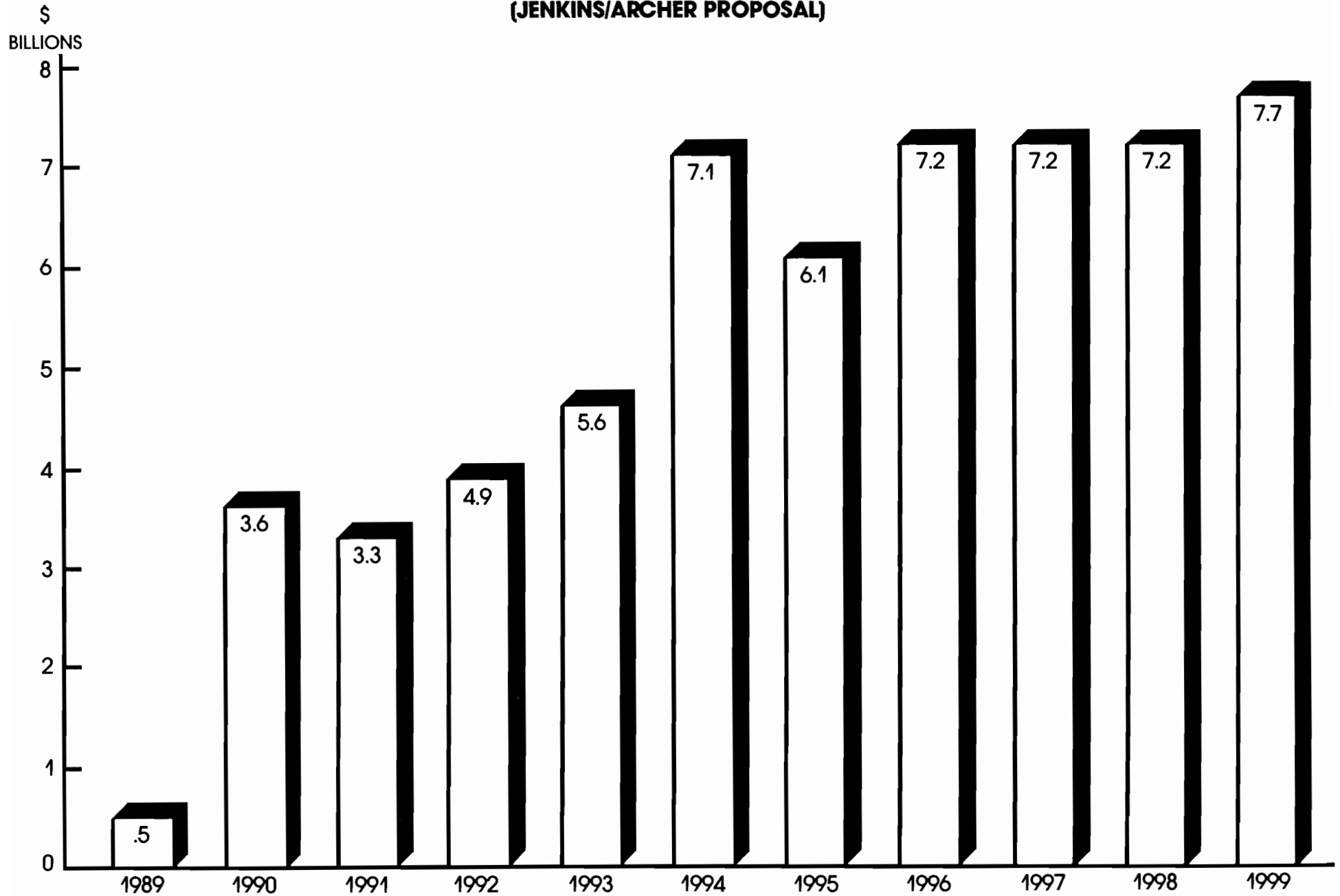# EFFECT ON FEDERAL REVENUE OF A CUT IN THE CAPITAL GAINS TAX RATE

(JENKINS/ARCHER PROPOSAL)

$ BILLIONS

Year	Value
1989	.5
1990	3.6
1991	3.3
1992	4.9
1993	5.6
1994	7.1
1995	6.1
1996	7.2
1997	7.2
1998	7.2
1999	7.7

ECONOMIC EFFECTS OF A CUT IN THE CAPITAL GAINS TAX RATE, 1989-1999

(JENKINS/ARCHER PROPOSAL)

INCREASE IN
GNP

$40.3
BILLION

INCREASE IN
FEDERAL
REVENUE

$61.0
BILLION

PERMANENT
NEW JOBS

750,000
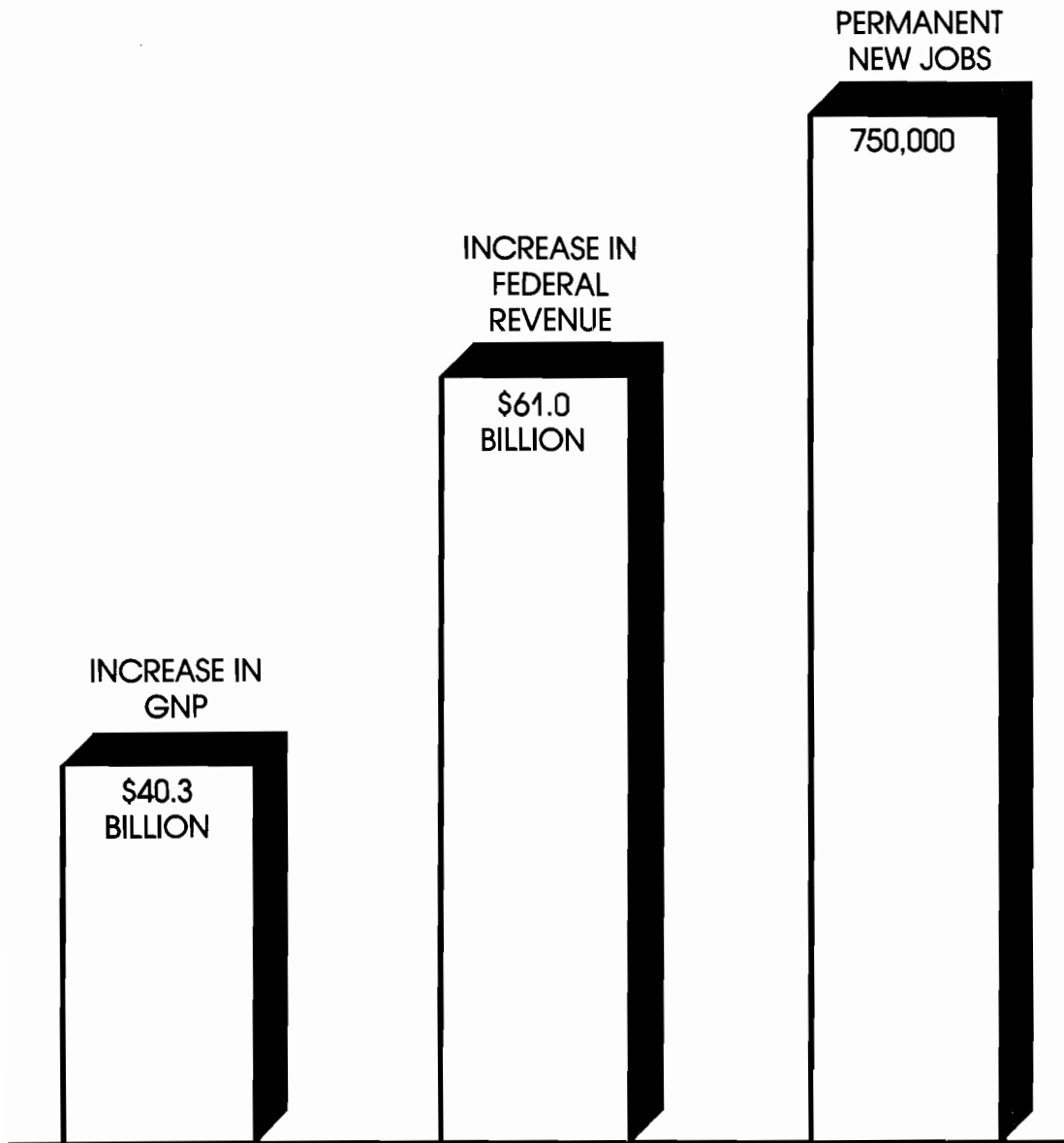
COST OF CAPITAL
(EQUIPMENT AND MACHINERY WITH A 20-YEAR LIFE)
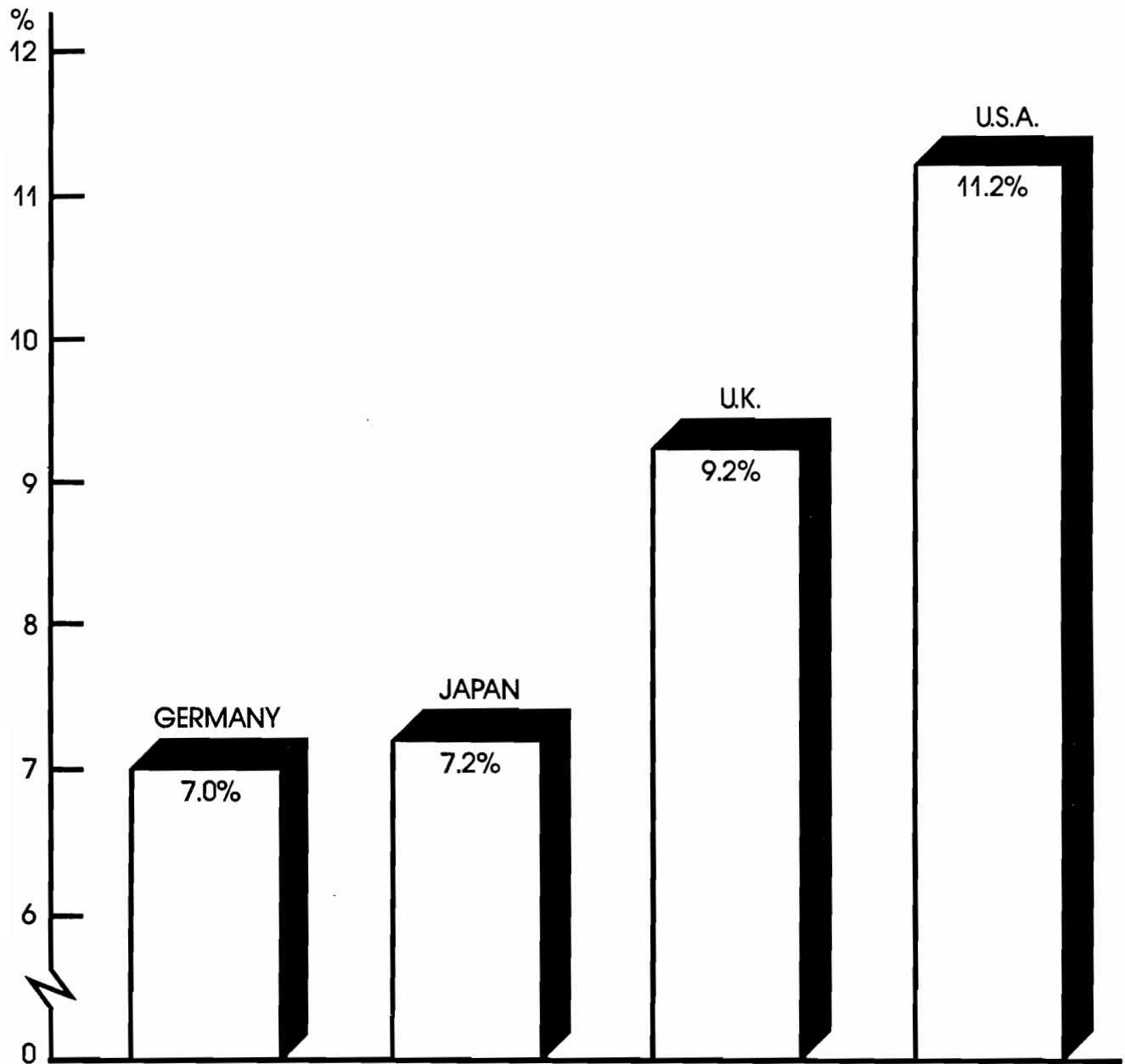
%

Country	Cost
GERMANY	7.0%
JAPAN	7.2%
U.K.	9.2%
U.S.A.	11.2%

SOURCE: ROBERT N. McCAULEY AND STEVEN A. ZIMMER,
"EXPLAINING INTERNATIONAL DIFFERENCES IN THE
COST OF CAPITAL," FEDERAL RESERVE BANK OF
NEW YORK, QUARTERLY REVIEW, 14, SUMMER, 1989.

EXECUTIVE SUMMARY

A capital gain is the difference between the sales price and the purchase price of an asset. Under current law, this gain is taxed at the same tax rate as ordinary income. Although the tax code is indexed to prevent recipients of ordinary income from being pushed into higher tax brackets by the effects of inflation, there is no similar protection for people who hold assets for several years. An investor who holds an asset which has increased in value with the rate of inflation is no better or worse off in real terms. Yet, under current tax law, this investor is forced to pay taxes on inflation-created gain.

Almost all serious students of the matter advocate a change in the way we tax capital gains. Some prefer inflation indexing. Others prefer a lower tax rate. Under either change, the federal government will gain revenues. For example,

- The Jenkins/Archer proposal would reduce the maximum rate on capital gains to 19.6 percent until 1992, then raise the rate to 28 percent with full inflation indexing.

- This proposal would increase federal revenue by $61 billion over the next ten years.

Our conclusion that the federal government would gain revenue from almost any reduction in the capital gains tax rate is consistent with historical experience and almost all scholarly studies. Those few projections which predict a loss of federal revenue err in ignoring how a reduction in taxes on capital gains will lead to a larger U.S. stock of capital.

A lower capital gains tax rate would also have other important economic effects. For example,

- The Jenkins/Archer proposal would increase our gross national product (GNP) by $40 billion over the next ten years.

- The proposal would create 400,000 permanent new jobs by 1992 and 750,000 new jobs by 1995.

The objection that a reduction in the capital gains tax rate primarily would benefit wealthy taxpayers ignores the importance of capital gains to middle-income families. On the average,

- In any five-year period, about one out of every five families with an income of $35,000 will have a capital gain equal to about 6.4 percent of family income.

- In any five-year period, more than one-half of families with incomes between $50,000 and $75,000 will have a capital gain equal to about 7.7 percent of family income.

The current tax on capital gains raises the cost of capital in the United States. As a result, it discourages capital accumulation, slows the growth of worker productivity, and lowers the future wages of all U.S. workers. Because other countries we compete with have little or no capital gains tax, this tax makes the United States less attractive to international investors and encourages the "export of jobs" to other countries.

Many supporters of a capital gains tax believe that, without the tax, investors would unfairly realize untaxed income. Yet this belief is wrong. Most assets have value only because of the future income they produce. If this future income is taxed at a 28 percent income tax rate, assets today will be worth 28 percent less than they otherwise would be. Thus, a 28 percent income tax imposes a 28 percent penalty on holders of assets, even if there is no capital gains tax.

TAXING CAPITAL GAINS: THE NEED FOR REFORM

A capital gain is the difference between the sales price and the original purchase price of an asset. Under current law,[1] capital gains are taxed at the same tax rate as the rate that applies to wage income, interest income, dividend income and other sources of income. Thus, depending on the taxpayer's tax bracket, capital gains are taxed at a rate of 15, 28 or 33 percent. In the case of corporations the rate is as high as 34 percent.

Almost everyone who has thought seriously about the taxation of capital gains agrees that there is a problem with the current system. Calls for reform range the gamut — from the *Wall Street Journal* to the *New York Times,* from conservative economist Milton Friedman to liberal economist Alan Blinder. The only differences among serious students of the economics of taxation are differences over which method of reform should be adopted. And these are often differences over what is thought to be politically possible.

The Problem With Taxing Capital Gains. Under the current system, any capital gain realized by an investor is taxed at the same rate — regardless of the type of asset, regardless of how long the asset has been held and regardless of the rate of inflation. To see why this method of taxation is troublesome, consider the effects of inflation:

- Since 1971, the price level in the United States has roughly tripled.

- This means that an asset purchased in 1971 for $10,000 and sold today for $30,000 would leave its owner no better off or worse off in real terms.

- Yet, under current law, the investor would owe as much as $6,600 ($20,000 x 33%) in taxes despite the fact there has been no *real* economic profit.

Because of inflation indexing, our tax code prevents wage earners from being pushed into a higher tax bracket by the effects of inflation alone. But there is no similar protection from inflation-induced increases in the price of assets held for several years. As a result, our tax law discourages people from holding assets, and thus discourages investment which is essential for economic growth.

An additional problem occurs with an income-producing asset, when the current value of the asset is determined by the future income it is expected to produce. Since the future income generated by the asset will eventually be realized and taxed, taxing the profit from the sale of the asset today is a form of double taxation. This problem will be considered in greater detail below.

Historical Treatment of Capital Gains. Recognition of the fact that capital gains can be very different from ordinary income is not new. In fact, from 1922 to 1986, capital gains always were treated separately from ordinary income in the tax code. This special treatment consisted of a lower tax rate for capital gains or exclusion of part of the gain for tax purposes (which resulted in a lower tax rate).[2]

Proposals for Reform. A proposal by Representative Ed Jenkins (D-GA) and Representative Bill Archer (R-TX) recently passed the House of Representatives. Under the

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[1] Current capital gains tax rates are established by the Tax Reform Act of 1986.

[2] A summary of the historical treatment of capital gains under U.S. tax law is contained in Appendix A.

Jenkins/Archer proposal, a maximum capital gains tax rate of 28 percent would be established and a 30 percent exclusion would be allowed for capital gains realized before 1992. This establishes a maximum tax rate of 19.6 percent (28% x 70%) for the next two years. Beginning in 1992, the effective rate would rise from 19.6 percent to 28 percent, but capital gains would then be indexed for inflation.

In both houses of Congress, there is also some sentiment for a permanent lowering of the top tax rate, say to 19.6 percent. In the estimates presented in the next section, we consider the effects of both proposals.

Why Indexing May Be More Important Than a Cut in the Tax Rate. In the debate over capital gains tax reform there has been a tendency to identify indexing as the "liberal" reform and a cut in the capital gains tax rate as the "conservative" reform, although the correlation between general political beliefs and preferences for reform are far from perfect. One assumption seems to be that a cut in the capital gains tax rate would benefit investors more than indexing.[3] In fact, the reverse may be true.

- With a 4 percent rate of inflation, indexing is more than twice as valuable to investors as a reduction in the maximum rate to 19.6 percent.

- At a 2 percent rate of inflation, indexing is 73 percent more valuable than a reduction in the maximum rate.

THE EFFECT ON THE FEDERAL DEFICIT
OF A CUT IN THE CAPITAL GAINS TAX RATE

As noted above, under the Jenkins/Archer proposal the top capital gains tax rate would be reduced to 19.6 percent until 1992,[4] and then rise to 28 percent. Capital gains realized in 1992 and beyond would be indexed for inflation. According to a widely reported forecast made by the Congressional Joint Committee on Taxation, this proposal would result in a gain of federal revenue for the next two years, followed by a loss of revenue in all succeeding years. A similar forecast was made for the Bush Administration proposal[5] by the U.S. Department of the Treasury.[6]

In general, there are four ways in which a reduction in the capital gains tax rate affects federal revenues. In what follows, we estimate each of these four effects using the same methodology used by the U.S. Treasury.

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[3]There is also a disagreement about whether current asset holders should be able to receive favorable tax treatment on *past* capital gains. If indexing were adopted prospectively beginning in 1989, it would not help taxpayers who currently hold assets that have appreciated in value because of past inflation.

[4]The lower rate applies to gains realized on the sale or exchange of assets (except for collectibles) for assets held more than one year and disposed of between September 14, 1989 and December 31, 1989.

[5]The original Bush Administration proposal called for a maximum capital gains tax rate of 15 percent. Individuals would have the option of taking a 45 percent exclusion, which would lower the rate to 8.25 percent for persons in the 15 percent income tax bracket.

[6]Testimony of Acting Assistant Secretary (Tax Policy) Dennis E. Ross before the Senate Finance Committee, March 14, 1989.

The Rate Effect. We begin with projections of a given volume of capital gains expected over the next ten years under current tax law. For this amount of capital gains income, a lowering of the tax rate will lower total federal revenue. Using the U.S. Treasury's estimating techniques, our projections of the loss of revenue over the next ten years is presented in the first row of Tables I and II.

The Volume Effect. A lowering of the capital gains tax rate makes the sale of assets more attractive. For this reason, a lower tax rate will lead to more asset sales which will, in turn, cause federal revenue to increase. Using the U.S. Treasury's estimating techniques, our projection of the revenue gain from this effect is presented in the second row of Tables I and II.

The Conversion Effect. If capital gains are taxed at a lower rate than the rate that applies to ordinary income, investors will have an incentive to convert ordinary income into capital gains. For example, if assets must be held for at least one year in order to qualify for a lower tax rate, more assets will be held for one year. To the degree that taxpayers can convert ordinary income (taxed at a higher rate) to capital gains income (taxed at a lower rate), federal revenue will be reduced. Using the U.S. Treasury's estimating techniques, our projection of the loss of revenue from the conversion effect is presented in the third row of Tables I and II.

The Effect of an Increase in the Stock of Capital. The conversion of ordinary income to capital gains income is an example of a portfolio adjustment. That is, when tax rates change, people adjust their entire portfolio of assets in response to the change. A more important type of portfolio adjustment will lead to an increase in U.S. capital stock. A lower capital gains tax rate makes investment more attractive relative to consumption. It also makes investment in the United States more attractive relative to investment in other countries. For example, in the face of a lower capital gains tax rate, Intel (the computer chip manufacturer) might be convinced to abandon plans to establish a fabrication plant in Ireland and build the plant in the United States instead.

In order to estimate the effect of a reduction in the capital gains tax rate, we calculated the decrease in the service price of capital for a number of different representative types of corporate investments.[7] To calculate the long-term effects, we adopted the same portfolio adjustment pattern used by the U.S. Treasury. These estimates are presented in the fourth row of Tables I and II.

Total Effects on Federal Revenue

When all four effects described above are taken into account, we estimate that almost any reduction in the capital gains tax rate will cause federal revenues to increase in all future years. This conclusion applies to the Bush Administration proposal, the Jenkins/Archer proposal and variations on these proposals. For example,

- The Jenkins/Archer proposal to reduce the maximum capital gains tax rate to 19.6 percent until 1992 will increase federal revenue by $3.6 billion in 1990 and by $3.3 billion in 1991.

- After 1991, the effects of inflation indexing will increase federal revenue by about $6 billion per year, on the average.

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[7]The method of estimation is presented in Appendix C. Note: Current proposals for reducing the tax rate on capital gains do not apply to corporations. However, since these proposals would reduce the cost of holding shares of stock for the individual investor, they would reduce the overall cost of corporate capital.

● Over the next ten years, the Jenkins/Archer proposal will increase total federal revenue by $61 billion.

For the reasons given above, inflation indexing in the long term will have a more powerful effect than a permanent reduction in the capital gains tax rate. Thus,

● If instead of indexing, the capital gains tax rate is permanently lowered to 19.6 percent, the annual increase in federal revenue will be about $2.5 billion beyond 1992.

● Over the next ten years, a permanent reduction in the maximum capital gains tax rate to 19.6 percent will increase federal revenue by a total of $31 billion.

TABLE I

EFFECT ON FEDERAL REVENUE OF THE JENKINS/ARCHER PROPOSAL[1]
($ Billions)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	1989-99
Rate Effect[2]	-1.1	-7.9	-11.7	-12.7	-13.5	-14.0	-14.3	-14.7	-15.0	-15.3	-15.7	-135.9
Volume Effect[3]	1.6	11.4	14.5	14.5	14.3	14.9	14.9	15.3	15.6	15.9	16.3	149.3
Conversion Effect[4]	0.0	-0.1	-0.4	-2.4	-3.5	-4.6	-4.6	-4.8	-4.8	-5.0	-5.2	-35.1
Effect of Increased Capital Stock	0.0	0.2	0.9	5.5	8.3	10.8	10.8	11.4	11.4	11.6	12.2	83.1
Net Revenue Effect	0.5	3.6	3.3	4.9	5.6	7.1	6.7	7.2	7.2	7.2	7.7	61.0

[1]A 30 percent capital gains exclusion until 1992. Maximum rate is lowered to 19.6 percent until 1992, then raised to 28 percent with full indexing. Assumes a 4.0 percent annual inflation rate.

[2]Effect of tax rate reduction on existing gains projected for current law realizations. Based on U.S. Treasury estimates of March 14, 1989.

[3]Effect of increased realizations. Based on U.S. Treasury estimates of March 14, 1989.

[4]Effect of conversion of ordinary income to capital gains income. Based on U.S. Treasury estimates of March 14, 1989.

TABLE II

EFFECT ON FEDERAL REVENUE OF A PERMANENT RATE REDUCTION[1]
($ Billions)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	1989-99
Rate Effect[2]	-1.1	-7.9	-11.7	-12.7	-13.5	-14.0	-14.3	-14.7	-15.0	-15.3	-15.7	-135.9
Volume Effect[3]	1.6	11.4	14.5	14.5	14.3	14.9	14.9	15.3	15.6	15.9	16.3	149.3
Conversion Effect[4]	0.0	-0.1	-0.4	-0.9	-1.3	-1.7	-1.7	-1.7	-1.7	-1.8	-1.9	-13.1
Effect of Increased Capital Stock	0.0	0.2	0.9	2.0	3.0	3.9	3.9	4.1	4.1	4.2	4.4	30.7
Net Revenue Effect	0.5	3.6	3.3	2.9	2.6	3.1	2.8	3.0	3.0	3.0	3.2	31.0

[1]A 30 percent capital gains exclusion. Maximum rate is lowered to 19.6 percent indefinitely.

[2]Effect of tax rate reduction on existing gains projected for current law realizations.   Based on U.S. Treasury estimates of March 14, 1989.

[3]Effect of increased realizations.   Based on U.S. Treasury estimates of March 14, 1989.

[4]Effect of conversion of ordinary income to capital gains income. Based on U.S. Treasury estimates of March 14, 1989.

HOW THESE ESTIMATES COMPARE WITH OTHER ESTIMATES

The revenue estimates presented here are consistent with almost all scholarly studies of the revenue effects of a reduction in the capital gains tax rate. They are also consistent with historical experience. They are different from three forecasts made by certain government agencies, however.

Other Scholarly Studies. Harvard economist Larry Lindsay recently reviewed the academic literature on the effects of the increase in the capital gains tax rate as a result of the Tax Reform Act of 1986.[8] Lindsay found that with only one exception, every study predicted that the recent increase in the capital gains tax rate would reduce long-term government revenue.[9] Lindsay's own estimate is that federal revenue would be maximized by a capital gains tax rate of about 15 percent. These findings are also consistent with the findings of the economists at the U.S. Department of the Treasury. Studies produced by the Treasury in 1985[10] and 1988[11] and two very recent additional studies[12] all conclude that government revenue will go up when capital gains tax rates go down.

Historical Experience. Even a casual examination of the evidence shows a clear, unmistakable, *inverse* relationship between capital gains tax revenue and the capital gains tax rate:[13]

● From 1968 through 1978, a steady rise in the maximum tax rate on capital gains occurred because of the effects of bracket creep. Yet the amount of revenue the federal government collected from the tax was almost one-half its 1968 level by 1970 and did not regain the 1968 level until 1976.

● Following a 1978 reduction in the maximum capital gains tax rate, federal capital gains revenues rose steadily from $9.1 billion in 1978 to $12.5 billion in 1980.

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[8]The Tax Reform Act of 1986 increased the maximum capital gains tax rate from 20 percent to 33 percent.

[9]Predicted revenue losses for the federal government for the period 1987 through 1991 ranged from $27 billion to $105 billion as a result of the increase in capital gains tax rates. See Lawrence B. Lindsay, "Capital Gains Taxes Under the Tax Reform Act of 1986: Revenue Estimates under Various Assumptions," *National Tax Journal,* Vol. 40, No. 3, September 1987.

[10]"Report to Congress on the Capital Gains Tax Rate Reductions of 1978," U.S. Department of the Treasury, September 1985.

[11]Michael R. Darby, Robert Gillingham and John S. Greenlees, "The Direct Revenue Effects of Capital Gains Taxation: A Reconsideration of the Time Series Evidence," *Treasury Bulletin,* June 1988.

[12]Robert Gillingham, John S. Greenlees and Kimberly D. Zieschang, *New Estimates of Capital Gains Realization Behavior: Evidence From Pooled Cross-Section Data,* May 1989, U.S. Department of the Treasury, Office of Tax Analysis, OTA Paper 66; and Gerald E. Auten, Leonard E. Burman, and William C. Randolph, *Estimation and Interpretation of Capital Gains Realization Behavior: Evidence from Panel Data,* May 1989, U.S. Department of the Treasury, Office of Tax Analysis, OTA Paper 67.

[13]Based on U.S. Department of the Treasury data reprinted in Ronald Utt, "Capital Gains Taxation: The Evidence Calls for a Reduction in Rates," *Heritage Foundation Backgrounder,* No. 704, May 2, 1989, Table 3, p. 10.

- Following the 1981 cut in the maximum capital gains tax rate from 26.67 percent to 20 percent, capital gains tax revenue almost doubled in four years — rising from $12.7 billion in 1981 to $24.5 billion in 1985.

Contrary Predictions by Government Agencies. In spite of the overwhelming evidence that a reduction in capital gains tax rates will lead to an increase in federal revenues, at least three forecasts by government agencies point in the opposite direction. These include forecasts by the Congressional Budget Office,[14] the U.S. Department of the Treasury[15] and the widely reported forecasts of the Congressional Joint Committee on Taxation. The central problem is that these forecasts fail to take into account each of the four ways in which a capital gains tax rate change affects government revenue. For example, in his March 14, 1989 presentation to Congress, Dennis Ross of the U.S. Department of the Treasury presented a forecast based on the rate effect, the volume effect and the conversion effect, but ignored the effect on the capital stock. In other words, the Treasury estimate included only those portfolio adjustments which reduce federal revenue and ignored those which increase federal revenue.[16]

THE ECONOMIC EFFECTS OF A
REDUCTION IN TAXES ON CAPITAL GAINS

In the current public policy debate over the capital gains tax, most of the attention has focused on the distribution effects of a change in the tax — i.e., how much wealthy families would gain vs. poor families and how much revenue the government would receive. These are arguments over how the nation's income pie should be divided. Yet the capital gains tax is socially important because taxes on capital gains determine the *size* of the income pie, regardless of how it is divided.

Effects on the Cost of Capital. A capital gains tax raises the cost of capital in the United States. As a result, it discourages capital accumulation which is essential to increased worker productivity. To the degree that the capital gains tax lowers future worker productivity, the tax lowers the future wages of all United States workers. In general, the damage done by the capital gains tax is highly sensitive to the rate of inflation. For example,

- On a representative investment held for two years with a 3 percent inflation rate, the current capital gains tax raises the service price of capital by 3.95 percentage points.[17]

- If the rate of inflation is 6 percent, the capital gains tax raises the service price of capital by 8.7 percentage points.

- If the rate of inflation rises to 12 percent, the capital gains tax raises the service price of capital by 16.92 percentage points.

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[14]"How Capital Gains Rates Affect Revenues: The Historical Evidence," Congressional Budget Office, March 1988.

[15]Testimony of Acting Assistant Secretary (Tax Policy) Dennis E. Ross before the Senate Finance Committee, March 14, 1989.

[16]In terms of Tables I and II, the Treasury estimate included rows one, two and three, but ignored row four.

[17]The service price of capital is the return a firm has to pay shareholders to raise capital.

In the estimates that are presented in Table V, we have assumed an average holding period of six years, an inflation rate of 4.0 percent, and a dividend payout rate of 50 percent on corporate earnings — assumptions that are consistent with recent experience. Based on these assumptions, we estimate that the Jenkins/Archer proposal would lower the service price of capital in the United States by 4 percent.

International Competition for Capital. The United States has one of the highest capital gains tax rates among developed countries. As Table III shows,

- In Germany, Italy, Belgium and the Netherlands, there is no capital gains tax.

- Prior to 1989, Japan had no capital gains tax, and the tax recently adopted is considerably more generous than the United States system.

Moreover, when all taxes are considered, the overall cost of capital in the United States is considerably higher than the cost of capital in countries with which we compete. As Table IV shows,

- The cost of capital in the United States for equipment and machinery with a 20-year life is 22 percent higher than in Britain, 56 percent higher than in Japan and 60 percent higher than in Germany.

- The cost of capital in the United States for a factory with a 40-year life is 29 percent higher than in Britain, 89 percent higher than in Germany and 104 percent higher than in Japan.

Economic Effects of the Jenkins/Archer Proposal. Because a lowering of taxes on capital gains would encourage capital accumulation and investment, almost any reduction in capital gains taxes would have positive economic effects. In Table V, we present estimates of the economic effects of the Jenkins/Archer proposal. As the table shows,

- The Jenkins/Archer proposal would increase real gross national product (GNP) by $30 billion over the next ten years.

- In addition, the Jenkins/Archer proposal would lead to the creation of 400,000 permanent new jobs by 1992 and 750,000 new jobs by 1995.

TABLE III

TAXATION OF LONG-TERM CAPITAL
GAINS REALIZED BY INDIVIDUALS

<u>COUNTRY</u>	<u>TAX</u>
Germany	0
Hong Kong	0
South Korea	0
Belgium	0
Netherlands	0
Italy	0
Japan	0 until 1989[1]
Canada	2/3 of gain included in net income subject to $100,000[2] (Canadian) lifetime deduction; rates are 17, 26 and 29 percent
United Kingdom	Taxed at ordinary rates of 25 or 40 percent, with inflation indexing

[1]
Beginning in 1989 a statutory deduction of 500,000 yen is allowed and 50 percent of the remaining gain is taxed at ordinary income tax rates.

[2]
Approximately $83,890 U.S. dollars.

Sources: Price Waterhouse, *Individual Taxes: A Worldwide Summary,* 1988; John Georges, "Capital Investment and Competition in the 1990s," Institute for Research on the Economics of Taxation, Policy Bulletin No. 40, July 31, 1989; Congressional Research Service, *Taxation of Individual Capital Gains in Canada, Germany, Japan, the United Kingdom and the United States,* March 24, 1989; and the American Council for Capital Formation.

TABLE IV

COST OF CAPITAL IN VARIOUS COUNTRIES

Country	Equipment and Machinery: 20-Year Life	Factory: 40-Year Life	R & D: 10-Year Payoff
United States	11.2%	10.2%	20.3%
United Kingdom	9.2%	7.9%	23.7%
Germany	7.0%	5.4%	14.8%
Japan	7.2%	5.0%	8.7%

Source: Robert N. McCauley and Steven A. Zimmer, "Explaining International Differences in the Cost of Capital," Federal Reserve Bank of New York, *Quarterly Review,* 14, Summer 1989.

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TABLE V

ECONOMIC IMPACT OF THE JENKINS/ARCHER PROPOSAL[1]

Change in:	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	1989-99
Employment (thousands)	0	16	70	400	590	740	750	750	750	750	750	
Real GNP ($ billions-1989)	0.0	0.6	2.8	16.8	24.6	29.0	30.0	30.0	30.0	30.0	30.0	223.8
Nominal GNP ($ billions)	0.0	0.7	3.0	18.3	27.7	33.6	35.8	36.9	38.0	39.1	40.3	273.5

[1]Includes 30 percent capital gains exclusion until 1992. Maximum rate is lowered to 19.6 percent until 1992, then raised to 28 percent with full indexing. Assumes a 4.0 percent annual inflation rate. The estimates presented here are based on the model presented in Appendix C.

RETHINKING CAPITAL GAINS[18]

A major impediment to a capital gains policy that encourages investment and capital accumulation is the view that a lower capital gains tax rate is fundamentally unfair. Advocates of a capital gains tax often argue that, in the absence of such a tax, investors would realize untaxed income. It follows that if the capital gains tax rate were lower than the tax rate applied to ordinary income, recipients of capital gains would be receiving preferential treatment under the tax code. In most cases, however, these arguments are wrong.

Most assets have value only because of the future income they are expected to produce. As a result, the present value of the asset today is totally determined by the income stream the asset will generate. Any change in expected future earnings changes the value of the asset today. With respect to these assets, the following propositions hold:

Propositions About Income-Producing Assets[19]

Proposition 1: **When there is an income tax, holders of assets pay the income tax indirectly through a lower sales price for those assets.**

Proposition 2: **When income tax rates change, asset prices immediately change to reflect the change in future taxes on income.**

Proposition 3: **A tax on capital gains is double taxation, even in the absence of a corporate income tax.**

These propositions are illustrated by the hypothetical investment presented in Table VI. In the case of no taxes, an asset produces an annual income (net of production costs) of $100,000 per year. At a rate of interest of 10 percent, this asset has a present value (and, therefore, a current sales price) of $1 million. Note that the value of the asset is totally determined by the expected future income and the discount rate.[20]

Now introduce a 28 percent income tax. This immediately reduces annual aftertax income to $72,000. As a result, the present value (sales price) of the asset is reduced to $720,000. Note that a 28 percent income tax reduces the value of the asset by 28 percent. If the income tax rate had been 33 percent, the value of the asset would be 33 percent lower. The holders of assets, then, do not escape taxation. They pay the income tax indirectly through the reduction in the value of the assets they hold.

Assume the asset is a patent and that there are no deductible costs associated with it. In this case, the sales price of the asset is exactly equal to the owner's capital gain. The existence of a 28 percent income tax, as we have seen, costs the owner $280,000 in terms of a lower sales price.

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[18]A more technical presentation of the propositions discussed in this section is presented in Appendix B.

[19]Exceptions to these propositions are assets that produce untaxed income. For example the "income" (enjoyment) from collectibles (paintings, coins, etc.) is not taxed. Similarly, the "income" from an owner-occupied house also is untaxed.

[20]The discount rate will reflect risk associated with the income stream as well as the expected rate of inflation.

His capital gain, therefore, is $720,000. If this capital gain also is taxed at a rate of 28 percent, the capital gains tax will equal $202,000, leaving the seller with $518,400.

In this example the effective tax rate on income from capital is 48.2 percent of this amount, 28 percentage points are the result of the income tax and 20.2 percentage points are the result of the capital gains tax. Far from creating equity in taxation, the capital gains tax causes the asset holder to pay an effective tax rate that is 72 percent higher than the tax rate on ordinary income. A capital gains tax plus an income tax, therefore, constitutes double taxation. *With a corporate income tax, we have triple taxation.*

In general, asset values change every time expectations about future income change. These gains and losses should not be confused with the production of real income, however, nor should the taxation of capital gains (which is really the taxation of changes in expectations) be confused with the taxation of real income.

TABLE VI

HOW THE INCOME TAX AFFECTS THE VALUE OF CAPITAL ASSETS

Future Earnings from an Investment

	Without an Income Tax	With an Income Tax
Annual Income[1]	$100,000	$100,000
Annual Taxes	0	$28,000
Income Net of Taxes	$100,000	$72,000

Present Value of the Investment (Current Sales Price)

	Without an Income Tax	With an Income Tax
Present Value of Income[2]	$1,000,000	$1,000,000
Present Value of Taxes	0	$280,000
Present Value of the Asset	$1,000,000	$720,000

[1]Net of production costs.

[2]Discounted at a 10 percent rate of interest.

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EFFECTS ON THE DISTRIBUTION OF INCOME

Critics of a reduction in the tax on capital gains frequently argue that the tax cut would primarily benefit the rich.

Even if true, that is not the right criteria by which to judge an individual component of the tax code. Individual components of the tax code should promote fairness and economic efficiency. Through its overall taxing and spending policies, the federal government has ample opportunity to influence the overall distribution of income.

The objection that a reduction in the capital gains tax rate primarily would benefit wealthy taxpayers also ignores the importance of capital gains to middle-income families. As Tables VII and VII show, on the average,

- In any five year period, about one out of every five families with an income of $35,000 will have a capital gain equal to about 6.4 percent of family income.

- In any five year period, more than one-half of families with incomes between $50,000 and $75,000 will have a capital gain equal to about 7.7 percent of family income.

Moreover, there are many reasons why people with very modest incomes experience a very large capital gain. An elderly widow may liquidate her husband's business. A family may sell its farm and move to the city. Parents may cash in assets to finance a child's education. In the year in which the capital gain is realized, reported family income may be quite large *because of the capital gain.*

TABLE VII

FREQUENCY OF CAPITAL GAINS FOR MIDDLE-INCOME TAXPAYERS[1]

(1987)

Adjusted Gross Income			Percent of Families With a Capital Gain Each Year	Percent of Families With a Capital Gain in Five Years
$0	-	$12,500	1%	10%
$12,500	-	$25,000	3%	17%
$25,000	-	$37,500	3%	21%
$37,500	-	$50,000	4%	31%
$50,000	-	$75,000	9%	51%
$75,000	-	$125,000	21%	72%

[1]Projection based on income tax returns for the period 1971-1975, the latest year for which data is publicly available.

Source: *Capital Gains Tax Reductions of 1978*, U.S. Department of the Treasury, September 1985, Table 1.7, p. 14.

TABLE VIII

THE IMPORTANCE OF CAPITAL GAINS
TO MIDDLE-INCOME TAXPAYERS

(1987)

Adjusted Gross Income			Capital Gains as a Percent of Income[1]
$10,000	-	$15,000	10.6%
$15,000	-	$20,000	9.8%
$20,000	-	$25,000	7.2%
$25,000	-	$30,000	8.3%
$30,000	-	$40,000	6.4%
$40,000	-	$50,000	6.6%
$50,000	-	$75,000	7.7%
$75,000	-	$100,000	10.0%

[1]For those who have capital gains income.

Source: *SOI Bulletin,* Spring 1989, Table 1, pp. 19-20.

CONCLUSION

The case for a tax on capital gains from the sale of income-earning assets is difficult to make. In the presence of an income tax, the holders of assets indirectly pay that tax through lower sales prices. If the income tax is 28 percent, asset prices will automatically be 28 percent lower.

Because the capital gains tax amounts to a form of double taxation, it discourages capital accumulation. As a result, the tax lowers future worker productivity and reduces the future income of all workers. The capital gains tax also causes the cost of capital in the United States to be higher than in other countries with which we compete in international markets. As a result, the tax encourages capital outflow and the export of jobs from the United States to other countries.

Almost any reduction in the capital gains tax rate would have positive economic effects. For example, the Jenkins/Archer proposal would increase GNP by $40 billion over the next ten years and create 750,000 permanent new jobs by 1995. The proposal also would increase government revenue by $61 billion over the next 10 years.

Far from being unfair, a reduction in taxes on capital gains would partially eliminate a form of double taxation that is present under the current law. The benefits of a reduction in the capital gains tax would not be concentrated among the wealthy, but would instead be shared by all income groups.

NOTE: Nothing written here should be construed as necessarily reflecting the views of the National Center for Policy Analysis or the views of the Institute for Policy Innovation or as an attempt to aid or hinder the passage of any bill before Congress.

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APPENDIX A

A BRIEF HISTORY OF CAPITAL GAINS TAXATION[1]

Until the 1986 Tax Reform Act, capital gains were either taxed separately from ordinary income under an alternative tax, or partially excluded from the tax under the regular rate schedule. Below is a brief historical summary of the tax treatment of capital gains.

● Special treatment of capital gains was first introduced into the tax law in 1922. If the holding period exceeded two years, the taxpayer could elect a special tax rate of 12.5 percent. Between 1922 and 1933 the top marginal ordinary income tax rate ranged from 24 percent to 73 percent.

● Between 1934 and 1937 the tax law allowed portions of capital gains to be excluded from income, depending on how long the asset was held (e.g., only 30 percent of the gain was includable in income for an asset held over 10 years).

● Between 1938 and 1941 the taxpayer could elect an alternative tax with a maximum tax rate of 20 percent for holding periods of one and one-half to two years, and a 15 percent rate for gains with longer holding periods.

● Between 1942 and 1953 only one-half of the amount of long-term capital gains (assets held longer than six months) were includable in income. At the discretion of the taxpayer, capital gains were subject to an alternative tax of 25 percent from 1942 to 1951, and 26 percent between 1952 and 1953. The top tax rate on ordinary income ranged from 86 percent to 94 percent during this period.

● The treatment of capital gains between 1954 and 1969 was essentially unchanged. Beginning in 1972, only the first $50,000 of net capital gains was eligible for the alternative tax of 25 percent; the remainder was taxed at one-half ordinary rates.

● The Tax Reform Act of 1976 increased the holding period required for long-term capital gains to nine months in 1977 and one year in 1978.

● The Revenue Act of 1978 included fundamental changes in the capital gains tax. The major change was that for the first time since 1942 the inclusion ratio (the amount of the gain subject to taxation) fell from 50 percent to 40 percent. Under the Act, the maximum possible rate of tax on a taxpayer's net long-term capital gains fell from as much as 52.5 percent to 28 percent (the product of a 40 percent inclusion rate and a 70 percent maximum ordinary income tax rate).

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[1]This summary is taken from "Reform the Capital Gains Tax" prepared by the U.S. Senate Republican Policy Committee, September 27, 1989.

● The 1981 Economic Recovery Tax Act reduced the maximum marginal tax rate on ordinary income to 50 percent. As a consequence, the maximum tax rate on long-term capital gains declined to 20 percent (because of the 40 percent inclusion and the 50 percent maximum rate).

● The Tax Reform Act of 1986 dramatically altered the tax treatment of capital gains. For the first time since 1922, capital gains were treated the same as ordinary income.

APPENDIX B

INVESTMENT EXAMPLES FOR CAPITAL GAINS ANALYSIS

We begin by assuming that an investor has three assets in his portfolio. The three examples chosen here are designed to examine three distinct types of assets. An investment in a utility company exemplifies a normal investment — one that produces a more or less constant stream of output over long periods of time. The microchip fabricator is chosen to illustrate a start-up investment that either requires some time before the process can reach its potential level of output and or which there is initial market resistance to the sale of its product. This example is often cited as a case where an investor is able to "convert" ordinary income into capital gains. The third example is chosen to illustrate a "natural deferral" industry. In the case of a forest, the return on growing trees is not taxed until the tree is actually sold. For this example, the forest is eventually harvested to produce a uniform output stream, although some would argue that some of the accruing gain goes untaxed. Table B-1 shows the output, the price (net of production costs) and the revenue (net of production costs) for each of the three assets for each of the next six years.

TABLE B-1

OUTPUT, PRICES AND REVENUE FOR THREE ASSETS

Year/Output

	1	2	3	4	5	6
Utility	1.00	1.00	1.00	1.00	1.00	1.00
Microchip Fabricator	0.82	1.23	1.64	1.64	1.64	1.64
Forest	0.00	0.00	0.00	0.00	0.00	1.16

Year/Price per Unit of Output[1]

	1	2	3	4	5	6
Utility	$1.00	$1.03	$1.06	$1.09	$1.13	$1.16
Microchip Fabricator	0.50	0.54	0.58	0.63	0.68	0.73
Forest	1.00	1.03	1.06	1.09	1.13	1.16

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[1]Net of costs.

Year/Revenue per Unit of Output[2]						
	1	2	3	4	5	6
Utility	$1.00	$1.03	$1.06	$1.09	$1.13	$1.16
Microchip Fabricator	0.41	0.66	0.95	1.03	1.11	1.20
Forest	0.00	0.00	0.00	0.00	0.00	1.34

For the purpose of these examples, we will use an internal rate of return of 3 percent, which is consistent with long-term historical values for the U.S. economy, and a general inflation rate of 3 percent. We will also assume that the investor expects to hold each investment for six years and then sell it. In order to determine how much the asset will be worth at the time of sale, we assume that the asset will continue to produce the amount produced in year six indefinitely into the future. The value of each asset after six years is the present discounted value of the future expected income stream the asset will produce.[3]

Given the estimated value today of the proceeds from the sale six years hence and the expected income from the sale of the output of the investments, the current value of the investment also can be calculated by discounting the receipts at each future period.[4] Both the current value of the three assets and their values six years hence are depicted in Table B-2.

TABLE B-2

ASSET VALUES IN THE ABSENCE OF TAXES

	Current Value of Asset	Value of Asset After Six Years
Utility	$33.33	$38.64
Microchip Fabricator	$33.33	$40.07
Forest	$33.33	$44.80

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[2]Net of costs.

[3] The real value of the constant output stream at the end of period six is output/r where r is the rate of return. The nominal value is found by multiplying the real value by the year six price level.

[4] Algebraically, this is Current Value = $\text{SUM}_i \{(O_i / P_i)/ (1 + r)^i\}$ + (Final Value / P_6)/ $(1 + r)^6$ where O_i is output in year i and P_i is price in year i.

The Effect of An Income Tax

Let us now assume a personal income tax rate of 28 percent to be applied to each period's receipts. The taxes on income for each asset for each of six years is shown in Table B-3.

TABLE B-3

INCOME TAXES FOR THE THREE INVESTMENTS

	Year/Taxes					
	1	2	3	4	5	6
Utility	$0.28	$0.29	$0.30	$0.31	$0.32	$0.32
Microchip Fabricator	0.11	0.19	0.27	0.29	0.31	0.34
Forest	0.00	0.00	0.00	0.00	0.00	0.38

Following the same procedure as before, the value of these investments has been calculated and is presented in Table B-4. The aftertax value of the asset in each case has fallen by the tax on the future income of the asset. Further, the tax has fallen equally on all three assets in spite of the different nature of each. There has been no "income tax" avoided, and in fact the decline in the value of each investment is exactly equal to the taxes taken by the government.

TABLE B-4

THE EFFECT OF AN INCOME TAX ON ASSET VALUES

	Current Value of Assets		
	Before Taxes	After Taxes	Difference
Utility	$33.33	$24.00	28%
Microchip Fabricator	33.33	24.00	28%
Forest	33.33	24.00	28%

	Value of Assets After Six Years		
	Before Taxes	After Taxes	Difference
Utility	$38.64	$27.82	28%
Microchip Fabricator	40.07	28.85	28%
Forest	44.80	32.25	28%

The claim that "taxes have been avoided" arises from two sources of confusion. First, inflation has caused the apparent value of the investments to rise. Since the value of the real output is produced by the physical assets, the nominal receipts advance with inflation. Therefore the nominal value of the investment also rises with inflation. This gain is purely illusory, however. Further, the value of taxes has enjoyed the same appreciation as has the value of the assets and the physical output.

The second source of confusion arises from the pattern of receipts associated with the microchip fabricator. The growing value of output which results from the start-up process leads to an asset appreciation greater than that caused by inflation. The government's share, however, enjoys the same appreciation. The investor is able to "realize" this appreciation before the physical product is actually sold. Those who would tax the gain from the timing effects of the output stream would extend to the government the right to collect taxes before they would have been collected if the investor had simply continued to hold the asset. In this regard, the government is merely placing an additional tax on the right of the investor to sell his asset.

Table B-5 shows the real (not due to inflation) gains from the original untaxed investment and those same investments when subject to tax. It is clear that the microchip investment does produce a real capital gain. However, the capital gain in the case of an income tax is lower than in the no tax case by exactly the tax rate. That is, the tax has already reduced the amount of the gain by 28 percent. The real gain on the investment is $1.23 in the no-tax case and $0.89 in the case of a 28 percent tax rate.[5]

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[5] $1.23 x 72% = .89.

TABLE B-5

ASSET VALUES AND TAXES IN REAL TERMS

Value of Assets With No Tax

	Current Value	Real Value After Six Years	Real Capital Gain
Utility	$33.33	$33.33	$0.00
Microchip Fabricator	$33.33	$34.56	$1.23
Forest	$33.33	$38.64	$5.31

Value of Assets With Tax

	Current Value	Real Value After Six Years	Real Capital Gain
Utility	$24.00	$24.00	$0.00
Microchip Fabricator	$24.00	$24.89	$0.89
Forest	$24.00	$27.82	$3.82

As has been shown, the government has not lost any revenue by the sale of the microchip asset in year 6. Therefore, there is no need to apply an additional tax to recoup an actual loss in revenue. Further, the taxpayer has had the real capital gain proceeds from the sale reduced exactly by the tax rate.

The Impact of the Current Capital Gains Tax

The current treatment of capital gains in our example places an additional tax of 28 percent on the nominal gain in value. The table below shows the additional tax to be paid in year 6.

TABLE B-6

THE EFFECT OF CAPITAL GAINS

	Capital Gains Tax After Sale of Asset in Six Years	Current Value After Income and Capital Gains Taxes	Current Value Without Taxes	Effective Tax Rate
Utility	$1.07	$23.03	$33.33	30.91%
Microchip Fabricator	$1.36	$22.77	$33.33	31.69%
Forest	$2.31	$21.91	$33.33	34.28

A measure of the importance of the increased taxes on capital is given by the "value of the Investment." That is the maximum amount an investor would pay for an asset which produces the three product streams. In the case of the utility investment, the maximum an investor would pay has fallen from $33.33 in the absence of taxes to $24.00 in the case of a 28 percent income tax to $23.03 when a capital gains tax is applied. As a result, only those production processes which cost no more than $23.03 will be profitable. Thus, the tax has reduced the investment opportunities available and therefore investment overall.

The Impact of Adding a Tax on Corporations

Expanding our examples to include corporations is complicated by the artificial legal status accorded this form of ownership. In the case of unincorporated businesses, income and expenses are split and reported by the individual owners at tax time. The limited liability of corporations requires a separation between the firm and its owners. This artificial barrier is ignored for tax purposes in the case of small corporations (Subchapter S). These businesses are taxed as if they were partnerships. In the case of larger widely held corporations, the legal fiction is maintained. Were there only a tax at the individual level, a corporation could sell assets, keep the proceeds free of tax, and thereby cause the value of the corporation to increase. Any number of approaches could be used to prevent this potential tax avoidance, such as extending the partnership treatment for small firms. This approach turns out to be impractical due principally to accounting difficulties. Instead, the U.S. placed a separate tax on corporations designed to collect slightly more from the corporation than would have been collected from the individual owners. The current maximum rate for individuals is 33 percent and it is 34 percent for corporations. Thus, even if the corporation were to retain all the proceeds in our examples, our results would be identical to the case of a capital gains tax on individuals except that 34 percent would replace 28.

The taxes on corporate capital income at the tax rate of 34 percent are presented in Table B-7. Comparing these rates with our prior examples demonstrates that taxing the income from our corporate assets differs only in the rate applied, not the geometry or conclusions. The corporation has introduced no opportunity to pay less in tax. In fact, 14 percent more tax is paid and the value of the investment is 9 percent less. In other words, the corporation is not a means of avoiding taxes; rather, it is structured to extract an additional tax on capital.

The U.S. tax system also places a tax on dividends — distributions made by corporations to their owners. This further adds to the discriminatory taxation of corporation income. If *all* the aftertax corporate income is distributed, the additional taxes on corporate dividends using a 28 percent tax rate is also shown in Table B-7.

TABLE B-7

EFFECT OF A CORPORATE INCOME TAX

	Year/Taxes on Corporate Capital Income[6]					
	1	2	3	4	5	6
Utility	0.34	0.35	0.36	0.37	0.38	0.39
Microchip Fabricator	0.14	0.23	0.32	0.35	0.38	0.41
Forest	0.00	0.00	0.00	0.00	0.00	0.46

	Year/Taxes on Corporate Dividends[7]					
	1	2	3	4	5	6
Utility	0.18	0.19	0.20	0.20	0.21	0.21
Microchip Fabricator	0.08	0.12	0.18	0.19	0.21	0.22
Forest	0.00	0.00	0.00	0.00	0.00	0.25

Table B-8 shows that the two tier tax system, which was to make sure that the corporate investment paid at least a tax rate of 28 percent, has resulted in an effective rate of 52.48 percent. And, it has reduced the value of the investment by over one half.

As in prior examples, the taxpayer has had the real capital gain proceeds from the sale reduced exactly by the new combined corporate tax rate. It is as if he has already paid the future tax. This follows from the fact that the purchaser of the investment must reduce the amount paid in order to pay the future taxes. As Table B-8 shows, the effect of all three types of taxes is an effective tax rate in excess of 54 percent.

TABLE B-8

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[6]Assumes a 34 percent tax rate.

[7]Assumes 100 percent divident payout and 28 percent individual income tax rate.

IMPACT ON EFFECTIVE TAX RATES

Effect of a Corporate and a Personal Income Tax

	Current Value Before Taxes	Current Value After Taxes	Effective Tax Rate[8]
Utility	$33.33	$15.84	52.48%
Microchip Fabricator	33.33	$15.84	52.48%
Forest	33.33	$15.84	52.48%

Effect of All Three Taxes

	Current Value Before Taxes	Current Value After Taxes	Effective Tax Rate
Utility	$33.33	$15.20	54.40%
Microchip Fabricator	$33.33	$12.81	54.92%
Forest	$33.33	$15.20	54.40%

Taxing the Natural Deferral Industries

The third asset in our examples represents an important class of investments, those which have long periods during which no product is sold. Take the case of timber. The land is purchased, trees planted and nothing is harvested for final sale until the trees have matured. Oil exploration has a similar pattern. Specifically, a lease is obtained, exploratory wells are drilled, and if these prove to be profitable, the well is placed into production. The justification for taxing the capital gain on these activities is based on the imputation of income during the time no product is brought to market. The argument is made that the investor is accruing income during this period since the "value" of his investment is increasing. Of course, there is actually no income unless the investor sells the asset and, as we have shown, this income has already borne a tax equal to the income tax rate. Thus, on the one hand this rationale requires the acceptance of the existence of income where none is forthcoming while denying the observed fact that the value of the investment has been reduced by the income tax rate.

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[8] $52.48\% = (1-0.34) \times (1-0.28) - 1$.

The Cost of Taxing Inflationary Gains

As has been pointed out, the imposition of a tax on nominal capital gains adds an additional tax on investment which reduces the incentives to save and invest. The amount of this additional tax depends on the amount of real capital gains and the rate of inflation. The table below shows the amount of additional tax which results from different levels of inflation.

TABLE B-9

The Effect of Inflation on Effective Tax Rates

Inflation Rate	Final Value	Tax Rate	Increase In Effective Tax Rate
0.00%	$24.00	28.00%	+0.00%
1.00%	$23.65	29.05%	+1.05%
2.00%	$23.33	30.02%	+2.02%
3.00%	$23.03	30.91%	+2.91%
4.00%	$22.76	31.72%	+3.72%
5.00%	$22.51	32.48%	+4.48%
6.00%	$22.28	33.17%	+5.17%

APPENDIX C

THE LONG-TERM ADJUSTMENT IN THE STOCK OF CAPITAL IN RESPONSE TO DECREASE IN THE CAPITAL GAINS TAX RATE FOR INDIVIDUALS

A decrease in the tax on investment income raises the rate of return to capital. In response, there will be an upward adjustment in the amount of capital services offered for use in the production process and an associated increase in the amount of labor services hired. These additional labor and capital inputs will lead to a higher output.

In order to estimate the potential impact of the reduction in the capital gains tax rate, we calculated the decrease in the service price of capital, a normalized measure of the cost of using capital which results from the proposed changes for a number of different representative corporate investments. The 30 percent exclusion results were estimated using an assumed 50 percent dividend payout rate, which is consistent with current experience. The service price changes due to indexing were invariant with respect to the type of investment. The estimated change in service price for the two major features was translated into an impact on GNP, employment and federal tax revenues following a reduced-form general equilibrium model described below.

Empirically, the Cobb-Douglas production function proves an accurate long-term representation of the production process. Cobb-Douglas relationships will provide estimates of changes in the amounts of capital services, labor services and output resulting from an increase in tax rates on investment income.

The following notations are used in the Cobb-Douglas derivations:

Q = private output produced,

r = the real aftertax rate of return to capital, which empirical evidence suggests is constant in the long run,

y = the cost per unit of capital (or the service price), which is determined by the real aftertax rate of return to capital, by the economic life of the asset and by taxes on capital,

t_c = the marginal tax rate on capital,

w = the cost per unit of labor,

t_L = the marginal tax rate on labor,

$\tilde{w}$ = the aftertax wage rate,

L = the number of units of labor used in production,

K = the number of units of capital used in production,

yK = the total amount received by capital,

and

wL = the total wage bill.

A Cobb-Douglas production function represents the production process as,

(1) $Q = A*L^a K^{(1-a)}$

where **A** is the state of technology, **a** is a parameter of the production function, measuring the responsiveness of output with respect to labor inputs, and **(1-a)** is the parameter measuring the responsiveness of output with respect to capital inputs. In a Cobb-Douglas production function, the shares of labor and capital in output are:

$wL/Q = a$ and $yK/Q = (1-a)$

Therefore,

(2) $wL/a = Q = yK/(1-a)$

Rewriting (2),

$wL/yK = a/(1-a)$ or $yK/wL = (1-a)/a.$

Solving for **K**,

$yK = [(1-a)/a]*wL$

$K = \{[(1-a)/a]*(1/y)\}*wL.$

The cost per unit of capital is proportional to the real aftertax return to capital and the taxes on capital. Using **C** to denote the proportional term, the capital service price may be written as,

(3) $y = C*r/(1-t_c).$

Substituting for **y**, **K** can be written as,

(3a) $K = \{[(1-a)/a]*(1-t_c)/C*r\}*wL.$

Remembering that the real aftertax return to capital will return to its long-term level, **a** and **r** in (3a) are constants. Rearranging the constant terms,

(4) $K = B*(1-t_c)*wL = B*AT_c*wL$

where **B** = **[(1-a)/a]/C*r** and **AT_c** = **(1-t_c)** is the aftertax return to capital.

The new level of **K** after an increase in taxes on investment income is denoted as **K'** and is equal to,

(5) $K' = B*(1-t_c)'*w'L'$

where $(1-t_c)'$ is the new tax and w' and L' are the new levels of w and L.

      The new level of K is equal to the original level of K times the proportional change in K, denoted by dK/K, or

(6) $K' = K*(1+dK/K)$.

Similarly, the new levels of w, L, and AT_c can be written as,

(7) $w' = w*(1+dw/w)$, $L' = L*(1+dL/L)$, and

$$AT_c' = AT_c*(1+dAT_c/AT_c).$$

    Using relations (4), (5), (6), and (7),

$$K' = K*(1+dK/K) = B*AT_c*(1+dAT_c/AT_c)*wL*(1+dw/w)*(1+dL/L).$$

Dividing through by K,

(8) $(1+dK/K) = (1+dAT_c/AT_c)*(1+dw/w)*(1+dL/L)$.

    Substituting the shares of labor and capital from (2) into the production function in (1),

$$Q = A*(aQ/w)^a*[(1-a)Q/y]^{(1-a)}.$$

Factoring out Q and dividing both sides by Q,

$$1 = A*[a*(1/w)]*[(1-a)*(1/y)]^{(1-a)},$$

then rearranging and substituting (3) for y,

(9) $\{1/[A*a^a*(1-a)^{(1-a)}]\} = w^{-a}*y^{(a-1)} = w^{-a}*(C*r/AT_c)^{(a-1)}$.

    Multiplying both sides of (9) by w^a and denoting the constant on the left-hand side of the equation as $\{ \}$,

(10) $w^a*\{ \} = (C*r/AT_c)^{(a-1)} = [AT_c/(C*r)]^{(1-a)}$

    Remember that the expression $\{ \}$ and C are constants and that r will return to its long-run value. As the tax on investment income increases, the aftertax return on capital, denoted as AT_c, must decrease. Therefore, the return to capital, y, must rise, and the cost per unit of labor, w, must fall.

    In other words, rewriting (10) in terms of w', we have

$$w'^a*\{ \} = [AT_c'/(C*r)]^{(1-a)}.$$

Substituting from (7) for w' and for AT_c',

$$w'^a*\{ \} = [w*(1+dw/w)]^a*\{ \} = [AT_c*(1+dAT_c/AT_c)/(C*r)]^{(1-a)}$$

Dividing through by **w** using (10),

$$(1+dw/w)^a = (1+dAT_c/AT_c)^{(1-a)},$$

and raising both sides to the (**1/a**) power,

(11) $(1+dw/w) = (1+dAT_c/AT_c)^{(1-a)/a},$

In other words, (11) will estimate the change in the per-unit cost of labor resulting from an increase in the tax on capital. Using empirical estimates which generally find the parameter **a** equal to two-thirds, the expression [**(1-a)/a**], which represents the elasticity of substitution between capital and labor, will equal 0.5. The change in **w**, therefore, will be about one-half the change in the tax on capital. For example, a 10 percent increase in the tax on capital will lead to a 4.88 percent increase in the cost per unit of labor.

This reduction in pretax wage rates will lead to a reduction in aftertax wage rates, and hence, a decrease in the amount of labor services supplied. The elasticity of labor supply is,

(12) $E_L = (dL/L)/(dw\sim/w\sim)$

where $w\sim = w*(1-t_L)$ and
$w\sim*(1+dw\sim/w\sim) = w*(1+dw/w)*(1-t),$

Dividing through by **w~** and substituting from (11),

$$(1+dw\sim/w\sim) = (1+dw/w) = (1+dAT_c/AT_c)^{(1-a)/a}$$

Subtracting 1 from both sides,

(13) $dw\sim/w\sim = [(1+dAT_c/AT_c)^{(1-a)/a}]-1.$

Solving equation (12) for **dL/L** and substituting in (13),

(14) $dL/L = E_L*dw\sim/w\sim = E_L*\{[(1+dAT_c/AT_c)^{(1-a)/a}]-1\}.$

Substituting (14) into (8),

(15) $dK/K = E_L*d(1-t)/(1-t).$

$(1+dK/K) = (1+dAT_c/AT_c)*(1+dw/w)*(1+dL/L)$
$= (1+dAT_c/AT_c)^{1/a}*(1+dL/L)$
$= (1+dAT_c/AT_c)^{(2/a-1)}*E_L+(1+dAT_c/AT_c)^{1/a}*E_L+(1+dAT_c/AT_c)^{1/a}$

Using the solutions found in (14) and (15), we can determine **Q** from (1).

ABOUT THE AUTHOR

Gary Robbins is President of Fiscal Associates and Senior Fellow of the NCPA. Mr. Robbins has developed a general equilibrium model of the U. S. economy that specifically incorporates the effects of taxes and government spending. Before joining the private sector, he was Chief of the Applied Econometrics Staff at the U. S. Treasury Department from 1982 to 1985, Assistant to the Under Secretary for Tax and Economic Affairs from 1981 to 1982, and Assistant to the Director of the Office of Tax Analysis from 1976 to 1981. Recent publications include an article entitled "Encouraging Private Provision for Long-Term Care" (with Aldona Robbins) in *Compensation and Benefits Management;* an *IRET Economic Policy Bulletin* entitled "Mandating Health Insurance" (with Aldona Robbins and John Goodman); an *IRET Op-Ed* entitled "Tax Catastrophes of Medicare Legislation" (with Aldona Robbins and Norman Ture); and two papers prepared for the Congressional Task Force on Long-Term Health Care Policies entitled "Promoting Long-Term Care Insurance through Existing Retirement Programs" and "Tax Policies to Promote Long-Term Care" (both with Aldona Robbins). Articles entitled "Why the Tax-Reform Numbers Don't Add Up" (with David Brazell); "End IRA Deduction, but Make Withdrawals Tax-Free" (with Aldona Robbins); and "Tax Reform Aims at Very Industries Up for Protection" (with Paul Craig Roberts) have appeared in the *Wall Street Journal*. He earned his master's degree in economics from Southern Methodist University.