The Evolution of the Role of Economics at the Joint Committee on Taxation

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Comments welcome.

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I. Introduction

Economic analysis at the Joint Committee on Taxation (JCT) has a long and distinguished history. After he became Chief of Staff in 1964, Laurence N. Woodworth set a goal of building an economics staff that could compete with the superb staff at Treasury's Office of Tax Analysis. Larry had earned a doctorate in Public Administration, but he often presented himself as an economist, had studied economics, and believed that economic analysis had great value to the congressional tax-writing committees. A complete history of economics at the JCT is beyond the scope of this paper. Instead, we present three detailed case studies of areas where JCT economic analysis has had an important impact on the tax legislative process. These case studies illustrate the circumstances in which economic analysis has proven helpful to the committees and the precise role it has played.

The first case study is the Tax Reduction Act of 1975. Faced with what they believed to be a severe recession, the committees looked to economists both within the staff and from outside for advice on how to respond, and to a large extent the legislation reflected that advice. While the macroeconomic policies of the 1970s are highly controversial today, a careful analysis of the 1975 Act indicates that it was a success in the sense that it achieved the tax-writing committees' objective, and most of the economic analysis holds up well when viewed with 40 years of hindsight.

The second case study is of changes in capital cost recovery provisions between 1980 and 1986. By 1980, it was widely believed that capital cost recovery had to be modernized, and JCT economists presented analysis of economic principles that the committees could use as a basis for reform. This advice was not adopted in the tax cuts enacted in 1981, which were largely driven by the preferences of

the new Administration. But the tax-writing committees became dissatisfied with the 1981 Act shortly after its enactment and turned to the principles that the JCT had presented in 1980. The committees used these principles in 1982 and 1984 as the basis for scaling back the excesses of the 1981 law and, ultimately, in rewriting the capital cost recovery rules in the historic Tax Reform Act of 1986. As was the case for the 1975 Act, the economic analysis and the policy hold up well with hindsight.

The third case study involves revenue estimation. During the entire life of the JCT, Congress has used revenue estimates; however, they assumed greater importance with the enactment and evolution of the congressional budget process. With greater focus on the estimates, the tax-writing committees have demanded that the estimates be more transparent and incorporate more economic analysis. Thus, the history of revenue estimation at the JCT over the past 40 years is largely a history of the use of ever more sophisticated economic analysis in its revenue estimates. While this has presented great challenges for the staff, it also presents a great opportunity because economic analysis is now firmly embedded in the tax legislative process.

Unlike legal analysis, which is incorporated in every tax bill, economic analysis other than that employed in revenue estimation is discretionary: the tax-writing committees use it only when they find it helpful. These case studies illustrate various ways in which JCT economic analysis has added great value to the committees' work.

II. Economic Stimulus in the Tax Reduction Act of 1975

Starting in November 1973, the U.S. experienced a severe recession. Congress responded in early 1975 by enacting an economic stimulus measure, the Tax Reduction Act of 1975.[1] The content of this Act was substantially influenced by economic analysis presented to the tax-writing committees. Part A of this section of the paper provides background on the situation facing Congress in early 1975. Part B

[1] P.L. 94-12, March 29, 1975.

describes the economic analysis that was presented to the tax-writing committees. Part C describes how the two committees' bills and the House-Senate conference agreement reflected that economic analysis. Part D evaluates the economic analysis with the benefit of 40 years of hindsight. Part E evaluates the policies in the Act itself.[2]

A. Background

By January 1975, the unemployment rate had increased from below 5 percent throughout 1973 to 8.1 percent. Contemporaneous date indicated that, in 1974, real gross national product (GNP) declined 2.2 percent from its level in 1973. The preliminary data for the fourth quarter of 1974, published in January 1975, showed a precipitous decline in GNP at an annual rate of 9.1 percent.[3] Spending on business investment, housing, and consumer durables, especially autos, was particularly hard-hit. Despite the recession, inflation remained high, exacerbated by oil and food shocks; the consumer price index (CPI) rose 12.3 percent from December 1973 to December 1974.[4]

The early 1970s had seen several significant macroeconomic policy developments. In 1971, President Richard M. Nixon imposed wage and price controls and a temporary import surcharge, and Congress enacted his proposals for significant business tax reductions, including restoration of the investment tax credit (ITC), which had been enacted in 1962 and repealed in 1969, accelerated depreciation, and an incentive for exports. The Fed maintained easy money policies through 1972, but began to tighten later

[2] The 1975 Act contained important provisions unrelated to economic stimulus, including repeal of percentage depletion for integrated oil companies, restrictions on oil companies' use of the foreign tax credit, and other changes to the treatment of foreign source income. These amendments, which did not originate in the tax-writing committees, and various other minor provisions of the Act, are not addressed in this paper.

[3] In those years the Bureau of Economic Analysis highlighted GNP, not gross domestic product (GDP), in its data releases, and the presentation of data to the tax writing committees in 1975 followed this practice. Subsequently, these data underwent very substantial revisions, as discussed below. Revised data show that GDP declined at a rate of only 1.6 percent in the fourth quarter of 1974. The recession of 1973-75 was much less severe than was believed to be the case at the time.

[4] An alternative price index, the GNP deflator, rose at a moderately slower pace on account of the lower weight of food and energy prices in that index; however, the CPI was the index most salient to the general public and, therefore, the members of the tax-writing committees.

in 1973. The wage and price controls were eliminated in 1973 except for oil prices. In response to U.S. support for Israel in the Yom Kippur War, Arab countries embargoed oil shipments to the U.S., and oil-producing countries coordinated a production cut that tripled the world oil price. Also in 1973, the Bretton Woods system of fixed exchange rates broke down, and the dollar began to float freely against other major currencies.

President Gerald R. Ford, who had assumed the office after President Nixon's resignation in August 1974, initially focused on trying to control inflation. However, in his State of the Union Message in January 1975, he shifted gears and proposed two temporary tax cuts intended as an economic stimulus.[5] First, he made a novel proposal for a refund equal to 12 percent of 1974 personal income tax liability up to a maximum refund of $1,000, to be paid out in two installments during 1975.[6] Second, he proposed a one-year increase in the investment tax credit from 7 percent to 12 percent.[7] These temporary tax cut proposals totaled $16 billion, just over one percent of GNP.

The President also proposed a package of permanent tax and tariff changes intended to reduce the nation's dependence on imported oil, including energy tax and tariff increases and various offsetting personal and business tax reductions. The proposed reductions included a reduction in the corporate tax rate from 48 percent to 42 percent, increases in the minimum standard deduction (low-income allowance) and reductions in lower tax rate brackets. These energy-related tax reduction proposals were in the tax-writing committees' jurisdiction, but the committees decided to separate energy tax legislation from stimulus, so as not to delay the latter. Thus, the Administration's energy proposals played little role in the committees' deliberations on the Tax Reduction Act of 1975.

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[5] See Staff of the Joint Committee on Internal Revenue Taxation, *Summary of the President's Legislative Tax Proposals Included in his State of the Union Message on January 15, 1975,* JCS-1-75,

[6] Since 1975, per capita income has increased sevenfold, so that a $1,000 rebate in 1975 is equivalent to $7,000 today.

[7] The credit for public utilities was to be increased from 4 percent to 12 percent.

Throughout 1973 and 1974, the Committee on Ways and Means had been marking up a tax reform bill, which eventually became the Tax Reform Act of 1976. Thus, its consideration of economic stimulus legislation was conducted with the understanding that "permanent" tax reform would be an element of its post-stimulus tax agenda.

The fixed dollar amounts in the income tax were not indexed for inflation in 1975, and "bracket creep" was producing steady increases in real tax burdens, a phenomenon that was well understood by the tax-writing committees.

B. Economic Analysis Presented to the Tax-Writing Committees

During the consideration of the Tax Reduction Act of 1975, the tax-writing committees received economic analysis from three principal sources—the Ford Administration, panels of economists invited by each committee, and briefing pamphlets prepared by the staff of the Joint Committee on Internal Revenue Taxation.[8] Naturally, individual Members of Congress received economic input from other sources as well.

Administration economic input

Ford Administration officials testified before the Ways and Means Committee on January 22-24, 1975, including Secretary of the Treasury William Simon and Director of the Office of Management and Budget Roy Ash. The Committee on Finance heard from Secretary Simon on March 5, 1975. No administration economists testified before either committee. Administration economists' analysis of the economic situation and the proposed tax cut was set forth in the *Economic Report of the President 1975,* which was transmitted to Congress on February 4, 1975. This is a good source for the Administration's economic analysis as presented by the economists themselves.

[8] In 1975, the Committee was still called the Joint Committee on Internal Revenue Taxation, the shortening of its name to Joint Committee on Taxation occurring the next year. The abbreviation JCT is used here.

The Report predicted that real GNP would be lower in 1975 than in 1974 but that the Administration's proposed tax cuts, if enacted, would reduce the decline by between one-half and one percentage point. It argued that "past experience suggests that most of the tax cut will be spent, and a large fraction of it this year."[9] It also predicted that the proposed increase in the ITC would begin to have a significant impact on investment spending in the second half of 1975.

The Report expressed concern that too expansionary a federal budget would worsen inflation and indicated that the Administration's proposed response was to reduce the rate of growth of federal spending.[10] There was no mention of the possibility that austerity on the spending side of the budget could offset some of the stimulus provided by the proposed tax cuts. The Report indicated that the deficits arising from the tax cut could "probably be financed without serious problems in 1975," assuming accommodation by the Fed.[11] However, it argued that continued rapid monetary growth once unemployment had declined would adversely affect inflation. All this was consistent with a generally Keynesian approach to macroeconomic policy.[12]

The Council's economic forecast was that GNP in 1975 would be 3 percent below 1974 and that by the final quarter of 1975 the rate of inflation, as measured by growth in the GNP deflator, would decline to 7 percent from 9.7 percent in 1974. The Council forecast that recovery would begin in the second half of 1975.

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[9] See Council of Economic Advisers, *Economic Report of the President 1975,* p. 20. The reference to "past experience" is puzzling because no policy similar to the proposed tax rebate had ever been enacted. Perhaps it was a reference to the 1936 veteran's bonus.

[10] *Economic Report*, p. 24.

[11] *Economic Report*, p. 25.

[12] By "Keynesian," we mean the approach to macroeconomics developed in the mathematical representation of Keynes' ideas by the British economist Sir John Hicks. See J. R. Hicks, "Mr. Keynes and the 'Classics', A Suggested Interpretation," *Econometrica* 5 (2): 147–159, 1937. Following World War II, much of macroeconomics consisted of research on the fundamental relationships driving this version of the Keynesian model, including determinants of consumer spending, business spending on plant and equipment, housing investment, inventory investment, and so forth. This knowledge was then incorporated into large-scale econometric models of the U.S. economy, several of which were in use by 1975.

Panels of economists

On January 27-29, the Ways and Means Committee held three full-day panel discussions with panels consisting largely of economists.[13] The economic panelists included former members of the Council of Economic Advisers under the Kennedy, Johnson and Nixon administrations, other former government economists, academic and think tank economists, a private sector economic forecaster, and economists from private sector organizations.[14] The panels were well attended by committee members, who asked numerous questions of the panelists.

Chairman Al Ullman opened the hearings by asking several specific questions of the panelists:

> We are interested also in your forecast of economic conditions, how big a tax reduction is desirable should you so recommend and whether it should be permanent or temporary, the implications of that decision and how it should be divided between industry and consumers and among different income levels.[15]

Michael Evans, the economic forecaster, began the hearings by presenting his forecasts under the assumption of no tax cut, enactment of the Administration package, and enactment of a package that

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[13] See Staff of the Joint Committee on Internal Revenue Taxation, *Summary of Statements Presented in Panel Discussions on the State of the Economy and the President's 1975* Legislative Tax Proposals, JCS-4-75, January 31, 1975; Staff of the Joint Committee on Internal Revenue Taxation, *Digest of Public Testimony on the President's 1975 Tax Proposals*, JCS-5-75, February 3, 1975; and Committee on Ways and Means, *Hearings on President's Authority to Adjust Imports of Petroleum, Public Debt Ceiling Increase, and Emergency Tax Proposals*, January 23-24, 27-30, 1975.

[14] The former high-level government economists included Walter Heller, Paul McCracken, Arthur Okun, Charles Schultze, James Duesenberry, Robert Roosa, Paul Volcker, Herbert Stein, Robert Nathan, Sherman Maisel, and Murray Weidenbaum. The private sector economic forecaster was Michael Evans of Chase Econometrics, who had built and who operated a large-scale econometric model. The academic and think tank economists were Robert Gordon, the President of the American Economic Association, and Joseph Pechman from The Brookings Institution. (Also, many of the former government officials were currently working in universities or at think tanks.) Certain non-economists testified on the panels as well as economists focusing on particular industries such as autos and housing. This discussion is limited to the testimony of the economists.

[15] *Ways and Means Hearings*, p. 469. The tax-writing committees could determine the size of their proposed tax cut because the newly enacted congressional budget process was not yet in effect, so that there was no externally imposed budget constraint on either tax-writing committee limiting the size of the tax cut.

was similar to what the Ways and Means Committee ultimately agreed to.[16] Using his large-scale econometric model, he forecast that, without a tax cut, the economy would reach bottom in the second quarter of 1975, begin growing at a 3-percent rate in the second half of 1975, and accelerate to a 6-percent growth rate in the first half of 1976. His simulation of the hypothetical Ways and Means bill indicated that it would cause growth to increase to 5 percent in the latter half of 1975 and to 6.5 percent in the first half of 1976.[17] He forecast that, without a tax cut, inflation would decline through 1975 and the first half of 1976 and that a tax cut would only modestly slow this rate of decline.[18]

All economic panelists supported the desirability of fiscal stimulus. Consistent with the Administration's analysis, the panelists testified that tax cuts would increase spending and expand the economy through a multiplier effect, a pure Keynesian approach.[19] The prevailing view among the panelists was that, even with a tax cut, the level of unemployment and the gap between actual and potential GNP would be sufficiently high for the foreseeable future that inflation would continue to decline. However, Herbert Stein argued that a considerable period of economic slack was desirable to get inflation under control

[16] The Chairman had introduced H.R. 2622 embodying his tax cut proposals, which scaled down the proposed rebate and added various personal income tax cuts that would be reflected in lower withheld taxes and that were targeted generally at lower-income taxpayers. Therefore, Evans had a basis for his simulations of a hypothetical Ways and Means bill. That the Chairman had introduced his bill prior to the panel discussions in no way diminished their impact on the committee's deliberations. Both the Chairman and the JCT staff were familiar with the views of many of the economic panelists. Moreover, the Chairman and other committee members were open to modifying the Chairman's proposals should they be persuaded that a different approach was preferable.

[17] *Ways and Means Hearings*, p. 477. Evans' simulation of the impact of the Administration program is difficult to interpret because it included the impact of the proposed energy taxes, which the committee had decided to address separately from tax cut legislation. Evans believed that the energy proposals would depress the economy.

[18] Evans' simulations provided the ingredients for a dynamic estimate of the revenue impact of a tax cut, and he provided such estimates in his testimony. However, dynamic scoring was not a significant issue for the Committee because it faced no externally imposed budget constraint. The Committee was interested in the appropriate size of the stimulus, which is better measured by static revenue estimates of the tax cut.

[19] In this sense, the policy debate in 1975 differed from what occurred in 2009, when many prominent economists opposed any fiscal stimulus to address the recession on the grounds that it wouldn't work. See, for example, John F. Cogan, John B. Taylor, and Volker Wieland, "The Stimulus Didn't Work," *Wall Street Journal,* September 17, 2009.

and that stimulus should be limited to what was needed to stop the decline in output and should not be so large as to produce too rapid a recovery.[20]

The panelists were split on whether fiscal stimulus should be temporary or permanent. Some believed that tax cuts should be permanent, generally on the grounds that permanent tax cuts would provide a stronger stimulus because taxpayers would spend a larger percentage of an increase in their disposable income that they believed to be ongoing.[21] This was an implication of the leading economic theoretical models of consumer behavior of the time, such as Milton Friedman's permanent income hypothesis and Franco Modigliani's life-cycle hypothesis.[22] Others indicated a preference for temporary tax cuts or argued that any permanent tax cut should be kept small, generally on the grounds that the federal government budget was projected to have a structural deficit that should not be aggravated by permanent tax reduction or on the grounds that inflation remained a problem.[23] Another group supported inflation indexing of the tax brackets and other fixed dollar amounts in the personal income tax, a permanent tax cut albeit one that merely maintained real tax burdens.[24]

The panelists were also split on the merits of the Administration's proposed tax rebate compared to a tax reduction that would be reflected in lower taxes withheld from paychecks. Some believed the rebate would be ineffective in stimulating the economy because most of it would be saved or used to pay down debt.[25] However, a substantial majority supported the rebate on the grounds that it could be delivered quickly and that enough of it would be spent to provide meaningful stimulus. Several

[20] Stein supported a tax cut of the size proposed by the Administration with modifications that he argued would provide a stronger stimulus. He recommended a "moderate sustained dose" of deflationary pressure "rather than to swallow the whole bottle at once." By this, he meant that policy should aim to maintain the unemployment rate between 6 and 7 percent until inflation subsided. *Ways and Means Hearings,* p. 518.
[21] This group included Stein, McCracken, and Okun.
[22] Franco Modigliani and Richard Brumberg, "Utility Analysis and the Consumption Function: an Interpretation of Cross-Section Data," in Kenneth K. Kurihara, ed., Post-Keynesian Economics, Rutgers University Press, 1956, pp. 388-436; Milton Friedman, *A Theory of the Consumption Function,* Princeton University Press, 1957.
[23] This group included Duesenberry, Roosa, Schultze, and Volcker.
[24] This group included Roosa, McCracken and Evans.
[25] This group included Stein, Gordon and Volcker.

economists suggested combining a rebate with a tax reduction reflected in withholding, the approach proposed by Chairman Ullman.[26]

Only one economic panelist supported the Administration's proposal to split the rebate into two payments.[27] The panelists' negative reaction to the two-payment concept illustrates the extent to which Keynesian economics dominated the discussion. The purpose of splitting the rebate presumably was to make it easier to finance without an increase in interest rates. Keynesians dismissed this concern on the grounds that, as long as the Fed accommodated the increased demand for money, the rebate's multiplier effect would ensure that enough additional saving and tax revenue materialized to finance the rebate. The Ford Administration did not fight hard to defend the two-payment approach.

The panelists generally supported the proposed increase in the ITC on the grounds that it would provide a powerful stimulus to business spending on equipment, albeit with a time lag.[28] This reflected recent work concluding that the after-tax cost of capital, measured so as to take into account such tax parameters as the ITC and depreciation schedules, affected business investment, generally with a lag of one to two years.[29]

Except for Murray Weidenbaum, the panelists had little to say about the proposal to equalize the investment credit for utilities with that for businesses generally. His testimony emphasized the difficult financial conditions facing the utility industry, which were constraining the industry's level of investment spending.

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[26] This group included Pechman, Schultze, Heller, and Okun.
[27] This was Weidenbaum.
[28] The exceptions were Gordon and Evans.
[29] See Dale Jorgenson and Robert Hall, "Tax Policy and Investment Behavior, *American Economic Review* 57, no. 3 1967; Dale Jorgenson, "Econometric Studies of Investment Behavior: A Review," *Journal of Economic Literature,* vol. 9, no. 4, 1971. Earlier work on investment behavior had linked investment to the level of output and capacity utilization and viewed it as unresponsive to the cost of capital. The economists' support for the ITC no doubt was influenced by their observations of the response of business investment to the enactment, repeal and restoration of the ITC beginning in 1962.

On January 30, 1975, the Ways and Means Committee heard from Arthur Burns, the Chairman of the Federal Reserve Board, and a noted economist who had chaired President Dwight D. Eisenhower's Council of Economic Advisers. Chairman Burns indicated his support for a one-year tax cut, split between a rebate and a personal income tax cut reflected in withholding. Burns' support for the tax cut was widely interpreted to mean that Fed policy would not try to offset the stimulus provided by the tax cut by tightening monetary policy; that is, the Fed would accommodate the tax cut. In the Keynesian model, this meant that the tax cut would not raise interest rates.

The Senate Finance Committee held its own panel of economists on March 11, 1975.[30] Much of the testimony addressed specific features of the House bill and possible alternatives. Joseph Pechman, for example, strongly supported the earned income tax credit as an appropriate offset for social security taxes on lower-income workers. Two panelists supported a significantly larger tax cut that the one passed by the House.[31] A third supported a tax cut the size of the House bill.[32] The panelists disagreed on whether lower-income people would spend a larger fraction of a tax rebate than higher-income people.[33]

JCT briefing pamphlets

On January 30, 1975, the JCT staff published a briefing pamphlet for use of the Ways and Means Committee.[34] On March 13, the staff published a briefing pamphlet for the Finance Committee.[35] The pamphlets addressed the key economic issues facing the committees in their mark-ups of the stimulus

[30] Panelists were Schultze, Weidenbaum, Stein and Pechman. See Senate Committee on Finance, *Hearings on Antirecession Tax Cut*, March 10-12, 1975. Naturally, the Senators had access to the testimony provided in the House panels.
[31] These were Schultze and Pechman.
[32] This was Stein.
[33] Stein, in particular, questioned the assumption that lower-income people had a higher propensity to consume a rebate.
[34] Staff of the Joint Committee on Internal Revenue Taxation, *Analysis of Administration's Tax Cut Recommendations and Possible Alternatives*, JCS-3-75, January 30, 1975.
[35] Staff of the Joint Committee on Internal Revenue Taxation, *Analysis of the House Version of the Tax Reduction Act of 1975 (H.R. 2622) and Possible Alternatives,* JCS-8-75, March 13, 1975.

legislation. Much of the content of the two pamphlets overlapped; however, the Senate pamphlet contained analysis of the House bill as well as a much more detailed economic forecast.

Causes of the recession.—The JCT staff attributed the recession to a shortfall in demand arising from several sources. First, the increased price of imported oil had the economic effect of a tax on oil consumers, reducing disposable income available to purchase U.S-produced goods and services. This effective tax increase would last until the oil-exporting countries started recycling the revenues by importing goods and services from the rest of the world. The staff estimated this "tax" increase at $18 billion (approximately 1-1/4 percent of GNP). The oil price increase also significantly reduced demand for U.S. produced cars because the most fuel efficient cars were imports. Second, the Federal Reserve's tight money policy, which started in 1973 and persisted through much of 1974, had affected housing and business investment. Third, the staff noted that federal fiscal policy had become more contractionary in 1974. While the actual federal budget deficit had increased, a better estimate of the budget's macroeconomic impact would be to estimate the deficit *pro forma* as if the economy were operating at full employment. On this basis, the budget had swung from a deficit of $5 billion in the first quarter of 1973 to a surplus of over $30 billion (a swing amounting to 2-1/2 percent of GNP).[36] Finally, the staff cited the cyclical impact of business inventory investment.

Economic Outlook.—In the House pamphlet, the staff presented a table of 32 economic forecasts, which unanimously predicted a decline in economic activity in 1975 below 1974 and continued high unemployment. In the Senate pamphlet, the staff presented the Chase Econometrics forecast about which Michael Evans had testified at the House panel. The Chase forecast was roughly in line with the Administration's economic forecast, adjusted for the fact that Chase assumed present law while the Administration assumed enactment of its program.

[36] These were Administration estimates. Much of this increase resulted from the impact of inflation in increasing real tax burdens, called bracket creep. The JCT staff estimated bracket creep to be $7 billion in 1974. See JCS-3-75, p. 9.

Amount of economic slack.—The staff produced its own estimates of potential GNP, which was at a level that implied a $169 billion gap between actual and potential GNP in the fourth quarter of 1974. The implication was that there was substantial room for economic growth before the economy reached capacity constraints and tight labor markets that would cause inflation to stop declining or to accelerate. The staff's estimate of potential GNP assumed 4-percent annual growth from its peak in the fourth quarter of 1973, reflecting an increase in labor force participation of 1.8 percent per year, a decline in hours worked of 0.3 percent per year, and an increase in productivity of 2.5 percent per year. The Chase forecast of actual GNP, together with the staff forecasts of potential GNP, implied that a large gap between actual and potential output would remain at the end of 1975—as much as 14 percent of potential GNP. The staff opined that, assuming a robust recovery of 6 percent per year, the economy would not attain full employment until 1980. The staff, however, qualified this by noting that estimates of the gap between actual and potential GNP were subject to significant uncertainty.[37]

Economic impact of a tax cut.—JCT presented a standard Keynesian analysis of the economic impact of an individual income tax cut. Taxpayers would spend a fraction of their disposable income, which would increase other people's income and spending through a multiplier effect. In addition, businesses would respond to a higher level of demand and lower after-tax cost of capital by increasing investment in plant and equipment. The staff estimated the multiplier to be between 1 and 2, the value derived from simulations of the Chase Econometrics model. The staff dismissed concerns that a tax cut would "crowd out" private investment, again applying the standard Keynesian multiplier analysis that the expanded income would produce enough additional tax revenue and saving to finance the tax cut as long as monetary policy accommodated the additional demand for money arising from higher levels of income.

[37] During one of the Ways and Means Committee's panel discussions, the panelists had addressed the size of the gap between actual and potential GNP in response to a question from Rep. Joe Karth. Views ranged from 9-10 percent to 20 percent, placing the staff estimates well within the range of outside estimates. *Ways and Means Hearings*, p. 549.

It expressed concern that a stronger economy would create more inflationary pressure, but quoted the Chase Econometrics forecast that this impact would likely be small and would be occurring during a period of declining inflation.

Duration of tax cut.—The staff predicted that economic slack was likely to persist after 1975, so that some stimulus probably would be needed after 1975. It also noted that bracket creep was raising effective tax rates, which over time would tend to counteract the economic impact of "permanent" tax cuts. The speed with which this erosion would occur would depend on the size of the cut and the rate of inflation. With bracket creep running at $5-7 billion per year, a $20 billion "permanent" tax cut would be substantially eroded by early 1977. To the extent the tax cut consisted of a rebate, it would be eroded even earlier.

Impact of tax rebate.--In the absence of historical experience, the staff analyzed the question of how much of a tax rebate would be spent by consulting public opinion surveys. These tended to vary, but indicated that anywhere from one-half to two-thirds of taxpayers would save a rebate or use it to repay debt (a form of savings). This was much more spending than was implied by economic theories of consumer behavior, but much less spending than would occur in response to tax reductions expected by taxpayers to be permanent. However, the staff noted an offsetting advantage of a rebate—that it could be paid out quickly and that spending could focus on consumer durables.

Size of tax reduction.—The Senate pamphlet presented information on whether the tax cut should be increased over that in the House bill. This analysis essentially was that the gap between actual and potential output was likely to be so large in the next year or two that even a larger tax cut would be insufficient to eliminate the gap. Beyond that time horizon, bracket creep could be expected to offset most, and eventually all, of the stimulus provided by the House tax cut.

Distribution of tax reduction.—The staff addressed various issues related to the appropriate distribution of a tax reduction. It suggested that a tax refund directed towards middle- and upper-income taxpayers, such as was proposed by the Administration, was more likely to be spent on consumer durables (because the refunds were large enough to contribute meaningfully to such a purchase) but that upper-income taxpayers who did not spend their rebate on consumer durables were more likely to save it than would be the case for lower-income taxpayers.[38] However, it also argued that lower-income taxpayers had suffered more from high food and energy costs, so that tax relief directed to them might be fairer. The staff noted that the tax threshold, the level of income at which people start paying income tax, had dropped below the poverty line in light of inflation, especially higher food and energy costs.

Investment tax credit.—The staff analysis supported the idea that the higher ITC would provide economic stimulus through higher investment spending; moreover, it suggested some additional benefits. Higher productivity arising from more capital formation would contribute to lowering inflation, and the U.S. could expect productivity to decline as the baby boom generation entered the workforce unless the pace of investment increased enough to equip the additional workers with capital.[39]

The staff expressed concern over the financial condition of utilities, which were experiencing difficulties financing necessary investments owing to the unwillingness of state regulators to allow them to fully pass high energy costs on to customers, stock prices below book value, and high interest rates.[40]

C. Content of the Legislation

Ways and Means Committee bill

[38] The argument about consumer durables spending was used by the Administration to justify rebates as large as $1,000.

[39] Economic panelist James Duesenberry had testified about the nation's capital needs arising from demographic and other changes.

[40] The average 1975 interest rate on AAA-rated corporate bonds was 8.83 percent.

The Ways and Means Committee reported its bill on February 25, 1975.[41] The bill contained tax reductions amounting to $21 billion, higher than the $16 billion proposed by the Administration. The committee report justified the larger tax cut by citing the deterioration of economic conditions in the six weeks following the Administration's proposal.[42]

As recommended by many of the economic panelists, the Committee split its proposed personal income tax reductions between a rebate of 1974 taxes and cuts that would be reflected in taxes withheld from worker's paychecks. The rebate was reduced from $12 billion proposed by the Administration to $8.1 billion. This was done by refocusing it on lower and middle income taxpayers on the grounds that they were more likely to spend the money.[43] The rebate was to be made in a single payment, not the two payments recommended by the Administration, in order to speed up the economic stimulus. The Committee justified the inclusion of tax cuts reflected in withholding by arguing that, even though the impact on spending would build up more slowly than with the rebate, a larger percentage of those tax cuts would be spent over the course of the year.[44] Statutorily, the tax cuts reflected in withholding were limited to 1975 tax liability; however, there was a general expectation that, apart from the tax rebate, the cuts were likely to be extended into future years.

The principal tax cut reflected in withholding was an increase in the standard deduction amounting to $5.2 billion, including a significant increase in the minimum standard deduction, or low-income allowance. This was justified by the need to offset the impact of inflation, especially higher food and

[41] House Report 94-19.
[42] House Report, p. 8.
[43] House Report, p. 9. Specifically, the proposed rebate was 10 percent of tax liability up to $200; however, there was a minimum rebate equal to the lesser of 100 percent of tax liability or $100. For taxpayers with income above $20,000, the rebate was phased down from $200 to $100. Adjusted for the increase in GNP per capita, the $100 rebate was the equivalent of $700 in 2014. One change that greatly facilitated the Committee's ability to rewrite the Administration's rebate proposal was that JCT staff had recently developed its own capability to use Treasury's individual income tax simulation model and did not have to rely on Treasury for estimates of specific proposals.
[44] House Report, p. 8.

energy prices, in increasing the poverty line as well as the impact of a higher standard deduction in simplifying the tax calculation.[45]

The Committee wanted to provide relief for taxpayers who were too poor to have personal income tax liability but who were subject to payroll tax, because they could be expected to spend a large fraction of any tax cut and had suffered from higher food and energy prices.[46] It considered the possibility of a payroll tax reduction; however, the Committee did not want to interfere with the financing of the social security trust funds. Therefore, it dusted off a proposal, called the "work bonus," that Senate Finance Committee Chairman Russell Long had made during consideration of President Nixon's welfare reform bill earlier in the decade, and renamed it the earned income tax credit (EITC). This tax cut amounted to $2.9 billion. Consistent with its desire to encourage consumer spending, the Ways and Means Committee's version of the EITC was to be reflected in lower income tax withholding for those recipients with pre-credit income tax liability.[47]

In response to its desire for fast-acting economic stimulus and its belief that consumer spending was more responsive to changes in after-tax income received in paychecks than to changes received as lump-sums, the Committee provided that the Internal Revenue Service was to create withholding tables that would reflect the entire 12 months' tax cut in the last two-thirds of the year; that is, at annual rates, the withholding change would be 50 percent larger than the cut in liability. The Committee, of course, recognized that it would be necessary, in future legislation, to increase the cut in tax liability in 1976 by 50 percent to prevent an increase in withholding taxes on January 1, 1976, but considered this an acceptable price to pay for the greater and faster stimulus arising from this approach. Because the withholding tables assumed that taxpayers took the standard deduction, itemizers would experience a

[45] House Report, p. 9-10.
[46] House Report, p. 10.
[47] Specifically, the House version of the EITC was a credit of 5 percent of earnings up to a maximum credit of $200, phased out as earning rose from $4,000 to $6,000. The credit was to be available to most taxpayers with income below $6,000.

reduction in withholding unless they proactively filed new Forms W-4 to claim fewer exemptions. These rules were designed to turbo-charge the increase in consumer spending resulting from the tax cut.

The Committee scaled down the Administration's proposed increase in the ITC from 12 percent to 10 percent, but added some additional business tax cuts for small business, including increases in the limitation on the amount of used property eligible for the credit and the corporate surtax exemption (now the lower tax rates for smaller corporations). For 1975, the business tax cuts totaled $3.5 billion.[48] The additional cuts for small business were responses to political considerations, not to the economic analysis that the committee had received from either the economic panelists or the staff.

Senate Finance Committee bill

The Finance Committee reported its version of the bill on March 17, 1975.[49] It increased the size of the tax cut to $29.2 billion on the grounds that the economy had continued to deteriorate since passage of the House bill three weeks earlier and that the larger tax cut was needed to bring the economy out of the recession.[50] In other respects, the Finance Committee bill continued the major themes of the House bill—addition of tax cuts reflected in withholding and concentration of tax cuts lower down the income scale. The Finance Committee accepted the House version of the rebate but replaced the increased standard deduction with other lower and middle-income tax cuts. These included cutting the bottom bracket rate and providing taxpayers an option to claim a $200 credit in lieu of the $750 personal exemption. These tax cuts responded to criticism of the House bill that its "permanent" tax relief neglected itemizers. The Committee also doubled the rate of the EITC and focused it on taxpayers with

[48] Additional credits would be claimed against 1976 liability because the additional credits were made available with respect to binding contracts in effect at the end of 1975.
[49] Senate Report 94-36.
[50] Senate Report, p. 8

children. This was consistent with the Finance Committee's view that an important purpose of the EITC was to encourage parents on welfare to enter the labor force.[51]

The Committee's business tax cuts were more generous than those in the House bill. The 10-percent ITC was made permanent, and the credit was increased to 12 percent for two years. For larger taxpayers, the additional two points of credit were available only if the employer contributed half the amount to an employee stock ownership plan (ESOP). The ESOP incentive reflected Chairman Long's interest in encouraging employee stock ownership.

The Committee's bill included some specialized stimulus measures, including a credit for new home purchases and repeal of the truck and bus excise tax. With the possible exception of the ESOP provision, these features of the Finance Committee bill could all be justified as ways to encourage spending.

Conference Report

The Conference Report compromised between the two versions of the bill, creating a net tax cut of $22.8 billion, approximately 1.5 percent of GNP. Personal tax cuts were split more or less evenly between the rebate and changes to 1975 tax liability. The Conference Report scaled back the House's increase in the low-income allowance, but the largest single tax cut reflected in withholding was a $30 "general tax credit" for most personal exemptions.[52] The conference adopted the Senate's version of the EITC. An odd provision of the conference report was to limit the Senate's credit for new home purchases to homes already built or under construction, significantly limiting the provision's stimulus. The conference kept the House 10-percent ITC but included the Senate's additional one point for ESOPs.

D. Evaluation of Economic Analysis

[51] Senate Report, p. 11, 33.
[52] Adjusted for the increase in per capita GNP, the $30 credit would be $210 today.

How does the economic analysis presented to the tax-writing committees hold up with 40 years of hindsight?

Today's academic macroeconomists would not look kindly on the Keynesian macroeconomics presented to the tax-writing committees in 1975, especially the use of large-scale Keynesian econometric models to simulate policy. As is discussed more fully below in the section on revenue estimation, the criticisms are both methodological and substantive. The methodological criticism is that the equations in the models are not derived rigorously from individuals' preferences and the technology available to businesses. The principal substantive criticism is that the models do not do a good job of incorporating people's expectations, especially their expectations about policy.[53] For example, if the government adopted a consistent policy of providing an ITC during recessions and removing it during booms, forward-looking businesses might respond by postponing investments until the credit was effective, in which case the policy could aggravate, not dampen, cyclical fluctuations, an effect that would be missed by a model that erroneously assumed that the ITC rate was an exogenous variable. Similarly, if the government routinely cut personal income taxes during recessions, individuals with long time horizons might choose to reduce labor force participation during booms and increase it during recessions to arbitrage tax rates, again aggravating cyclical fluctuations.[54]

Among actual policymakers outside academia, however, the Keynesian macroeconomic analysis presented to the tax-writing committees in 1975 retains considerably more credibility. Lawrence Summers has indicated that the Obama Administration's economic analysis in the recent recession

[53] Robert E. Lucas, Jr. and Thomas Sargent, "After Keynesian Macroeconomics," *Federal Reserve Bank of Minneapolis Quarterly Review,* Vol. 3, No. 2, Spring 1979, p. 14. The precise quotation is "existing Keynesian macroeconometric models cannot provide reliable guidance in the formulation of monetary, fiscal or other types of policy. This conclusion is based in part on the spectacular recent failure of these models and in part on their lack of a sound theoretical or econometric basis."

[54] More recent models that feature forward-looking agents who maximize their utility subject to budget constraints are termed "dynamic stochastic general equilibrium," or DSGE, models. These are discussed more fully below.

largely ignored DSGE models and relied on traditional Keynesian macroeconomics.[55] Like doctors who use medical protocols that have little or no basis in biology but have been shown to work, economists in policymaking positions continue to use Keynesian economics despite its theoretical flaws when they are faced with economic downturns.

The view expressed by Lucas and Sargent that Keynesian models failed spectacularly in the 1970s is not accurate as applied to the 1975 Act. The economic forecasts on which the tax-writing committees relied proved to be reasonably accurate. GNP bottomed in March 1975, one month earlier than Michael Evans had predicted, and grew rapidly over the next 15 months, although growth tapered off in the second half of 1976. The unemployment rate peaked at 9.0 percent in May 1975 and began a steady decline, reaching 8.3 percent by year-end and 7.3 percent by May 1976 before rising in the second half of 1976. Investment in equipment began growing in the third quarter of 1975, and the growth rate reached double digits a year later. Inflation fell rapidly through 1975 and 1976, with CPI growth down to 4.9 percent in 1976. The Keynesian econometric model on which the tax-writing committees relied worked pretty well during the period before bracket creep caused the impact of the tax cuts to wear off.

Since 1975, there have been numerous revisions to the national income accounts. These show that the recession was less severe than was believed to be the case at the time. The GNP data shown in the 1976 *Economic Report of the President* show a 5.9% drop in GNP (in 1972 prices) between the peak in the fourth quarter of 1973 and the trough in the first quarter of 1975. Subsequent revisions (including the shift in emphasis to GDP) show a decline of only 3.2%, still a severe recession (particularly in light of the rapid growth in the labor force that was occurring) but not as catastrophic as originally thought.

[55] See Lawrence Summers, "A Conversation With Martin Wolf," available at http://larrysummers.com/commentary/speeches/brenton-woods-speech/. The precise quotation is, "[I] would have to say that the vast edifice in both its new Keynesian variety and its new classical variety of attempting to place micro foundations under macroeconomics was not something that informed the policy making process in any important way."

The most serious error in the economic analysis was that the JCT staff and other estimates of the gap between actual and potential output proved to be much too large for three reasons. First, contemporaneous data understated actual GNP relative to the previous peak by almost 3 percent. Second, the level of unemployment below which inflation starts to accelerate was increasing on account of demographic changes, so that the level of unemployment attained at the 1973 peak would not be attainable later in the decade. Third, the JCT's assumption that potential GNP would grow by 4 percent annually was too optimistic. Measured from the business cycle peak in 1973 to the peak in 1989, productivity grew 1.5 percent per year, compared to the staff's 1975 estimate of 2.5 percent. Labor force participation grew 1.5 percent per year, compared to a forecast 1.8 percent. Hours per worker fell 0.4 percent per year, compared to the forecast 0.3 percent. As a result, the staff (along with many other economists) overestimated the amount of slack in the economy.[56] The Congressional Budget Office now estimates that the gap between actual and potential GDP in 1975 was less than four percent.[57] Even with this error, however, the gap between actual and potential GNP was certainly large enough in 1975 to support a fiscal stimulus of the size and duration of the 1975 Act.

Economic research in the past 40 years on the determinants of consumer and investment spending and the tax cut multiplier appears to confirm much of what was presented to the tax-writing committees in 1975, even with the substantial reshaping of econometric models. Studies of consumer responses to tax rebates confirm that a much larger fraction of the rebate is spent in the short-run than is implied by life-cycle or permanent income models of consumer behavior but that most of the rebate is saved or used to pay down debt.[58] The studies remain split on whether the propensity to consume a rebate is higher for lower-income households and whether a rebate to middle-income taxpayers encourages spending

[56] By the same token, the Administration overestimated the full-employment budget surplus.
[57] Frank Russek and Kim Kowalewski, "How CBO Estimates Automatic Stabilizers," Working Paper 2015-7, *Working Paper Series*, Congressional Budget Office, November 2015.
[58] The evidence is summarized in Shapiro, Matthew D., and Joel Slemrod. 2009. "Did the 2008 Tax Rebates Stimulate Spending?" *American Economic Review*, 99(2): 374-79. See also Jonathan A. Parker, "The Effectiveness of Tax Rebates as Countercyclical Fiscal Policy," *Vox* June 17, 2014.

on consumer durables, similar to the divergent views presented to the committees in 1975. Today's economic models agree that the after-tax cost of capital has a significant impact on business investment. The JCT staff estimate of the tax cut multiplier in a recession, between 1 and 2, is consistent with recent empirical work.[59]

E. Evaluation of the policies

How do the policies embodied in the Tax Reduction Act of 1975 hold up with 40 years of hindsight?

The Act was successful on its own terms. The tax-writing committees and the Administration wanted a robust economic recovery led by consumer spending and business investment in an environment of declining inflation. This is what they got in 1975 and 1976, which was the relevant time horizon because bracket creep could be expected to erode the economic stimulus over this period. Contra Lucas and Sargent, Keynesian economics was successful in helping policymakers achieve their objective. There was no "spectacular failure" in 1975.

Events later in the decade were more problematic. The temporary tax cuts other than the rebate were made permanent as expected, additional tax reduction was enacted in 1977 and 1978, and monetary policy remained easy. Recovery continued, and the inflation rate, which had dropped to 4.9 percent in 1976, began to increase rapidly, with CPI growth reaching 13.3 percent in 1979, a level widely viewed as unacceptable and prompting a change in policy implemented by the new Fed Chairman Paul Volcker. The tighter monetary policies led to a recession in 1981-82 that was even deeper than that of 1973-75 but which succeeded in dampening inflationary expectations and set the stage for the low inflation rates of the past 35 years. Whether the acceleration of inflation after 1976 represents evidence that Keynesian economics didn't work or whether it merely means that it was applied incorrectly because

[59] Alan Auerbach and Yuriy Gorodnichenko, "Measuring the Output Response to Fiscal Policy," *AEJ: Economic Policy,* Vol. 4, No. 2, May 2012, p. 1-27.

policymakers (including the Federal Reserve) greatly overestimated the gap between actual and potential output is an important question beyond the scope of this paper.

This history raises the issue of whether, if the U.S. economy had taken its anti-inflation medicine in 1973-75 rather than in 1981-82, a reduction in inflation to desirable levels might have been achieved with less cumulative unemployment and lost output. In the Ways and Means Committee economic panels, Herbert Stein had suggested that economic policy should not aim at a rapid recovery until inflation was brought under better control. He recommended a mix of easy money to stimulate investment and tight fiscal policy to hold back the rate of recovery (although not so tight to cause him to oppose a tax cut). Paul Volcker, in contrast, foreshadowed the policies implemented after 1979 by recommending a mix of fiscal stimulus and limitation on the growth of monetary aggregates to rates consistent with price stability.[60]

In a system of floating exchange rates, the Volcker mix can be expected to be more effective in bringing down inflation than the Stein mix on account of their respective impacts on exchange rates. Tight money raises the value of the dollar, lowering import prices and contributing to lowering inflation, while easy money has the opposite impact. In 1975, the Volcker mix was not on the table for the tax writing committees—the Fed was pursuing an easy money policy and continued to do so until Volcker became Fed Chair in 1979. Under these circumstances, tighter fiscal policy may well have meant higher unemployment without necessarily doing much to control inflation.

Another line of criticism of the policymaking in the 1975 Act and its immediate successors emerged later in the decade. "Supply side" economists made the point that, by focusing so intensively on the impact of tax reduction on aggregate demand, policymakers neglected the opportunity to use tax policy to increase supply by improving incentives to work and save, which could have been achieved with

[60] The 1975 *Economic Report of the President* had also recommended control of monetary aggregates once recovery was underway.

reductions in marginal income tax rates. In effect, this critique is that policymakers should have adopted a longer time horizon. This thinking was embodied in the Kemp-Roth tax bill, introduced in 1978, providing for across-the-board cuts in marginal tax rates, a variant of which was enacted in 1981.[61]

The supply side critique is not entirely fair as applied to the 1975 Act. While it is true that most of the tax-writing committees' focus was on whether and how best to stimulate aggregate demand, the increase in the ITC was explicitly intended as a stimulus to business investment with the expectation that this would increase supply. In the Senate, the EITC was seen as increasing labor force participation of low-income people, also increasing supply. In any case, while Congress expected that the tax cuts in the Act, other than the rebate, would be made permanent as a matter of law, as an economic matter they were really temporary tax cuts because it was expected that bracket creep would lead to offsetting tax increases over the ensuing two years. In that context, it was reasonable for Congress to focus the 1975 Act on economic stimulus and save reductions in marginal tax rates for tax reform and energy tax legislation once recovery from the recession was underway.

Several of the specific tax cuts included in the 1975 fiscal stimulus germinated provisions that subsequently became important parts of the tax code. The EITC has expanded into a major income maintenance program that is generally given high marks for increasing labor force participation of low income families with children, although at the price of creating a serious problem with refund fraud. However, it worked poorly as a fiscal stimulus. In 1975, because the other tax cuts were reflected in withholding over an 8-month period, virtually all of the EITC was received by taxpayers from whom no pre-credit income taxes were being withheld and, thus, was received as a refund in 1976. The credit's phase-out and restrictions on eligibility made it very difficult to integrate it into the withholding system, and this idea was dropped when the credit was extended into 1976.

[61] See the Economic Recovery Tax Act of 1981. This Act also indexed fixed dollar amounts in the personal income tax for inflation, as had been suggested by many of the Ways and Means Committee economic panelists.

The $30 tax credit morphed through several versions, eventually becoming the child tax credit, an important part of the current tax system. Tax incentives for ESOPs expanded in subsequent years, although most did not long survive Senator Long's retirement from the Senate. Tax rebates have been used for economic stimulus in several subsequent recessions.

In sum, the policies enacted in 1975 appear to hold up well with hindsight.

III. Capital Cost Recovery and Tax Benefit Transfers: JCT Economic Analysis, 1980-1986

A. Background

Capital cost recovery provisions in the income tax changed direction several times in the first part of the 1980s. Congress moved from capital cost recovery rules focused largely on income measurement to rules designed to stimulate investment and finally to rules that reduced investment incentives and promoted neutrality among different types of investment and among different taxpayers. This process culminated in the Tax Reform Act of 1986, whose capital cost recovery structure remains largely in place to this day. JCT staff economic analysis played a large part in framing the issues that Congress faced.

Prior to 1980, tax policymakers did not routinely apply economic analysis to the issue of depreciation. The original 1913 income tax contained little detail on how to compute depreciation deductions, and until 1954 the matter was left in the hands of Treasury, whose concern was achieving accurate measurement of income in a way that minimized controversy between taxpayers and the Internal Revenue Service. A second focus of policy, especially when the economy was weak, was on providing incentives for investment, which motivated the introduction of the double-declining-balance and sum-of-the-years digits depreciation methods in 1954 and the investment tax credit (ITC) in 1962 as well as the ITC's reenactment (after a 2-year hiatus) in 1971.[62] The ITC was typically analyzed as an investment

[62] See David W. Brazell, Lowell Dworin, and Michael Walsh, *A History of Federal Tax Depreciation Policy,* U.S, Treasury Office of Tax Analysis*,* OTA Paper 64, May 1989.

incentive separate from depreciation, which was viewed as part of the normal tax structure, even though the ITC's enactment and reenactment each coincided with changes in depreciation rules.

Before 1981, useful lives were determined through the asset depreciation range (ADR) system, legislated in 1971, under which broad categories of assets were grouped into asset classes where taxpayers could elect a recovery period as much as 20% shorter than the estimated actual average useful life of assets in the class. Taxpayers were also entitled to a 10-percent ITC. Two developments in the 1970's put great stress on this approach. First, the high inflation toward the end of that decade significantly reduced the benefit from historical cost depreciation. Second, depreciation and ITC rules were being exploited to create syndicated tax shelters.

By 1980, members of the tax-writing committees considered modernization of cost recovery rules to be a high priority. In response, during the ensuing 7 years JCT economists provided extensive analysis of the capital cost recovery provisions of the income tax. This attention reflected Members' interest in providing incentives for investment, which they viewed as a key driver of economic prosperity and growth. Also during this period, the staff provided extensive analysis of one of the consequences of investment incentives – a pile-up of unused tax benefits by property owners enjoying capital cost recovery incentives especially when they used substantial debt finance. In fact, the fluctuation in investment incentives in effect during this period can be viewed as a continual rebalancing of Members' views of the relative importance of providing these incentives while avoiding the equity and efficiency problems of tax benefit transfer mechanisms such as tax shelters and leasing. The staff's analyses dealt with numerous aspects of this tradeoff, and many of the provisions scaling back incentives and restricting the transfer of tax benefits enacted during this period flowed directly from this work.

The inherent structure of the income tax creates a tendency for investment incentives to lead to pressure for taxpayers to engage in tax benefit transfer transactions. In an ideal income tax, the tax

depreciation schedules would provide "economic depreciation" -- cost recovery deductions that equal the actual loss of value of the depreciable property in each period. This system would impose the same tax burdens on different types of assets. Assume, for example, that non-depreciable property (e.g. land) yielded a 5% return and depreciable property yielded a 7% (gross) return but declined in value by 2% a year. A tax system that included all the income and that allowed a depreciation deduction for the 2% decline would impose the same relative burden on the two asset types. With more than one type of depreciable property, each with a different rate of value decline, an economic depreciation system that provided depreciation deductions that matched the decline in value for each property type would retain this "neutrality" feature. The neutral treatment would be the outcome even if some of the depreciable property were financed by debt because the equity owner would bear the burden of the decline in property value and, in turn, would receive the entire depreciation deduction. When depreciation deductions are more generous than economic depreciation, however, the likelihood that taxable income will be negative in one or more years will increase substantially. In the above example, if the property were financed entirely by equity and if depreciation deductions in any given year exceeded 7% of the property's value, taxable income in that year would be negative unless the taxpayer had other sources of net income against which to use the deductions. The deduction threshold for negative taxable income would be even lower if the property were partly debt financed, because interest deductions would offset some of the gross income, leaving less available for depreciation.

Thus, to the extent depreciation deductions exceed economic depreciation, owners of depreciable property are more likely to have tax losses, especially if the investment is substantially leveraged. Although in this case the income tax provides net operating loss deductions, they may often exceed the refund immediately available through the use of carrybacks. The remaining tax losses are carried forward, delaying the realization of the original deductions and reducing their value. In cases where taxpayers experience or anticipate substantial carryforwards, taxpayers may want to pursue

transactions that effectively transfer the tax benefits to another taxpayer with sufficient taxable income to use them immediately. These tax benefit transfer transactions include leasing property from another entity that can currently benefit from the deductions associated with the property rather than owning it and combining a business with another taxpayer that has substantial taxable income. Thus, the issues of capital cost recovery, neutrality across asset types, and tax benefit transfers are intertwined.

B. 1980 Senate Finance Committee bill

In September 1980, the Senate Finance Committee reported a bill with a new system of depreciation deductions. On June 25 of that year, Republican Presidential candidate Ronald Reagan and House and Senate Republicans had announced their support for a large tax cut that included the "10-5-3" depreciation system, which had substantial support in the business community.[63] In response, Senate Democrats directed the Finance Committee to report to the full Senate a "responsible" tax cut bill. The Committee held markups in August and filed its report on September 15. Along with a large tax cut for individuals and numerous other tax cut provisions, the bill included a new "10-7-4-2" depreciation system. Under this approach, equipment was grouped into four asset classes for purposes of determining useful lives and depreciated using a declining balance method.

The Finance Committee's new depreciation system had been proposed by Sen. Lloyd Bentsen, who had been an original sponsor of 10-5-3 but had become convinced that it was too generous and expensive. JCT economists provided substantial analysis of 10-5-3. Their analysis showed that the 10-5-3 system, when combined with the ITC, was more generous for personal property than a system of immediate expensing.[64] Expensing can be viewed as a benchmark for capital cost recovery systems because,

[63] Under 10-5-3, certain types of short-lived equipment were written off over a 3-year life, most other equipment over a 5-year life, and structures and certain kinds of equipment over a 10-year life. In each case, an accelerated method of depreciation was allowed.

[64] To do this calculation, it is necessary to make assumptions about the rate at which depreciation deductions should be discounted as well as the tax rate at which the depreciation would be deducted.

under certain assumptions, immediate expensing of the cost of assets essentially eliminates the burden of the income tax on capital income.[65] In addition, in the process of developing the 10-7-4-2 system, Sen. Bentsen received an in-depth analysis from the JCT staff. Staff economists used a study by academic economists that attempted to measure the rate of economic depreciation for certain classes of assets by studying market prices of used assets.[66] Using this research, they designed a system in which the "effective tax rates" on different types of property were very similar, so as to achieve a neutral result. When tax depreciation equals economic depreciation, one can say that the "effective" tax rate equals the statutory rate in the sense that the present discounted value of the tax paid on the income derived from the asset divided by the present discounted value of that income equals the statutory tax rate. If depreciation is more or less generous than economic depreciation the effective tax rate will differ from the statutory tax rate.

Unlike 10-5-3, the effective tax rates in the 10-7-4-2 system were positive although lower than the statutory tax rate.[67] The Senate Finance Committee report memorialized this result:[68]

> The new system applies a more neutral tax treatment to the full range of assets and thereby will lead, not only to more investment, but also to a more productive mix of investment spending….These incentives should be limited so that the total discounted present value of allowable credits and deductions normally would not exceed the discounted present value of a current deduction of the entire acquisition cost of the property. The committee generally believes that benefits more generous than current expensing would result in encouraging

[65] E. Cary Brown, "Business Income Taxation and Investment Incentives," *Income, Employment and Public Policy: Essays in Honor of Alvin Hansen*, 1948. More precisely, under expensing the present value of the cost recovery deductions will equal the present discount value of the income earned by the asset assuming the asset earns a rate of return equal to the discount rate. To the extent that the asset earns higher returns, a positive tax will be collected. Thus, it may be said that expensing leads to a zero effective tax rate on the "normal" return to capital.
[66] Hulten C. and F. Wycoff, "The Measurement of Economic Depreciation," in Hulten, ed. *Depreciation, Inflation, and the Measurement of Income from Capital*, The Urban Institute, 1981. This paper was circulating as a working paper in 1980.
[67] The JCT staff economists were not the only ones suggesting use of economic depreciation. In hearings before the Finance Committee in July 1980, two prominent economists, Alan Auerbach (who later served as a JCT Deputy Chief of Staff) and Dale Jorgenson, made a proposal for first-year depreciation designed to achieve this goal; however, the high first-year revenue loss from this approach and its impact of financial accounting made it unattractive to the tax-writing committees. An important assumption in the calculation of these effective tax rates was that investments earned a "normal" return equal to the cost of capital.
[68] S. Rpt. 96-940, p. 13

> uneconomic investments. Also, the committee has carefully structured this new system so that the tax laws provide the smallest feasible distortion in business choices about whether to invest in assets with short or long useful lives.

After this report was filed, Senate Democrats decided not to bring the bill to the Senate floor in light of the impending election.

C. Economic Recovery Tax Act of 1981

The depreciation issue, however, did not go away. After President Reagan won the 1980 election, the Treasury Department developed a formal Administration tax cut proposal that incorporated a variant of the 10-5-3 depreciation system. On May 6, 1981, the JCT published for the Ways and Means Committee an economic analysis of key concepts useful in analyzing capital cost recovery systems.[69] The pamphlet noted that eliminating the tax on the normal return to capital in an expensing system achieved a similar result as a consumption tax for equity-financed investment. It also explained in detail the concept of an effective tax rate, which is a function of the cost recovery deductions and credits, the statutory tax rate, an assumed interest rate used for present value calculations, and assumptions about the economic depreciation of various asset types. Pointing out that an effective tax rate of zero is equivalent to expensing and that using tax deductions equivalent to economic depreciation equates the effective rate to the statutory rate, the study analyzed the pre-1981 Act system. The study showed that for all equipment types the effective rate was lower than the statutory rate and that the effective rate for shorter-lived equipment tended to be much lower than that for longer-lived equipment. Thus, that system provided an investment incentive but was not neutral among equipment types. As with the analysis done the previous year, this analysis integrated the depreciation rules with the ITC.

[69] Joint Committee on Taxation, *Analysis of Proposed Depreciation and Investment Tax Credit Revisions*, JCS-18-81, May 6, 1981.

The 1981 Act, as enacted, largely accepted the President's proposals, including a version of 10-5-3, renamed the Accelerated Cost Recovery (ACRS) system. The shorter useful lives took effect immediately. Accelerated depreciation methods initially approximated 150% declining balance depreciation, while a further acceleration to 200% declining balance was to become effective in 1985-86.[70]

The Administration realized that ACRS would cause many capital intensive businesses to develop net operating losses, which would dilute the investment stimulus provided by ACRS. Thus, it recommended "safe harbor leasing" to allow an easy transfer of tax benefits from one company to another. Even before the Act, many companies, especially those that were capital intensive and/or had significant debt finance, tended to have significant net operating loss carryforwards. For such firms, leasing property from another party that could immediately use the tax deductions attributable to ownership was a traditional way to deal with this problem. But leasing was subject to many restrictions, which were designed to ensure that the transaction had economic substance, which made leasing transactions less attractive to businesses. With the expansion of cost recovery benefits under ACRS, the Administration wanted to give loss firms a greater ability to use these benefits so that they were available to a reasonably broad cross-section of firms. Thus, safe harbor leasing, which allowed transfer of cost recovery benefits from one firm to another without regard to economic substance, was included in the Act as a presumably more efficient way to transfer tax benefits.

D. Tax Equity and Fiscal Responsibility Act of 1982

Almost as soon as the ink was dry on President Reagan's signature on the 1981 Act, members of the tax-writing committees, led by Chairmen Dan Rostenkowski and Bob Dole, realized that the Act's revenue

[70] P.L. 97-34

loss would lead to budget deficits they could not accept.[71] Thus, they began to review every provision with the objective of recouping some of the lost revenue. The Administration also decided to seek more revenue, introducing the euphemism "revenue enhancement" in its fiscal year 1982-83 budget. Two of the 1981 Act's changes that received special scrutiny were safe harbor leasing and ACRS. In addition to leading to a large additional revenue loss, safe harbor leasing was criticized primarily on two grounds: (1) publicity about the transactions would diminish respect and voluntary compliance among individuals who were angered by the ability of corporations to buy and sell tax benefits, and (2) the transactions were inefficient because a large portion of the benefits was absorbed by buyers and intermediaries rather than by sellers. Thus, although some benefits were provided to corporations with tax losses, significant benefits were granted to highly profitable corporations as well.

JCT economists conducted an analysis of safe harbor leasing the results of which were published in June 1982.[72] Using information from mandated information returns filed with respect to each transaction, the economists estimated that 76.5% of revenue loss went to the sellers of tax benefits, while 2.0% went to third party agents and 21.5% went to the buyers.[73] The analysis also documented that the largest selling industries were forest products, utilities, and railroads. Thus, the study provided support for the concern about inefficiency and validated the expectation that capital intensive and leveraged companies would be large beneficiaries of the provision.

[71] Economist Walter Heller, who had been Chairman of the Council of Economic Advisors under President Kennedy, warned that impending deficits would impede economic recovery: "Even with the tax cut and the investment stimuli, businessmen are worried about the huge budget deficits as far as the eye can see. That is what is holding back their confidence." (Thomas L. Friedman, "Economic Worries Persist," *New York Times*, August 17, 1981.) The phrase "deficits as far as the eye can see" would soon be popularized by David Stockman, President Reagan's budget director.

[72] Joint Committee on Taxation, *Analysis of Safe-Harbor Leasing: A Report Prepared for the Committee on Ways and Means*, JCS 23-82, June 14, 1982.

[73] The staff's methodology understated the inefficiency of safe-harbor leasing because it failed to account for state tax benefits that were transferred in the leasing transactions, for which no data were available.

The safe harbor leasing study also illuminated a concern that was to receive even greater attention in the next few years – the use of leasing to transfer tax benefits to governmental and tax-exempt organizations and to perpetually unprofitable corporations. Although safe harbor leasing generally was not available to the public sector, an exception was made for buses, subway cars, and rail cars used for mass commuting. The study examined safe harbor leases made by a local transit authority and Amtrak to estimate the proportion of the revenue loss that actually benefited the transit organizations. It found that the two entities received only 71% and 62%, respectively, of the revenue loss and pointed out that direct appropriations could have provided almost 100% of the Federal expense to these recipients. The study also provided a more thorough analysis of the argument that safe harbor leasing improved neutrality among equipment types and companies. It pointed out that safe harbor leasing actually reduced neutrality when companies were nontaxable for extended periods because of interest or other deductions or very large property investments relative to income. This occurred because safe harbor leasing provided tax benefits associated with the initial investment, but the income resulting from the investment was not subject to tax for many years. In this case, safe harbor leasing gave businesses an incentive to make investments that would not be profitable in the total absence of an income tax. The study also showed that the ACRS benefit for property in the 3-year and 5-year classes was more generous than expensing, thus creating another source of distortion.

Immediately prior to the Senate Finance Committee markup of the 1982 Act, the JCT staff published a pamphlet describing numerous options for raising revenue, with arguments for and against each one.[74] Almost all of the options would have broadened the base of the income tax or improved compliance rather than raising rates. Several of the proposals involved scaling back ACRS deductions and safe harbor leasing. The pamphlet repeated the staff economists' estimate that ACRS provided personal

[74] Joint Committee on Taxation, *Description of Possible Options to Increase Revenues: Prepared for the Use of the Committee on Finance*, JCS 24-82, June 15, 1982.

property benefits more generous than expensing. The staff also noted that the further acceleration of depreciation that had been enacted in the 1981 Act and was to take place in 1985 and 1986 would exacerbate this problem. The staff suggested that a basis adjustment for 50% of the ITC, along with repeal of the further acceleration scheduled for 1985-86, would create a capital cost recovery system approximately equivalent to immediate expensing.[75] The arguments concerning safe harbor leasing summarized the material in JCS 23-82.

The 1982 Act, which by some measures was the largest tax increase enacted since 1968, contained the capital cost recovery proposals set forth in the options pamphlet. The 1985 and 1986 accelerations were repealed, and a 50% basis adjustment was instituted. Safe harbor leasing was repealed, although a new set of rules ("finance leasing") was enacted that allowed limited liberalization of the pre-1981 leasing rules.

E. Deficit Reduction Act of 1984

Although the 1982 Act cut back on capital cost recovery benefits, they still remained equivalent to expensing – much more valuable than pre-1981 benefits and quite generous by historical standards. Thus, there were still many pressures in the tax system for tax benefit transfer transactions, including leasing and tax shelters.

Public sector leasing

In late 1982, JCT economists worked with the Oversight Subcommittee of the Ways and Means Committee to study Federal Government leasing of equipment from private sector taxpayers. The focus of the inquiry was on the Navy's leasing of container ships used to support marine amphibious brigades. Ordinarily, the Navy would have purchased these ships outright. However, Navy consultants had

[75] This conclusion assumed a 10% discount rate in computing the present value of depreciation deductions.

contended that the present value of the Navy's outlays would be lower if it leased the ships rather than bought them. The JCT economists' analysis, however, showed that when the tax benefits to the lessor were taken into account, the combined outlay and revenue cost to the Federal Government of the lease arrangement was 11.7% higher than an outright purchase because of the revenue cost of the tax benefits to the lessor.[76] Although the tax law denied the ITC for equipment used by a governmental unit, the Navy had avoided this restriction by structuring the transaction as a service contract. The study pointed out that this transaction exemplified a more general problem – leasing allowed generous capital cost recovery provisions to be passed through, in the form of lower rents, from lessors to governments and tax-exempt organizations that were not subject to income tax. Thus, these entities were better off than if the income tax did not exist and had an incentive to make investments that would not be desirable in the absence of an income tax.

The staff worked with members of the House and Senate to craft proposed legislation to scale back capital cost recovery deductions for leased property used by governments and tax-exempt organizations (including use under a service contract). Hearings were held by both tax-writing committees in June and July, 1983; the staff reiterated the policy concerns in pamphlets prepared for these hearings.[77] Both committees reported out the proposal shortly thereafter. The Administration endorsed the proposal in its FY 1985 budget, and it was enacted (with some modifications) in the Deficit Reduction Act of 1984.[78]

Tax shelters

A second category of tax benefit transfer transactions that was a long-standing concern of the tax-writing committees was individual income tax shelters. A typical form of tax shelter prevalent at this

[76] Joint Committee on Taxation, *Tax Aspects of Federal Leasing Arrangements: Scheduled for a Hearing Before the Subcommittee on Oversight of the Committee on Ways and Means*, JCS 3-82, February 25, 1983.
[77] Joint Committee on Taxation, *Description of S. 1564 (Government Lease Financing Reform Act of 1983) Relating to Property Leased to Tax-Exempt Entities: Scheduled for a Hearing Before the Senate Committee on Finance*, JCS 34-83, July 18, 1983. See also JCS 21-83 prepared for the Ways and Means Committee.
[78] P.L. 98-369

time was a limited partner interest in a partnership that owned real or personal property and that leased it to the user. The combination of tax benefits associated with property ownership, especially combined with leverage, led to many of these partnerships having losses that were passed through to individuals who bought partnership interests because they could use the losses to offset the tax on other income. In February 1984, the JCT published a detailed study of tax shelters and proposals to restrict them.[79] The economic analysis section pointed out that the sector with the largest amount of partnership losses was real estate, which had recently gained substantial liberalization of depreciation as part of the 1981 Act's enactment of ACRS. Partnerships investing in oil and gas extraction, which for many years had generous treatment of their capital expenditures, were another big source of tax losses. The report noted that the combination of ACRS and debt financing, particularly in highly leveraged investments such as real estate, could generate tax deductions substantially larger than pre-tax income in the early years of the property's life. In a brief discussion of approaches to reducing tax shelters, this part of the report noted that there were two basic approaches – reduce the deductions and credits that encourage users of tax-advantaged assets to lease, rather than own, these assets, and impose restrictions on the transactions that transfer the tax benefits.

The 1984 Act followed both of these approaches. It placed restrictions on the use of partnerships to transfer tax benefits. It also made cutbacks in numerous tax provisions that were perceived to contribute to the supply of tax shelters, with an emphasis on accounting changes to properly incorporate the time value of money into the tax rules. Real estate tax shelters were addressed by lengthening to 18 years the 15-year real property depreciation period that had been enacted in 1981.

F. Tax Reform Act of 1986

[79] Joint Committee on Taxation, *Proposals Related to Tax Shelters and Other Tax Motivated Transactions: Scheduled for a Hearing Before the Committee on Ways and Means*, JCS 5-84, February 17, 1984.

Beginning around the time that the 1982 Act was being formulated, a number of members concluded that wholesale repeal of tax incentives and lowering marginal tax rates, rather than the selective patches exemplified by that Act, were superior ways of dealing with the problems in the income tax. Among these problems was the incentive for businesses to enter into tax benefit transfer transactions. The view of these members was that the reduction in incentives and the lowering of rates, which would reduce the value of the incentives and, at the same time, reduce distortions caused by high statutory tax rates, would reduce the prevalence of shelters and more generally improve the equity and efficiency of the income tax.

One of the leaders of the comprehensive tax reform movement was Sen. Bill Bradley, who in 1982 fashioned a comprehensive tax reform bill co-sponsored with Rep. Dick Gephardt.[80] In the capital cost recovery arena, this bill aimed to allow owners of property benefits no more generous than economic depreciation by repealing the investment credit and scaling back depreciation deductions. Reflecting the belief that incentives and other types of mismeasurement of income were the root cause of tax shelters, the bill did not contain provisions aimed directly at tax benefit transfer transactions, such as those that were to be included in the 1984 and 1986 Acts.

Interest in comprehensive tax reform increased during the 1983 to 1985 period. The JCT staff continued to study areas of the tax code where base broadening measures had been suggested. Another mechanism for transfer of tax benefits – combinations of profitable companies with those having accumulated net operating losses -- had been targeted in an American Law Institute proposal. In a study prepared as background for a Ways and Means subcommittee hearing on this issue, staff economists noted that the arguments about whether to impose restrictions on these combinations were similar to

[80] Both authors of this paper provided substantial assistance in the crafting of this bill.

the arguments about safe harbor leasing.[81] Some argued for free transferability or refundability of all losses so that all companies could receive tax benefits. Contrary arguments were that limits on recoupment of losses were necessary to cap the inefficient effects of the many imperfections in the tax code and that, in order to avoid tax-motivated incentives for corporate combinations, these limits should not allow the buyer of a company with loss carryovers to use them any faster than the loss company would have used them. The economic analysis portion of a later pamphlet on the same subject provided data relevant to designing a rule to achieve this result.[82]

After the Administration released its tax reform proposal in May 1985, the JCT staff published a series of pamphlets analyzing the tax reform proposals that had been introduced by members, as well as the Administration proposal. Tax shelters and the taxation of capital income were the topics of two of the pamphlets.

The 1985 tax shelter pamphlet expanded and updated the analysis of the previous year's pamphlet.[83] It included data showing that the amount of losses in loss partnerships grew by 71% between 1980 and 1983; most of the increase was in the real estate industry. The study provided documentation of the prevalence of tax shelter losses among high income taxpayers. Staff economists crafted a new way of presenting distribution tables that allowed an analysis of the impact of "passive losses," measured as net losses from rental and royalty activities, subchapter S corporations, and limited partnership interests, on tax liability by income class. In the highest income class, 56.1% of taxpayers claimed passive losses, which generated a 15.7% reduction in the tax liability of the entire class. Figures also showed how these losses resulted in a large disparity in the effective tax rates of taxpayers within this

[81] Joint Committee on Taxation, *Description of Proposal Relating to Special Limitations of the Carryover of Net Operating Losses and Other Tax Attributes of Corporations: Scheduled for a Hearing Before the Subcommittee on Select Revenue Measures of the Committee on Ways and Means*, JCS 45-83, September 22, 1983.
[82] Joint Committee on Taxation, *Special Limitations on Net Operating Losses and Other Tax Attributes of Corporations: Scheduled for a Hearing Before the Subcommittee on Select Revenue Measures of the Committee on Ways and Means*, JCS 16-85, May 21, 1985.
[83] Joint Committee on Taxation, *Tax Reform Proposals: Tax Shelters and Minimum Tax*, JCS 34-85, August 7, 1985

income class. This analysis of the significance of passive losses was instrumental to the design of the anti-tax shelter provisions and rate reductions that were included in the 1986 Act.

The pamphlet also described features of the tax system that created the explosion of tax shelters. As in previous analyses, it emphasized the combination of ACRS and interest deductions for leveraged assets as substantially exceeding the gross income from these assets, leading to a large supply of losses that could be transferred to taxpayers seeking a reduction in their taxable income. In addition, the front loading of capital cost recovery benefits with both an ITC and accelerated depreciation created substantial tax losses for many taxpayers. The discussion probed in depth the impact of shelters on the efficiency and equity of the income tax system, including pressures to transfer assets to high income taxpayers, a glut of real estate development, and the large transaction costs absorbed by the mechanisms to transfer the tax benefits.

The capital income pamphlet contained a detailed analysis of the aspects of the tax system that affect the incentive to invest, with a focus on evaluation of the Administration's depreciation proposal.[84] Indexing received special emphasis because the Administration's proposal would have adjusted depreciation deductions for inflation; the analysis highlighted the complexities of these adjustments. The analysis also pointed out that, although the Administration depreciation proposal's grouping of assets was designed to conform to that used in a study of economic depreciation,[85] the proposed grouping would have introduced an entirely new way of determining which assets fell into which groups, leading to complexity and possible confusion. It observed that the same study's findings could be used to group assets with similar economic depreciation by using their "ADR lives," which had been used to classify assets for tax purposes for many years. This observation was the basis of the depreciation proposals included in the House and Senate bills and the eventual 1986 Act.

[84] Joint Committee on Taxation, *Tax Reform Proposals: Taxation of Capital Income,* JCS-35-85, August 8, 1985.
[85] See Hulten and Wycoff, *supra.*

The capital income pamphlet also included a quantitative analysis of the amount of investment incentive incorporated in the ACRS system and the Administration proposal. The finding was that ACRS benefits were more generous than expensing for most categories of personal property.[86] Further, it showed that the Administration's proposal improved neutrality among types of property by allowing a more nearly equal incentive to each type. Also, the study estimated that the proposal would have provided considerable incentive, equivalent to allowing expensing for 66% of property cost and economic depreciation for the remainder.

The 1986 Act incorporated many provisions that drew on staff economists' analyses.[87] The use of tax shelters was directly attacked through restrictions on passive losses; the distributional analysis of these losses allowed marginal rates to be lowered substantially without providing a tax cut for the highest income class of taxpayers. Transfer of benefits was further restricted by limiting net operating losses of companies that had significant ownership changes and repealing finance leases. Investment incentives that had been a key tax shelter ingredient were cut back by the repeal of the ITC and the lengthening by 50 percent or more of the lives used for real estate depreciation. A new depreciation system was enacted using ADR lives to determine depreciation rates, which were not adjusted for inflation.

G. Evaluation

The staff's analysis of capital cost recovery proposals and the basis for tax benefit transfer transactions had a clear impact on legislative outcomes during the first part of the 1980s. Because the tax cuts of the 1981 Act were viewed by Members as excessive and they quickly decided to reverse course, there was

[86] The finding that the 1982 Act amendments made ACRS equivalent to expensing assumed a 10 percent discount rate. In 1985, the staff used an 8-percent discount rate because of the decline of interest rates between those years, thus increasing the present value of depreciation deductions realized after the initial year of an investment and reducing the estimated effective tax rate.
[87] P.L. 99-514

an interest in economic input from JCT staff. Members relied on the staff to identify problems in the income tax and to help craft solutions that would improve the efficiency of the system.

The analytic tools the staff used to explain the generosity of the ACRS system and to help formulate its replacement are still in use today, and the diagnosis of the problems of tax-exempt entity leasing has stood the test of time. The passive loss rules of the 1986 Act were based on the staff's analysis of the ingredients of tax shelters and their impact on the distribution of tax liabilities; they have largely prevented most taxpayers from avoiding tax on earned income. Although excessive tax benefits can still lead to pressure for their transfer to other taxpayers, such pressure appears to be significantly lower than in the early 1980s.

The JCT analysis of capital cost recovery using effective tax rates focused on the incentives facing a business making a "marginal" investment that earns a rate of return equal to the discount rate at which the taxpayer discounts the tax benefits associated with the investments. Today, analysis would be more likely to include a discussion of "inframarginal" investments that earn a return higher than the discount rate, for which the tax rate plays a larger role in determining incentives, such as the incentive to move an entire manufacturing operation to another country. Extending the analysis in this manner, of course, supports the policy of the 1986 Act to reduce rates and restrict capital cost recovery benefits.

IV. Economic Analysis and Revenue Estimates: Evolution Since the 1970s

Revenue estimates play an important role in the tax legislative process because they are the means by which Congress administers the budget constraints that it imposes on itself. For the process to work well, the estimates need to be both as accurate as possible and credible to Members of Congress and the general public. This section of the paper reviews the evolution of the methodology for incorporating economic analysis into the JCT's revenue estimates from the mid-1970s to the present. The story is one of a gradual increase in the use of increasingly sophisticated economic analysis and greater

transparency, driven by desires of Members of Congress, the explosion of research into the economic impacts of tax policy that has occurred in the past 40 years, and a continuing concern that the revenue estimates should always be credible.

A. Background

At the start of the 1970s, revenue estimates assumed that GDP and other major economy-wide variables were unaffected by tax legislation. JCT staff did little analysis of the macroeconomic effects of proposed legislation. During the intervening four and a half decades, JCT staff developed the capability to incorporate these effects into the estimates as required by House rules for significant legislation.

By the mid-1970s, established practice was to incorporate in revenue estimates behavioral changes due to relative price effects ("microeconomic effects") when there was reasonable evidence on the magnitude and direction of the response. Thus, for example, a revenue estimate for a proposed increase in the cigarette excise tax would generally incorporate a reduction in taxable cigarette sales because there was a body of empirical work on the elasticity of demand for cigarettes. Behavioral changes were also taken into account when Congress was contemplating enactment of a tax expenditure, like individual retirement accounts, and some estimate had to be made of the extent to which taxpayers would establish such accounts. However, the traditional methodology generally did not incorporate tax induced changes in the size of the economy and the associated effect on taxable income, either because of the impact on aggregate demand or on the economy's capacity for production. For tax changes estimated to increase productive capacity, this would not have been practical because supply changes tend to have longer lags than the five-year window then used for revenue estimates. Further, the effects tax bills could have on changing the gap between overall

demand for goods and services and the economy's potential to supply them were not taken into account in the revenue estimates.[88]

B. Microeconomic Effects Incorporated in Estimates

By the mid-1970s, public finance economists had done only limited empirical research into the microeconomic impact of tax policy, and Members sometimes were frustrated by the JCT's reluctance to incorporate behavioral responses into revenue estimates unless credible outside research had established a reasonable estimate of the response. During legislative consideration of the Revenue Act of 1978, the tax-writing committees considered reducing capital gains tax rates, and many Members believed that taxpayers would respond by increasing realizations of gains, thereby mitigating the revenue loss and potentially causing the proposal to produce a revenue gain. Treasury, which strongly opposed such a reduction, took the position that the revenue estimate of such a reduction should not include this behavioral response because "the empirical work to date concerning the response of gains realizations to changes in capital gains tax rates has not distinguished between short run transitional effects and long run effects." [89]

The JCT revenue estimates followed Treasury's position on this issue. However, the staff was quite aware of the controversial nature of Treasury's position and noted in a pamphlet that several private studies had criticized this position.[90] The pamphlet states that several of the studies assumed an

[88] The JCT and Treasury used the same methodology. The Treasury's methodology is described in the Appendix to the Statement of Secretary Blumenthal, August 17, 1978, before the Senate Finance Committee, on the Revenue Act of 1978. Treasury states that the macroeconomic impact of the entire Federal budget (including the Administration's proposed policy changes) is reflected in the economic assumptions used in estimating revenue and outlays. Thus incorporating macroeconomic impacts of individual legislative proposals included in the budget would result in double counting.

[89] *Statement of Secretary Blumenthal, ibid.* The reason the long-run impact of a capital gains rate cut on realizations is likely to be smaller than the short-run impact is that the earlier realizations reduce the stock of unrealized gains that can potentially be realized later on.

[90] Joint Committee on Taxation, *Description of S. 2428, S. 2608 and S. 3065 Relating to Capital Gains Taxation: Scheduled for a Hearing By the Subcommittee on Taxation and Debt Management of the Committee on Finance,* JCS 78-20, June 27, 1978.

induced increase in realizations that is constant in percentage terms from year to year. The studies also assumed that the rate reduction would lead to an increase in savings and/or investment, adding to economic capacity and, thus, total revenue. The staff noted that Treasury "disputed the conclusion of these studies, asserting that they are based on unwarranted assumptions."

This state of affairs was unappealing to the tax-writing committees. No one disagreed that a capital gains tax reduction would induce some increase in realizations, so a purely static revenue estimate had to be inaccurate. When the bill came before the Senate Finance Committee in September 1978, the Senators were well versed in the revenue estimating controversy, and the Committee voted to direct the JCT staff to assume an increase in realizations as a result of its capital gains tax reduction provision. The Revenue Estimate section of the capital gains part of the Committee report included two sets of numbers – the "static" revenue reduction figure that reflected no behavioral response, and an offset (33 percent in all years) for increased revenue due to induced realizations. The net of these two sets of figures was the Committee's revenue estimate. (The report also noted that Treasury, apparently changing its position, agreed with the Committee's figures.)[91] A situation in which the committee members voted on the revenue estimate obviously reduced the credibility of the estimating process.

After 1978, JCT estimators gradually became less reluctant to require the existence of credible outside research on behavioral response in order to incorporate such response into the revenue estimates. For example, in the Crude Oil Windfall Profits Tax of 1980, the estimates included assumptions about the extent to which the tax would affect oil drilling and output that were based on internal research but not on outside studies.[92]

The evolution of the congressional budget process in the 1980s greatly increased the impact of JCT revenue estimates on the legislative process. The Gramm-Rudman-Hollings Balanced Budget and

[91] Senate Report 95-1263, Part 1
[92] P.L. 96-223.

Emergency Deficit Control Act of 1985 provided that automatic spending cuts ("sequestration") were to take place unless Congress passed legislation providing sufficient deficit reduction so that the deficit would be equal to or less than targets in the law. Central to Congressional legislative plans to satisfy these targets were the JCT's revenue estimates.[93]

Capital gains continued to draw attention. When Congress raised the capital gains tax rate in 1986, effective at year-end, there was an enormous surge of realizations, as taxpayers rushed to avoid the impending tax increase, followed by a sharp drop-off the next year, which further highlighted the impact of tax laws on realizations. As the amount of academic research on the impact of capital gains tax changes on realizations mushroomed, the staff became more confident that it could improve the accuracy of the estimates by incorporating its view of the best estimates of the relevant elasticities. Drawing on the most recent research, including some of its own, JCT estimates, beginning in the late 1980s, incorporated expected changes in realizations, distinguishing between the short run elasticity and the lower long run elasticity.

The capital gains controversy also spurred greater transparency of the JCT's estimating process. Before this issue became a source of public controversy, the staff typically revealed very little about the assumptions and methodology used in deriving its estimates on the grounds that, if information were public, advocates would provide one-sided criticism -- they would criticize the assumptions that led to estimates unfavorable to their proposals but would not question the ones that led to favorable

[93]These consequences were effectively continued by the Budget Enforcement Act of 1990, which established a "PAYGO" rule that required proposals that decreased revenues to be offset by proposals that increased revenues. These requirements were renewed throughout the 1990s, lapsed in 2002, and were renewed with amendments in 2010. Revenue estimates also can be the basis for Senate and House points of order during floor action on legislation. *Bill Summary and Status 99th Congress (1985-1986) H.J. Res. 372,* CRS Summary as of 12-10-1985 http://thomas.loc.gov/cgi-bin/bdquery/z?d099:HJ00372:@@@D&summ2=m&; *Budget Process Law Annotated 1993 Edition,* James Sasser, Chairman, Committee on the Budget, U.S. Senate, Annotations by William G. Dauster, Chief Counsel, Committee on the Budget, U.S. GPO, Washington: 1993; Office of Management and Budget, *The Statutory Pay-As-You-Go Act of 2010: A Description, https://www.whitehouse.gov/omb/paygo_description/* ; Congressional Research Service, *Budget Enforcement Procedures: The Senate Pay-As-You-Go (PAYGO) Rule,* August 4, 2015.

estimates. Thus, such openness and resulting criticism would likely make the estimates less, not more accurate. The capital gains controversy, however, led to a change in this position. In 1990, the staff published a pamphlet explaining the methodology behind its estimates. The document devotes 23 pages to discussing the differences between the elasticities used by JCT staff and Treasury, which by then had also begun incorporating behavioral assumptions in its estimates. Treasury was assuming such a large response that capital gains tax cuts were seen as raising revenue, while JCT estimates generally showed that such cuts would result in a small net reduction in receipts.[94]

The past 40 years have seen an enormous increase in academic research on the economic impact of tax policy. The staff incorporated this research into its analysis when relevant, and staff economists continued to contribute to that research. JCT documents describe how estimated behavioral responses are incorporated into revenue estimates for the personal income tax, estate and gift taxes, and the cigarette excise tax.[95] The publication of these documents also reflects a sea change in the staff's attitude towards transparency. The JCT website now contains 24 documents describing revenue estimating methodology.

C. Macroeconomic effects in revenue estimates[96]

Meanwhile, substantial Member interest developed in requiring the JCT staff to incorporate macroeconomic changes, particularly "supply side" effects, into its estimates. Advocates of including economy-changing effects into revenue estimates termed such a framework "dynamic scoring." As noted above, the staff's revenue estimates assumed that tax changes would not affect GDP and other

[94] Joint Committee on Taxation, *Explanation of Methodology Used to Estimate Proposals Affecting the Taxation of Income from Capital Gains,* JCS-12-90, March 27, 1990, pp. 17-39.
[95] Joint Committee on Taxation, *Estimating Changes in the Federal Individual Income Tax: Description of the Individual Income Tax Model,* JCX-75-15, April 23, 2015; *Modeling the Federal Revenue Effects of Changes in Estate and Gift Taxation,* JCX-76-12, November 9, 2012; *Modeling the Federal Revenue Effects of Changes in Cigarette Excise Taxes,* JCX-101-07, October 19, 2007.
[96] The authors thank Pamela Moomau for responding to requests for background information that proved extremely useful in preparing this section of the paper

major economic variables, such as the interest rate, the average price level and inflation rate, and the unemployment rate. Many used the term "static estimates" to describe this framework. Because significant microeconomic behavioral response was in fact reflected in the estimates, this was an incorrect characterization. Some critics of this framework believed wrongly that the staff assumed that taxable income did not change in response to tax policy changes. But the staff actually did incorporate the impact of microeconomic behavioral responses on taxable income, including timing effects, movement between taxable and excluded income, and portfolio shifts. The only taxable income changes the staff did not include were those resulting from possible changes in the economic aggregates.

Initially, the JCT staff responded to Member interest in the effects of tax policy on economic capacity and growth by providing written analyses of such effects in separate pamphlets, but not incorporating these effects into its revenue estimates.[97] But Members and some lobbyists continued to express concern that the official revenue estimates did not incorporate macroeconomic feedback effects.

By the early 1990s, the JCT staff (and former staff) had published several pieces that explained the reasons for their position.[98] First, tax legislation is only one of many types of policy changes that Congress considers each year. In order to derive meaningful estimates of the impact of an entire session's legislative work, estimates of all types of legislation would have to be performed using the same set of macroeconomic assumptions so that they can be added together to provide a consistent picture of the nation's fiscal posture. Second, the macroeconomic impact of any proposal interacts with all the other budgetary decisions that Congress makes. As Sunley and Weiss put it:

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[97] See, for example, Joint Committee on Taxation, *Economic Issues Relating to the House-Passed Tax Reform Bill (H.R. 3838), Scheduled for Hearings before the Senate Committee on Finance on January 29-30 and February 4-6, 1986,* January 29, 1986, JCS-2-86. This pamphlet included a discussion of growth effects obtained by simulating the bill with several commercial econometric models.

[98] See Emil M. Sunley and Randall D. Weiss, "The Revenue Estimating Process," *American Journal of Tax Policy,* Fall 1992; and JCS 12-90, *op. cit.*, pp. 7-8.

> The sizes of all these effects depend on how close the economy is to full employment, the level of the overall budget deficit and many other variables which themselves depend on hundreds of individual budget policy decisions. Because of these complex interactions, a specific estimate of a proposal's impact on the aggregates would be virtually meaningless in a broader context.

Third, estimates of macroeconomic effects require complex models that incorporate all significant economic responses to changes in the tax law, and, as of that time, the staff believed that there was a lack of consensus on a "best" such model. Fourth, the impact of tax legislation on the economy requires an arbitrary assumption about the response of the Federal Reserve. Finally, estimates of macroeconomic effects would require considerable investment in staff resources.

In spite of frequent requests to produce dynamic estimates that incorporated the effects of policies on overall economic growth, which multiplied when Republicans gained control of both Houses of Congress in 1994, the JCT staff continued to have concerns about the feasibility of estimating such effects. In January 1995, the JCT's Chief of Staff, Ken Kies, testified on the revenue estimating process before a joint hearing of the House and Senate budget committees.[99] The testimony contains a description of methodology and examples reiterating the points that had been made in the JCT's earlier statements. The testimony noted continuing requests to incorporate macroeconomic effects of changes in the tax law into the estimates and cited points made in a contemporaneous Congressional Budget Office (CBO) report that addressed the same issue. These items were:

- Inclusion of macroeconomic effects in estimates of revenue proposals but not spending proposals could create a serious inconsistency in overall budget analysis.
- Most revenue proposals are likely to have little or no macroeconomic consequences.
- Because of the complexity and lack of consensus as to the measurement of such macroeconomic effects, attempting to take macroeconomic consequences into account could undermine the credibility of the estimating process and render estimates less reliable. The uncertainty of monetary policy further contributes to this problem.

[99] Joint Committee on Taxation, *Written Testimony Of The Staff Of The Joint Committee On Taxation Regarding The Revenue Estimating Process for the Joint Hearing of the House and Senate Budget Committees of the 104th Congress on January 10, 1995,* JCS 1-95.

- Given the fact that most of the discussion associated with proposals to take macroeconomic effects into account has focused on proposals which are viewed, at least by some, as having the potential for positive macroeconomic effects, taking such effects into account could reduce the pressure to further reduce the deficit. Moreover, to the extent that an estimate overstates the positive macroeconomic effects of a proposed change, the result could be an increase in the deficit.

These arguments did not quell the demand for "dynamic" estimates, however, and the staff began to look for ways to respond to the tax-writing committees.

Tax Modeling Project

JCT staff began its efforts to develop a capacity to incorporate macroeconomic effects into revenue estimates in 1995. In a letter to the Chairmen of the tax-writing committees dated May 18, 1995,[100] Chief of Staff Kies discussed the budget committees' hearing, and outlined staff plans for developing for this capacity:

> The consensus among witnesses at the January 10, 1995, hearing was that while some tax proposals may have significant effects on the long-run growth of the economy, economists have not as yet developed models of the economy that can predict the timing and magnitude of these effects with enough accuracy to justify including them in revenue estimates…In response to concerns regarding the Joint Committee revenue estimating process, …we will establish an advisory board of prominent economists familiar with macroeconomic modeling and other estimating issues to provide input to the staff on ways to improve the estimating process and estimating methodology…We also will be securing access to various macroeconomic models from several outside vendors to assess their usefulness in performing this type of analysis.

On May 18, 1995, the two chairmen announced the formation of the Revenue Estimating Advisory Board.[101] An indirect outcome of the discussions with the Advisory Board was the enlistment of a number of macroeconomic modelers to participate in the 1996-97 JCT Tax Modeling Project.[102] During the mid-1990's, there was considerable interest in tax reform that would replace the income tax with a

[100] Joint Committee on Taxation, *Joint Committee on Taxation Tax Modeling Project and 1997 Tax Modeling Symposium Papers,* JCS-21-97, November 20, 1997, pp.312-313.
[101] Joint Committee on Taxation, *Membership of the Joint Committee on Taxation Revenue Estimating Advisory Board,* JCX-29-95, May 18, 1995. Randall Weiss was a member of this Advisory Board.
[102] The project, participants, and outcomes are described in detail in Joint Committee on Taxation, *Joint Committee on Taxation Tax Modeling Project and 1997 Tax Modeling Symposium Papers,* JCS-21-97, November 20, 1997.

consumption tax, which many economists asserted would result in a substantial increase in economic capacity. Each of the economists and groups promoting these reforms, and each of their critics, had its own version of this reform, its own models, and its own forecast of the effects of the reform on the economy. The goal of the project was to apply a representative set of these macroeconomic models to the analysis of a set of standardized tax reform proposals, using the same starting baseline forecasts for the economy, including the same baseline characterization of the present law tax system. This would enable JCT staff to see how much of the variation in results was attributable to differences among the models rather than differences among the proposals.

Nine different modelers participated. They were asked to analyze the effects of a unified income tax (often referred to as "corporate integration") and a consumption-based tax modeled either as a value-added tax ("VAT") or as a flat tax levied on an equivalent VAT base. Modelers were asked to look at the effects of including transition relief to the extent possible. Estimated GDP effects of the VAT varied widely both across models and within models when varying modeling and transition assumptions were used. The range was from -4.2 percent to 16.4 percent change in GDP in the short-run, and 1.7 percent to 7.5 percent increase in GDP in the long-run. The discussion among modelers during several sessions in which the development of the final proposals and preliminary assessment of different outcomes were presented shed much light on the state of macroeconomic modeling of tax policy. These sessions proved invaluable to JCT staff in highlighting the strengths and limitations of the various types of models, as well as the influence of specific types of modeling frameworks and parameter assumptions on the results of the analysis.

The models presented in the symposium fell into three broad classes of macroeconomic models: structural neoclassical growth models, large scale econometric models, and computable general equilibrium ("CGE") models. In all three types of models, economic output is determined by the

availability of labor and capital, demand for final output, and an assumed production technology. Changes in costs of labor and capital and prices of final output adjust so that, in the long run, supply equals demand. Changes in tax policy affect the supply of labor and capital by changing the after-tax returns from working, saving, and investing. In general, a policy change that reduces marginal tax rates (the amount of tax paid on incremental income) provides a positive incentive to increase work or investment.

In the neoclassical growth models, behavioral responses are governed by elasticities estimated in a substantial empirical literature. The models included one generic product and one generic supplier of labor, and the prices in the models adjusted such that supply equals demand in each period. Because these structural equations have simple response parameters, the importance of the assumptions about the responsiveness of labor and capital to policy changes are relatively transparent. However, a disadvantage of using this class of models for revenue estimation or short-run economic forecasting is that the assumption of labor market equilibrium in these models means that they do not provide information about effects of tax policies on demand, or any interactions between the policy being analyzed and Federal Reserve's reaction to it. Despite the fact that the simulation exercise was specified to be "revenue neutral," these issues were important for analyzing the switch from a modified income tax to a consumption tax. To the extent that a consumption tax would increase saving, it can reduce demand, at least in the short run.

The large scale econometric models were structurally similar to the models that the JCT staff had used in the Tax Reduction Act of 1975, as discussed earlier, albeit with much refinement. These models are primarily designed to model the effects of fiscal and monetary policy changes on demand for goods and services. They provided more detail on the transition between the old and new tax law, arguably providing more accurate information about what would be likely to occur during the 10-year "budget

window" over which revenue estimates are provided. However, they were not designed to model the long run equilibrium, which arguably would better reflect the "supply side" incentive effects of changes in marginal tax rates on labor and capital, key information in assessing the desirability of a major tax reform initiative.[103]

At the time of the symposium (as is still true today), the preferred form of macroeconomic modeling in academic research was the third class of models, CGE models. Decision makers in these models behave according to microeconomic utility theory, with individuals deciding how much to work based on the trade-off between consumption and leisure in their utility functions over a long time horizon. Three of the four symposium participants using this class of models modeled these decisions as based on "rational expectations," in which it was assumed that the individuals could see the entire future path of the economy, including future fiscal policy and interest rates. Agents' responsiveness to changes in tax policy was not characterized by one or two elasticities, but on a series of calculations taking account of current and future trade-offs between consumption and leisure, and between current and future consumption.

What makes CGE models attractive to academic economists is that they are based on more rigorous microeconomic foundations and arguably more logical assumptions about how people form expectations about the economy. In contrast, the other classes of models contain "reduced form" equations that are not built up from fundamental features of the economic landscape, such as individual preferences or technology available to businesses, but instead reflect historical correlations among the variables included in the model. This difference can be especially important when the models are used to analyze policies outside the range of historical experience. However, like the structural neoclassical

[103] Given the focus on "supply side" analysis among most of those who were advocating incorporating macroeconomic effects in revenue estimates, there was some question as to whether such an analysis should include demand effects at all.

growth models, CGE models were designed to determine long-run equilibria, with less focus on the transition path that would occur within the budget window of relevance to dynamic scoring, making them somewhat less useful for forecasting within the ten-year budget window.

One of the major findings of the symposium was that there was a significant variation in the way each of the models characterized the tax policy changes:

> …one of the major difficulties in modeling the consequences of changes in tax policy arises from the complexity of the current tax system, which presents challenges to both measurement and modeling specification...problems arise because the requirements of fully modeling the complexity of the U.S. tax code go far beyond the level of articulation of the consumption, labor and capital sectors of any of the models participating in this experiment.[104]

Characterizing the complexity of the present tax system, and proposed changes to it, is exactly what the models the JCT staff had built for conventional estimating purposes had been designed to do. It was clear to staff that one of their priorities in future development of a macroeconomic modeling capacity would be to enhance the tax sectors of any macroeconomic models they used, and to develop a methodology for conveying the information on tax policy changes from their traditional estimating models into their macroeconomic models.

JCT staff developed a continuing relationship with several participants in the symposium. In particular, JCT staff contracted with Macroeconomic Advisers, LLC, a vendor of one of the well-known econometric models, to develop a structural growth model incorporating a much more detailed tax sector than was included in its econometric model. While it is not an econometric model, this model includes a monetary sector, and allows for temporary periods of less than full employment, which allows for the modeling of demand as well as supply side responses to changes in tax policy. JCT staff and the vendor collaborated on the development of this new model, which became the Macroeconomic Equilibrium

[104] JCS 27-91.

Growth ("MEG") model that has been used by the JCT staff since 2001 for much of its macroeconomic analysis.

Incorporation of dynamic scoring in House Rules and JCT response

Meanwhile, Member interest in dynamic scoring persisted, despite continuing public debate among economists and consequent staff reservations about its feasibility. In 1999 and 2001, the House of Representatives incorporated into its rules a clause providing that dynamic scoring could be included in a Ways and Means Committee report of major tax legislation, for informational purposes, if such an estimate was requested by the committee chairman.[105]

In 2001, Congress enacted a large package of tax rate reductions -- the Economic Growth and Tax Relief Reconciliation Act of 2001 -- the first part of the "Bush tax cuts."[106] Using traditional revenue estimating methodology, the JCT staff estimated that this law would reduce receipts by $1.3 trillion over the ten-year budget period. In addition, the JCT staff analyzed the House and Senate versions of this law using three macroeconomic models - the MEG model, the Macroeconomic Advisers econometric model, and the DRI Inc., McGraw-Hill econometric model. Its findings were incorporated in a ten-page internal staff memorandum containing estimates of effects of the proposal on GDP, labor, capital, and revenue from each of these models under several different assumptions. This memorandum was reduced to the following footnote on the official revenue table for the Conference agreement:

> …While the estimates do not include the effects of these proposals on economic growth, the proposals are likely to result in modest increases in growth during the 10-year budget estimating

[105] Rule XIII 3. (h)(2). "A report from the Committee on Ways and Means on a bill or joint resolution designated by the Majority Leader, after consultation with the Minority Leader, as major tax legislation may include a dynamic estimate of the changes in Federal revenues expected to result from the legislation. The Joint Committee on Internal Revenue Taxation shall render a dynamic estimate of such legislation only in response to a timely request from the chairman of the Committee on Ways and Means, after consultation with the ranking minority member. A dynamic estimate under this paragraph may be used for informational purposes."

[106] P.L. 107-16.

> period. The largest component of the proposals, the marginal rate cuts, will provide incentives for more work, investment, and savings.[107]

While this footnote represents a modest first step in the official inclusion of macroeconomic analysis of specific legislation, it did not go unnoticed among the D.C. tax policy community, many of whom were concerned about the precedent set by such an assertion. Nor did it satisfy advocates for dynamic scoring, who continued to push for estimates to be accompanied by more detailed information about macroeconomic impacts of tax legislation.

Although the new House rule was not invoked during the few years after its adoption, the JCT staff continued enhancing its macroeconomic modeling capacity by adding an overlapping generations (OLG) model to its arsenal, continuing developmental work on the MEG model, and refining techniques for translating complex tax packages into inputs suitable for macroeconomic models.[108] In 2002, the staff presented its models, including results of sample simulations using them, to a new "Blue Ribbon Advisory Panel." This panel included some of the same modelers who had participated in the 1996-97 symposium and a number of additional economic experts on modeling.[109] Majority and minority staff from House and Senate budget and tax writing committees, as well as staff from the CBO and Treasury's Office of Tax Analysis, were invited to attend the three meetings of the Advisory panels and observe both the JCT staff presentations and Panel commentary.

In 2003, the House upped the ante on the requirement for macroeconomic analysis, changing the Rule governing dynamic scoring to require a macroeconomic analysis of tax bills reported by the Ways and

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[107] Joint Committee on Taxation, *Estimated Budget Effects of the Conference Agreement for H.R. 1836,* JCX-51-01, May 26, 2001, footnote 1.

[108] The OLG model focuses more intensively on the savings and labor supply decisions of individuals in light of the age structure of the population.

[109] A list of panel members and a description of their commentary is included in Joint Committee on Taxation, *Overview of Work of the Staff of the Joint Committee on Taxation to Model the Macroeconomic Effects of Proposed Tax Legislation to Comply with House Rule XIII.3.(h)(2),* December 22, 2003, JCX-105-03.

Means Committee or a statement from the JCT explaining why such an analysis could not be calculated.[110]

The first bill for which a macroeconomic analysis was prepared under the new rule was the second of the "Bush tax cut" bills -- the Jobs and Growth Reconciliation Tax Act of 2003, which provided for $550 billion in tax cuts over the 10-year budget period.[111] The largest of these cuts was the acceleration of the individual income tax cuts provided in the 2001 Act; this affected tax receipts primarily in the first half of the budget period. The bill also included reductions in tax rates on dividends and increases in expensing for small businesses, the effects of which lasted throughout the budget window. Consistent with the lack of consensus among various Advisory Panel members and other economists as to which type of model is best suited to macroeconomic tax policy analysis and how much behavioral response it would be appropriate to assume, JCT staff used several models under varying assumptions to analyze the bill. The staff's macroeconomic analysis for this bill used the MEG model, the OLG model and the Global Insight econometric model. The analysis concluded that real GDP would be increased relative to the baseline by 0.2 to 0.9 percent in the first half of the budget period (when the bulk of the tax cuts occurred), and decreased by -0.0 to -0.2 percent in the second half of the budget period, during which

[110] House Rule XIII.3 (h)(2)(A). "It shall not be in order to consider a bill or joint resolution reported by the Committee on Ways and Means that proposes to amend the Internal Revenue Code of 1986 unless -
(i) The report includes a macroeconomic impact analysis:
(ii) the report includes a statement from the Joint Committee on Internal Revenue Taxation explaining why a macroeconomic impact analysis is not calculable; or
(iii) The chairman of the Committee on Ways and Means causes a macroeconomic impact analysis to be printed in the Congressional Record before consideration of the bill of joint resolution.
(B) In subdivision (A), the term "macroeconomic impact analysis" means-
(i) an estimate prepared by [the JCT] of the changes in economic output, employment, capital stock, and tax revenues expected to result from enactment of the proposal; and
(ii) a statement from the [JCT] identifying the critical assumptions and source of data underlying that estimate."

[111] P.L. 108-27

the negative influence of increased Federal debt began to outweigh the continuing positive incentives of the reduction in dividend taxation, which was a longer term feature of the policy.[112]

One issue that became apparent during modeling exercises is the importance of the fundamental modeling requirement, within forward-looking CGE models, that Federal government debt not grow (or decrease) forever at a rate faster than GDP.[113] Such a result is, by definition, unsustainable, and thus economic decision-makers in the model cannot pick a "rational" response to a policy that generates such a result. In order for policies that would result in net changes in tax revenues to be simulated, it was necessary to generate a counterfactual fiscal policy assumption that offset the deficit effects of the policy. Questions about the legitimacy of such analysis persist today.

Between 2003 and 2008, House Rule XIII.3.(h)(2)(a) stayed in effect, but the Joint Committee did not produce a full-scale macroeconomic analysis of a tax bill as part of the official legislative process. For some bills, the JCT stated that the macroeconomic effect was so small as to be incalculable. For a few bills that were explicitly promoted as being likely to generate economic growth, but that were either largely retroactive and temporary, or included many offsetting provisions that could not be adequately incorporated in their macroeconomic models, the JCT staff provided somewhat more elaborate qualitative analyses, which described likely positive or negative impacts of components of the legislation, but ended with the "incalculable" disclaimer. In addition, for several years, major tax legislation went to the House Floor without being reported by the Ways and Means Committee, thus eliminating the official requirement for a macroeconomic analysis.

[112] Joint Committee on Taxation, "Macroeconomic Analysis for the Jobs and Growth Reconciliation Tax Act of 2003," *Congressional Record,* May 8, 2003, pp. H3829-H2830.

[113] This issue did not emerge during the 1996-97 symposium because the policies that were being simulated were stipulated to be revenue neutral and the present law baseline at the time was not generating large budget deficits.

Staff developmental work continued during this period. The JCT added a dynamic stochastic general equilibrium ("DSGE") model to its modeling portfolio.[114] A DSGE model is a type of CGE model. The distinguishing feature of a DSGE model is the inclusion of uncertainty, modeled by making one or more variables stochastic. This addition allows analysis of a richer set of issues than non-stochastic models. The Joint Committee staff also presented analyses of a number of hypothetical polices in various venues, including academic journals, think tank seminars, and several additional Advisory Panels it convened.[115]

The next official full-scale macroeconomic analysis required by the House Rule was for two 2009 Obama Administration initiatives: the American Recovery and Reinvestment Tax Act of 2009 ("ARRA") and America's Affordable Health Choices Act of 2009 (the House version of what is now known as the Affordable Care Act ("ACA.")[116] ARRA, an economic stimulus bill, presented issues similar to the Tax Reduction Act of 1975, albeit in an environment where much more attention was being paid to the 10-year revenue estimates and possibly less attention to the appropriate size and structure of the stimulus. Most of JCT's recent macroeconomic modeling had focused on capturing the supply side incentive effects of tax policy that changed effective marginal tax rates. However, like the 1975 Act, ARRA was temporary and largely intended to stimulate demand. The analysis of ARRA used the MEG model, with various assumptions about the size of the consumption reaction (and thus the fiscal demand multiplier). The House Report stated: "Because the overlapping generations and dynamic stochastic equilibrium models are constructed to simulate an economy that is always at full employment, these models are not helpful in analyzing the short-term effects of policies designed to provide stimulus to an economy that is

[114] A description of an early version of this model may be found in Joint Committee on Taxation, *Background Information about the Dynamic Stochastic General Equilibrium Model Used by the Staff of the Joint Committee on Taxation in the Macroeconomic Analysis of Tax Policy,* JCX-53-06, December 14, 2006.
[115] See the "macroeconomics" link on www.jct.gov for all of the macroeconomic analysis produced by JCT staff, including several analyses of hypothetical proposals produced during this time period.
[116] Ibid.

in a recession."[117] This analysis also differed from the typical macroeconomic analysis by showing GDP effects for the two years during which the policy was in effect and for the first half of the 10-year budget window, rather than for the full ten-year budget period. It concluded that real GDP would be increased by between 0.3 and 0.8 percent during the two years it was in effect, and by 0.0 to 0.1 percent in the five year period. Unlike 1975 and 2001-3, the staff did not use a traditional econometric model. The tax policy multiplier in the MEG model appears to be smaller than is suggested by some recent work suggesting that multipliers are higher than average in recessions.[118] However, owing to its fuller specification of the determinants of potential output, the MEG model appears less likely to overestimate the gap between actual and potential output, as occurred in 1975.

Between 2009 and 2015, a number of macroeconomic analyses were requested by Members of Congress and committee staffs as they worked on developing major budget and tax reform legislation. Most requests were confidential and thus generated no public documents. The staff continued to refine its modeling and to provide information about the models in hearing testimony[119] and in other venues.[120]

In 2013-2014, as Rep. David Camp, Chairman of the House Ways and Means Committee, developed a comprehensive tax reform proposal, JCT staff analysis of its impact on economic growth was an important input to proposal design. The proposal would broaden the individual and corporate tax bases by reducing deductions, credits and exemptions, while lowering statutory tax rates, with the goal of

[117] Joint Committee on Taxation, "Macroeconomic Analysis of the American Recovery and Reinvestment tax Act of 2009," in House Report 111-8, Part I, 111th Congress, First Session, January 27, 2009.
[118] See Auerbach and Gorodnichenko, *supra.* See also Olivier Blanchard and Daniel Leigh, "Growth Forecast Errors and Fiscal Multipliers," IMF Working Paper 13-1, January 2013.
[119] Joint Committee on Taxation, *Summary of Economic Models and Estimating Practices of the Staff of the Joint Committee on Taxation,* JCX-46-11, September 19, 2011 and *Testimony of the Staff of the Joint Committee on Taxation before the House Committee on Ways and Means Regarding Economic Modeling,* JCX-48-11, September 21, 2011.
[120] Bull, Nicholas, Tim Dowd, and Pamela Moomau, "Corporate Reform: a Macroeconomic Perspective," *National Tax Journal, December 2011, v. 54(4), 923-942.*

providing increased incentives to work, save, and invest. The proposal also includes reforms in the taxation of U.S. multinational corporations, in the hope of making them more competitive internationally, while reducing incentives not to repatriate foreign earnings to the United States. The proposal was designed to generate the same amount of revenue over the 10-year budget period as present law (as measured with traditional revenue estimating methodology), and to be distributionally neutral (not change the present law distribution of tax liability among income classes).

The JCT released a macroeconomic analysis of Chairman Camp's tax reform proposal along with the draft of the proposal and documents describing the proposal and its revenue and distributional effects.[121] This analysis used the staff MEG model, with six sets of modeling assumptions, and an enhanced version of the OLG model, using two sets of modeling assumptions. The MEG simulations projected that the tax reform proposal could increase GDP relative to the present law baseline by 0.1 to 0.6 percent, while the OLG simulations showed an increase of 1.5 to 1.6 percent. The estimated increases in GDP in both models resulted from increases in labor supply, as the policy reduced effective marginal tax rates on wages.[122] In both models the stock of capital was projected to increase relative to the baseline in the first half of the budget window, as reductions in the corporate tax rate phased in, but in most simulations, the capital stock was projected to begin a relative decrease in the second half of the budget window as the proposal phased in a deceleration of depreciation. The ranges of these projected economic impacts are considerably narrower than those obtained in the 1996-97 modeling symposium, reflecting in part a concerted effort by JCT staff to use models and parameters that reflect the midrange of recent economic research.

[121] Joint Committee on Taxation, *Macroeconomic Analysis of the "Tax Reform Act of 2014,"* JCX-22-14, February 26, 2014.

[122] In these models, reductions in marginal tax rates provide incentives to increase labor supply, but broadening of the tax base does not provide a countervailing disincentive. This position is controversial.

JCT's analysis of Chairman Camp's proposal generated some controversy. Supporters of the proposal highlighted the larger positive economic impacts produced by the OLG model and generally ignored the small impacts produced by the MEG model. Opponents did the opposite. Others criticized the assumption that base broadening would not affect work incentives. How to do this type of analysis without provoking controversy remains an issue.

Work on this 2014 tax reform proposal highlighted several areas for JCT modeling improvement. The most important are modeling international capital flows to account for differences between the location effects of intellectual property and those of traditional capital and modeling changes in depreciation schedules. These are the subject of ongoing staff work.

In 2015, "dynamic scoring" became much more important in the legislative process. The House adopted a new rule requiring for the first time the incorporation of macroeconomic feedback effects in the revenue estimates of "major tax legislation."[123] Subsequent Budget Resolutions adopted by both the House and the Senate reinforced this requirement. In 2015, five pieces of legislation triggered this requirement. JCT staff provided "dynamic scores" of two bills[124] and collaborated with the CBO on dynamic scores for two other bills related to health care. None of the bills for which the dynamic scores

[123] House Rule XIII.8.(b). "An estimate provided by the Joint Committee on Taxation to the Director of the Congressional budget Office under section 201(f) of the Congressional budget Act of 1974 for any major legislation shall, to the extent practicable, incorporate the budgetary effects of changes in economic output, employment, capital stock, and other macroeconomic variables resulting from such legislation…
(d)As used in this clause-
(1) the term "major legislation" means any bill or joint resolution-
(A) for which an estimate…causes a gross budgetary effect (before incorporating macroeconomic effects) in any fiscal year…greater than 0.25 percent of the current projected gross domestic product of the United States for that fiscal year; or
(B) designated as such by the chair of the Committee on the Budget for all direct spending legislation other than revenue legislation or the Member who is chair or vice chair...of the Joint Committee on Taxation for revenue legislation…"
This rule also required dynamic scoring for mandatory spending legislation, but not for appropriated spending.

[124] Joint Committee on Taxation*, A Report to the CBO of the Macroeconomic Effects of the "Tax Relief Extension Act of 2015," As Ordered to be Reported by the Senate Committee on Finance,* JCX-107-15, August 4, 2015, *and A Report to the CBO of the Macroeconomic Effects of H.R. 2510, Bonus Depreciation Modified and Made Permanent," as Ordered to be Reported by the House Committee on Ways and Means,* JCX-134-15, October 27, 2015.

were prepared became law. The JCT's dynamic estimates of the first two bills reflected two partially offsetting effects: the effect on revenues from changes in GDP and the effect on interest payments on the national debt from changes in interest rates caused by increasing deficits. These dynamic scores reduced estimates of the net deficit increase, relative to conventional revenue estimates, by about eleven percent for the package of temporary extensions of business tax preferences, and by about five percent for the permanent extension of bonus depreciation. Thus, the dynamic estimates show a much more modest impact that might have been hoped for by some proponents of supply side economics.

The fifth bill, enacting, among other provisions, five-year extensions of bonus depreciation and the broadening of the EITC and the child credit, and permanent extension of the research and expenditure tax credit, was developed, considered by the House and Senate, and signed into law in a time frame that was so short that the JCT staff was unable to provide a macroeconomic analysis of the bill in time for a dynamic score to be developed.

Confronting the Issues Posed by Dynamic Scoring

In the 21 years since the JCT staff's testimony before the budget committees in 1995 identifying numerous issues with dynamic scoring, the staff has undertaken a major effort to address these issues. First, the staff has made major investments in personnel and contracted resources devoted to macroeconomic modeling. Second, although the economics profession has not produced a consensus "best model" for analyzing macroeconomic impacts of tax policy, the staff has presented estimates from several models that have substantial professional credibility. The OLG and DSGE models remain controversial on account of the need to make necessarily arbitrary assumptions about how the federal government achieves long-run budget sustainability, but this controversy merely exposes the difficulty of analyzing macroeconomic effects of unsustainable fiscal policy. Third, the staff has made reasonable assumptions about Federal Reserve response to tax policy changes. Fourth, to avoid dealing with the

potential complexities of incorporating non-tax policy changes into its estimates, the staff assumes that the only policy changes that would change the GDP levels assumed in the budget baseline are the tax policy changes embedded in the bill being analyzed. But the dynamic estimates thus are not consistent with the budget estimates that use the unchanged baseline assumptions, which is the case for many of the other policy changes Congress may be considering. Fifth, the staff does not produce dynamic estimates of minor tax legislation.

D. Evaluation

This review of how the JCT staff has incorporated economic analysis into revenue estimates in the last two decades reveals three consistent themes. First, the staff has maintained familiarity with relevant economic research, in some cases making direct contributions, and the expertise necessary to apply this research to the analysis of detailed provisions of proposed policy changes. Second, the staff has responded to Members' interest in ensuring that the latest research be incorporated into this analysis, from the impact of capital gains tax changes on realizations to the development of a framework for implementation of dynamic scoring. Finally, the staff has placed a very high premium on maintaining the credibility of its estimates, especially as revenue estimates have become such an important determinant of the fate of legislative provisions. This has been accomplished by maintaining established frameworks for estimation, applying the latest research, and moving toward a more transparent stance that allows the public to understand the complexity of the estimation process and the choices the staff has made to implement it.

V. Conclusion

These case studies of economic analysis at the JCT show that staff economists have consistently married the latest economic research to their knowledge of the details of the tax system to provide invaluable

input to Members of Congress. They also illustrate several different ways in which economic analysis at the JCT has influenced tax legislation.

In the Tax Reduction Act of 1975, the tax-writing committees, alarmed by the economic decline, proactively sought guidance from the economics profession, including JCT staff, on how best to deal with a crisis. It is extraordinary that, of the 33 days which elapsed between the date of the President's State of the Union Message and the reporting of the bill by the Ways and Means Committee, the Committee devoted three full days to panels consisting largely of economists as well as an additional day to the Fed Chairman and additional time to discussions with JCT economics staff. Several factors contributed to the large influence economists had on shaping the Act.

First, the tax-writing committees were asking economists precise questions that the economists appeared well equipped to answer. Is fiscal stimulus desirable? How much stimulus is optimal? What tax cuts would be most effective? With the exception of Senator Long, who took advantage of the House's invitation to enact a key feature of his program for welfare reform and wanted to spur use of ESOPs, the committees were laser-focused on addressing what they viewed as an economic crisis, not on how to use the crisis to achieve unrelated policy goals on which the economists would not necessarily be able to offer useful input.

Second, while there was disagreement on details, the economists spoke with one voice expressing the profession's then-consensus on macroeconomics. It was hard to distinguish testimony from former officials of Republican administrations from that of former Democratic officials. The disagreements on details did not arise from economists' using different paradigms but rather from differing judgments about what was good policy within the prevailing Keynesian paradigm. Thus, the economists' disagreements framed well-defined issues for the committee members to decide.

Third, the advice that the economists were offering—tax cuts directed to people most likely to spend the money and incentives for business investment—was politically attractive to a bipartisan majority of both committees. The committee members wanted to do the right thing to address what they perceived as an economic crisis, but this is a lot easier when the right thing is politically popular.

In the capital cost recovery legislation of the 1980's, JCT economists developed economic principles on which the tax-writing committees could agree. It is always challenging to reach agreement on major tax legislation, but the process is much easier if the various parties can first reach agreement on underlying principles, economic or otherwise. In 1982, once the committees and the Administration decided to seek opportunities for "revenue enhancement," the process of reaching agreement was facilitated by the staff's analysis that ACRS provided benefits more generous than expensing, the undesirability of which was relatively uncontroversial from an economic point of view absent some desire to subsidize the investments in question. Once this principle was accepted, agreement on the half-basis adjustment and repeal of the scheduled future accelerated depreciation methods was relatively easy.

In 1982, the chairmen of the tax-writing committees wanted to repeal safe-harbor leasing, but it was tenaciously defended by the capital intensive industries and the Treasury Department. One might debate the theoretical merits of an efficient mechanism for transferring tax benefits or whether the public outcry over safe-harbor leasing would eventually subside, but it was difficult to dispute the staff's analysis of the inefficiency associated with safe-harbor leasing, the fact that it was not an efficient way to transfer tax benefits. Thus, the analysis gave the repeal effort important momentum. There was a comparable impact from the staff's analysis when the committees addressed leasing by tax-exempt entities the next year.

In 1986, the committees looked for base broadening reforms to finance lower tax rates. Similar to the experience in 1982, in 1986 the staff's analysis that capital cost recovery should provide similar effective

tax rates for various types of assets provided a focus around which the committees could design a new depreciation schedule. The staff's analysis of who was using tax shelters convinced the committees that they could sharply lower top tax rates and maintain distributional neutrality by enacting the passive loss limitation.

As was the case in 1975, the staff's analyses of capital cost recovery in 1980-86 were relatively uncontroversial within the economics profession and were attempts to address a perceived need of the tax-writing committees.

The experience between 1981 and 1984 illustrates another aspect of the tax legislative process that affects JCT staff economists' impact. When Congress is in a tax reduction mode, the business community and other taxpayer groups provide substantial input on measures they claim will provide benefits to them. However, when Congress is raising taxes or broadening the tax base, as in 1982, 1984, and 1986, the Members need analysis of which tax system problems are priorities for repair and which fixes should be avoided because of possible economic damage. They are much more likely to rely on the staff to provide this.

In the past 40 years, revenue estimation has evolved from a more or less ministerial task into a central feature of the tax legislative process, consuming a much larger amount of the staff economists' effort. Whether the process pays too much attention to the estimates and correspondingly too little to other matters is subject to debate, but the JCT staff needs to respond to the current needs of the Members—accurate and credible revenue estimates—which it has done.

What might the future hold in store for economics at the JCT? The experiences with economic stimulus in 1975 and capital cost recovery in the 1980s suggest that JCT economists are most helpful to the tax-writing committees when the committees are asking questions that economists are capable of answering and when the economics profession is speaking with one voice. When these conditions are

met, the economic analysis can help define the issues in such a way that the committees can make informed decisions and establish agreed-upon principles that bring the contending parties closer to reaching agreement. The challenge is that neither of these conditions is likely to be met in the foreseeable future. When Congress is polarized along partisan or ideological lines, the contending parties are often not just disagreeing over the answers to well-defined questions, where economic analysis can narrow the range of disagreement; rather, they are asking totally different questions. In this situation, economic analysis has much less to offer. Furthermore, the economics profession speaks with one voice on fewer issues. As discussed earlier, macroeconomics is split between academics, who study models that are theoretically elegant, and policy practitioners, who still rely on theoretically flawed models that appear to work pretty well in practice. In microeconomics, the problem is more of an abundance of riches. There are often many studies of a particular topic using different methodologies and different data sources producing widely varying results, with supporters of any particular policy quick to publicize those studies that happen to support their position. These circumstances produce a challenging environment in which JCT economists operate.

However, the increasing use of economic analysis in revenue estimation presents a significant opportunity. Congress cannot do without the revenue estimates. By encouraging, and indeed mandating, that JCT revenue estimates incorporate up-to-date economic analysis, Congress has essentially created a self-imposed economic education requirement. Not everyone who goes to school learns much, but they generally learn more than people who don't go to school at all. Thus, we can expect that, over time, members of the tax-writing committees will continue to learn a lot from JCT economists.