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Macroeconomic Effects of Tax Reform

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I. Introduction

Tax reform can be wide-ranging and all-encompassing, visited and revisited many times in the history of U.S. economic policy. But now tax reform is front-and-center, having been suggested as a key component in any program to deal with outsized U.S. fiscal deficits and debt, and also to promote economic growth and to simplify and make fairer an unduly complicated tax system. The emphasis on economic growth *and* reducing deficits and debt is new. *In our view it is well-placed—to best reduce the federal budget deficit relative to the economy, a faster pace of growth is essential!*

This paper looks at tax reform in the context of the current macroeconomic policy dilemma facing the United States—how, and what, tax reforms might be selected and implemented to raise economic growth, increase jobs, lower unemployment, reduce federal budget deficits and the growth in public debt relative to GDP. To this might be added an objective to alter the mix of federal government outlays and revenues, currently at a near record-high 24.7% of GDP for federal government outlays and a very low 17% of GDP for revenues. Both measures are way out-of-line with history and unless altered likely to eventually subject the U.S. to a sovereign debt crisis such as has recently engulfed the Eurozone.

We review some history and examine some analytics of tax reform from a macroeconomic perspective. We particularly look at the macroeconomic effects of previous tax reforms such as the Tax Reform Act of 1986 (TRA86). We then use a large-scale structural macroeconometric model to quantitatively assess the effects of some tax reform proposals on real economic growth, jobs and the unemployment rate, inflation, federal budget deficits, and gross public debt relative to GDP. The resulting mix of federal government outlays and revenues relative to GDP also is of interest. Contrary to the usual criteria for assessing tax reform—efficacy, fairness, and simplicity—our paper focuses on the

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macroeconomy—adding growth, jobs and unemployment, budget deficits and debt to the standard criteria.

Like others, *we argue that tax reform is a necessary ingredient to a reasonable and balanced long-run deficit reduction program.* The reforms chosen can have macroeconomic and sectoral implications and may affect the choices of other components to be included in any program to reduce federal budget deficits and the growth of public debt relative to GDP.

In the empirical sections of the paper, several tax reform proposals are selected and quantitatively assessed using large-scale macroeconometric model simulations with the Sinai-Boston (SB) Quarterly Model of the U. S. Economy. The time span, 2012 to 2021, covers short- and long-run effects.

The tax reforms include a proposal by Feldstein-Feenberg-MacGuineas (FFM, 2011) to cap certain tax expenditures (TE) or tax deductions for individuals at 2% of adjusted gross income. The funds raised from limiting tax expenditures are used to reduce the federal budget deficit or for fiscal actions that might stimulate the economy, e.g., reductions of personal income tax rates, reduced capital gains taxes, or a lowering of social security taxes.

A basic notion is that revenues raised by limiting TE can be used to reduce deficits or to finance other fiscal policies that might potentially be net stimulative to the economy and, ex-post, bring down federal government budget deficits and the growth in public debt relative to GDP.[1]

Flatter-tax, base-broadening measures put forward by the National Commission on Fiscal Responsibility and Reform (Bowles-Simpson), the Debt Reduction Task Force (Domenici-Rivlin) and suggested by the Obama Administration (April 2011), perhaps the heart of what most mean by tax reform in the current setting, then are simulated. *So far as we know, the attempt here is the first to quantify the macroeconomic effects of lower and flatter tax rates and base-broadening for individuals and corporations.* However, because of the large-scale structural macroeconometric model methodology and potential changes in behavior, or in the economy's structure, that might occur from tax reform, the results must be viewed as preliminary and a tentative baseline for further analysis.

Quite understandably, microeconomic behavioral responses in the economy might be altered by tax reform—hence possibly macroeconomic behavior as well. Although this probably renders less precise the results from macroeconometric model simulations that use a maintained structure, the quantitative results still can shed light on the broad contours of macroeconomic effects. They also can provide guidance for a framework within which a program of tax reform might be selected to reduce deficits, stimulate growth, and lower unemployment.

Section II deals with the need for pro-growth tax reform in the context of too slow economic growth, too little jobs creation, too high unemployment, and too high federal budget deficits and public debt relative to GDP.

Section III briefly reviews some history of tax reform, especially the Tax Reform Act of 1986 (TRA86), with an emphasis on the macroeconomic aspects.[2]

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[1]Doug Holtz-Eakin and Allen Sinai (2010) emphasize this approach, especially in a fiscally constrained macro policy environment.

[2]See Henry G. Aaron and William G. Gale, eds. (1996); Joel Slemrod, ed. (1990) for discussions and papers that review TRA86 and the various outlays and savings that were affected.

In Section IV are some macro-analytics of tax reform—ways in theory that tax reform might impact the macro economy. Although there is a considerable literature on tax reform—various types, elements, programs, and impacts—relatively little has been done on the macroeconomic effects.[3]

Section V examines some recent tax reform proposals with particular emphasis on the Bowles-Simpson Commission and Domenici-Rivlin Task Force recommendations. Tax reform was integral to the proposals made by the Commission and Task Force and deficit and debt reduction was the rationale for much of the tax reform discussion and analysis.

Section VI presents macroeconometric simulation results for some proposals on tax reform compared with a stochastic CBO Baseline (August 2011).[4] These include a 2% cap on TE to reduce deficits as suggested by FFM, and also some alternative uses of the funds raised that might stimulate growth. Aspects of the tax reforms recommended by Bowles-Simpson, Domenici-Rivlin and the Obama Administration are examined, particularly simpler and flatter individual and corporate tax structures accompanied by base-broadening. A flat tax of some sort, consumption or value-added tax, with or without sharp reductions in tax rates on income and corporate profits, was not analyzed; instead, tabled for later work.

The last Section summarizes the results on the macroeconomic effects of tax reform as assessed here. We apply the results to the current situation—the dilemma of how to increase economic growth, create more jobs, lower unemployment, and reduce the U.S. federal budget deficit and debt relative to GDP—all at the same time. Some recommendations follow.

II. The Problem and Need for Pro-Growth Tax Reform

A need for pro-growth tax reform arises from having to reduce federal budget deficits and the growth in public debt relative to GDP. Since this almost certainly would require some tax increases; how to use a reformed tax system to increase economic growth, jobs, tax receipts, and the standard-of-living of the United States seems worth considering.

The U.S. federal budget deficit stands at about 8-1/2% of GDP and the ratio of gross public debt-to-GDP is over 90%. Both have risen sharply in recent years. Budget deficits are running at $1 trillion plus and real and nominal GDP growth is low relative to history. If no fiscal actions are taken to reduce the deficit, or a surprising increase in nominal GDP does not occur, the deficits and debt-to-GDP ratios will stay outsized, public debt will rise, interest payments on the debt will increase at an accelerating rate, add to debt, and U.S. federal government demands on fixed income markets will rise more rapidly than otherwise. At some point, as has already happened in several Eurozone countries and elsewhere, markets may balk at absorbing U.S. sovereign debt issuance except at much higher interest rates. If that situation did develop, the U.S. public and Federal Reserve would have to purchase much of the debt. This could crowd-out funds available for private sector spending. Actual and potential growth of the economy would be constrained. In a worst case situation, like other heavily-indebted

[3]Plenty of research can be found on the efficiency, simplicity, and equity aspects of tax reform. For a good review, see Alan Auerbach and Joel Slemrod (1997).

[4]Congressional Budget Office, "Budget and Economic Outlook: An Update," August 2011. The stochastic SB Model Baseline compares very closely with the CBO Baseline, but not precisely given the stochastic nature of the exercise. "What-If" shocks and/or changes representing the tax reform programs were inputted into the stochastic Baseline, then the results from the simulation compared with the Baseline.

nations, the U.S. dollar, stock market, and fixed income markets could be severely damaged. The result would be weak economic growth, possibly recession, and eventually another financial crisis.

How long until such an eventuality?

That is hard to say. Even if no carefully considered and balanced fiscal actions are taken, it can still be a long time before financial disarray sets in.

For Greece, it took six to eight years of fiscal irresponsibility, worsening deficits, growing debt, rising debt interest burdens and a growing risk of unsolvency, government outlays outstripping tax revenues, before Greek sovereign debt could not be sold and Greece began its road to ruin. For Japan, after years of failing to come to grips with its deficit and debt problems, the economy has remained mired in a low-growth deflationary state. Japan has faded as a global economic power and the Japanese standard-of-living stagnated.

In the U.S. situation, since deficit and debt reduction must lie in reducing federal government outlays *and/or* raising taxes, *if* tax increases are a consideration then a natural thought is to use tax reform for growth, to provide a way to raise revenues and to simplify, make more efficient, and fairer the existing very complicated U.S. tax system. It has been *hypothesized* that tax reform can be pro-growth, not only to be used in a program of deficit and debt reduction, but also to grow the economy faster than otherwise would be the case.

III. Some History of Tax Reform and Some Lessons

Broad-based "tax reform" has had three main thrusts post-W.W.II.

First was during the Reagan Administration in the early 1980s when individual and corporate tax rates were sharply reduced, tax brackets made fewer, itemized deductions limited, and the standard deduction encouraged and implemented. Although tax reform was indicated as a major reason for the fiscal actions that were proposed and legislated, stimulating economic growth after the depressed and shock-laden decade of the 1970s really was the main motivation.

In the second half of the decade came the Tax Reform Act of 1986 (TRA86), also in a Reagan Administration. This was reform more along the lines of what tax reform normally means—a simpler, more distributionally efficient, and fairer tax code.

Third, in the 1990s numerous changes were made to provide incentives for certain social and economic goals, particularly saving, with, at times, the mantra of tax reform surrounding them.

In what follows, the most significant of the tax reforms is discussed—TRA86—with a look at its macroeconomic aspects.

A. Tax Reform Act of 1986

TRA86 is held up by many as a model of what can be achieved when the President of the United States and both Houses of Congress cooperate in a bipartisan effort to meet an agreed upon national goal. TRA86 (Pub.L. 99-S14) was enacted October 22, 1986. To a considerable extent, it achieved its main objectives—simplifying the Tax Code, broadening the tax base, and eliminating many tax shelters and other tax preferences. *As a macro event, however, its effects were minimal.*[5]

[5]See Joel Slemrod (1996); also Allen Sinai (1986), "The Tax Reform Act of 1986: Winners and Losers."

The legislation was truly a cooperative effort. President Reagan took the lead, but the Act was officially sponsored in the U.S. House of Representatives by Congressman Richard Gephardt, a Democrat from Missouri. In the U.S. Senate, the sponsor was Bill Bradley, a Democrat from New Jersey.

From the outset, there was agreement that TRA86 should be revenue neutral. While individual income taxes would be reduced, corporate profits taxes would be raised. Moreover, the tax code would be greatly simplified. Both the number of deductions and number of tax brackets would be severely scaled back.

In actuality, TRA86 ended up including a significant reduction in individual income tax rates; a change in Individual Retirement Accounts; elimination of deductions for interest on consumer loans; a curtailment of defined contributions for pensions; liberalization of several tax incentives; the ending of depreciation deductions; and the elimination of numerous other tax loopholes.

A. 1 Individual Income Tax Rates

TRA86 decreased the top tax rate from 50 per cent to 28 per cent. The bottom rate was increased from 11 per cent to 15 per cent. Several lower level tax brackets were consolidated. In addition, the upper income level of the bottom rate (applicable to married couples filing jointly) was raised from $5,720 per year to $29,750. Fifteen levels of reportable income were cut to four. Capital gains were made subject to the same tax rate as ordinary income.

A. 2 Retirement Accounts and Pension Funds

The TRA86 also imposed restrictions on deductions for Individual Retirement Accounts (IRAs). IRAs were created by the Employee Retirement Income Security Act (ERISA) of 1974. As a result, employees not covered by a company pension plan could contribute the smaller of $1,500 or 15 per cent of earned income each year. Previously, the Economic Recovery Tax Act of 1981 (ERTA) had removed the pension clause and increased the maximum contribution to $2,000, or 100 per cent of earned income. When TRA86 was adopted, it kept the $2,000 contribution limitation. However, it restricted the deductibility for those households that had pension plan coverage while simultaneously having moderate to high incomes. On the other hand, non-deductible contributions were allowed. This was designed to stimulate aggregate saving.

With respect to consumer finances, TRA86 cancelled the deductibility of interest on consumer loans—such as credit card debt. In the previous Tax Code, there was a provision called “Income Averaging.” Its application reduced taxes for those who had suddenly experienced a much higher income than previously earned. TRA86 eliminated that provision. It should be noted that “Income Averaging” was partially restored for farmers in 1977 and for fishermen in 2004. The TRA86 did increase the personal exemption and standard deduction. The idea was to shift consumption to saving.

The ability to subtract from income amounts placed in defined contribution pensions was restricted. Before TRA86, defined contribution limits were the lesser of 25 per cent of compensation or $30,000. A taxpayer could meet the goal through a combination of elective deferrals and profit-sharing. Under TRA86, the effective deferral limit was fixed at $7,000 and indexed to inflation. The profit-sharing percentage adopted had to be uniform for all employees. One result of the change was to make contributions to 401(k)s and other forms of defined contribution pension plans more equitable.

A. 3 Promoting Home Ownership

The TRA86 provided special tax incentives to encourage home ownership. This was accomplished by increasing the home mortgage interest deduction. The Act modified the treatment of mortgage interest payments, local property taxes, and imputed rent for owner-occupied housing. The changes favored investment in taxpayer-owned homes compared with rental housing. Because low-income families were more likely to live in rental housing than in owned properties, a low-income housing tax credit was added.

A. 4 Depreciation of Equipment

The TRA86 also effected changes in the way companies depreciated newly acquired equipment. Before ERTA, depreciation was figured using "useful life" tables supplied by the U.S. Treasury Department. ERTA introduced the "Accelerated Cost Recovery System," (ACRS). The latter established a schedule of Useful Lives. These were: 1) 3 years for Technical Equipment; 2) 5 years for Nontechnical Office Equipment; 3) 10 years for Industrial Equipment, and 4) 15 years for Real Property. TRA86 lengthened these lives. The latter were stretched further for taxpayers subject to the Alternative Minimum Tax (AMT). These longer lives were meant as a much closer approximation of a measure, "economic depreciation," employed by economists to estimate the actual life of an asset compared with its economic value.

A. 5 Alternative Minimum Tax (AMT)

TRA86 had unexpected consequences for many American taxpayers. When originally adopted, the AMT sought to curb tax shelters used primarily by high-income households. Unfortunately, TRA86 refocused the AMT so that it affected an entirely different range of deductions relied upon by high-income (but not very rich) taxpayers.

These newly targeted deductions included items such as the personal exemption; the standard deduction for state and local taxes; union dues; private activity bond interest; and some medical expenses for seriously ill persons. The TRA86—which was aimed at untaxed wealthy investors—ended up taxing many other families who happened to own homes in high-tax states.

A. 6 Real Estate Investments

The TRA86 had mixed effects in another area—net negative on real estate investments because of the cancellation of numerous tax shelters. The Act imposed limitations on deductions for passive losses and on passive activity credits.

Before 1986, a considerable amount of real estate investment finance was provided by passive investors. In practice, many promoters formed syndicates and persuaded investors to pool funds for investments in tax-advantaged real property—both commercial and residential. TRA86 undercut the market value of these investments by restricting the extent to which realized losses could be subtracted from the investor's gross income. This provision induced many investors with loss-generating property investments to sell them. The liquidations contributed significantly to the decline in real estate values in the 1980s.

There is some evidence that suggests attempts to dispose of many tax shelter assets contributed to the Savings and Loan Crisis of the 1980s. Andrew F. Brimmer, Co-Chair of the National Commission on Financial Institution Reform, Recovery and Enforcement, reported that mortgages and similar real property loans made up a significant share of the

assets in S&L portfolios. Marked reductions in the market value of real properties contributed to the bankruptcy of many institutions.

There were other provisions of TRA86 which made it an outstanding example of federal government tax reform. The foregoing features document its secure place in tax reform history. But its macroeconomic effects were few.

B. Lessons To Be Learned

Several lessons can be learned from the tax reforms of the Reagan years.

– *Presidential Leadership and Responsibility*. President Reagan realized quite early that the White House had to take the lead if tax reform was to make any headway. The first step was for the White House to draft a specific plan under the aegis of the President, who then became its Chief Advocate.

– *Bipartisan Sponsorship.* Tax Reform in 1986 would have been impossible without the active participation of both Democrats and Republicans in the Congress. In the House of Representatives, the Chairman of the tax-writing House Ways and Means Committee—Dan Rostenkowski (Democrat from Illinois) played a key role. In the Senate, the Chairman of the Finance Committee—Robert Packwood (Republican from Oregon) was pivotal. The President reached out to both men frequently and in-person. The three of them recognized the benefits of tax reform for the nation at-large. While there were marked differences among them—in economic, fiscal and social policies—these were laid aside in order to reach a viable Plan.

– *Agreement on Revenue Goals*. The first critical question was the issue of revenues. The three leaders agreed early on answers to several questions—how much revenue should the new tax system raise? Should it be through a tax cut or a tax increase? Should the objective be to restructure the tax system as revenue-neutral against the previous code?

The three agreed that the new tax system should be revenue neutral. While the distribution of the burden of federal taxes would clearly be changed, revenue as a fraction of GDP would not be altered.

– *Improvement of an Imperfect System*. The leaders accepted that they would not be able to design an ideal tax code. The latter would be optimally efficient, fair, and simple. Putting extra emphasis on one of these criteria would require giving less weight to one, or both, of the others. Instead, the leaders strove to achieve the "best balance" possible. This is another way of saying that the final outcome would be what a majority of Congress would accept.

– *Carving in Previous Stone.* When the Congress adopted TRA86, it was known that a Tax Code was being created that would not last forever. The historical record had shown the impossibility of this.

These lessons are of value for the current, and coming, discussion on tax reform and its practical implementation.

IV. Some Macro-Analytics of Tax Reform

The macroeconomic analytics of tax reform depends on the Plan, whether or not revenue-neutral, its components and their effects, and behavioral changes in the economy that might ensue. The latter are not dealt with here.

Even if a revenue-neutral program of tax reform were included in an overall deficit reduction plan where the growth in federal government outlays was taken down, the

large-scale macroeconometric model used here would not *necessarily* give a net negative result (see Table 14 below). And, more generally, if there were positive allocative, distributive, efficiency and behavioral effects, the net results could be significantly positive.

One reason for a net positive effect is that lower federal budget deficits, if permanent and expected to be so, reduce current long- and short-term interest rates, U.S. Treasury and others, raise the present value of expected future corporate earnings, increase stock prices, and can lower the value of the dollar. Through these effects, the stimuli can offset the negative short-run impacts from outlay reductions.

In the SB Model, the rationale for long-term U.S. Treasury yields responding favorably to an expected permanent reduction in the federal budget deficit is: 1) the expectation of less economic activity and lower demands for funds, 2) lower price inflation, and 3) a lessened supply of U.S. Treasury securities. *Fixed income markets price into current yields these expectations*, producing lower long-term interest rates. Lower long-term interest rates affect other financial asset prices, e.g., increasing equity prices and reducing the currency exchange rate. Changes in those asset prices, in turn, impact household and business balance sheets, expected real aftertax returns on saving, investment and labor supply and, in turn, the macroeconomy.

Generally, however, the overall impacts of tax reform, particularly if the Plan being considered is approximately revenue-neutral, would be thought unlikely to produce major variations in U.S. economic growth, inflation, or employment from what might have otherwise occurred. The composition of spending could change, savings might be affected, investment as well, and the supply and demand for labor. And, sectorally, there might be demonstrable effects. But, large macro effects would not be an a priori expectation.

If tax rates are reduced and the tax base broadened, the lower marginal income tax rates would be stimulative for spending and employment, but the effects from base-broadening would be negative. Also, lower tax rates provide a positive cash flow effect. Both "income" and "relative price" effects occur on an aftertax basis for changes in marginal income tax rates. Base-broadening, however, has only "income" effects. Changes in marginal tax rates should induce additional effects from changes in real aftertax returns on saving, investment, the compensation to labor, and in the reactions of financial markets. Changes in the behavior of individuals and firms could be expected to occur, especially in the demands and supplies of health care services and in housing.

In the SB Model, corporate profits taxes are costs and reduce inflation when lowered. Increases in taxes to corporations because of base-broadening are passed on in higher prices. A lower statutory tax rate, however, reduces prices. Net, under an overall Tax Reform Plan, whether or not revenue-neutral, changes in corporate profits tax rates and in the components of base-broadening should noticeably impact macroeconomic performance.

V. Tax Reform Proposals

Currently, there is a plethora of proposals to reform the Federal Tax Code.[6] Some advocates seek to make the Tax Code more efficient, fair, and simple. Others want to reduce the level of taxation generally. Still others argue that tax reform is a precondition

[6]See James Bickley (2011) "Tax Reform: An Overview of Proposals in the 112th Congress."

for lifting economic growth in the long-run. And, many see it as part of a bigger program for reducing federal budget deficits and debt.

Most of the current efforts are being made against the background of large federal budget deficits and growing U.S. sovereign debt. This has sparked a strong movement to shrink the size of the federal government. In contrast, there is also a strong movement to protect (and even expand) a number of federal government programs—including Social Security, Medicare, and Medicaid.

Therefore, the debate over Tax Reform inevitably has become entangled with politics. The resulting strife is evident in "Washington." The debate has also spawned numerous commissions, committees, groups, centers and individuals—all dedicated to generating tax reform proposals.

Among them have been: 1) President Obama's National Commission on Fiscal Responsibility and Reform (Bowles-Simpson); 2) the Debt Reduction Task Force (Domenici-Rivlin); 3) a U.S. House of Representatives proposal (Paul Ryan, Chairman, House Budget Committee); and 4) others, including The White House (April 13, 2011), the latter particularly on corporate tax reform.

The heart of Bowles-Simpson and Domenici-Rivlin lies in moving toward a lower and flatter tax rate structure with the tax base for individuals and corporations broadened, or loopholes closed. These proposals continue the thrust of Tax Reform since 1980.

A. Bowles-Simpson

The National Commission on Fiscal Responsibility and Reform was appointed by President Obama in 2010. Erskine Bowles (former Member of the Clinton Administration) and Alan Simpson (former Senator from Wyoming) were Co-Chairmen. There were 17 Members. After much research and deliberation, the Members could not reach unanimous agreement on a report. Consequently, the Co-Chairmen decided to release their own report. In November 2010, they set forth the conclusions and recommendations on which they had agreed.

Bowles-Simpson concluded that the mandate from President Obama called for a Tax Code that would generate enough revenue to finance the goods and services the American public want the federal government to provide. The Tax Code should also foster sustained economic growth. Above all, the changes had to produce a real reduction in the federal budget deficit.

The principal reductions in expenditures recommended by Bowles-Simpson are shown in Table 1. Ten categories yielded reductions totaling $141.5 billion for FY2015, 70.8% of the $200 billion recommended for 2015.

Bowles-Simpson also recommended reducing discretionary spending in 2012 to FY2010 levels. Subsequently, such spending would be cut by 1 per cent per year. After 2015, spending (adjusted for inflation) would be permitted to grow. Finally, the Co-Chairmen recommended that, initially, federal government spending should not exceed 22 per cent of GDP. Eventually, the goal should be 21 per cent.

Bowles-Simpson suggested significant changes to the Federal Tax Code—elimination of the Alternative Minimum Tax (AMT) and of numerous tax deductions, credits, and exemptions.

These tax expenditures, or "loopholes," were estimated to cost the federal government in excess of $1 trillion per year. One of the largest is the deduction for residential mortgage interest. Tax expenditures are a hidden form of government spending—

although the lost revenue doesn't appear in the federal budget as an outlay. Once such provisions are embedded in law, it becomes extremely difficult to dislodge them.

Table 1
Bowles-Simpson Proposed Cuts in Expenditures
(Bils. $s)

Activity	Amount
Streamline Defense Department	$28.0
Reduce Defense Procurement	20.0
Cut 250,000 Government Contractors	18.4
Eliminate Earmarks	16.0
Freeze Government Employee Pay for Three Years	15.1
Cut Government Work Force by 10%	13.2
Freeze Non-Combat Military Pay	9.2
Reduce Overseas Military Deployments	8.6
Reduce Military R&D	7.0
Modernize Military Health Care	6.0
Total	**$141.5**

Source: Co-Chairmen Proposals, National Commission on Fiscal Responsibility and Reform.

Other Options on taxes were offered.

In a "Zero Plan" Option, tax expenditures would be eliminated completely. Individual income tax rates would be taken from six (6) brackets to three (3) with the lowest two rates (10 per cent and 15 per cent) set at 8 per cent. The middle two rates (25 per cent and 28 per cent) would decline to 14 per cent. The top two rates (33 per cent and 35 per cent) would be reduced to 23 per cent. For U.S. business, the corporate rate would fall from 35 per cent to 26 per cent.

In a "Second" Option, Bowles-Simpson would reduce the mortgage interest deduction, restricting this tax expenditure to the first $500,000 for a loan on a taxpayer's primary residence, roughly half what is possible under the existing Tax Code.

In addition, deductions for State and Local Government taxes and others would be repealed. Individual tax rates under the Second Option would be set at 15 per cent, 25 per cent, and 35 per cent.

Under both Tax Reform Plans, treatment of investment income would be changed, with capital gains and dividends taxed at ordinary income rates rather than 15 per cent currently.

Under the Bowles-Simpson proposals, more taxpayers would probably have higher—not lower—federal tax obligations. On the other hand, the revamped Tax Code would most likely be more progressive.

In the Bipartisan Policy Center (BPC) (Domenici-Rivlin) tax reform was recommended sharp reductions in tax rates and fewer brackets for personal income taxes, 15 per cent and 28 per cent as opposed to the current five-bracket structure. With no standard deduction or personal exemptions, the 15 per cent rate would apply to the first dollar of income. The 28 per cent rate would apply to income above $51,000 for single filers and $102,000 for couples. Base-broadening would occur with a phasing-out over

10 years of the tax exclusion for employer-sponsored health insurance benefits, estimated for 2012 to be about $171 billion.

The current system of itemized deductions would be altered but still allow some tax subsidies for charitable contributions, mortgage interest on a primary residence, and incentives for contributions to retirement savings accounts. The Earned Income Tax Credit (EITC) would be ended and refundable child and earnings credits established.

The corporate income tax rate would be set at 28 per cent rather than the current 35 per cent. And, capital gains and dividends would be taxed as ordinary income at the top rate of 28 per cent excluding the first $1,000 of realized capital gains, or losses.

This Plan would achieve a significant simplification of the tax code by: 1) aligning the top individual, capital gains and dividend tax rates; 2) reducing the corporate tax rate; and 3) eliminating the AMT. The increased tax base would produce additional revenues for achieving debt reduction at the new lower tax rates.

Income and profits tax rate reductions with base-broadening in an approximately revenue-neutral situation provided the basis for the macroeconometric simulations of the major elements in the Bowles-Simpson and Domenici-Rivlin Tax Reform Plans.

VI. Specific Tax Reform Proposals and the Macroeconometric Results

Of the many tax reform proposals, those analyzed were the FFM deficit reduction plan to limit, or cap, individuals' tax expenditures at 2%, 3% or 5% of their estimated value and several generic tax reform possibilities deriving from Bowles-Simpson and Domenici-Rivlin. For the latter, tax rate reductions and base-broadening for individuals and businesses were set to be approximately revenue-neutral. The programs were simulated over 2012 to 2021 with the SB Large-Scale Quarterly Macroeconometric Model of the United States.[7]

The CBO Baseline of August 2011 was used for the simulations. A stochastic version of the CBO Baseline was created, including current law as envisioned by the CBO. Behavioral equation "add" factors and exogenous variable settings were determined to produce a stochastic version of the main variables of interest.

Table 2 shows the key elements of the August 2011 CBO Baseline in the SB CBO stochastic Baseline. A stochastic version cannot be exact, but can be a very close approximation. As is well-known, the CBO Baseline is not really a forecast but has in it certain assumptions relating to steady-state full employment in the outyears.

Such a result is unlikely. But, for purposes of "What If" quantitative assessments of various tax reform programs it serves well as the Baseline of comparison. In Table 2 can be noted the convergence to full employment in the CBO Baseline with the "natural rate" of unemployment estimated at 5.2%. Stable growth, stable inflation, and stable interest rates are assumptions at full employment. The so-called natural rate of unemployment appears several years before the end of the simulation period and is maintained. *Estimates of federal budget deficits and debt relative to GDP are too low in such an exercise because full employment is assumed.*

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[7]Discussion and a sketch of the version of the SB Model used here can be found in Allen Sinai (2010), "Capital Gains Taxes and the Economy," Appendix. Over many years, more than three decades, the SB Model and its antecedents have been used to analyze numerous macroeconomic fiscal policies, particularly tax and federal government outlays, and tax incentives ranging from reductions in personal income and corporate profits taxes to specific tax measures such as accelerated depreciation, investment tax credits, repatriation of profits held abroad, capital gains and for saving.

Monetary policy was unaltered, with nonborrowed reserves and the Federal Reserve balance sheet held unchanged at Baseline levels. Interest rates were permitted to move in response to the macroeconomic and financial effects of the tax reform programs. The Federal Reserve did not hold short-term interest rates near zero nor at Baseline levels, since interest rates are integral to how financial markets and the economy behave in response to tax reform. Both financial asset prices and exchange rates change as a result of the fiscal actions and the economy responds endogenously. Monetary policy does *not* respond to fiscal policy, *per se,* only to whether inflation or the unemployment rate is pushed away from, or toward, the targets of the central bank.

Table 2
CBO Baseline—Highlights*
(Calendar Years, 2012-2021)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Real GDP (% Chg.)	2.6	1.6	4.3	5.0	2.9	2.6	2.6	2.4	2.7	2.4
Nominal GDP (% Chg.)	4.1	4.6	7.7	8.4	7.2	6.7	7.0	6.6	6.8	5.3
PCE Chain Deflator—Overall (% Chg.)	1.4	1.3	1.3	1.6	1.8	2.0	2.0	2.0	2.0	2.0
PCE "Core" Inflation (% Chg.)	1.4	1.4	1.4	1.6	1.7	1.9	2.0	2.0	2.0	2.0
Unemployment Rate (%)	8.7	8.7	7.9	6.1	5.4	5.2	5.2	5.2	5.2	5.2
Interest Rates (%)										
3-Mos. Treas.	0.1	0.2	0.8	1.9	3.2	4.0	4.0	4.0	4.0	4.0
10-Yr. Treas.	3.2	3.3	3.8	4.3	4.9	5.3	5.3	5.3	5.3	5.3
Fed. Budg. Def. ($ Trils.)	-1.057	-0.734	-0.560	-0.547	-0.670	-0.667	-0.640	-0.705	-0.838	-0.869
Def./GDP (%)	-6.8	-4.5	-3.2	-2.9	-3.3	-3.1	-2.8	-2.9	-3.2	-3.2
Gross Debt ($ Bils.)	15,933	16,012	16,693	17,176	17,342	17,341	17,335	17,550	17,837	18,180
Gross Debt/GDP	96.8	96.8	95.5	91.2	85.2	80.2	74.7	71.0	67.6	65.0
Outlays/GDP (%)	23.6	23.4	22.7	22.2	21.8	21.3	20.3	20.0	19.9	19.5
Revenues/GDP (%)	19.1	20.2	20.4	20.3	20.2	20.5	20.3	20.0	19.7	19.5

*CBO Baseline (August 2011) near-replication in a stochastic simulation with the SB Model.

It should be noted that the SB Model contains a number of variables that reflect model-consistent expectations as they affect financial markets. Specifically, asset prices such as interest rates, the stock market and exchange rates react in the current period to expectations of future results as forecasted by the Model. This, in turn, affects the behavior of the economy in the present and subsequent near-term future.

For example, expected *future* federal government budget deficits affect current long-term interest rates and through interest rates the stock market. The stock market is affected by *expected* (model-consistent) future earnings, with the discount rate used calculated as a weighted average of short- and long-term interest rates, where the latter are impacted by current and future deficits. The dollar exchange rate is affected by interest rates across countries, among other factors, and by expected future budget deficits. Hence, trade flows will be impacted.

The modeling of these expectations effects is specific to the SB Model, reflecting the reality of the setting of expectations in response to expected future behavior. Federal budget deficits, and the expectation of them, are one determinant of current long-term interest rates and both expectations of deficits and interest rate levels affect the dollar exchange rate. These asset prices, in turn, affect current stock prices and the economy through effects on household and business balance sheets and the financial-real interactions that connect the financial system to housing, consumption, business capital spending, and international trade. *These quick expectations effects link expectations of future behavior to current asset prices and to current and near-term economic activity.* The financial condition of households and businesses (and, to some extent, other financial institutions) is integrated with the real economy in the SB Model.[8]

The first set of reforms considered and simulated was based on FFM, where a 2% cap on tax expenditures (TE) for individuals broadened the tax base to reduce the deficit (Table 3).[9] This raised approximately $278 billion in federal tax revenues, assumed each year from 2012 to 2021, with the funds raised used to reduce the federal budget deficit and the growth of debt relative to GDP. Very likely, the value of the tax expenditures and amounts from the 2% cap would rise over these years. But, for purposes of the simulation a constant figure of $278 billion was used.

Table 3 shows the empirical results. The tax expenditures subject to a 2% cap included employer-provided health insurance premiums and benefits and a number of itemized deductions such as home mortgage interest, state income taxes, and some tax credits.[10] In subsequent simulations, the revenues raised from the 2% cap on TE were used to fund tax cuts on personal income and/or capital gains, or in combination, and included some, or no, deficit reduction. Other variants used the revenues raised to reduce individual personal income taxes, social security taxes, or some of both.

The macroeconomic effects of FFM, essentially higher taxes to reduce federal budget deficits, not surprisingly, were negative. Real GDP, relative to Baseline, declined $60 billion per year over 2011 to 2021. Real economic growth was down 0.5 percentage points in 2012 and 0.2 percentage points in 2013. Subsequently, in 2014 there was a small cyclical bounce up, with real GDP growth rising 0.2 percentage points.

The biggest decline in economic activity occurred in aggregate consumption, down $129 billion per annum. Less of a decline was registered in business capital spending. Later on, consumption rose relative to the Baseline. The better performance for investment derives from lower interest rates relative to the Baseline, 20 basis points per annum for the three-month Treasury bill rate and 33 basis points a year for the 10-year U.S. Treasury yield. The declines of interest rates stem from decreases in the demands

[8]See Allen Sinai (1992) (pp. 43-46 and Figure 17 specifically) for an illustration of how financial market expectations affect current financial asset prices and then the economy through various financial-real interactions.

[9]See Feldstein, Feenberg, and MacGuineas (FFM) for a description of the proposal, the tax expenditures subject to a 2%, 3% or 5%, cap and estimates of the revenues raised.

[10]FFM use data on estimated tax expenditures from the Office of Management and Budget for 2012-16 and the NBER TAXSIM model to arrive at this estimate, a 2012 figure. Potential microeconomic and macroeconomic structural behavioral changes that might occur in response to changes in the tax structure were not incorporated into the SB Model simulations. In a full analysis, the macroeconomic effects of an FFM type of tax reform would need to be analyzed and connected to the Model simulations, as would housing market responses to this kind of tax legislation. The demands and supplies of health care goods and services, costs of providing health care, and demand and supply of housing likely would respond to changes in relative aftertax costs and the reduced subsidizes for health care and housing.

for funds, lower price inflation, and a permanent improvement in federal government budget deficits. The latter reduced *current* long-term interest rates on expectations of lower future budget deficits.

Table 3
FFM 2% Cap on Tax Expenditures (TE)
with Federal Budget Deficit Reductions*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2011-15**	**2016-21**	**2011-21**
Economy													
Real GDP ($ '05 Bils.)	-65.4	-85.1	-69.7	-78.3	-87.8	-77.0	-60.6	-54.7	-52.8	-27.8	-59.7	-60.1	-59.9
Cons. ($ '05 Bils.)	-71.8	-115.2	-120.8	-148.7	-176.1	-178.3	-172.1	-171.2	-171.2	-89.6	-91.3	-159.7	-128.6
Bus. Fixed Inv. ($ '05 Bils.)	-2.8	-9.4	-7.0	3.1	7.8	10.3	13.4	15.9	15.1	-14.6	-3.2	8.0	2.9
Nom. GDP ($ Bils.)	-87.1	-119.9	-91.2	-86.5	-105.1	-105.8	-96.1	-97.9	-102.0	-117.6	-76.9	-154.1	-119.0
Real GDP Growth (Pctg. Pts.)	-0.5	-0.2	0.2	0.0	-0.1	0.1	0.1	0.1	0.0	0.1	-0.1	0.1	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.0	0.1	0.1	0.0	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	-0.234	-0.541	-0.456	-0.408	-0.478	-0.441	-0.344	-0.295	-0.295	-0.047	-0.328	-0.317	-0.322
Unempl. Rate (%)	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	-0.1	0.1	0.1	0.1
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-14	-28	-24	-19	-20	-20	-18	-16	-15	-41	-17	-22	-20
10-Yr. Treas.	-52	-54	-55	-29	-32	-56	-57	-55	-15	-45	-38	-28	-33
Fed'l Budg. Def. ($ Bils., FY, Unified)	214.3	295.9	324.3	336.6	342.3	371.4	408.6	439.2	468.0	102.6	234.2	355.4	300.3
Revs. ($ Bils.)	207.1	277.8	285.1	278.9	272.8	271.3	273.7	274.8	274.7	17.5	209.8	230.8	221.2
Outlays ($ Bils.)	-7.2	-18.1	-39.2	-57.7	-69.5	-100.2	-135.0	-164.5	-193.2	-132.4	-24.4	-132.8	-83.3
Def./GDP (Pctg. Pts., FY)	1.4	1.8	1.9	1.8	1.7	1.7	1.8	1.8	1.8	0.4	1.4	1.5	1.5
Gross Public Debt/GDP (Pctg. Pts.)	-0.8	-3.3	-6.2	-8.8	-10.8	-12.9	-14.9	-16.9	-18.7	-14.5	-3.8	-14.8	-9.8
Revs./GDP (Pctg. Pts.)	1.3	1.7	1.6	1.5	1.3	1.3	1.2	1.1	1.0	0.1	1.2	1.0	1.1
Govt. Outlays/GDP (Pctg. Pts.)	0.0	-0.1	-0.2	-0.3	-0.3	-0.5	-0.6	-0.7	-0.7	-0.5	-0.1	-0.5	-0.4

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

The federal budget deficit is reduced by some $300 billion per year (over 2011-21). Revenues rise $221 billion per annum and federal government outlays decline by about $83 billion a year. The federal budget deficit-to-GDP ratio improves by 1.5 percentage points per year. The reductions in outlays come, in part, from lower interest rates and a reduction of interest payments on debt. Gross public debt rises at a lesser pace. The gross public debt-to-GDP ratio drops almost ten percentage points compared to the Baseline. The mix of revenues and government outlays shifts with the ratios of revenues-to-GDP up 1.1 percentage points and federal government outlays-to-GDP down 0.4 percentage points—a swing of 1.5 percentage points—and a desired outcome.

Thus, the FFM proposal does what it is supposed to do—reduce federal government deficits and the growth of debt relative to GDP. There is a cost to the economy in lost economic activity and in spending, however. The loss of employment is notable, over 300,000 persons per annum, with the unemployment rate typically rising 0.2 percentage points above the Baseline.[11]

Tables 4, 5, 6, 7 and 8 show the results of simulations for variants of the FFM 2% cap on TE, where the funds raised from the cap are used in other ways than for deficit reduction.

Table 4
FFM 2% Cap on Tax Expenditures (TE): Revenues Used to Reduce Personal Income Taxes and Federal Budget Deficits*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2011-15	2016-21	2011-21
Economy													
Real GDP ($ '05 Bils.)	-32.8	-41.3	-31.2	-45.7	-59.0	-52.0	-41.4	-39.8	-38.9	--	-30.2	-38.5	-34.7
Cons. ($ '05 Bils.)	-35.4	-56.8	-57.5	-82.0	-105.8	-104.6	-97.2	-95.9	-94.1	--	-46.3	-83.9	-66.3
Bus. Fixed Inv. ($ '05 Bils.)	-1.4	-5.2	-4.6	-0.2	0.8	1.5	3.2	4.4	3.3	--	-2.3	2.2	0.2
Nom. GDP ($ Bils.)	-42.9	-51.9	-21.4	-17.6	-35.3	-36.6	-30.7	-34.6	-35.5	--	-26.7	-28.8	-27.9
Real GDP Growth (Pctg. Pts.)	-0.3	-0.1	0.1	-0.1	-0.1	0.1	0.1	0.0	0.0	--	-0.1	0.0	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	--	0.0	0.0	0.0
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	-0.116	-0.267	-0.202	-0.182	-0.228	-0.143	-0.003	0.088	0.142	--	-0.153	-0.024	-0.103
Unempl. Rate (%)	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	01	--	0.1	0.1	0.1
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-7	-14	-11	-7	-9	-10	-9	-8	-8	--	-8	-7	-8
10-Yr. Treas.	-30	-38	-37	-7	-7	-28	-26	-27	-6	--	-22	-16	-19
Fed'l Budg. Def. ($ Bils., FY, Unified)	109.9	151.8	167.9	168.2	159.0	172.7	193.3	207.5	222.3	--	119.5	168.4	146.2
Revs. ($ Bils.)	49.1	16.3	115.3	105.5	113.7	66.9	99.9	94.8	92.1	--	34.3	93.5	66.7
Outlays ($ Bils.)	-4.1	-11.9	-25.4	-31.7	-27.9	-41.2	-60.7	-72.9	-86.9	--	-14.6	-51.8	-34.9
Def./GDP (Pctg. Pts., FY)	0.7	0.9	1.0	0.9	0.8	0.8	0.8	0.8	0.8	--	0.7	0.7	0.7
Gross Public Debt/GDP (Pctg. Pts.)	-0.4	-1.7	-3.8	-4.6	-5.5	-6.4	-7.3	-8.3	-9.1	--	-2.0	-6.5	-4.5
Revs./GDP (Pctg. Pts.)	0.7	0.9	0.8	0.7	0.6	0.6	0.6	0.5	0.5	--	0.6	0.5	0.5
Govt. Outlays/GDP (Pctg. Pts.)	0.0	-0.1	-0.1	-0.2	-0.1	-0.2	-0.3	-0.3	-0.3	--	-0.1	-0.2	-0.3

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

[11]The employment estimates of the SB Model, because so much of the historical sample period used in estimation spans times of strong growth in employment, can produce upward biased estimates in the jobs results, or number of persons finding work. There is much less of the recent cyclical "joblessness" in the data, which would bias down the employment responses.

One way was to reduce personal income taxes by $139 billion and to use the remaining $139 billion to finance reductions in federal budget deficits (Table 4). Another was to take the funds raised to reduce personal income taxes by $139 billion and capital gains taxes by $50 billion, with the rest, $80 billion, applied to reductions in federal budget deficits (Table 5).

The next simulation took all the revenues raised and gave them back through an equivalent reduction in personal income taxes (Table 6). And, in Table 7, the $278 billion of increased tax receipts from the FFM 2% cap were expended 50-50 for reductions in personal income and social security taxes. Finally, Table 8 shows the effects of using the $278 billion of revenues for an equivalent reduction in social security taxes.

Table 5
FFM 2% Cap on Tax Expenditures (TE): Revenues Used to Reduce Personal Income Taxes, Capital Gains Taxes and Federal Budget Deficits*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2011-15	2016-21	2011-21
Economy													
Real GDP ($ '05 Bils.)	-31.7	-16.4	13.5	9.9	-2.3	8.0	22.7	28.7	32.0	28.3	-4.9	19.6	8.4
Cons. ($ '05 Bils.)	-34.1	-30.9	-3.7	-5.4	-16.0	-2.1	19.4	32.9	47.3	57.1	-14.8	23.1	5.9
Bus. Fixed Inv. ($ '05 Bils.)	-1.4	-4.2	-0.6	5.6	6.4	6.5	9.1	12.1	13.0	11.8	-0.1	9.8	5.3
Nom. GDP ($ Bils.)	-41.4	-16.8	51.7	91.7	103.6	138.6	185.1	222.8	263.9	293.1	17.0	201.2	117.5
Real GDP Growth (Pctg. Pts.)	-0.3	0.1	0.2	0.0	-0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	-0.111	-0.176	0.034	0.115	0.061	0.125	0.269	0.365	0.422	0.432	-0.028	0.279	0.140
Unempl. Rate (%)	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-7	-9	2	11	12	13	18	21	23	23	-1	18	10
10-Yr. Treas.	-26	-39	-50	-27	-32	-56	-58	-69	-45	-33	-29	-49	-40
Fed'l Budg. Def. ($ Bils., FY, Unified)	106.4	117.9	143.9	162.8	163.6	181.8	207.1	229.2	256.8	314.3	106.2	225.5	171.3
Revs. ($ Bils.)	102.8	107.3	114.4	120.7	121.5	123.9	127.5	133.0	141.6	142.0			
Outlays ($ Bils.)	-3.6	-10.6	-29.4	-41.8	-41.6	-57.2	-78.6	-95.0	-113.9	-114.5	-17.1	-83.5	-53.3
Def./GDP (Pctg. Pts., FY)	0.7	0.7	0.8	0.9	0.8	0.8	0.9	0.9	1.0	1.1	0.6	0.9	0.8
Gross Public Debt/GDP (Pctg. Pts.)	-0.4	-1.7	-3.1	-4.5	-5.5	-6.6	-7.6	-8.7	-9.7	-10.7	-1.9	-8.9	-5.3
Revs./GDP (Pctg. Pts.)	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.5
Govt. Outlays/GDP (Pctg. Pts.)	0.0	-0.1	-0.2	-0.2	-0.2	-0.3	-0.2	-0.4	-0.4	-0.4	-0.1	-0.3	-0.2

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

Tables 4 to 8 show varying degrees of macroeconomic effects from this "tax reform." The measures taken affect real GDP and its growth, nominal GDP, employment, inflation, the federal budget deficit, growth of public debt, and mix of revenues and outlays relative to GDP. The specific effects are dependent upon the variant of the FFM 2% cap on TE, the types of tax changes, and whether a partial or fully offsetting mix of tax reductions or decreases in federal budget deficits are uses of the ex-ante increases in tax receipts.

It is interesting to note that the approximately revenue-neutral ex-ante increase in taxes from the 2% cap and equivalent reductions in personal income taxes do *not* (Table 6), net, benefit the overall economy nor change the federal budget deficit very much. However, this is what might be expected, a priori.

Table 6
FFM 2% Cap on Tax Expenditures (TE):
New Revenues Source Equivalent Reductions in Personal Income Taxes*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2011-15**	**2016-21**	**2011-21**
Economy													
Real GDP ($ '05 Bils.)	-2.1	-0.5	16.0	3.8	-12.6	-15.5	-12.1	-15.0	-26.5	-35.5	3.4	-19.5	-9.1
Cons. ($ '05 Bils.)	-1.2	-2.8	18.3	12.7	-2.8	-7.9	-2.9	-2.0	-25.7	-53.0	6.4	-15.7	-6.1
Bus. Fixed Inv. ($ '05 Bils.)	-0.2	-1.7	-1.6	0.3	-0.5	-2.1	-2.8	-1.6	-2.7	-6.6	-0.6	-2.7	-1.7
Nom. GDP ($ Bils.)	-1.3	10.7	58.4	77.3	71.1	70.5	78.0	77.2	64.4	54.5	29.0	69.3	51.0
Real GDP Growth (Pctg. Pts.)	0.5	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	-0.1	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	-0.004	0.015	0.076	0.123	0.108	0.197	0.342	0.487	0.540	0.954	0.036	0.375	0.221
Unempl. Rate (%)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.0	0.1	0.1
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-1	-3	3	7	6	5	4	4	2	-2	-3	3	2
10-Yr. Treas.	-8	-21	-21	7	8	-9	-3	-7	-12	-8	-8	-5	-6
Fed'l Budg. Def. ($ Bils., FY, Unified)	6.7	8.0	2.4	12.1	-3.7	-3.8	-12.5	-14.8	-10.1	28.1	6.7	-2.7	1.3
Revs. ($ Bils.)	5.7	4.7	-7.9	4.3	5.1	8.5	-1.3	0.4	5.4	-8.8	1.4	1.9	1.7
Outlays ($ Bils.)	-1.0	-4.5	-10.3	-7.5	9.2	12.8	11.1	15.6	15.4	16.5	-4.8	13.4	5.2
Def./GDP (Pctg. Pts., FY)	0.0	0.1	0.0	0.1	0.0	0.0	-0.1	-0.1	0.0	0.1	0.0	0.0	0.0
Gross Public Debt/GDP (Pctg. Pts.)	0.0	-0.1	-0.4	-0.6	-0.5	-0.4	-0.4	-0.2	-0.1	0.0	-0.2	-0.3	-0.2
Revs./GDP (Pctg. Pts.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Govt. Outlays/GDP (Pctg. Pts.)	0.0	0.0	-0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

The number of persons working does rise, over 200,000 per year, presumably from the higher nominal GDP growth that occurs because of somewhat higher inflation. In the SB Model, the demand for labor depends upon *nominal* final sales, nonfinancial corporate cash flow, and the relative aftertax costs of labor and capital, among other factors. The supply of labor depends on the real aftertax return to labor and the labor force. Higher nominal final sales and an increase in the aftertax return to labor because of lower marginal tax rates, income or social security, could account for higher numbers of people finding work. Similarly, there is an increase in the labor force, which can, if sizeable enough, increase the number of persons who find work.

Most stimulative, net, to the economy was the use of new tax revenues for reductions in social security taxes or capital gains taxes.

Table 7
FFM 2% Cap on Tax Expenditures (TE):
Funds Raised Split 50-50 in Reductions for Personal Income and Social Security Taxes*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2011-15**	**2016-21**	**2011-21**
Economy													
Real GDP ($ '05 Bils.)	2.7	17.4	44.3	64.6	61.0	61.3	63.7	62.1	54.2	43.8	25.8	57.7	43.2
Cons. ($ '05 Bils.)	1.8	12.0	37.4	59.6	55.4	48.8	45.7	38.2	12.0	-19.2	22.2	30.1	26.5
Bus. Fixed Inv. ($ '05 Bils.)	0.2	2.6	10.2	21.6	27.5	27.5	29.4	33.0	34.8	32.1	6.9	30.7	19.9
Nom. GDP ($ Bils.)	4.9	29.4	82.5	140.8	170.3	204.0	241.6	269.2	285.5	292.6	51.3	243.9	156.4
Real GDP Growth (Pctg. Pts.)	0.1	0.2	0.2	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.1	0.1	0.0	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	0.005	0.078	0.247	0.420	0.465	0.433	0.479	0.518	0.526	0.508	0.150	0.485	0.333
Unempl. Rate (%)	0.0	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-3	1	9	18	22	22	24	25	23	20	5	22	15
10-Yr. Treas.	-37	-61	-69	-48	-55	-78	-77	-86	-94	-90	-43	-80	-63
Fed'l Budg. Def. ($ Bils., FY, Unified)	109.3	161.5	193.2	223.8	243.0	269.3	238.6	321.7	348.3	425.7	137.6	317.8	235.9
Revs. ($ Bils.)	104.3	138.2	143.0	153.8	162.2	186.8	172.6	177.4	179.5	177.6	107.9	172.7	143.2
Outlays ($ Bils.)	-5.0	-23.1	-49.7	-69.4	-80.1	-102.0	-125.4	-143.8	-168.8	-187.8	-29.4	-134.5	-86.8
Def./GDP (Pctg. Pts., FY)	0.7	1.0	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	0.8	1.3	1.1
Gross Public Debt/GDP (Pctg. Pts.)	-0.6	-2.2	-4.0	-5.8	-7.4	-9.0	-10.4	-11.9	-13.3	-14.6	-2.9	-11.5	-7.6
Revs./GDP (Pctg. Pts.)	0.7	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.7	0.7
Govt. Outlays/GDP (Pctg. Pts.)	0.0	-0.2	-0.3	-0.4	-0.4	-0.5	-0.5	-0.6	-0.6	-0.7	-0.2	-0.5	-0.4

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

In Table 5 can be seen a net positive effect on the overall macroeconomy from an FFM Program that places a 2% cap on TE, then uses much of the funds, but not all, for reductions in personal income and capital gains taxes.

The economy is higher by a little over $8 billion per annum, 2011-21; civilian employment rises by over 100,000 persons per annum; the federal budget deficit improves $171 billion a year; the deficit-to-GDP ratio is better by 0.8 percentage points a year; and the ratio of gross public debt-to-GDP diminishes by over five percentage points per year. The mix of revenues and outlays relative to GDP shifts toward higher revenues and less federal government outlays. Comparing Table 5 with Table 4 suggests a good-sized contribution from lower capital gains taxes.[12]

Even more powerful was using the $278 billion in new tax receipts for an equivalent and permanent reduction in social security taxes (Table 8).

Table 8
FFM 2% Cap on Tax Expenditures (TE):
Revenues Raised Used for Equivalent Reductions in Social Security Taxes*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2011-15	2016-21	2011-21
Economy													
Real GDP ($ '05 Bils.)	13.3	50.1	80.4	120.9	120.5	124.0	129.9	128.9	121.5	121.3	54.9	122.7	91.9
Cons. ($ '05 Bils.)	11.1	44.6	82.5	113.2	108.5	95.8	86.2	69.3	37.6	4.0	50.3	86.9	58.3
Bus. Fixed Inv. ($ '05 Bils.)	0.8	7.2	20.8	38.0	40.2	51.4	57.4	65.0	89.5	68.4	13.4	60.0	38.8
Nom. GDP ($ Bils.)	18.8	83.4	176.3	279.6	348.4	422.3	498.6	554.8	597.8	628.9	111.6	508.1	327.9
Real GDP Growth (Pctg. Pts.)	0.1	0.3	0.3	0.2	0.0	0.0	0.0	0.0	-0.1	-0.1	0.2	0.0	0.1
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	0.035	0.229	0.469	0.633	0.596	0.502	0.480	0.444	0.371	0.281	0.273	0.446	0.387
Unempl. Rate (%)	0.0	-0.1	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	-0.1	-0.1	-0.1	-0.2	-0.1
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-4	8	23	37	43	45	48	48	46	40	13	45	31
10-Yr. Treas.	-68	-107	-127	-115	-129	-158	-163	-176	-185	-183	-83	-166	-128
Fed'l Budg. Def. ($ Bils., FY, Unified)	219.7	333.6	397.2	454.8	501.7	555.3	608.8	653.3	698.7	793.8	281.1	536.3	704.3
Revs. ($ Bils.)	210.2	290.0	307.0	326.7	342.0	350.7	361.3	369.2	372.9	373.5	226.8	361.6	300.3
Outlays ($ Bils.)	-9.5	-43.6	-90.3	-128.0	-159.7	-204.6	-247.6	-284.0	-325.9	-355.4	-54.3	-262.9	-168.0
Def./GDP (Pctg. Pts., FY)	1.4	2.0	2.3	2.4	2.4	2.5	2.6	2.6	2.6	2.8	1.6	2.6	2.1
Gross Public Debt/GDP (Pctg. Pts.)	-1.2	-4.7	-8.2	-11.8	-15.0	-18.2	-21.2	-24.1	-26.8	-29.5	-5.2	-22.5	-14.6
Revs./GDP (Pctg. Pts.)	1.3	1.8	1.7	1.7	1.7	1.7	1.6	1.5	1.4	1.3	1.3	1.5	1.4
Govt. Outlays/GDP (Pctg. Pts.)	-0.1	-0.3	-0.5	-0.7	-0.8	-0.8	-1.0	-1.1	-1.2	-1.2	-0.3	-1.1	-0.7

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

[12]See Allen Sinai, "Capital Gains Taxes and the Economy," for an explanation and evidence on how lower capital gains taxes stimulate the economy.

Here, the overall economy does much better, with real GDP rising $92 billion a year compared with the Baseline. There is a good-sized series of increases in aggregate consumption and in business fixed investment. Long-term interest rates drop sharply because of a big $200 billion per annum improvement in the federal budget deficit. There are large reductions in the ratios of deficit-to-GDP (0.7 percentage points per annum) and gross public debt-to-GDP (down 4.5 percentage points per year). There is an 0.8 percentage point swing toward higher revenues than outlays as a percent of GDP.

Reductions of individual social security taxes in a revenue-neutral program thus appear to be a significant stimulus for spending, real economic growth, employment, *and* ex-post improvement in the federal budget deficit and debt.

Why so much power from reductions in social security taxes?

Permanent reductions in individual social security taxes set off a chain of events. The chain begins with an increase in disposable income. This generates purchasing power for increased consumption. Multiplier and accelerator effects lock-in and the economy expands. Business profits move higher and employment rises, increasing social security tax receipts. The stronger economy generates additional tax receipts from higher ordinary income and corporate profits. An improved stock market sources some capital gains realizations and increases capital gains tax receipts. Ex-post, the federal budget deficit improves and long-term interest rates decline on expectations of permanently lower future budget deficits. Reductions in interest payments on outstanding public debt reduce government outlays, bringing an improved federal government budget deficit, less U.S. Treasury financing, more room for the private sector to fund growth, increased spending, output and employment, etc.. Social security taxes are regressive, particularly for low income bracket households where marginal propensities to consume are higher, so that consumption gets an added boost from this type of tax reduction than, for example, reductions in personal income taxes.

These macroeconomic effects in the simulation suggest that permanent reductions in social security taxes can be a prime lever for revenue-neutral stimulation of the economy, the creation of jobs, lower unemployment, smaller federal budget deficits, ex-post, and less growth in debt, objectives of any program designed to solve the macro policy dilemma currently facing the U.S.. It should be noted again that reducing a regressive tax on individuals, as opposed to reducing a progressive tax by the same amount, is more stimulative. Social security tax receipts are large in the U.S. economy so that reductions in them are no small matter.

A second set of simulated tax reform reflects recommendations by the Bowles-Simpson Commission, Domenici-Rivlin Task Force, and Obama Administration. Each of these perhaps could be best depicted as base-broadening, or loophole-closing, with reductions in individual income or corporate profits tax rates producing a flatter tax rate structure.

Tables 9 to 13 show the macroeconometric results of some tax reform measures stemming from the lowering of tax rates for individuals and corporations and base-broadening.

In Table 9 is shown the results of a simulation that reduces personal income tax rates to two brackets, 25 per cent and 15 per cent. The tax base is broadened by eliminating certain tax expenditures to raise the equivalent amount of funds lost from the simpler, flatter tax rate structure.

The net effects on the economy, persons working, unemployment and inflation are small. But the federal budget deficit improves and there are modest gains in deficit-to-GDP ratios and in gross public debt relative to GDP. *By-and-large, as might be expected from a revenue-neutral tax reform program, not much actually happens at the macroeconomic level. However, changes in behavior as a consequence of the changes in tax structure can not be fully accounted for in a Model that maintains the structural parameters of history.* This does not mean the Model results are wrong, or without guidance for the future, but does suggest that, *if possible, potential changes in structure from changes in taxes should be incorporated into the Model simulations.*

Table 9
Tax Reform for Individuals:
Lower Personal Income Tax Rates (25% and 15%) and Base-Broadening*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2011-15**	**2016-21**	**2011-21**
Economy													
Real GDP ($ '05 Bils.)	8.7	24.6	43.2	28.7	5.9	-0.4	-1.7	-6.1	-16.3	-27.2	21.0	-7.6	5.4
Cons. ($ '05 Bils.)	4.6	19.0	45.7	39.9	17.2	4.1	-1.3	-7.8	-33.7	-65.7	21.8	-14.5	2.0
Bus. Fixed Inv. ($ '05 Bils.)	0.3	0.8	2.1	2.8	0.8	-1.2	-1.1	0.7	0.6	-2.5	1.2	-0.4	0.3
Nom. GDP ($ Bils.)	13.6	51.1	116.0	148.9	148.5	153.9	161.5	160.9	150.7	136.5	65.9	152.0	112.9
Real GDP Growth (Pctg. Pts.)	0.1	0.1	0.1	-0.1	-0.2	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	0.032	0.100	0.170	0.106	-0.049	-0.096	-0.079	-0.070	-0.080	-0.101	0.080	-0.079	-0.008
Unempl. Rate (%)	0.0	0.0	-0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0
Interest Rates (Basis Pts.)													
3-Mos. Treas.	1	6	15	21	19	17	15	14	12	8	9	14	12
10-Yr. Treas.	-13	-33	-38	-10	-10	-27	-21	-25	-30	-25	-19	-23	-21
Fed'l Budg. Def. ($ Bils., FY, Unified)	6.4	30.4	42.0	48.7	34.9	35.2	41.5	41.5	44.0	95.5	25.5	48.8	38.2
Revs. ($ Bils.)	4.9	20.8	20.8	26.9	26.4	25.9	26.7	27.4	26.0	20.0	14.7	25.4	20.5
Outlays ($ Bils.)													
Def./GDP (Pctg. Pts., FY)	0.0	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.1	0.2	0.2
Gross Public Debt/GDP (Pctg. Pts.)	-0.1	-0.5	-1.1	-1.7	-1.8	-1.9	-2.1	-2.2	-2.3	-2.4	-0.7	-2.1	-1.5
Revs./GDP (Pctg. Pts.)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Govt. Outlays/GDP (Pctg. Pts.)	0.0	-0.1	-0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

Nominal GDP is higher on a slight increase of inflation, and this helps tax receipts, the federal budget deficit, and employment. *But, all-in-all, this tax reform program appears to have little implication for overall macroeconomic performance.*

Table 10 shows the effects of a reduction in corporate profits taxes to 27 per cent from 35 per cent, close to the Bowles-Simpson and Domenici-Rivlin recommendations, but with no base-broadening. Table 11 has the results of corporate tax reform that has only base-broadening.

Table 10
Tax Reform for Corporations:
Corporate Profits Tax Rate Reduction to 27% from 35%, No Base-Broadening*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2011-15	2016-21	2011-21
Economy													
Real GDP ($ '05 Bils.)	-5.1	-0.3	23.0	35.5	26.1	24.2	31.6	46.1	54.5	58.0	10.6	40.1	26.7
Cons. ($ '05 Bils.)	-9.2	-20.0	1.7	19.3	13.4	11.8	21.9	37.9	32.5	19.9	-1.6	22.9	11.7
Bus. Fixed Inv. ($ '05 Bils.)	5.4	24.9	40.0	51.5	54.1	50.2	49.8	54.3	58.6	58.4	24.4	54.2	40.7
Nom. GDP ($ Bils.)	-8.0	-17.0	-15.3	-35.3	-97.0	-165.7	-231.7	-291.9	-369.4	-461.7	-15.1	-269.6	-153.9
Real GDP Growth (Pctg. Pts.)	0.0	0.0	0.2	0.1	-0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.3	-0.1	-0.3	-0.2
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	-0.1	-0.1	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.2	-01	-0.3	-0.2
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	-0.035	0.045	0.214	0.328	0.283	0.233	0.281	0.394	0.513	0.583	0.110	0.381	0.258
Unempl. Rate (%)	0.0	0.0	-0.1	-0.2	-0.1	-0.1	-0.1	-0.2	-0.2	-0.3	-0.1	-0.2	-0.1
Interest Rates (Basis Pts.)													
3-Mos. Treas.	5	5	8	9	4	-3	-10	-14	-18	-22	5	-10	-3
10-Yr. Treas.	21	7	7	43	43	46	61	64	60	66	16	58	39
Fed'l Budg. Def. ($ Bils., FY, Unified)	-128.8	-192.9	-203.7	-204.8	-242.8	-280.3	-311.8	-343.7	-365.9	-342.1	-146.0	-314.4	-237.9
Revs. ($ Bils.)	-124.7	-180.6	-195.3	-190.5	-200.5	-212.4	-223.8	-230.4	-234.3	-243.6	-138.2	-224.2	-185.1
Outlays ($ Bils.)	4.1	12.4	8.4	14.2	42.3	67.9	88.1	113.4	131.6	147.1	7.8	98.4	57.2
Def./GDP (Pctg. Pts., FY)	-0.8	-1.2	-1.2	-1.1	-1.2	-1.3	-1.4	-1.4	-1.4	-1.2	-0.9	-1.3	-1.1
Gross Public Debt/GDP (Pctg. Pts.)	0.7	2.6	4.3	5.8	7.5	9.3	11.1	12.8	14.4	16.1	2.7	11.9	7.7
Revs./GDP (Pctg. Pts.)	-0.8	-1.1	-1.1	-1.0	-1.0	-1.0	-1.0	-0.9	-0.9	-0.9	-0.8	-0.9	-0.9
Govt. Outlays/GDP (Pctg. Pts.)	0.0	0.1	00	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.0	0.4	0.2

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

The reductions in corporate profits tax rates are stimulative to the economy (Table 10), generating a good-sized increase in employment, 258,000 persons per annum, and lower inflation. One reason is that a reduction in tax costs puts downward pressure on prices through cost-push forces. Because of lower prices, nominal GDP declines relative to the Baseline, causing lost tax receipts for the government, a worsened federal budget deficit, higher debt, higher long-term interest rates from higher federal budget deficits, increased federal government outlays as a consequence of higher interest

costs, a worse federal budget deficit, etc.. *Federal government debt outstanding is so large that even relatively small changes in interest rates can have sizeable effects on the federal budget deficit and debt.* For deficit reduction, cutting corporate profits taxes is *not* a good way. *For increasing economic growth and employment, it is a relatively good way.*

Table 11
Tax Reform for Corporations:
Corporate Base-Broadening or "Loophole-Closing"*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2011-15**	**2016-21**	**2011-21**
Economy													
Real GDP ($ '05 Bils.)	2.0	-14.5	-12.5	-17.5	-34.8	-41.9	-50.6	-71.1	-98.2	-124.0	-8.3	-70.1	-42.0
Cons. ($ '05 Bils.)	1.4	2.9	14.2	12.8	-8.2	-22.4	-37.4	-63.0	-113.2	-169.6	6.3	-69.0	-34.8
Bus. Fixed Inv. ($ '05 Bils.)	0.2	-29.6	-50.4	-56.0	-59.8	-62.7	-63.3	-63.2	-65.8	-70.8	-27.1	-64.3	-47.4
Nom. GDP ($ Bils.)	4.9	-11.6	7.6	31.9	40.7	66.3	96.9	110.6	112.4	111.1	6.6	89.7	51.9
Real GDP Growth (Pctg. Pts.)	0.0	-0.1	0.0	0.0	-0.1	0.0	-0.1	-0.1	-0.2	-0.2	0.0	-0.1	-0.1
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	-0.048	-0.558	0.829	-0.824	-0.902	-0.979	-1.000	-1.063	-1.181	-1.287	-0.452	-1.089	-0.788
Unempl. Rate (%)													
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-9	-15	-14	-10	-9	-7	-3	-1	-1	-3			
10-Yr. Treas.	-30	-41	-37	-9	-13	-35	-35	-44	-54	-49	-23	-38	-31
Fed'l Budg. Def. ($ Bils., FY, Unified)	126.9	175.8	183.5	189.2	192.0	207.5	225.7	235.1	241.4	296.1	135.1	233.0	188.5
Revs. ($ Bils.)	122.2	167.3	179.0	180.5	182.0	185.5	188.4	187.3	178.0	164.2	129.8	180.9	157.7
Outlays ($ Bils.)	-4.7	-8.5	-4.5	-8.7	-10.0	-22.0	-37.4	-47.8	-63.4	-75.7	-5.3	-42.7	-25.7
Def./GDP (Pctg. Pts., FY)	0.8	1.1	1.0	1.0	0.9	1.0	1.0	0.9	0.9	1.1	0.8	1.0	0.9
Gross Public Debt/GDP (Pctg. Pts.)	-103.3	-390.0	-683.5	-993.3	-1306.0	-1635.7	-1996.6	-2378.0	-2772.8	-3170.7	-434.0	-2210.0	-1402.7
Revs./GDP (Pctg. Pts.)	0.8	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.6	0.8	0.8	0.8
Govt. Outlays/GDP (Pctg. Pts.)	0.0	-0.1	0.0	0.0	0.0	-0.1	-0.2	-0.2	-0.2	-0.3	0.0	-0.2	-0.1

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

Reducing corporate profits tax rates should increase U.S. competitiveness vis-à-vis other countries. This effect might be sizeable. Certainly, some repatriation of business profits held abroad would occur, be stimulative to the domestic U.S. economy, and raise federal tax receipts where otherwise there would have been none.[13]

[13]See Allen Sinai (2010), "Macroeconomic Effects of Reducing the Effective Tax Rate on Repatriated Foreign Subsidiary Earnings in a Credit- and Liquidity-Constrained Environment."

In Table 12 is shown a tax reform package for corporations that both reduces the corporate profits tax rate, to 27 per cent from 35 per cent, and broadens the tax base. Loopholes closed could range from ending carried interest, limiting special tax breaks for the oil and gas industry, exemptions for expenses of private company planes, or by taxing companies or executives more on large gains in the value of restricted stock and stock options.

Table 12
Tax Reform: Lower Corporate Profits Tax (27% from 35%)
and Base-Broadening ("Loophole-Closing")*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2011-15	2016-21	2011-21
Economy													
Real GDP ($ '05 Bils.)	1.3	-14.7	-15.4	-38.5	-62.9	-64.8	-62.7	-64.0	-72.1	-80.7	-13.4	-67.9	-43.1
Cons. ($ '05 Bils.)	-3.4	-12.0	-2.2	-19.0	-47.9	-56.3	-57.3	-59.5	-86.0	-109.6	-7.3	-71.1	-42.1
Bus. Fixed Inv. ($ '05 Bils.)	5.7	-6.1	-20.2	-27.3	-32.7	-34.4	-33.6	-29.8	-28.2	-29.8	-9.6	-31.4	-21.5
Nom. GDP ($ Bils.)	3.0	-15.9	-11.0	-35.6	-92.4	-138.6	-182.8	-231.5	-293.5	-360.7	-11.9	-211.6	-123.6
Real GDP Growth (Pctg. Pts.)	0.0	-0.1	0.0	-0.2	-0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2	-0.2	-0.1	-0.2	0.0	-0.2	-0.1
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.0	0.0	0.0	-0.1	-0.2	-0.2	-0.2	-0.1	-0.2	0.0	-0.1	-0.1
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	-0.065	-0.492	-0.753	-0.857	-0.987	-0.977	-0.897	-0.819	-0.779	-0.758	-0.433	-0.869	-0.671
Unempl. Rate (%)	0.0	0.3	0.4	0.4	0.5	0.5	0.4	0.5	0.4	0.4	0.2	0.4	0.4
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-4	-8	-9	-9	-14	-19	-20	-22	-24	-28	-6	-21	-14
10-Yr. Treas.	3	-4	3	39	47	34	43	41	37	41	8	41	26
Fed'l Budg. Def. ($ Bils., FY, Unified)	1.4	-11.8	-30.8	-53.4	-90.9	-111.0	-125.9	-144.2	-158.8	-126.3	-18.9	-126.2	-77.4
Revs. ($ Bils.)													
Outlays ($ Bils.)	0.4	10.3	25.2	38.2	61.5	73.1	78.0	88.3	92.9	96.6	14.8	81.7	51.3
Def./GDP (Pctg. Pts., FY)	0.0	-0.1	-0.2	-0.3	-0.5	-0.5	-0.5	-0.6	-0.6	-0.4	-0.1	-0.5	-0.3
Gross Public Debt/GDP (Pctg. Pts.)	0.0	0.1	0.4	0.7	1.5	2.4	3.2	4.1	4.9	5.8	0.2	3.7	2.1
Revs./GDP (Pctg. Pts.)	0.0	0.0	0.0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	0.0	0.2	0.1
Govt. Outlays/GDP (Pctg. Pts.)	0.0	0.1	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.1	0.3	0.2

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

Tax reform of the kind shown in Table 12 turns out to be marginally negative for the economy and employment. It also worsens the federal budget deficit and growth of debt relative to GDP.

The harmful effects on the federal budget deficit of tax reform structured this way result, in part, from higher long-term interest rates which, in turn, stem from worsened expectations of future federal budget deficits. Higher interest rates on federal

government debt raise outlays through increased interest payments. However, the simulation results do seem counter-intuitive and should be regarded as tentative.

Potential incentives to growth and entrepreneurship from the lower marginal tax rates can lead to behavioral reactions and changes in structural behavior that could be positive for the economy. Attempts to analyze this possibility were not undertaken for this paper.

Finally, Table 13 shows the effects of "Full Tax Reform," where both personal income and corporate profits tax rates are taken sharply lower. The resulting loss in tax receipts to the federal government is offset, ex-ante, by an equivalent amount of funds raised on base-broadening for individuals and corporations.

Table 13
"Full Tax Reform": Lower Personal Income and Corporate Profits Tax Rates and Base-Broadening for Individuals and Corporations*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2011-15**	**2016-21**	**2011-21**
Economy													
Real GDP ($ '05 Bils.)	12.6	22.5	41.2	20.6	-11.6	-22.5	-28.0	-35.9	-48.8	-60.9	19.4	-34.6	-10.0
Cons. ($ '05 Bils.)	7.7	39.3	78.7	70.9	36.5	13.2	-2.2	-18.5	-54.4	-91.1	39.3	-19.4	7.3
Bus. Fixed Inv. ($ '05 Bils.)	4.5	-6.5	-16.4	-20.9	-26.3	-28.9	-27.7	-22.8	-20.5	-21.6	-7.9	-24.8	-17.0
Nom. GDP ($ Bils.)	18.3	42.4	93.1	101.4	87.9	41.0	12.7	-25.6	-18.8	-38.1	51.1	-20.2	12.2
Real GDP Growth (Pctg. Pts.)	0.1	0.1	0.1	-0.2	-0.2	0.0	0.0	-0.1	-0.1	-0.1	0.0	-0.1	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.0	0.2	0.2	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	-0.1	0.0
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.0	0.1	0.1	0.0	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.0
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	-0.009	-0.268	-0.387	-0.456	-0.632	-0.698	-0.660	-0.609	-0.588	-0.578	-0.224	-0.628	-0.445
Unempl. Rate (%)	0.0	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.4	0.3
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-2	2	9	14	9	4	1	-2	-6	-11	4	-1	2
10-Yr. Treas.	-6	-25	-27	5	11	-1	8	6	4	10	-11	6	-1
Fed'l Budg. Def. ($ Bils., FY, Unified)	7.3	15.9	5.5	4.8	-22.5	-35.9	-45.2	-58.1	-68.7	-32.2	6.7	-43.6	-20.8
Revs. ($ Bils.)	6.5	10.6	9.6	12.2	1.9	-5.0	-13.6	-20.4	-29.6	-43.2	9.0	-18.4	-6.0
Outlays ($ Bils.)	0.0	0.0	0.1	0.2	0.6	0.7	0.7	0.6	0.8	0.6	0.1	0.7	0.4
Def./GDP (Pctg. Pts., FY)	0.0	0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.2	-0.2	-0.1	0.0	-0.2	-0.1
Gross Public Debt/GDP (Pctg. Pts.)	-0.2	-0.4	-0.6	-0.8	-0.4	0.0	0.4	0.8	1.3	1.8	-0.4	0.6	0.2
Revs./GDP (Pctg. Pts.)	0.0	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.1	-0.2	0.1	-0.1	0.0
Govt. Outlays/GDP (Pctg. Pts.)	-0.2	-0.4	-0.6	-0.8	-0.4	0.0	0.4	0.8	1.3	1.8	-0.4	0.6	0.2

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

Tax reform of this kind shows only marginal effects, net positive on the economy for the first four years and negative for the remaining six, but indicates considerable damage to employment and the unemployment rate. The number of persons working falls by

nearly 450,000 per annum and the unemployment rate averages 0.3 percentage points higher per year. Aggregate consumption shows good-sized increases between 2012 and 2016. But, business fixed investment falls relative to the Baseline.

Once again, it must be noted that changes in the structure of aggregate supply and in aggregate demands could well occur on changes made in the tax system that might *not* show up in the macroeconometric results. *Possible changes of this sort, based on micro-, or sector-specific, responses of the economy can be incorporated into macroeconometric model simulations through well thought-out levers and connections, but were not in this paper.*

In Table 14 are the results of a flatter personal income tax structure financed, ex-ante, by an equivalent reduction in federal government purchases of goods and services.

Table 14
Financing a Flatter Personal Income Tax Structure (25%, 15%) with Reduced Federal Government Purchases*
(Chgs. Relative to Baseline Unless Otherwise Indicated, 2012-2021)

											Avg. Per Annum		
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2011-15**	**2016-21**	**2011-21**
Economy													
Real GDP ($ '05 Bils.)	-18.8	9.8	31.0	24.3	4.6	0.1	0.9	-1.2	-10.0	-20.2	9.3	-4.3	1.9
Cons. ($ '05 Bils.)	14.6	48.7	86.2	90.7	75.5	68.3	67.8	64.7	42.1	15.0	48.0	55.6	52.1
Bus. Fixed Inv. ($ '05 Bils.)	-0.4	1.5	8.6	14.6	15.1	13.4	14.0	16.8	17.5	15.0	4.8	15.3	10.5
Nom. GDP ($ Bils.)	-25.8	22.2	84.7	122.9	123.6	128.1	135.9	134.8	121.4	102.4	40.8	124.4	86.4
Real GDP Growth (Pctg. Pts.)	-0.2	0.2	0.2	-0.1	-0.1	0.0	0.0	0.0	-0.1	-0.1	0.0	-0.1	0.0
Inflation													
PCE Chain Deflator (Pctg. Pts.)	0.0	0.1	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
PCE "Core" Ex-Food & Energy (Pctg. Pts.)	0.0	0.1	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Jobs and Unempl.													
Civil. Empl. (Mils. of Persons)	-0.089	-0.008	0.132	0.114	-0.018	-0.065	-0.039	-0.017	-0.015	-0.029	0.030	-0.031	-0.003
Unempl. Rate (%)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0
Interest Rates (Basis Pts.)													
3-Mos. Treas.	-7	-5	5	13	13	10	9	8	5	1	1	8	5
10-Yr. Treas.	-5	-26	-35	-9	-10	-28	-23	-28	-33	-28	-15	-25	-21
Fed'l Budg. Def. ($ Bils., FY, Unified)	10.2	30.5	52.0	66.1	59.4	65.9	77.5	83.2	92.5	152.1	31.7	88.4	62.7
Revs. ($ Bils.)	-22.9	-20.8	-24.2	-20.3	-22.7	-26.5	-29.5	-32.6	-38.3	-48.9	-17.7	-33.1	-26.1
Outlays ($ Bils.)	-33.1	-51.3	-76.2	-86.4	-82.2	-92.4	-107.7	-115.7	-130.9	-144.3	-49.4	-112.1	-83.6
Def./GDP (Pctg. Pts., FY)	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.2	0.4	0.3
Gross Public Debt/GDP (Pctg. Pts.)	0.1	-0.5	-1.2	-1.8	-2.2	-2.5	-2.8	-3.3	-3.5	-3.8	-0.7	-3.0	-2.0
Revs./GDP (Pctg. Pts.)	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.1	-0.1	-0.1
Govt. Outlays/GDP (Pctg. Pts.)	-0.2	-0.3	-0.4	-0.5	-0.4	-0.4	-0.5	-0.5	-0.5	-0.5	-0.3	-0.5	-0.4

*Simulation with SB Model of the U.S. Economy; nonborrowed reserves and the Federal Reserve balance sheet unchanged.

As has been the case in other exercises of this kind with the SB Model, reducing federal government outlays *and* permanently reducing personal income tax rates is ex-

post favorable to economic growth, employment, federal budget deficits, and debt-to-GDP.[14]

Aggregate consumption and business capital spending are higher than in the Baseline. The balance of economic activity shifts toward the private sector and away from the public sector, a desirable result. Federal budget deficits move lower on increased tax receipts and reduced federal government outlays, in part from lower interest payments on outstanding U.S. Treasury debt.

Why these results?

Fundamental in the SB Model is integration of the household balance sheet with real economic activity as affects saving, broadly defined, and consumption spending. Funds shifted from the federal government sector to the household sector, e.g., by cutting taxes permanently rather than increasing federal government outlays, follow a different "behavioral route," raising both savings and spending. Consumer spending increases *later* in response to the improved household financial conditions that permanent tax cuts bring about. The "behavioral" route is consumption and business-based, as opposed to that followed by federal government spending. Financial markets react differently to the two approaches and economy responses to financial markets also help shape a different path of reactions.

Obama Administration "Tax Reform" so far has been best described in The White House Fact Sheet of April 13, 2011. Elements of the Administration view on tax reform appear in the Bowles-Simpson and Domenici-Rivlin proposals and are included in generating the results shown in Tables 9 to 13. No structured Obama Administration Tax Reform package was simulated. Presumably, one will be set out during the 2012 Presidential Election Campaign.

What is known on an Obama Administration tax reform program is a general view toward limiting exemptions and raising tax rates for the wealthy and also reducing corporate profits tax rates and closing loopholes. The Obama Administration tax reform notions have much in common with others, including FFM, Bowles-Simpson, Domenici-Rivlin, even though the Administration did not embrace any of them nor carry one forward. Thus, a possible Consensus on "tax reform" could emerge.

Flat Tax proposals and other tax reform possibilities such as a progressive flat-rate tax on consumption, or a VAT, were not considered here. These will be analyzed in subsequent work, *if relevant* for public policy deliberations.

VII. Conclusions, Perspectives, and Recommendations

In this paper was an attempt to analyze and assess quantitatively some macroeconomic effects of "Tax Reform."

Tax reform in the context of reducing outsized federal budget deficits and debt relative-to-GDP is set as the framework. Looking at the macroeconomics of tax reform goes beyond standard assessments that use only the criteria of efficacy, simplicity, and fairness. The emphasis on economic growth *and* reducing federal budget deficits is the current role envisaged for tax reform given the most important macroeconomic policy challenge facing the United States—increasing economic growth, generating more employment, and lowering the unemployment rate without raising federal budget deficits

[14]Holtz-Eakin and Sinai, pps. 2, 10-13, 14-16.

and debt; indeed, preferably bringing about with policy a lowering of federal budget deficits and the growth in public debt relative to GDP.

However, reducing federal budget deficits and growing the economy and jobs are in opposition to one another in almost all paradigms of macroeconomic analysis used historically and currently. How to achieve both is the macro policy challenge in the fiscally constrained environment that currently confronts the U.S.. Sequencing stimulus to produce a strong economy that can then permit deficit reduction has proved to be a failed strategy; not just in the U.S. but also in Japan.

Variants of a proposal made by Feldstein-Feenberg-MacGuineas (FFM, 2011) to limit the cap on tax expenditures for individuals and tax reform based on Bowles-Simpson Commission and Domenici-Rivlin Task Force recommendations on lowering individual and corporate tax rates and broadening tax bases were quantitatively assessed.

The empirical results support the FFM proposal as a useful vehicle within which progress can be made on deficit reduction and tax reform. The funds raised by the FFM approach could be used to reduce federal budget deficits or to finance other tax policies that can stimulate the economy.

Most significantly, a 2% cap on tax expenditures for individuals that raises tax revenues and uses the funds to permanently reduce social security taxes would provide a good chance of stimulating more economic growth, more jobs and lower unemployment, while, ex-post, reducing federal budget deficits and the growth of debt relative to GDP. An offsetting mix of marginal tax rate reductions on income and capital gains also would be pro-growth.

Full tax reform as considered here—lowering individual and corporate income tax rates and base-broadening, or a closing of loopholes, did not show much promise in stimulating the economy, creating more jobs, and reducing federal budget deficits and the growth in debt. However, the results must be considered as preliminary and tentative since possible behavioral responses beyond those captured in the structure of the Model could occur to alter what was reported. Other elements of a deficit reduction program, such as reducing federal government outlays, e.g., a winding down of defense spending on Wars, that could provide funds for reducing deficits *and* for tax policy stimulus, including tax reform, appeared to be helpful. Reducing the growth in federal government outlays and redeploying the funds raised into pro-growth private sector tax stimulus would be effective macro policy.

Our recommendation would be to choose a tax reform program that was as much pro-growth as possible, focusing on base-broadening, closing loopholes or limiting tax expenditures, for individuals and corporations, then using the funds raised for permanent reductions in taxes that could have the strongest growth and jobs effects. Tax receipts raised this way also could be used for some deficit reduction. *Reducing the growth of federal government outlays is an essential first step.* The revenues raised from tax reform, *if fully used* for deficit reduction, most likely would have adverse macroeconomic effects *unless* the funding mechanism included major reductions in federal government outlays. The 3-to-1 mix of changes in outlays to revenues that has been suggested for deficit reduction looks reasonable based on the macroeconometric research performed here.

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