Long-run macroeconomic impact of increasing tax rates on high-income taxpayers in 2013

Prepared on behalf of the Independent Community Bankers of America, the National Federation of Independent Business, the S Corporation Association, and the United States Chamber of Commerce

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July 2012

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Executive summary

The confluence of fiscal policy changes scheduled to occur at the end of 2012 – sometimes referred to as the "fiscal cliff" – poses serious challenges for policy makers. One area of disagreement is the increase in tax rates for high-income taxpayers resulting in part due to the sunset of elements of the 2001 and 2003 tax cuts. President Obama has called for the reinstatement of the higher top tax rates in his budget submission to the Congress, while key Republican members of Congress have called for their extension. The increase in the Medicare tax and its expansion to unearned income for high-income earners under the Patient Protection and Affordable Care Act of 2010 (PPACA) further contributes to the increase in top tax rates.

The concern over the top individual tax rates has been a focus, in part, because of the prominent role played by flow-through businesses – S corporations, partnerships, limited liability companies, and sole proprietorships – in the US economy and the large fraction of flow-through income that is subject to the top two individual income tax rates. These businesses employ 54% of the private sector work force and pay 44% of federal business income taxes.[1] The number of workers employed by large flow-through businesses is also significant: more than 20 million workers are employed by flow-through businesses with more than 100 employees.

This report uses the EY General Equilibrium Model of the US Economy to examine the impact of the increase in the top tax rates in the long run. While a recent Congressional Budget Office (CBO) report examined the near-term effects of all of the federal government fiscal policies under scrutiny at the end of 2012 and found them to be of sufficient size to push the economy into recession at the beginning of 2013, this report focuses on the long run effects of the increase in the top tax rates. This report examines four sets of provisions that will increase the top tax rates:

- The increase in the top two tax rates from 33% to 36% and 35% to 39.6%.
- The reinstatement of the limitation on itemized deductions for high-income taxpayers (the "Pease" provision).
- The taxation of dividends as ordinary income and at a top income tax rate of 39.6% and increase in the top tax rate applied to capital gains to 20%.
- The increase in the 2.9% Medicare tax to 3.8% for high-income taxpayers and the application of the new 3.8% tax on investment income including flow-through business income, interest, dividends and capital gains.

With the combination of these tax changes at the beginning of 2013 the top tax rate on wage income will rise from 35% in 2012 to 44.7%, the top tax rate on dividends will rise from 15% to 44.7% and the top tax rate on capital gains will rise from 15% to 24.7%.

These higher tax rates result in a significant increase in the average marginal tax rates (AMTR) on business, wage, and investment income, as well as the marginal effective tax rate (METR) on new business investment. This report finds that the AMTR increases significantly for wages (5.0%), flow-through business income (6.4%), interest (16.5%), dividends (157.1%) and capital gains (39.3%). The METR on new business investment increases by 15.8% for the corporate sector and 15.6% for flow-through businesses.

This report finds that these higher marginal tax rates result in a smaller economy, fewer jobs, less investment, and lower wages. Specifically, this report finds that the higher tax rates will have significant adverse economic effects in the long run: lowering output, employment, investment, the capital stock, and real after-tax wages when the resulting revenue is used to finance additional government spending.

Through lower after-tax rewards to work, the higher tax rates on wages reduce work effort and labor force participation. The higher tax rates on capital gains and dividend increase the cost of equity capital, which discourages savings and reduces investment. Capital investment falls, which reduces labor productivity and means lower output and living standards in the long run.

- Output in the long run would fall by 1.3%, or $200 billion, in today's economy.
- Employment in the long run would fall by 0.5% or, roughly 710,000 fewer jobs, in today's economy.
- Capital stock and investment in the long run would fall by 1.4% and 2.4%, respectively.
- Real after-tax wages would fall by 1.8%, reflecting a decline in workers' living standards relative to what would have occurred otherwise.

These results suggest real long-run economic consequences for allowing the top two ordinary tax rates and investment tax rates to rise in 2013. This policy path can be expected to reduce long-run output, investment and net worth.

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I. Introduction

At the end of 2012, a substantial shift in fiscal policy is currently scheduled to occur. The 2001 and 2003 tax cuts, various other expiring provisions, and the extensions of the reduction in the payroll tax enacted earlier this year are all set to sunset. Major elements of the Patient Protection and Affordable Care Act of 2010 (PPACA) are scheduled to take effect beginning in 2013. The sequestration enacted as part of the Budget Control Act of 2011 is scheduled to begin in early 2013. In addition, the AMT patch that sunset at the end of 2011 will greatly expand the reach of the AMT beginning with the 2013 spring filing season.

Notwithstanding this enormous near-term uncertainty in fiscal policy, there are areas of apparent agreement, such as the permanent extension of many of the provisions of the 2001 and 2003 tax cuts that affect low- and moderate-income taxpayers, supported by many prominent members of Congress and included in each of President Obama's annual budget submissions. An area of disagreement is whether the reductions in the top two individual income tax rates and the top tax rates on dividends and capital gains enacted in 2001 and 2003, should be extended or allowed to sunset.

These tax rates, however, may be of particular economic importance. The reported income of high-income taxpayers has been found to be more sensitive to tax rates than that of low- and moderate-income taxpayers. Thus, increasing tax rates on high-income taxpayers may have larger effects on the size of the tax base than among other taxpayer groups. The high-income tax brackets have also been found to be important to flow-through businesses because a disproportionate share of this income is subject to the top income tax rates. Finally, the taxation of dividends and capital gains results in the double taxation of corporate profits and higher tax rates amplify the distortive effects of the double tax for a number of economically important decisions.

This study considers the long run macroeconomic impact of the increase in the top individual tax rates to better understand their effects and help inform the policy debate.[2] These long-run effects of these higher tax rates on major macroeconomic variables – output, employment, investment, capital stock and after-tax wages – are estimated using the Ernst & Young LLP General Equilibrium Model of the US Economy. This model distinguishes between taxpayers facing the top tax rates and other households, and allows investment and the capital stock in the United States to adjust to differences in after-tax returns in the United States and abroad.

Alternative assumptions are made regarding how the revenue from the higher tax rates could be used – to finance a higher level of government spending versus a return of the revenue to households through an across-the-board reduction in tax rates. These two financing assumptions reflect alternative uses of the additional revenue.[3] The analysis also considers the sensitivity of the results to alternative sets of behavioral assumptions to reflect the uncertainty in how households and firms might respond to changes in tax policy.

This report finds that the increase in the top tax rates would reduce long-run output by 1.3% when the resulting revenue is used to finance additional government spending. Employment is found to fall by 0.5%. In today's economy, these results would translate into a reduction of gross domestic product (GDP) of $200 billion and employment by 710,000 jobs. Investment and the capital stock (net worth) would fall in the long run by 2.4% and 1.4%, respectively. Real (non-inflationary) after-tax wages would fall by 1.8%, indicative of the decline in living standards relative to what would have occurred otherwise.

If the higher tax rates are instead used to finance an across-the-board reduction in tax rates, long-run output instead falls by 0.4% with more modest declines in investment and the capital stock. The sensitivity analysis shows a range in the reduction of long-run output of between 1.0% and 1.7% when the resulting revenue is used to finance higher government spending and a range of between 0.3% and 0.6% when used to finance an across-the-board reduction in tax rates.

These results suggest real long-run economic consequences for allowing the top two ordinary tax rates and dividend and capital gains tax rates to rise in 2013. This policy path can be expected to reduce long-run output, investment and net worth. If the revenue is used to finance higher spending – a policy consistent with financing the growth in entitlement programs – employment and living standards would also be adversely affected.

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II. The effect of higher tax rates on economic decision making

The confluence of fiscal policy changes scheduled to occur at the end of 2012 – sometimes referred to as the "fiscal cliff" – poses serious challenges for policy makers. One area of disagreement is the increase in the top tax rates due to the sunset of elements of the 2001 and 2003 tax cuts. These higher tax rates are embodied in several provisions:

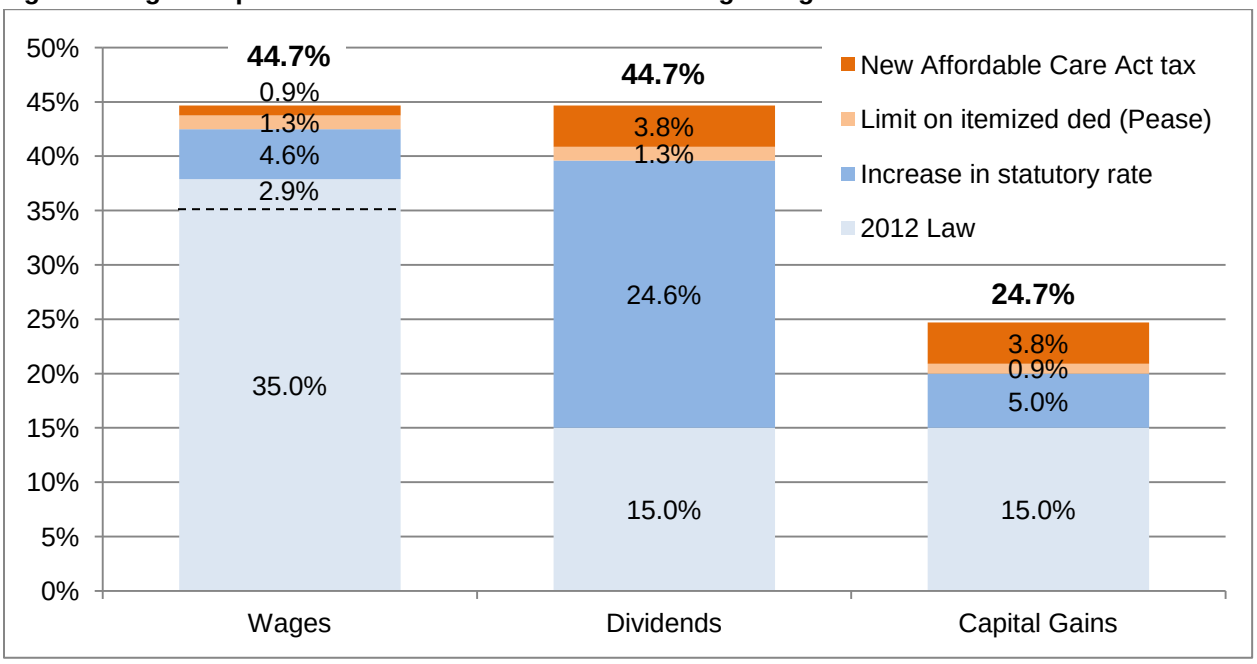
1. the increase in the top two statutory tax rates from 33% and 35% to 36% and 39.6%, respectively;

2. the increase in the top statutory tax rate on dividends from 15% to 39.6% (i.e., top ordinary income tax rate) and capital gains from 15% to 20%; and,

3. the reinstatement of the limitation on itemized deductions for high-income taxpayers, which further increases the effective marginal tax rate on ordinary income, dividends and capital gains.

In addition, the health insurance reform legislation (PPACA) enacted in 2010 further adds to the tax increases high-income taxpayers will face beginning in 2013 due to the increase in the Medicare tax from 2.9% to 3.8% and the extension of this tax to unearned income (e.g., interest, dividends and capital gains).[4]

Figure 1. Higher top tax rates scheduled to take effect beginning in 2013



Source: Ernst & Young LLP.

These higher tax rates, as depicted in Figure 1, will result in an increase in the top federal effective marginal tax rate on wage income from 35% to 44.7%. The top effective tax rate on dividend income received by individuals will rise from 15% to 44.7%, but this calculation excludes the previously paid tax on this income at the corporate level.[5] The top effective tax rate

on capital gains received by individuals will rise from 15% to 24.7%.[6] Including state tax rates would increase these tax rates further.

Economists have long recognized the role tax rates play in the decision making of households and firms. Resources transferred from the private economy to the public sector to finance government spending through taxes, not only reduce disposable incomes but also have important economic consequences depending on how those revenues are raised and spent. The more households and firms base their decisions on tax considerations, rather than economic merit, the more economic resources are generally wasted.

The concern over higher individual tax rates has also been a focus because of the prominent role played by flow-through businesses – S corporations, partnerships, limited liability companies, and sole proprietorships – in the US economy and that a large fraction of flow-through income is subject to the top two individual income tax rates. These businesses employ 54% of the private sector work force and pay 44% of federal business income taxes.[7] The number of workers employed by large flow-through businesses is also significant: more than 20 million workers are employed by flow-through businesses with more than 100 employees. Tabulations of the effect of the increase in the top two individual tax rates on flow-through business taxpayers is provided in Appendix D.

Flow-through employment varies considerably within different industries with significantly greater representation in the services and construction industries, with C corporation employment more dominant in the manufacturing, wholesale and retail trade, and transportation industries. Large employers likely skew these statistics. For example while only 7% of flow-through employment is within the manufacturing sector, more than 81% of manufacturing firms are organized as flow-through businesses.[8] The flow-through form is also important to the financial services sector as nearly one-third of all banks -- mostly community banks -- in the United States are organized as S corporations.

Economic research has generally indicated that high tax rates on these firms' owners may result in less hiring and capital investment of businesses, and the slower growth of firms within this sector. Higher tax rates on dividends and capital gains can also have pronounced effects on economic decisions. High taxes on dividends and capital gains serve to increase the double tax on corporate profits and amplify the distorting effect that the double tax has on the overall level of investment, the allocation of investment within the economy, debt versus equity financing, and corporate governance through its effect on firm dividend policy.

Impact of high tax rates on the tax base and revenues

High tax rates in particular can be especially harmful. High tax rates can affect the amount of labor workers supply, especially for secondary workers among married couples. High tax rates can also discourage saving, affect how investors allocate their investments and households' consumption patterns. High tax rates can also affect taxpayer compliance. All of these ways in which taxpayers respond generally reduce the amount of revenue the government can expect to collect from higher tax rates.

These behavioral responses are not inconsequential. Research on the major changes in tax rates over the past nearly thirty years has generally found that these responses can have a sizable impact on the size of the tax base, especially for higher-income taxpayers. For example, a recent study of the lower tax rates enacted in 2001 and 2003 reported that the reduction in the top two tax rates led to an increase in reported taxable income for those affected by roughly 3% and may have lowered the cost of the tax cuts by as much as 40%.[9] Similar effects have been found for the lower tax rates enacted in 1981 and 1986, while the higher tax rates enacted in 1993 have been found to reduce the size of the tax base.[10]

Importance of higher-income tax rates to owners of flow-through businesses

In addition, the top two tax rates are particularly important to flow-through businesses because of the high concentration of flow-through income reported by taxpayers in these tax brackets. Research has found that flow-through business owners may be particularly sensitive to individual income tax rates when making a number of economic decisions.

For example, tax rates have been found to affect the entry and exit from flow-through form as individuals decide whether to open up their own business or work for another firm.[11] Higher tax rates have also been found to deter these businesses from hiring workers and investing, and higher tax rates also affect the rate at which flow-through businesses grow.[12] The effect of the individual tax rates on these types of economic decisions is one reason the tax treatment of flow-through businesses has figured prominently in recent discussions of changes to these tax rates.

Increases in the cost of capital resulting from higher individual income tax rates was found to reduce the investment spending of entrepreneurs and the probability that they invested at all.[13] A 5-percentage point increase in the individual marginal tax rate was found to reduce the percentage of entrepreneurs who made new capital investments by 10.4% and the mean amount of investment by 9.9%.

Lower individual tax rates were found to increase the probability of entrepreneurs hiring workers and, for those with employees, the total amount of a firm's wages.[14] A 10% increase in the net-of-tax share (i.e., 1 minus the marginal tax rate) was found to increase the mean probability of hiring workers by 12%, and for those firms with employees, increase the median wage bill by 3.7%. Finally, a 10% increase in the net-of-tax share was found to increase business receipts by 8.4%.[15]

Importance of dividend and capital gains taxation

The double tax on corporate profits can also distort a number of business decisions.[16] The double tax creates a differential in the taxation of business income earned by C corporations and flow-through businesses. One important distortion arises because the double tax mainly affects business income generated by activities financed through equity capital within the C corporation form. The double tax thus raises the cost of equity financed investment by C corporations relative to debt financed investment, providing an incentive for leverage and borrowing rather than for equity financing. Accordingly, the double tax contributes to the tax bias

for higher leverage. Greater leverage can make corporations more susceptible to financial distress during times of economic weakness.

The double tax also increases the cost of investment in the corporate sector relative to the rest of the economy. This tax bias against investment in the corporate sector leads to a misallocation of capital throughout the economy. That is, capital is not allocated to its best and highest use based on economic considerations. This reduces the productive capacity of the capital stock and dampens economic growth. As noted before, the diversity of organizational forms can be seen as a useful choice for businesses to make in organizing themselves, but the impact of differential treatment should be recognized. Finally, the double tax raises the overall cost of capital in the economy, which reduces capital formation and, ultimately, living standards.[17]

III. Methodology

The EY General Equilibrium Model of the US Economy (the "EY GE Model") is used to estimate the economic impact of the increase in the top individual tax rates in the long run. This model has been designed to reflect the major features of the US economy and capture the key economic decisions of firms and households affected by the tax changes. Households adjust their labor-leisure choice to maximize their utility in the face of a lower after-tax reward from work. Firms adjust their use of labor and capital inputs in production to maximize firm value in response to reductions in the after-tax return from saving and investment. Investment flows shift between major sectors of the US economy, as well as between the United States and the rest of the world, in response to the higher US tax rates until after-tax returns are equalized. A more detailed description of the EY GE Model is provided in Appendix A.

The model is initially calibrated to the US economy in 2011. The model is calibrated to match the size of each sector and its use of capital and labor under current law average marginal tax rates by income source. Policy changes, however, are assumed to be financed by an exactly offsetting change in fiscal policy, either through a change in government spending/transfers or through a change in tax policies.

In the context of evaluating the economic effects of the increase in the top tax rates, two alternative financing assumptions are considered. First, the additional revenue is assumed to finance a higher level of government spending. In the current policy environment, this assumption is broadly consistent with the higher taxes funding a portion of the growth in government spending associated with the growth in entitlement programs. Second, the additional revenue is assumed to be returned to households through an across-the-board reduction in individual income tax rates. This assumption, in effect, alters the distribution of the tax burden by exchanging a tax increase on high-income taxpayers for a tax reduction for all taxpayers. This policy also involves, to some extent, a substitution of higher taxes on capital for generally lower taxes on labor.

The impact of four sets of tax increases are estimated:

- The increase in the top two tax rates from 33% to 36% and 35% to 39.6%.
- The reinstatement of the limitation on itemized deductions for high-income taxpayers (the "Pease" provision)
- The taxation of dividends as ordinary income and at a top income tax rate of 39.6% and the increase in the top tax rate applied to capital gains to 20%.
- The increase in the 2.9% Medicare tax to 3.8% for high-income taxpayers and the application of this tax to unearned income including interest, dividends and capital gains.

These policies encompass changes that both reduce the after-tax reward from work and the after-tax return from saving and investment. Table 1 shows the increase in the average marginal tax rates (AMTR) for various income sources and the marginal effective tax rate (METR) for new investment associated with these tax changes. These measures indicate the extent by which the increase in the top tax rates affects the overall tax burden by income source within the US economy.

The AMTR on overall wages increases by 5%, while the AMTR for noncorporate business income increases by 6.4% reflecting the greater concentration of noncorporate business income within the top two tax brackets. The AMTR on dividend income increases by more than one and one-half times (157%) reflecting the very large increase in the effective statutory tax rate on this income (i.e., from 15% to 44.7%) and the concentration of this income in the top tax brackets. The AMTR on capital gains increases by 39.4% reflecting the significant increase in the effective statutory tax rate (i.e., from 15% to 24.7%) and the concentration of this income in the top tax brackets.

The marginal effective tax rate (METR) on new investment is a more detailed calculation that indicates the additional economic income an investment would need to earn to cover taxes over the life of an investment after taking into account the major features of the tax code: corporate and noncorporate tax rates, depreciation schedules and investor level taxes on interest, dividends and capital gains. The METR can be thought of as a measure of the "tax wedge" between the pre- and after-tax return and reflects the distorting effect of the tax system on investment decisions. The increase in the top tax rates described above results in the METR rising by over 15% in both the corporate and noncorporate sectors. Investment in the corporate sector is affected by the increase in investor level taxes, while investment in the noncorporate sector is affected by the higher taxes on ordinary income.

Table 1. Effect of higher tax rates on the average marginal effective tax rate, various income sources and new investment

	2012 Law	2013 Law	Percent Increase
Average marginal tax rates			
Wages	31.3%	32.8%	5.0%
Noncorporate business income 1/	30.6%	32.6%	6.4%
Interest	26.6%	31.0%	16.5%
Dividends	9.1%	23.4%	157.1%
Capital gains	11.2%	15.6%	39.3%
Marginal effective tax rate on new investment			
Corporate sector	25.9%	30.0%	15.8%
Noncorporate sector	19.9%	23.0%	15.6%

Notes: The average marginal tax rates are income weighted averages calculated from the EY Individual Income Tax Microsimulation Model after adding $100 to each taxpayer's income (by source). The marginal effective tax rate on new investment is calculated from the EY Cost of Capital Model. The METR reflects the additional economic income an investment in a competitive market would need to earn to cover taxes over its life.
1/ Includes income from flow-through businesses (S corporations, partnerships, sole proprietorships and farm proprietorships).
Source: Ernst & Young LLP.

The increases in the AMTRs and the METRs depicted in Table 1 indicate the overall increase in the tax burden on labor and saving/investment throughout the economy. Additional adjustments are made to reflect the extent to which some of these income sources are held within tax-

preferred accounts, tax-exempt non-profit organizations or by lightly taxed foreigners and then used as inputs into the EY GE Model to simulate the macroeconomic impact of increases in tax rates.

In addition to modeling the impact of the higher tax rates under different uses of the resulting revenue, this study also considers the sensitivity of the results to the responsiveness of households and firms to changes in taxes. Ultimately, the estimated impacts will depend on a combination of the structure of the model and how responsive households and firms are to changes in after-tax rewards, such as the wage rate and the after-tax returns. In the baseline simulations, this study uses parameter values reflecting key household and firm behaviors that approximate central tendency estimates from prior research. However, uncertainty underlies the exact magnitude of these parameters and this study presents results assuming sets of "low" and "high" values for these parameters.[18] This approach provides a general sense for the potential variability in estimated results that could result from alternative views on how responsive households and firms might be to changes in tax policy. The key parameter values under the baseline specification and their low and high value specifications are provided in Appendix B.

IV. Estimated impacts of the higher tax rates on high-income taxpayers

In this section, the impact of the higher top tax rates on key macroeconomic variables in the long run are presented. Results are presented assuming two different uses of the revenue and additional estimates are also presented assuming a low and high responsiveness of households and firms to taxes.

Potential short-run effects of higher tax rates

While the EY GE model is used to estimate economic impacts in the long run, the higher tax rates can be expected to have a short-run impact as well, although through a different channel. During periods when the economy is performing below full employment, changes in fiscal policy can be expected to have significant effects on economic performance. During such periods, there is often a strong case for fiscal stimulus provided other avenues for stimulating the economy, such as monetary policy, are not available or have been exhausted.

The Congressional Budget Office (CBO) recently analyzed the effects of the sunset of the 2001 and 2003 tax cuts, as well as a number of other policies that sunset or go into effect beginning in 2013 – the so-called Fiscal Cliff.[19] The CBO analysis found that the increase in taxes and reduction in spending would significantly hinder the economic recovery by serving as a temporary negative shock to the total demand for goods and services in the economy, and, thus, result in significantly lower output and higher unemployment.

In total, the fiscal changes scheduled to occur in 2013 will reduce the federal budget deficit by $774 billion (or 5.1% of GDP) in calendar year 2013. This fiscal shock is projected to result in 2013 real GDP growth of 0.5%, whereas in the absence of this fiscal shock, real GDP growth is estimated at 4.4%. CBO projects that under current law policies, the economy will contract by 1.3% in the first half of 2013 before growing by 2.3% in the second half of 2013, meeting the standard textbook definition of a recession of two consecutive quarters of negative economic growth. The CBO also projects that employment would increase by 2 million more jobs under the scenario where the budget deficit is not reduced.

While CBO did not separately analyze the near-term effects of the provisions affecting high-income taxpayers, the deficit impact of the higher tax rates is nearly $70 billion or 10% of the total fiscal cliff in calendar year 2013, and totals nearly $1.1 trillion over the ten year budget window. Although a disproportionate share of the tax change is likely to be channeled through savings for taxpayers facing the top tax rates as compared to other taxpayers, these policies can still be expected to have significant effects on output and employment in the near term.

Revenues used to finance higher government spending

The baseline results for the impact of the higher top tax rates when the revenue is used to finance higher government spending is shown in Table 2. Output falls in the long run by 1.3% and is accompanied by a reduction in employment of 0.5%. In today's $15.7 trillion economy with total employment of 142.2 million, these reductions would be a roughly $200 billion reduction in output and a loss of roughly 710,000 jobs. Investment falls by 2.4% and the size of the capital stock (or net worth) by 1.4% in the long run. The reduction in the size of the capital stock means workers are less productive as they have less capital to work with and new technologies are incorporated into production more slowly. Workers' real after-tax wages ultimately fall by 1.8% in the long run.

Table 2. Baseline estimates of the long run impact of higher top tax rates 1/

	Revenue used to finance higher government spending	Revenue used to finance across-the-board reduction in tax rates
Output (GNP)	-1.3%	-0.4%
Employment	-0.5%	+0.4%
Investment	-2.4%	-1.4%
Capital Stock	-1.4%	-0.6%
Real after-tax wages	-1.8%	+0.3%

1/ Higher tax rates include the increase in the top dividends tax rate to 39.6%, the top capital gains tax rate to 20%, the increase in the top two ordinary tax rates to 36% and 39.6%, and the increase in the Medicare tax from 2.9% to 3.8% and its application to unearned income (e.g., dividends, capital gains and interest income) for high-income taxpayers.
Source: Ernst & Young LLP.

These results can best be understood by considering how the higher tax rates affect the after-tax reward to work and the after-tax return to savings and investment and the disposable incomes of households. The higher tax rates make work less attractive as compared to leisure, thereby reducing labor supply. At the same time, the lower after-tax returns to saving and investment make current consumption more attractive and make investment in the United States less attractive. The increase in taxes also reduces disposable incomes, which reduces households' desire to consume more leisure.

Additionally, the higher tax rates on dividends and capital gains through the sunset of the 2001 and 2003 tax cuts and the extension of the Medicare tax to investment income raises the cost of equity investment in the corporate sector. This causes a shift of investment from the corporate to the noncorporate and housing sectors due to the lower after-tax returns to corporate investment. A similar shift of investment abroad can also be expected to occur until after-tax returns equalize. These changes in investment reduce the capital stock and also result in a less economically efficient allocation of capital across sectors, both of which reduce output.

The higher taxes on dividends and capital gains also cause producers to reduce their capital-labor ratio and become more labor intensive. The decrease in capital intensity offsets some of the reduced labor supply associated with the higher taxes on wages through the higher ordinary tax rates and the increase in the Medicare tax. This explains why investment and the capital stock decline more sharply than labor supply. Real after-tax wages, however, fall due to the reduction in the size of the capital stock and its less productive deployment in the economy. The reduction in real after-tax wages is reflective of a reduction in living standards relative to what would have occurred otherwise.

Comparison to other studies that have examined the long run macroeconomic effects of other tax policy changes helps put the results reported in Table 2 into context. At the upper end of reported estimates, one study estimates that long-run output would increase by 6% to 9% from complete replacement of the income tax with a flat rate consumption tax (Altig et al, 2001).[20] Replacement of the current income tax by a progressive consumption tax was estimated to increase long-run output by roughly 2.8% (2005 Tax Panel).[21] Replacing the corporate income tax with a consumption tax/value-added tax was estimated by the Treasury Department to increase long-run output by 2.0% to 2.5% (Treasury 2007).[22]

While large is in the eye of the beholder, comparison to other tax policy changes that many would regard as significantly more far reaching suggest that the scheduled higher tax rates on high-income taxpayers can be expected to have significant economic consequences for the size of the economy in the long run.

Revenues used to finance an across-the-board reduction in tax rates

As an alternative use of the revenue from the higher top tax rates, this study also considers returning the revenue to taxpayers through an across-the-board reduction in individual income tax rates. The combination of higher top tax rates and the across-the-board reduction both increases the progressivity of the tax code and generally reduces taxes on labor taxation in favor of higher taxes on capital.

The results for this simulation (Table 2) indicate that output, investment and the capital stock would still all decline in the long run, but by smaller amounts. In the long run, output would fall by 0.4%, investment by 1.4% and the capital stock (net worth) by 0.6%. Employment and real after-tax wages would both increase somewhat (0.4% and 0.3%, respectively).

The major difference between these estimates and the results shown for when revenue is used to finance higher government spending is that the lower tax rates on low- and moderate-income taxpayers serve to increase the after-tax reward from work for low- and moderate-income taxpayers, resulting in greater labor supply.

Sensitivity of results

The sensitivity results for “low” and “high” responsiveness of households and firms to tax policy changes are provided in Table 3. These results bound the baseline results reported in Table 2 above. For the policy scenario where the revenue from the higher tax rates is used to finance additional government spending, output declines by between 1.0% and 1.7% in the long run.

Similarly, capital stock falls by between 1.0% and 2.2% and real after-tax wages, reflecting the decline in living standards, fall by between 1.6% and 3.1%.

More modest results are estimated for the policy scenario where the resulting revenue is instead used to finance an across-the-board reduction in tax rates. Long-run output falls by between 0.3% and 0.6%. The capital stock falls by between 0.3% and 1.0%, while real after-tax wages rise between 0.5% and 0.0%.

Table 3. Sensitivity of impact of higher tax rates to "low" and "high" responsiveness of household and firm behavior 1/

	Revenue used to finance higher government spending	Revenue used to finance across-the-board reduction in tax rates
Low responsiveness		
Output (GNP)	-1.0%	-0.3%
Employment	-0.5%	+0.3%
Investment	-2.0%	-0.9%
Capital Stock	-1.0%	-0.3%
After-tax wage	-1.6%	0.5%
High responsiveness		
Output (GNP)	-1.7%	-0.6%
Employment	-0.5%	+0.5%
Investment	-3.1%	-1.6%
Capital Stock	-2.2%	-1.0%
After-tax wage	-3.1%	-0.0%

1/ Higher tax rates include the increase in the top dividends tax rate to 39.6%, the top capital gains tax rate to 20%, the increase in the top two ordinary tax rates to 36% and 39.6%, and the increase in the Medicare tax from 2.9% to 3.8% and its application to unearned income (e.g., dividends, capital gains and interest income) for high-income taxpayers.
Source: Ernst & Young LLP.

V. Summary

The confluence of fiscal policy changes scheduled to occur at the end of 2012 – sometimes referred to as the "fiscal cliff" – poses serious challenges for policy makers. One area of disagreement is whether the increase in the top tax rates due to the sunset of elements of the 2001 and 2003 tax cuts, as well as the increase and expansion of the Medicare tax to unearned income for high-income taxpayers, should be allowed to occur.

This study examines the impact of these higher top tax rates for the US economy in the long run. Some of these provisions, particularly the increase in tax rates on dividends and capital gains, can be expected to adversely affect investment and the capital stock by reducing the after-tax return to investment. Other provisions, such as the increase in the top two ordinary tax rates and the increase in the Medicare tax on labor income of high-income taxpayers can be expected to both reduce disposable incomes and reduce labor supply by reducing the price of leisure.

Overall, this study finds that the higher tax rates would reduce output in the long run by 1.3% when the proceeds are used to finance additional government spending. Employment would fall by 0.5%. In today's economy these changes would translate into a decline in GDP of $200 billion and employment by roughly 710,000 jobs. Investment, the capital stock (net worth) and real after-tax wages would also fall. Under the alternative assumption that resulting revenues are used to finance an across-the-board tax cut, output would only fall by 0.4% and real after-tax wages would rise. A sensitivity analysis using "low" and "high" responsiveness of household and firm behavior bounds these results, but does not appreciably change the qualitative results.

These results may suggest to policy makers that allowing the top tax rates to increase comes with economic consequences. Long-run output can be expected to fall, and, depending on the use of the revenues, living standards, as reflected by workers' real after-tax wages, may also be lower.

Appendix A – EY General Equilibrium Model of the US economy

The EY general equilibrium model of the US economy was used to estimate the macroeconomic impacts associated with the tax rate increases in the long run. In this model, tax policy affects the incentives to work, to save and invest, and to allocate capital and labor among competing uses. Representative consumers and firms incorporate the after-tax reward from work and savings into their decisions of how much to save, work, and produce. Output is generated by four production sectors, and individual level decisions of two consumer groups determine the aggregate level of labor supply and savings.

An overview of the model follows:

Firms

Firm behavior is modeled for four production sectors – corporate-manufacturing, corporate-nonmanufacturing, noncorporate, and housing. Production is represented by the standard Cobb-Douglas functional form with differing elasticities of factor substitution, factor-intensities and scale parameters.

Firms choose the optimal level of labor and capital to maximize firm value. Investment in each sector is determined so as to equalize the after-tax return to investment. Firms will add to investment so long as the increase in firm value resulting from additional investment exceeds the after-tax cost of additional investment. In this way, investment is reallocated throughout the economy (i.e., across the four production sectors) until after-tax returns are equalized. A similar investment allocation mechanism is included to account for the flow of investment between the United States and the rest of the world (as discussed below).

The value of the firm reflects all tax characteristics including the corporate tax rate, depreciation schedules, economic depreciation, and investor level taxes on firm earnings/distributions. The model assumes that firms respond to the traditional view of dividends taxes whereby such taxes influence investment decisions.

Households

The model includes two consumer groups – the top 2% of taxpayers and all other households. These two groups allow the tax changes described above for high-income taxpayers to be analyzed. Household utility is represented by a CES function of leisure and consumption goods from the four production sectors.

Each household's labor supply is determined using the aforementioned CES function along with a labor supply elasticity and initial leisure preference endowment for each household. Households respond to the after-tax return to labor (one minus the marginal tax rate), as well as their overall income levels, in determining whether to work and thereby earn income that is used to purchase consumption goods or to simply consume leisure by not working. Households also receive transfers from government, which are not contingent upon their own work effort.

Government

The model includes a simple characterization of the government. Government is assumed to impose taxes and redistribute income to households, thereby increasing households' ability to consume products.

The government finances its expenditures by collecting taxes – individual income, corporate income, payroll taxes – and issuing government debt. The model includes a representation of the graduated tax rates schedule together with the various exclusions, exemptions, deduction and credits, and investor level taxes on dividends, capital gains, and interest. The corporate tax includes the corporate tax rate and the system for depreciating investment in tangible property. The noncorporate tax rate and the tax depreciation system are included in the modeling of the noncorporate sector. The model incorporates both average and marginal tax rates, thereby taking into account both the income effect of higher taxes and the marginal incentive effect that tax rates have on labor/investment decisions.

In this model, tax policy changes are assumed to be offset by a contemporaneous and offsetting change in government spending or taxes. This structure illustrates the effect of the financing assumption on the estimated impacts.

International Capital Flows

The model includes a representation of international capital flows, which are assumed to respond to differences in after-tax rates of return in the United States and the "rest of the world" through a constant elasticity expression. This approach represents a compromise between the standard closed economy approach and the alternative of a completely open economy in which capital is perfectly mobile and the international return to capital is fixed.

The United States is assumed to be large enough to affect the rate of return in the rest of the world. The model is initially calibrated to the current capital flows of Americans and foreigners and their holdings in the United States and the rest of the world. Changes to these initial capital holdings are then estimated, whereby the percent change in capital in the United States is equal to an assumed semi-log elasticity multiplied by the change in the difference between the US after-tax rate of return and the rest of the world after-tax rate of return.

Appendix B – Key model parameters under baseline specification and "low" and high" responsiveness of households and firms

	Baseline	Low Responsiveness	High Responsiveness
Constant elasticity of substitution parameter	1.0	0.9	1.1
Labor supply elasticity	0.4	0.3	0.5
Leisure share of time endowment	0.38	0.38	0.38
Nominal interest rate	5.5%	5.5%	5.5%
Elasticity of substitution in production (Manufacturing)	2.3	2.1	2.5
Elasticity of substitution in production (Non-manufacturing)	2.0	1.9	2.1
Elasticity of substitution in production (Housing)	0.4	0.3	0.5
Labor intensity (Manufacturing)	0.6	0.6	0.6
Labor intensity (Non-manufacturing)	0.7	0.7	0.7
Labor intensity (Housing)	0.3	0.3	0.3
International capital flow elasticity (semi-log)	0.05	0.03	0.08
Capital income share	0.29	0.29	0.29
Transfer income share (Low- and Moderate-Income)	0.8	0.8	0.8
Definition of "High-Income"	Top 2%	Top 2%	Top 2%

Source: Ernst & Young LLP.

Appendix C – State-by-state effects on output and employment from increasing tax rates on high-income taxpayers

	Output ($ in billions)	***Employment***
United States	-$200.9	-710,000
Alabama	-$2.3	-10,100
Alaska	-$0.7	-1,800
Arizona	-$3.5	-13,000
Arkansas	-$1.4	-6,300
California	-$26.3	-76,400
Colorado	-$3.5	-12,200
Connecticut	-$3.1	-8,800
Delaware	-$0.9	-2,300
District of Columbia	-$1.4	-3,900
Florida	-$10.1	-39,400
Georgia	-$5.6	-20,900
Hawaii	-$0.9	-3,200
Idaho	-$0.8	-3,300
Illinois	-$9.0	-30,700
Indiana	-$3.7	-15,400
Iowa	-$2.0	-8,000
Kansas	-$1.8	-7,300
Kentucky	-$2.2	-9,700
Louisiana	-$3.3	-10,200
Maine	-$0.7	-3,200
Maryland	-$4.0	-13,800
Massachusetts	-$5.3	-17,400
Michigan	-$5.2	-21,300
Minnesota	-$3.8	-14,500
Mississippi	-$1.3	-5,900
Missouri	-$3.3	-14,500
Montana	-$0.5	-2,300
Nebraska	-$1.3	-5,100
Nevada	-$1.7	-6,100
New Hampshire	-$0.9	-3,400
New Jersey	-$6.5	-20,900
New Mexico	-$1.1	-4,300
New York	-$15.5	-46,900
North Carolina	-$5.9	-21,200
North Dakota	-$0.5	-2,100
Ohio	-$6.5	-27,500
Oklahoma	-$2.1	-8,400
Oregon	-$2.6	-8,800
Pennsylvania	-$7.8	-30,800
Rhode Island	-$0.7	-2,500
South Carolina	-$2.2	-9,900
South Dakota	-$0.5	-2,200
Tennessee	-$3.6	-14,300
Texas	-$17.5	-56,800
Utah	-$1.7	-6,500
Vermont	-$0.3	-1,600
Virginia	-$5.8	-19,900
Washington	-$4.8	-15,300
West Virginia	-$0.9	-4,100
Wisconsin	-$3.4	-14,900
Wyoming	-$0.5	-1,500

Note: Estimates are long-run effects shown in relation to the size of US economy in 2012. For models of this type, roughly two-thirds to three-quarters of the long-run effect is reached within a decade.
Source: Ernst & Young LLP.

Appendix D – Individual tax returns affected by the expiration of the top two tax rates in 2013

Type of Return	All returns	"At-Risk" Returns		Returns in top two tax brackets with higher tax liability	
		Total	% of all returns	Total	% of all returns
All returns	146.2	3.8	2.6%	1.5	1.0%
Adjusted Gross Income (AGI)	$9,362	$2,860	30.6%	$1,687	18.0%
Total business income (less losses)	$922	$653	70.8%	$560	60.7%
Returns w/ positive business income	25.5	2.1	8.2%	0.9	3.6%
AGI	$3,090	$1,667	53.9%	$1,120	36.3%
Total business income	$1,189	$723	60.8%	$576	48.5%
Returns w/ positive S corporation income	3.8	0.9	23.2%	0.5	12.6%
AGI	$1,187	$913	76.9%	$688	58.0%
Total business income (less losses)	$561	$467	83.2%	$412	73.4%
S corp income	$492	$404	82.0%	$354	71.9%
Returns w/ positive partnership income	3.9	1.0	25.7%	0.5	11.9%
AGI	$1,226	$964	78.6%	$656	53.5%
Total business income (less losses)	$455	$387	85.0%	$320	70.3%
Partnership income	$272	$215	79.1%	$165	60.9%
Returns w/ positive sole proprietorship income	17.2	0.8	4.5%	0.3	1.7%
AGI	$1,395	$535	38.3%	$311	22.3%
Total business income (less losses)	$460	$169	36.8%	$122	26.4%
Sole prop income	$382	$90	23.6%	$51	13.4%
Returns w/ positive other* business income	5.8	0.6	9.7%	0.2	3.9%
AGI	$838	$493	58.8%	$303	36.1%
Total business income (less losses)	$260	$180	69.3%	$146	56.4%
Other business income	$102	$42	41.6%	$20	20.0%

Note: "At-risk" returns includes single returns with AGI > $200,000 and joint returns with AGI > $250,000. The AGI thresholds are at 2009 levels and would be indexed for inflation thereafter. Most returns that are "at risk" who are not in the top two brackets are AMT returns. Returns with business income includes returns that report sole proprietorship, farm proprietorship, partnership, S corporation or rental income or losses. Other business income includes rental income reported on schedule E and farm income on schedule F. Returns are in millions, incomes are in billions of dollars.
Source: Ernst & Young LLP Individual Tax Microsimulation Model.

[1] See, for example, Robert Carroll and Gerald Prante, "The Flow-Through Business Sector and Tax Reform: The economic footprint of the flow-through sector and the potential impact of tax reform," An Ernst & Young LLP report prepared for the S Corporation Association, April 2011.
[2] For models of this type, roughly two-thirds to three-quarters of the long run effect is reached within a decade.
[3] Using the additional revenue to reduce the deficit is not modeled.
[4] While the Medicare tax is applied to investment income for high-income taxpayers, the associated revenue is not transferred to the Medicare trust fund.
[5] The top integrated dividend tax rate that includes both the corporate and individual level taxes on corporate earnings paid out to shareholders as dividends will be 68.5% in 2013 (including both federal and state taxes). See Robert Carroll and Thomas Neubig, "Business Tax Reform and the Tax Treatment of Debt: Revenue neutral rate reduction financed by an across-the-board interest deduction limit would deter investment," an Ernst & Young LLP report prepared for the Private Equity Growth Capital Council, May 2012, p.4.
[6] The top integrated capital gains tax rate will be 43.3% in 2013 after taking into account the tax benefits of deferral and both federal and state taxes. Ibid, p.4.
[7] See, for example, Robert Carroll and Gerald Prante, "The Flow-Through Business Sector and Tax Reform: The economic footprint of the flow-through sector and the potential impact of tax reform," An Ernst & Young LLP report prepared for the S Corporation Association, April 2011.
[8] Ibid.
[9] For example, see Gerald Auten, Robert Carroll and Geoffrey Gee, (2008), "The 2001 and 2003 Tax Rate Reductions: An Overview and Estimate of the Taxable Income Response," *National Tax Journal*, Vol. 61(3), (September 2008), pp. 345-364.
[10] A series of studies have examined the responsiveness of reported taxable income to changes in tax rates. For example, Feldstein (1995) and Auten and Carroll (1999) examined the 1986 tax reform. Carroll (1998) and Heim (2009) examined the 1993 tax rates increases. For an extensive review of this literature see Saez, Slemrod and Gertz (2009).
[11] Donald Bruce and Tami Gurley-Calvez, "Federal Tax Policy and Small Business," In Overcoming Barriers to Entrepreneurship, Rowan and Littlefield Publishers, forthcoming; William M. Gentry and R. Glenn Hubbard, "'Success Taxes, Entrepreneurial Entry, and Innovation," Working Paper No. 10551, National Bureau of Economic Research, June 2004.
[12] Robert Carroll, Douglas Holtz-Eakin, Mark Rider and Harvey Rosen, "Income Taxes and Entrepreneurs' Use of Labor," *Journal of Labor Economics,* April 2000, 18(2), pp. 324-351; Robert Carroll, Douglas Holtz-Eakin, Mark Rider and Harvey Rosen, "Personal Income Taxes and the Growth of Small Firms," *Tax Policy and the Economy*, NBER, Vol. 15, 2001, pp. 121-147; and Robert Carroll, Douglas Holtz-Eakin, Mark Rider and Harvey Rosen, "Entrepreneurs, Income Taxes, and Investment," In *Does Atlas Shrug? The Economic Consequences of Taxing the Rich*, Joel Slemrod, ed., Russell Sage Foundation and Harvard University Press, NY, 2002, pp. 427-455.
[13] Robert Carroll, Douglas Holtz-Eakin, Mark Rider and Harvey Rosen, "Entrepreneurs, Income Taxes, and Investment," In *Does Atlas Shrug? The Economic Consequences of Taxing the Rich*, Joel Slemrod, ed., Russell Sage Foundation and Harvard University Press, NY, 2002, pp. 427-455.
[14] Robert Carroll, Douglas Holtz-Eakin, Mark Rider and Harvey Rosen, "Income Taxes and Entrepreneurs' Use of Labor," *Journal of Labor Economics,* April 2000, 18(2), pp. 324-351.
[15] Robert Carroll, Douglas Holtz-Eakin, Mark Rider and Harvey Rosen, "Personal Income Taxes and the Growth of Small Firms," *Tax Policy and the Economy*, NBER, Vol. 15, 2001, pp. 121-147.
[16] See Robert Carroll and Gerald Prante, "Corporate Dividend and Capital Gains Taxation: A comparison of the United States to other developed nations, An Ernst & Young LLP report prepared for the Alliance for Savings and Investment, February 2012.
[17] For example, a dynamic analysis of the lower tax rates on dividends and capital gains enacted in 2003 found that they would increase gross domestic product in the long run by 0.4% and the capital stock by 1.2% if made permanent. See US Department of the Treasury, *A Dynamic Analysis of Permanent Extension of the President's Tax Relief*, July 25, 2006.
[18] The Frisch labor supply elasticity equals 0.18 under the low response parameters and 0.75 under the high response parameters. This is consistent with the results surveyed by Browning, Hansen and Heckman (1999), and recent papers by Ziliak and Kniesner (1999, 2005) and Lee (2001), which estimate the Frisch labor supply elasticity for men ranges between 0.0 and 0.5. The econometric literature has generally found larger labor supply responses for women compared to men, but there are few studies that measure the Frisch labor supply elasticity for women. Aaronson and French (2002) suggest this value is believed to be around 1.
[19] See Congressional Budget Office, *Economic Effects of Reducing the Fiscal Constraint That Is Scheduled to Occur in 2013,* May 2012.
[20] See David Altig, Alan Auerbach, Laurence Kotlikoff, Kent Smetters and Jan Walliser, (2001), "Simulating Fundamental Tax Reform in the United States." *American Economic Review,* Vol. 91, pp. 574-595.
[21] Robert Carroll, John Diamond, Craig Johnson and James Mackie III, "A Summary of the Dynamic Analysis of the Tax Reform Options Prepared for the President's Advisory Panel on Federal Tax Reform," Office of Tax Analysis, US Department of the Treasury, May 25, 2006.

[22] US Department of the Treasury, *Approaches to Improve the Competitiveness of the US Business Tax System for the 21st Century*, December 20, 2007.