

IMPACT OF TWO PROPOSED FEDERAL TAX REFORM PLANS ON BUSINESS INVESTMENT INCENTIVES:

Alternative approaches to business tax reform

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EXECUTIVE SUMMARY

This report analyzes the effects two federal tax reform plans – the plan released by the National Commission on Fiscal Responsibility and Reform in December 2010 (the “Fiscal Commission” plan) and the Growth and Investment Tax plan (the “GIT” plan) as proposed by the 2005 President’s Advisory Panel on Federal Tax Reform – would have on investment incentives. The report estimates the impact these two plans would have on the cost of capital for new investment within the business sector, a measure frequently used to evaluate the impact of the tax system on investment incentives. Estimates are provided by major business sectors, industries, and asset types to indicate how these two tax plans would affect the level of tax on new business investment. The report also considers whether and to what extent the tax plans would result in the more even tax treatment of alternative investments.

These two tax plans demonstrate how the effects of tax reform can vary depending on the approach taken. The Fiscal Commission plan would broaden the tax base and reduce income tax rates. The GIT would also broaden the base, but shift to a business cash-flow with somewhat less rate reduction. One of the biggest differences between the two plans is their treatment of business investment with the Fiscal Commission plan moving to economic depreciation, but the GIT allowing immediate write-off for all business investment. Both plans offer economic benefits from the similar reductions in statutory corporate income tax rates, a margin to which foreign direct investment and income shifting are sensitive.

The two tax plans were designed with somewhat different objectives for how much revenue the federal tax system should raise. The Fiscal Commission plan was designed, together with spending changes, to put the federal government on a fiscally sustainable path with revenue slowly rising to 21% of gross domestic product (GDP). In contrast, the GIT plan is a revenue neutral reform limited to the income tax.

The cost of capital estimates presented in this report measure the real pre-tax rate of return that a barely profitable new investment needs to earn to both cover taxes over its life and provide investors their required after-tax rate of return. This report also considers the extent to which these plans result in the more equal treatment of investment allocations and provides a quantitative metric, the standard deviation in the cost of capital across alternative investments.¹ The focus on investment incentives helps indicate to what extent the two plans might be expected to impact both the level and allocation of US business investment.

The report also describes other benefits – though not captured in the cost of capital estimate – that might accrue from the tax plans related to foreign direct investment and taxable income shifting, both of which have been found to be sensitive to the statutory corporate income tax rate.

Overall, the analysis finds that the cost of capital for new investment in the business sector would increase from 5.4% to 5.6% under the Fiscal Commission plan, while decreasing to 4.3% under the GIT plan. It also finds that the standard deviation in the cost of capital – used in this analysis as a measure of the extent by which the tax plans result in the more even treatment of investment – decreases from 1.5% under current law to 1.4% under the Fiscal Commission plan and to 1.0% under the GIT plan. These findings suggest that under both plans, a more neutral tax code for business investment would exist than under current law.² However, some previous research suggests that allowing all new investment to be deducted immediately under the GIT plan could have a stronger impact on US investment and output than a base broadening, rate reducing plan that achieved a similar amount of rate reduction.³

It is widely recognized that business taxation in the United States is in need of reform. The Administration and prominent members of Congress have promoted a goal of tax rate reductions financed through a broadening of the tax base. Estimating the impact of potential tax reform proposals on investment incentives – both on the overall level of tax on the marginal investment and the variation across investment types – is an important step to gauging their potential economic impacts.

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I. INTRODUCTION

Many believe that business taxation in the United States is in need of reform. The Administration and prominent members of Congress have advanced the objective of lowering the corporate income tax rate and financing the lower rate by broadening the tax base.⁴ Some recent proposed tax reform plans have also included changes to the individual income tax.⁵

This report analyzes the impact of two tax reform plans on investment incentives: 1) Fiscal Commission plan released in December 2010 and 2) the GIT plan as proposed by the 2005 President's Advisory Panel on Federal Tax Reform. The approach of the Fiscal Commission plan is to finance lower income tax rates through base broadening. The GIT plan would achieve somewhat less reduction in income tax rates, but would allow businesses to write-off (i.e., expense) new business investment, remove interest from the business tax base, and reduce investor-level taxes on dividends, capital gains, and interest. The immediate deductibility of investment encourages investment by removing the tax from an economically important part of an investment's return.

The base broadening, rate reducing reform of the Fiscal Commission was intended to slowly increase federal revenue to 21% of gross domestic product (GDP), while the GIT plan was intended to be revenue neutral over the ten year budget window. In this respect, both plans had different revenue objectives and achieved this objective in the context of a broader package with the inclusion of a variety of non-business tax provisions.⁶

The cost of capital for new investment is one way to measure investment incentives. In this study, the cost of capital is measured as the real pre-tax rate of return that a barely profitable investment needs to earn to both cover taxes over its life and provide investors their required after-tax rate of return. This measure is commonly used to evaluate investment incentives by source of finance, industry, asset type, and the overall level of investment.⁷ Empirical research has found both the level and allocation of investment to be sensitive to its tax treatment.⁸ The report presents the results for the cost of capital by sector, industry, and major asset type.

While the cost of capital reflects the potential impact of tax reform on investment incentives, changes in the relative cost of capital by sector, industry, and major asset type as well as a lower corporate income tax rate can have other economic benefits. These include efficiency gains from more even treatment across a number of different types of investment (e.g., sector, asset type, source of finance), increased investment in certain types of capital that respond to not only the tax at the margin but the total tax (e.g., firm-specific assets, intangibles), and an expanded corporate tax base due to the reduction in taxable income shifting and tax planning. These other potential economic benefits are also discussed below.

Overall, this report finds that the net cost of capital for new investment in the business sector would increase from 5.4% under current law to 5.6% with the Fiscal Commission plan. It would decrease to 4.3% with the GIT plan. It also finds that the standard deviation in the cost of capital – used in this analysis as the measure of the tax code's neutrality across business investment – decreases from 1.5% under current law to 1.4% under the Fiscal Commission plan and to 1.0% under the GIT plan. These findings suggest that under both plans, a more neutral tax code for business investment would exist than under current law.

II. ANALYSIS OF EACH PLAN'S MAJOR FEATURES

The Fiscal Commission plan

The Fiscal Commission plan would reduce the corporate income tax rate to 28% and broaden the business tax base by repealing all business tax expenditures.⁹ Additionally, the plan would simplify individual-level taxation by reducing it to three brackets (top rate of 28%), which would lower the tax rates on income received by owners of pass-thru businesses (e.g., S corporations, partnerships, limited liability companies, sole proprietorships). The plan would also tax investor-level income from dividends, capital gains, and interest as ordinary income.¹⁰

The plan would also repeal a number of business tax expenditures, including:

- The domestic production activities deduction,
- The research and experimentation (R&E) credit,
- Expensing of R&E expenditures,
- Last-in, first-out (LIFO) tax inventory rules,
- The Modified Accelerated Cost Recovery System (MACRS),
- Extraction-specific provisions, such as intangible drilling costs, percentage depletion, and geological and geophysical

The domestic production activities deduction allows 9% of qualified income, such as domestic manufacturing and resource extraction, to be deducted from taxable income. This is the equivalent of a reduction in the top corporate income tax rate for qualified income from 35% to 32%.¹¹ The R&E tax credit, although a temporary provision, is a longstanding provision in the Internal Revenue Code (the Code) and has been extended more than a dozen times since it was first enacted in 1981.

Because the Fiscal Commission plan did not include many details, there is some lack of clarity on precisely what was intended for a number of its provisions, such as the cost recovery method intended and the transition rules that might apply (e.g., LIFO is “eliminated with appropriate transition” under the Fiscal Commission plan). To provide a more concrete analysis, this report uses the cost recovery system former Senate Finance Committee Chairman Max Baucus (D-MT) outlined in his November 2013 staff discussion draft as the model for the Fiscal Commission plan’s cost recovery system.

The Baucus draft would replace the MACRS and Alternative Depreciation System with a system of asset pools and constant percentage depreciation with substantially slower write-off periods, especially for investment in equipment. The new system is intended to more closely reflect economic depreciation, as compared to the current system of accelerated depreciation.

Under the proposed system there would be four asset pools (three for short- to mid-term property and one for longer-term property) plus two additional categories for real property and personal-use passenger automobiles. The four asset pools would be depreciated using a constant percentage depreciation method with a recovery rate intended to be approximately equivalent to the economic life of the assets in each pool. In general, asset costs would be recovered by multiplying the balance in each pool by its applicable recovery rate (38%, 18%, 12%, or 5%) each year. Real property and personal-use passenger automobiles would be depreciated using the straight line method over 43 and 5 years, respectively.

The Baucus draft also includes a transition rule for real property placed in service before January 1, 2015, whereby such property would be depreciated over 43 years less the number of years for which the property has already been depreciated under current law. Under the transition, for example, property placed in service in 2005 would have its remaining basis, as of January 1, 2015, depreciated using straight line over 33 years (i.e., 43 years minus the 10 years for which the property had already been depreciated). This report’s estimate of the cost of capital does not reflect the transition rule because the measure only considers the tax on new investment. This transition rule represents a retroactive tax increase on real property as it would increase the taxes on investment already placed in service.

A transition rule for LIFO is also included in the Baucus draft. LIFO is an accounting method for inventories in which the cost of a unit of inventory sold is recorded as the cost of the unit of inventory most recently produced or purchased; this contrasts to the first-in, first-out (FIFO) accounting method for inventories in which the cost of a unit of inventory sold is recorded as the cost of the oldest unit of inventory. LIFO, by allowing current costs to be matched with current revenues, provides protection from inflation. The accumulated difference in inventory cost when using the LIFO method rather than the FIFO method is referred to as the LIFO reserve and, in the Baucus draft, is recaptured in taxable income over an eight-year period. Similar to the transition rule for real property, the transition rule for LIFO is not included in the cost of capital estimates because it is a retroactive tax increase that does not affect new investment.

The GIT plan

The GIT plan's objective is not only to reduce income tax rates financed by base broadening, but also to promote economic growth through significant reductions in the tax on the return to savings and investment. An analysis of the macroeconomic effects of the GIT plan found that it would increase GDP by more than 2% in the long-run.¹² Moreover, some previous research comparing the GIT plan to a base broadening, rate reducing plan with a similar amount of rate reduction but without the immediate deductibility of new investment using the same economic model suggests that allowing all new investment to be deducted immediately is an important factor explaining the larger estimated impact on US investment and output under the GIT.¹³

The GIT plan would replace the current system for taxing the business sector with a 30% business cash-flow tax (with no distinction between the corporate and pass-thru sectors), an immediate deduction for all new investment, and no deduction for interest expenses (except for financial institutions).¹⁴ It would retain a progressive income tax applied to household wages and compensation with a top rate of 30% and would tax investor returns from dividends, capital gains, and interest at a flat 15% rate.¹⁵

The GIT plan would significantly reduce the tax on savings and investment by allowing new investment to be immediately deducted and imposing a 15% tax rate on investment income at the individual level (i.e., capital gains, dividends, and interest). The GIT plan focuses on allowing all new business investment to be deducted immediately as a means to encourage new investment. The immediate deductibility for new investment has the effect of removing the tax on the expected normal return to an investment in present value. While immediate deductibility focuses the benefits of the tax treatment on new investment, a lower corporate income tax rate reduces the tax on both the return to new and existing investment at the time of the tax change.

Table 1 compares the taxation of capital income under a corporate income tax (e.g., current law, Fiscal Commission plan) and a business cash-flow tax (e.g., GIT plan). The business is assumed to have \$100 in pre-tax earnings and the after-tax proceeds are calculated under a scenario in which a business chooses to reinvest these earnings and another in which it does not.

Table 1. Illustration of capital taxation under a corporate income tax and business cash-flow tax

	CORPORATE INCOME TAX		BUSINESS CASH-FLOW TAX	
	Does not reinvest earnings	Reinvests earnings	Does not reinvest earnings	Reinvests earnings
Business earnings (Year 1)				
Pre-tax earnings	\$100	\$100	\$100	\$100
Deductibility of new investment	n/a	n/a	\$0	\$100
Income subject to tax	\$100	\$100	\$100	\$0
Tax rate	35%	35%	35%	35%
Tax liability	\$35	\$35	\$35	\$0
After-tax earnings	\$65	\$65	\$65	\$100
Reinvestment of earnings (Year 2)				
Pre-tax return from investment (20%)		\$78		\$120
Depreciation deduction*		\$65		n/a
Income subject to tax		\$13		\$120
Tax rate		35%		35%
Tax liability		\$5		\$42
After-tax earnings	\$65	\$73	\$65	\$78
After-tax rate of return		13%		20%

*For simplicity, investment is assumed to be in an asset with a one-year life; at the end of that year it is written off.

Under a corporate income tax, a business is subject to tax on its earnings and then decides whether or not to reinvest. In this example, the business chooses whether or not to invest in an asset yielding a 20% pre-tax rate of return with a one-year life after which it is written off. Reinvesting yields a 13% after-tax rate of return with the corporate income tax reducing the investor's return.

In contrast, under the business cash-flow tax, the pre- and after-tax returns will be the same because the value of the immediate deduction for new investment will exactly offset the tax on investment returns (in present value). In this respect, the immediate deduction removes the tax on the expected normal return.¹⁶

The income tax and business cash-flow tax results in the same tax liability for a business if it chooses not to reinvest its earnings (i.e., \$65). If the business chooses to reinvest its earnings under the business cash-flow tax, it pays no tax in year 1. In year 2, it receives no depreciation deduction (assuming the income is not reinvested) and is taxed on the entire \$120 return, resulting in after-tax earnings of \$78. Because this \$78 return from reinvesting is 20% greater than the \$65 from not reinvesting, capital can be viewed as being untaxed because the pre- and after-tax returns are the same.

In addition to eliminating disincentives in the income tax for new investment by equalizing the pre- and after-tax rate of return, this approach can also provide an additional benefit to investment through the cash-flow channel. Specifically, some research has found that after controlling for the economic fundamentals of a project, cash-flow can impact the amount of investment a business undertakes through financing constraints due to frictions in the financial markets.¹⁷ The GIT plan cash-flow tax approach, by taxing income net of investment expenditures, helps mitigate this issue.

Under the GIT plan, the after-tax earnings, if earned in the corporate sector, would be subject to tax at the investor level as capital gains, dividend, or interest income. Thus, the GIT plan – because it retains a flat 15% tax rate on capital income at the investor level – does not entirely remove the return to saving and investment from the tax base.¹⁸

The major tax provisions analyzed by this report under current law, the Fiscal Commission plan, and the GIT plan are described below in Table 2.

Table 2. Comparison of major tax provisions under current law, the GIT plan, and of the Fiscal Commission plan included in analysis

	CURRENT LAW	GIT PLAN	FISCAL COMMISSION PLAN
Tax rates			
Top statutory corporate income tax rate	35%	30%	28%
Noncorporate business income tax rate	10%, 15%, 25%, 28%, 33%, 35%, 39.6%	30% ¹	12%, 22%, 28%
Dividend income tax rate	0%, 15%, 20%	15%	12%, 22%, 28%
Capital gains tax rate	0%, 15%, 20%	15%	12%, 22%, 28%
Interest income tax rate	10%, 15%, 25%, 28%, 33%, 35%, 39.6%	15%	12%, 22%, 28%
Medicare surtax on investment income	3.8%	3.8%	3.8%
Itemized deduction limitation (Pease)	3% of adjusted gross income (AGI) exceeding threshold	Repealed	Repealed
General provisions			
Cost recovery system	MACRS	New investment immediately deductible	Replace MACRS with Baucus Capital Cost Recovery System ²
Deductibility of interest expenses	Immediately deductible	Repealed (except for finance institutions)	Immediately deductible
Advertising expenditures	Immediately deductible	Immediately deductible	50% amortized over five years
Domestic production deduction	9% of qualified production activities income ³	Repealed	Repealed
LIFO inventory accounting	LIFO inventory accounting allowed	New investment immediately deductible	Repealed (i.e., limited to FIFO)
Extraction provisions			
Geological and geophysical costs	Amortize over two or seven years ⁴	New investment immediately deductible	Amortize over five years
Intangible drilling costs	Immediately deductible ⁵	New investment immediately deductible	Amortize over five years
Percentage depletion	Deduct percentage of revenue	New investment immediately deductible	Repealed; apply cost depletion
Research provisions			
R&E expensing	Immediately deductible	New investment immediately deductible	Amortize over five years
R&E tax credit	Expired	Repealed	Repealed

¹ Sole proprietorships would be taxed at individual income tax rates.

² The Fiscal Commission plan includes the replacement of the MACRS with economic depreciation. In this analysis, MACRS is modeled as being replaced with the cost recovery system proposed in the staff discussion draft released by former Senate Finance Committee Chairman Max Baucus (D-MT) in November 2013.

³ This is restricted to 6% for the oil and gas industry.

⁴ Independent producers and smaller integrated companies amortize over two years and larger integrated companies amortize over seven years.

⁵ Integrated oil companies are required to amortize 30% of the intangible drilling costs on productive wells over five years.

III. USING THE COST OF CAPITAL TO EVALUATE INVESTMENT INCENTIVES

This report uses the concept of the cost of capital for a new investment to measure the impact of the Fiscal Commission plan and the GIT plan on investment incentives. The cost of capital is a standard measure used to analyze the effect of investment incentives on sectors, asset types, sources of financing, and the overall level of investment; it is frequently used to inform tax policy discussions.¹⁹ Formally, the cost of capital is the required real pre-tax rate of return necessary for a barely profitable new investment to both cover taxes over its life and provide investors with their required after-tax rate of return.

The cost of capital is a forward-looking measure that summarizes investment incentives for new investment and may bear little resemblance to the overall burden of the tax system for an industry or sector. The cost of capital estimates used for this report focus only on the return on the last dollar (i.e., marginal dollar) of investment for a barely profitable investment and do not include the impact of taxes on above-normal returns or economic profits.²⁰

The cost of capital models the tax consequences to both the business that makes the investment and the saver who provides the financing. The cost of capital measure used for this report captures the major elements of the income tax system affecting new investment, such as the corporate statutory income tax rates, the statutory income tax rates applied to pass-thru income reported on individual tax returns, the capital cost recovery system, the deductibility of interest expenses, and investor-level taxes on dividends, capital gains, and interest income. The measure also captures a number of more specific tax provisions including R&E expensing, LIFO, and provisions related to extraction (geological and geophysical (G&G) expenditures, intangible drilling costs (IDC), percentage/cost depletion). Aspects of the tax system affecting the taxation of foreign-source income are not reflected. Thus, the analysis is restricted to US domestic-only businesses.

The analysis applies the top 28% business income tax rate and 28% tax rate on dividends and capital gains as proposed by the Fiscal Commission plan and the 30% top tax rate on business income and 15% tax rate on dividends, capital gains, and interest income as proposed under the GIT plan. The Fiscal Commission plan is modeled using the depreciation reforms included in the Baucus draft on capital cost recovery.²¹ The GIT plan assumes expensing for new capital investment, including investment in equipment, structures, inventories and land.

If calculated just with the corporate income tax, the cost of capital will equal the after-tax rate of return required by investors grossed up by the corporate income tax rate when depreciation allowances are based on replacement cost or economic depreciation. It will also exactly equal the after-tax rate of return required by investors with ability to immediately deduct new investment. Thus, with immediate deductibility of new investment, the corporate income tax will be non-distorting to new investment even though corporate income tax would be paid on the return to prior investment and on investments that yield above-normal returns. This illustrates that while the measure is useful for analyzing the effects of the tax system on investment decisions, it does not measure the total burden of the tax system for an industry or company. A more detailed discussion of the cost of capital concept is provided in Appendix A.

The responsiveness of investment activity to the cost of capital has been the subject of numerous empirical studies. A review of this literature finds that the elasticity of investment with respect to cost of capital is typically estimated to be between -0.5 and -1.0.²² That is, the literature suggests that a 10% increase in the cost of capital would result in a 5% to 10% decrease in investment.

IV. OTHER IMPORTANT BUSINESS DECISIONS AFFECTED BY TAX REFORM

The cost of capital measure captures the net effect of the base broadening and the reduction in income tax rate on investment incentives. However, there are a number of other economic benefits associated with a lower corporate income tax rate such as more even treatment of investment, enhancing the attractiveness of the United States to foreign investment, and expanding the corporate income tax base due to reduced income shifting and tax planning.

Neutrality/more even treatment of investment

The current income tax results in uneven treatment of investment that can affect a number of business decisions: 1) the mixture of debt and equity when financing investments, 2) whether to organize as a corporate or pass-thru business, 3) a firm's dividend policy, and 4) what assortment of asset types to purchase. Independent of the impact on capital accumulation, a decrease in tax-induced distortions on these decisions would improve the allocation of capital within the economy.

Investment by source of financing

The taxation of the returns resulting from an equity financed investment differs from the taxation of returns stemming from a debt-financed investment in at least two important ways.²³ First, the current corporate income tax does not generally allow a deduction for equity (e.g., a deduction for dividend payments or a basis adjustment for corporate income that is retained). In contrast, the tax code allows interest expenses for debt-financed investment to be deducted as a standard business expense, which, in effect, offsets the entity-level taxation on corporate debt-financed investment. Second, equity returns are subject to additional investor-level taxes when received by shareholders as dividends or when retained by the corporation and received by shareholders as capital gains. Empirical studies have analyzed the impact of this tax-induced bias against equity in favor of debt, with some research finding that a 10 percentage-point increase in the corporate income tax rate would result in a 1.5% increase in debt-equity ratios in the business sector.²⁴

Investment across sectors

Relatedly, because the earnings from equity-financed investments are subject to two layers of tax in the corporate sector, but not under the individual tax system, there is potential for an additional tax-induced distortion in a businesses' choice of organizational form. In the corporate sector, earnings are taxed once at the entity level and again when corporate earnings are distributed to shareholders as dividends or retained and later realized by shareholders as capital gains. The top statutory tax rate on dividends and capital gains is 20%. Investment income is also subject to an additional 3.8% tax for high-income taxpayers. These two layers of tax are often referred to as the "double tax" on corporate profits. In contrast, the earnings of a pass-thru entity are only taxed at the individual level – there is no entity-level taxation. Economic research provides a consensus estimate for the impact of this distortion, estimating that a 10 percentage-point increase in the corporate income tax rate would result in an approximately 7% decrease in the size of the corporate sector (i.e., an elasticity of -0.7).²⁵

Blend of dividends paid, retained earnings, and share repurchases

The income tax can also influence the dividend policy of a corporation; that is, whether a corporation chooses to retain corporate earnings or distribute corporate earnings to shareholders as dividends.

Favorable treatment for capital gains over dividends, for example, can lead to an over-investment of firms financing new investment through retained earnings. This is likely to be the case for the taxation of capital gains and dividends even when both forms of capital income are subject to the same statutory tax rate. The current income tax is on realized capital gains rather than accrued capital gains; it follows that, because of an ability to defer taxation until realization, the present value of tax on capital gains is likely to be lower. Additionally, step-up of basis on assets held until death can further reduce capital gains taxes.

This over-investment from retained earnings can lead to a number of unfavorable effects. Dividends can benefit corporate governance as they are a simple and important signal to investors of a company's financial viability.²⁶ Dividends can also help restrain corporate managers from deviating too far from the interest of investors. The impact may be more heavily concentrated

in certain sectors of the economy, thereby distorting the allocation of capital and the efficiency of the economy. Some evidence from the lower dividend tax rate enacted in 2003 found that publicly traded corporations' dividend payments increased by approximately 20% within a year of the enactment of the tax cut.²⁷ An earlier study suggested that dividends would increase by approximately 30% as a result of reducing tax rates on dividends and capital gains.²⁸

Mixture of asset types

The tax code has generally provided accelerated depreciation in asset cost recovery in one form or another for the past several decades. Accelerated depreciation provides a faster write-off of an investment and, consequently, reduces the present value of taxes on its return. Accelerated depreciation thus reduces the tax rate on an investment below the statutory tax rate in present value, providing an incentive for additional investment.

Recent studies of the US cost recovery system hold most investment attributes constant (e.g., use of debt and equity financing) to analyze how asset-specific tax provisions vary in their generosity.²⁹ An economically neutral capital cost recovery system (i.e., one without allocative distortions) would provide no incentive for an investment to be made in one type of asset over another; that is, the economic features of an asset would be the margin on which investment decisions are made rather than the change in relative prices due to the tax code. These studies, however, have found that there is wide variation in how generous the cost recovery system is by type of asset.

For example, recent studies estimating the marginal effective tax rate (METR) – an algebraic transformation of the cost of capital that measures the additional economic profit needed for a barely profitable new investment to cover taxes over its life – have been conducted by both the US Department of the Treasury and the Congressional Budget Office (CBO). The US Department of the Treasury in 2000 estimated a METR of 32% for the corporate sector, but significant variation in its components. Its major asset categories are intangibles (4%), public utilities (30%), equipment (31%), inventories (38%), land (38%), and structures (39%).³⁰ Likewise, the CBO in 2005 estimated a METR of 26% for the corporate sector as well as variation in the major asset types of equipment (21%), structures (26%), land (31%), and inventories (34%).³¹

Moving to either a system of economic depreciation or immediate write-off of all new investment would provide neutral treatment of investment by asset type. Considering just the corporate income tax alone, economic depreciation would result in a METR equal to the statutory tax rate across all investment types, while immediate write-off of investment would result in a zero METR across all investment types.

Foreign investment

Additional considerations for tax-induced impacts arise in an international context. In particular, when US and foreign multinationals face the decision of whether and how much to invest in the United States versus abroad, recent literature suggests these international investments are, in large part, discrete location choices and responsive to their total tax, not just the tax at the margin.³² That is, first multinational companies make a discrete choice of where to locate their facilities and then they determine the scale of investment to maximize profitability.

For such an investment, the multinational firm is earning economic profit from a firm-specific advantage, such as a patent or firm-specific knowhow, and this economic profit is subject to taxation at the statutory tax rate.³³ Thus, the literature suggests modeling the investment incentives of this investment through use of a weighted average of the taxation of a marginal investment and the statutory corporate income tax rate.³⁴ Based on the weights, such a measure would summarize investment incentives over the range of economic profitability of new investment. This measure is equal to the taxation of marginal investment when there is no economic profit and converges to the statutory tax rate as economic profit increases.

There is a large body of empirical literature on the responsiveness of international investment to corporate income tax rates. The literature reaches a number of conclusions. First, both the location and level of international investment are sensitive to tax factors. Second, this responsiveness has increased over time. Finally, the empirical literature finds that international investment is less responsive to marginal taxation relative to the statutory corporate income tax rate. This implies that the statutory rate is more important for some types of investment than the provisions that define the tax base.³⁵ Moreover, it suggests that a reduction in

the statutory rate – even at the cost of increased taxation of marginal investments – could result in an increase in investment in the United States. However, since foreign direct investment accounts for only about 10% of total US investment, the impact of a lower income tax rate is likely to have less of an impact on overall US investment than expensing.³⁶

Income shifting

Another aspect of a high corporate income tax rate is that it reduces the size of the US corporate income tax base by encouraging the location of income and profits to low-tax jurisdictions outside of the United States. Several researchers have found these effects to be large. One study that reviews this literature suggests the average elasticity of income shifting with respect to the statutory corporate income tax rate is -2.³⁷ Thus, for a 10 percentage-point increase in the statutory corporate income tax rate, the tax base would decrease by 20%. One often-cited study examines this impact specifically for the United States and estimates that income shifting reduces corporate income tax revenues by the equivalent of 35% of total corporate income tax revenue.³⁸

V. IMPACT OF THE FISCAL COMMISSION AND GIT PLANS ON THE COST OF CAPITAL

Estimated impacts on the business sector

Table 3 shows estimates of the cost of capital for new investment by major business sector under current law, the Fiscal Commission plan and the GIT plan. The cost of capital for the US business sector is 5.4% under current law, but the cost of capital varies considerably by sector and asset type. Such a result is consistent with prior analyses of investment incentives in the United States by the US Department of the Treasury in 2000 and the CBO in 2005, as well as the more recent analysis by the current Administration.³⁹

The difference in the cost of capital for the corporate (5.6%) and pass-thru (5.1%) sectors, to a large extent, reflects the double tax on corporate profits. The double tax also contributes to the higher cost of capital for business investment generally. The higher overall cost of capital in the business sector means that business investment is likely lower than it would be otherwise.

The cost of capital for the major asset types – equipment, structures, inventories, land, and intangibles – are also shown in Table 3. The lower cost of capital for new investment in equipment (5.3% and 4.8% in the corporate and pass-thru sectors, respectively) as compared to new investment in structures (5.5% and 5.1% in the corporate and pass-thru sectors, respectively) reflects the effects of accelerated depreciation for equipment under current law.⁴⁰ Inventories receive no depreciation deduction under current law, but instead, their cost is deducted against sales to compute net earnings. This tax treatment results in a relatively high cost of capital for inventories (7.2% and 6.6% in the corporate and pass-thru sectors, respectively) relative to the overall cost of capital for investment (5.6% and 5.1% in the corporate and pass-thru sectors, respectively). Similarly, land is not depreciated under current law, resulting in a relatively high cost of capital for land (5.9% and 5.4% in the corporate and pass-thru sectors, respectively). Intangible assets, in contrast, have a relatively low cost of capital (4.9% and 4.6% in corporate and pass-thru sectors, respectively) because a significant portion of the intangible assets are deducted immediately.⁴¹

Table 3. Cost of capital by sector and major asset type under current law, the Fiscal Commission plan and the GIT plan

	Current law	Fiscal Commission plan		GIT plan	
	Cost of capital	Cost of capital	Percent change	Cost of capital	Percent change
Business sector	5.4%	5.6%	3%	4.3%	-21%
Standard deviation in cost of capital	1.5%	1.4%	-5%	1.0%	-36%
Corporate sector	5.6%	5.8%	5%	4.4%	-21%
Equipment	5.3%	6.2%	17%	4.4%	-17%
Structures	5.5%	5.6%	3%	4.4%	-19%
Inventories	7.2%	6.9%	-5%	4.5%	-37%
Land	5.9%	5.6%	-5%	4.2%	-29%
Intangibles	4.9%	5.7%	16%	4.5%	-9%
Pass-thru sector	5.1%	5.1%	-1%	4.1%	-20%
Equipment	4.8%	5.4%	14%	4.1%	-14%
Structures	5.1%	5.0%	-3%	4.1%	-19%
Inventories	6.6%	5.9%	-10%	4.1%	-37%
Land	5.4%	5.0%	-8%	4.1%	-25%
Intangibles	4.6%	5.1%	10%	4.1%	-10%

Note: The business sector is defined as all non-farm US businesses. Structures, in addition to buildings, include assets such as mine shafts, petroleum pipelines, and railroad tracks. The intangibles included in this analysis are software, scientific research and development, artistic originals, and advertising.

Source: EY analysis.

A common metric for the neutrality of the tax system with respect to new investment is the standard deviation in the cost of capital.⁴² If the tax system treated all investment neutrally, then all investments would have the same cost of capital and, as a result, the standard deviation in the cost of capital would equal zero. In contrast, as differentials in how the tax system treats various types of investment increases, the variation in the cost of capital across types of investment increases, which results in a larger standard deviation in the cost of capital. Thus, an increase in the standard deviation in the cost of capital would likely result in efficiency losses for the US economy, and a decrease in the standard deviation in the cost of capital would likely result in efficiency gains for the US economy. Moreover, a larger change in the standard deviation in the cost of capital would likely lead to a larger efficiency gain or loss. Under current law, the standard deviation in the cost of capital is estimated to be 1.5%.

The Fiscal Commission plan results in a modest 3% increase in the cost of capital for the business sector from 5.4% to 5.6%. This increase reflects the net effect of the lower tax rates and broadening of the tax base. The cost of capital for equipment (5.3% and 4.8% in corporate and pass-thru sectors, respectively) increases significantly (6.2% and 5.4% in corporate and pass-thru sectors, respectively) reflecting the effect of repealing accelerated depreciation under the Fiscal Commission plan. For structures, there is a small increase in the cost of capital for the corporate sector (5.5% to 5.6%) and a small decrease in the cost of capital for the pass-thru sector (5.1% to 5.0%). This reflects the modesty of the base broadening relative to the benefit of the lower tax rates under the Fiscal Commission plan. It should be noted that some structures, such as 27.5-year structures and oil and gas wells, do face significantly greater base broadening than other structures (e.g., 39-year structures).

Both inventories and land receive a net benefit from the base broadening and rate reduction under the Fiscal Commission plan. This is in large part a result of neither inventories nor land receiving a depreciation deduction under current law. There is some upward pressure in the cost of capital from the inventories disallowed from using LIFO accounting, but this is outweighed for aggregate inventories by rate reduction. Finally, intangibles are subject to an increase in the cost of capital in both the corporate sector (from 4.9% to 5.7%) and the pass-thru sector (from 4.6% to 5.1%). This is due to the sizable base broadening from the lengthening of the cost recovery period for R&E, advertising, and Section 197 intangible assets.⁴³

The extent by which the Fiscal Commission plan results in more equal treatment of investment, as measured by the reduction in the standard deviation the cost of capital, is not great. Specifically, there is a 5% decrease in the standard deviation in the cost of capital from 1.5% to 1.4%. This suggests that the mixture of asset types used in the business sector will be less a result of tax-induced behavior and more a result of the economic characteristics of those assets. This also reflects a modest decrease in the bias against equity-financed investment from the combination of a lower corporate income tax rate and interest income being taxed at the same statutory rate as equity income (i.e., dividends and capital gains). However, the differential in cost of capital between the corporate and pass-thru sector increases from 0.4 percentage points to 0.8 percentage points.

While the Fiscal Commission plan increases the cost of capital somewhat in the business sector, the GIT plan results in a large reduction in the cost of capital from 5.4% to 4.3% – a 21% decrease. This decrease in the cost of capital under the GIT is the result of the immediate deductibility of all new investment of equipment, structures, inventories, land, and intangibles combined with the low individual-level tax rates on capital income. This large decrease in the cost of capital can be expected to have a significant positive impact on investment and capital accumulation.

Although the size of the reduction in cost of capital varies under the GIT plan across major asset types, the cost of capital is reduced to a near-uniform level across the major asset types. In the corporate sector, the overall reduction in the cost of capital is 21% (5.6% to 4.4%). The reduction in cost of capital is 37% for corporate inventories (7.2% to 4.5%), 29% for corporate land (5.9% to 4.2%), 19% for corporate structures (5.5% to 4.4%), 17% for corporate equipment (5.3% to 4.4%), and 9% for corporate intangibles (4.9% to 4.5%).

This same pattern can be seen for the major asset types in the pass-thru sector under the GIT plan. While the reduction in cost of capital for the overall pass-thru sector is 20% (5.1% to 4.1%), it is 37% for pass-thru inventories (6.6% to 4.1%), 25% for pass-thru land (5.4% to 4.1%), 19% for pass-thru structures (5.1% to 4.1%), 14% for pass-thru equipment (4.8% to 4.1%), and 10% for pass-thru intangibles (4.6% to 4.1%). A tax plan that removed the individual-level tax on capital income would result in a cost of capital equivalent to the after-tax rate of return required by investors, as the normal return to capital would be fully removed from the tax base.⁴⁴

In addition to the benefit under the GIT plan from a significant 21% decrease in the cost of capital, there is an additional benefit from allocative efficiency resulting from the more even treatment of investment by type. First, the standard deviation of the cost of capital for the major asset categories within the corporate and pass-thru sectors would decrease significantly. Second, bias against equity-financed investments would be significantly reduced because interest income and equity income would have the same statutory tax rate and the deduction for interest expenses is disallowed (except for financial institutions). These allocative efficiency impacts from the GIT plan are summarized in a 36% decrease in the standard deviation in cost of capital, from 1.5% to 1.0%.

Estimated impacts by industry

The aggregate results for the business sector mask significant industry-level variation in the cost of capital under current law and the two tax plans. Industry results are provided in Tables 4, 5, and 6 for the business, corporate, and pass-thru sectors, respectively. The industry-level variation is largely due to three industry-specific characteristics. First, the use of types of assets differs across industries, and there is significant variation in the tax treatment by asset type.⁴⁵ For example, an industry with greater use of equipment will tend to benefit more from accelerated depreciation and fare worse under proposals that repeal accelerated depreciation. Second, the use of the C corporation form versus the pass-thru business form differs by industry.⁴⁶ C corporations are subject to the double tax on corporate profits, whereas pass-thru entities are only taxed at the individual level. Finally, the mixture of debt and equity financing varies by industry.⁴⁷

Table 4 breaks down the cost of capital for the business sector by industry. The cost of capital for the industries estimated varies from 4.6% in the utilities industry to 6.6% for leather and allied product manufacturing. A higher cost of capital for any specific industry relative to another implies that business investment is generally channeled away from that industry due to its tax treatment.

These results illustrate the role of economic characteristics in evaluating the effect of taxes on investment incentives. The utility industry has the lowest overall cost of capital for a major industry in the business sector, in large part due to the relatively high leverage of the industry – a result of the borrowing often required to finance large investments in infrastructure – and the tax bias against equity financing embedded in the current tax code. The overall highest cost of capital for leather and allied product results from a relatively high concentration of investment in structures combined with a significant use of equity financing for these investments.

The Fiscal Commission plan, which eliminates all business tax expenditures, reduces the wide variation in cost of capital by industry. Industries that have benefitted from the many investment-related tax provisions such as accelerated depreciation and research expensing can expect to face a higher cost of capital even after taking into account the reduction in the corporate income tax base. For example, the cost of capital for manufacturing increases by 9% in the business sector (from 5.7% to 6.2%) in part due to a less generous tax treatment of research and development investment. While on the surface it might seem as though allocative efficiency gains might result, this would depend on whether there were a reduction in research spending that provided broad benefits to society (e.g., positive spillover effects) that would not necessarily accrue to companies themselves.

The base broadening of the Fiscal Commission plan results in a significant increase in the cost of capital for the major capital-intensive industries. In the business sector, the cost of capital increases by 13% for utilities, 9% for transportation and warehousing, 9% for manufacturing, 8% for mining, and 7% for information. A similar impact can be seen in both the corporate and pass-thru sectors. For the corporate sector and pass-thru sector, respectively, the cost of capital for utilities increases by 13% and 11%, transportation and warehousing by 10% and 7%, manufacturing by 9% and 5%, mining by 9% and 5%, and information by 7% and 4%. (See Tables 5 and 6)

In contrast, most other industries benefit more from rate reduction than base broadening. These include a decrease in the cost of capital of 3% for retail trade, 3% for construction, 1% for wholesale trade, and 1% for finance, insurance, real estate, and rental and leasing. As illustrated in Tables 5 and 6, there is additional variation in the corporate and pass-thru sectors of these industries. For the corporate and pass-thru sector, respectively, the cost of capital decreases for retail trade by 2% and 7%, for construction by 0% and 5%, for wholesale trade by 1% and 5%, for finance, insurance, real estate, and rental and leasing by 0% and 3%. The

Fiscal Commission plan also results in a modest increase in the cost of capital for the service industry for the business sector (1% increase), the corporate sector (2% increase), and the pass-thru sector (0% increase).

Under the GIT plan, this industry variation in the cost of capital – despite economic characteristics remaining the same – largely disappears. In particular, the standard deviation in cost of capital for the corporate sector decreases from 1.0% under current law to 0.2% under the GIT plan and for the pass-thru sector decreases from 0.7% under current law to 0.1% under the GIT plan. There does, however, remain a noticeable tax-induced distortion due to the differing tax treatment of the corporate and pass-thru sectors; the standard deviation in cost of capital for the business sector only declines from 1.5% under current law to 1.0% under the GIT plan (see Table 4).

This result is driven primarily by the immediate write-off of all new investment, the repeal of industry-specific tax provisions, and mitigation of the bias against equity-financed investment, as well as the somewhat lower tax rates. The only outlier is the finance, insurance, real estate, and rental and leasing industry (3.9%); this reflects repeal of the deductibility of interest except for financial institutions. The tax-induced distortion between the corporate and pass-thru sectors is largely a result of the 15% tax on dividends, capital gains, and interest income in the GIT plan that retains – albeit reduced from current law – the double tax on corporate profits.

Excluding the finance, insurance, real estate, and rental and leasing industry, the cost of capital in the business sector under the GIT plan ranges from 4.3% to 4.5%. Similarly, in the corporate sector, the cost of capital is estimated to be 4.5% in all industries excluding finance, insurance, real estate, and rental and leasing. The variation is more pronounced in the pass-thru sector and the cost of capital – excluding finance, insurance, real estate, and rental and leasing – ranges from 4.0% to 4.3%.

The components of the oil and gas industry and major extraction-specific tax provisions (G&G expenditures, IDCs, and percentage/cost depletion) are explicitly modeled in this study. The oil and gas extraction and petroleum and coal products manufacturing industries follow the standard North American Industry Classification System (NAICS). The petrochemical refining industry, however, is a component of the chemical manufacturing industry but is disaggregated in this study.⁴⁸

Under current law, the cost of capital in the oil and gas extraction industry is similar to the weighted average cost of capital in the business sector (5.3% relative to 5.4%), the corporate sector (5.4% relative to 5.6%), and the pass-thru sector (4.6% relative to 5.1%). Approximately two-thirds of all capital in the oil and gas extraction industry is classified as IDC expenditures. IDCs include wages, fuel, repairs, construction costs, and other expenses for which there is no salvage value possible. Under current law these expenditures are immediately deductible for independent oil and gas companies; for integrated oil and gas companies, 70% of these costs are expensed with the remaining amount written off over five years. The Fiscal Commission plan, largely due to the repeal of the IDC provision and requirement that these costs be amortized over a 5-year period outweighing the benefit from rate reduction, results in an increase in cost of capital of 9% in the business sector, 10% in the corporate sector, and 6% in the pass-thru sector. In contrast, the GIT plan reduces the cost of capital for the oil and gas extraction industry by 15% in the business sector, 16% in the corporate sector, and 12% in the pass-thru sector; this is largely due to the immediate deductibility of new investment under the GIT plan.

The other major components of the oil and gas industry are petroleum and coal products manufacturing and petrochemical manufacturing. Under current law, both of these industries face a higher cost of capital than that of overall business sector investment (6.6% and 5.9%, respectively, relative to 5.4%) and that of overall manufacturing investment (6.6% and 5.9%, respectively, relative to 5.7%). The base broadening of the Fiscal Commission plan outweighs the benefit from rate reduction in both of these industries. The cost of capital for petroleum and coal products manufacturing increases 3% in the business sector (6.6% to 6.8%). Similarly, the cost of capital for petrochemical manufacturing increases 5% in the business sector (5.9% to 6.3%). In contrast, the GIT plan reduces the cost of capital in the petroleum and coal products manufacturing and petrochemical manufacturing industries by 32% and 24%, respectively.

Table 4. Cost of capital by industry in the business sector under current law, the Fiscal Commission plan, and the GIT plan

	CURRENT LAW	FISCAL COMMISSION PLAN¹		GIT PLAN	
	Cost of capital	Cost of capital	Percent change	Cost of capital	Percent change
Business sector²	5.4%	5.6%	3%	4.3%	-21%
Standard deviation in cost of capital	1.5%	1.4%	-5%	1.0%	-36%
Mining, quarrying, and oil and gas extraction	5.5%	5.9%	8%	4.5%	-18%
Oil and gas extraction	5.3%	5.8%	9%	4.5%	-15%
Mining (except oil and gas)	6.2%	6.4%	3%	4.5%	-28%
Support for mining activities	5.9%	6.5%	9%	4.5%	-24%
Utilities	4.6%	5.2%	13%	4.5%	-2%
Construction	6.3%	6.1%	-3%	4.3%	-32%
Manufacturing	5.7%	6.2%	9%	4.5%	-21%
Durable goods manufacturing	5.9%	6.4%	9%	4.5%	-23%
Wood product manufacturing	6.0%	5.9%	-1%	4.4%	-26%
Nonmetallic mineral product manufacturing	5.9%	6.3%	5%	4.5%	-25%
Primary metal manufacturing	5.4%	5.8%	9%	4.5%	-16%
Fabricated metal product manufacturing	5.5%	5.9%	8%	4.4%	-19%
Machinery manufacturing	5.7%	6.2%	8%	4.5%	-22%
Computer and electronic product manufacturing	6.3%	7.0%	11%	4.5%	-28%
Electrical equipment, appliance, and component manufacturing	5.3%	5.7%	8%	4.5%	-15%
Transportation equipment manufacturing	5.9%	6.5%	9%	4.5%	-24%
Furniture and related product manufacturing	5.7%	5.8%	3%	4.5%	-22%
Miscellaneous manufacturing	5.7%	6.2%	9%	4.5%	-21%
Nondurable goods manufacturing	5.5%	6.0%	9%	4.5%	-18%
Food manufacturing	5.5%	5.9%	8%	4.5%	-19%
Beverage and tobacco product manufacturing	5.5%	6.0%	9%	4.5%	-19%
Textile mills	6.0%	6.1%	2%	4.4%	-26%
Textile product mills	5.9%	6.2%	4%	4.4%	-25%
Apparel manufacturing	6.1%	6.1%	-1%	4.4%	-27%
Leather and allied product manufacturing	6.6%	6.3%	-4%	4.3%	-35%
Paper manufacturing	5.3%	5.9%	11%	4.5%	-15%
Printing and related support activities	5.3%	5.7%	8%	4.5%	-16%
Petroleum and coal products manufacturing	6.6%	6.8%	3%	4.5%	-32%
Chemical manufacturing (excl. petrochemical refining)	5.0%	5.7%	14%	4.5%	-10%
Petrochemical refining	5.9%	6.3%	5%	4.5%	-24%
Plastics and rubber products manufacturing	5.4%	5.8%	8%	4.5%	-17%
Wholesale trade	6.5%	6.4%	-1%	4.4%	-32%
Retail trade	6.5%	6.3%	-3%	4.4%	-32%
Transportation and warehousing	5.2%	5.6%	9%	4.5%	-14%
Information	5.3%	5.7%	7%	4.5%	-15%
Finance, insurance, real estate, and rental and leasing	5.2%	5.2%	-1%	3.9%	-26%
Services	5.1%	5.2%	1%	4.4%	-14%

¹ The Fiscal Commission tax plan includes the repeal of the Modified Accelerated Cost Recovery System (MACRS). In this analysis, MACRS is modeled as being replaced with the cost recovery system proposed in the staff discussion draft released by former Senate Finance Committee Chairman Max Baucus (D-MT) in November 2013.

² The business sector is defined as all non-farm US businesses.

Source: EY analysis.

Table 5. Cost of capital by industry in the corporate sector under current law, the Fiscal Commission plan, and the GIT plan

	CURRENT LAW	FISCAL COMMISSION PLAN¹		GIT PLAN	
	Cost of capital	Cost of capital	Percent change	Cost of capital	Percent change
Corporate sector²	5.6%	5.8%	5%	4.4%	-21%
Standard deviation in cost of capital	1.0%	0.8%	-23%	0.2%	-82%
Mining, quarrying, and oil and gas extraction	5.5%	6.0%	9%	4.5%	-18%
Oil and gas extraction	5.4%	5.9%	10%	4.5%	-16%
Mining (except oil and gas)	6.3%	6.5%	3%	4.5%	-28%
Support for mining activities	6.0%	6.6%	10%	4.5%	-25%
Utilities	4.6%	5.2%	13%	4.5%	-2%
Construction	6.7%	6.7%	0%	4.5%	-33%
Manufacturing	5.7%	6.3%	9%	4.5%	-21%
Durable goods manufacturing	5.9%	6.5%	9%	4.5%	-24%
Wood product manufacturing	6.2%	6.2%	0%	4.5%	-27%
Nonmetallic mineral product manufacturing	6.0%	6.4%	6%	4.5%	-25%
Primary metal manufacturing	5.4%	5.9%	9%	4.5%	-16%
Fabricated metal product manufacturing	5.6%	6.1%	9%	4.5%	-19%
Machinery manufacturing	5.8%	6.4%	9%	4.5%	-22%
Computer and electronic product manufacturing	6.3%	7.0%	11%	4.5%	-29%
Electrical equipment, appliance, and component manufacturing	5.4%	5.8%	8%	4.5%	-15%
Transportation equipment manufacturing	5.9%	6.5%	10%	4.5%	-24%
Furniture and related product manufacturing	5.8%	6.0%	3%	4.5%	-22%
Miscellaneous manufacturing	5.7%	6.2%	9%	4.5%	-21%
Nondurable goods manufacturing	5.5%	6.1%	10%	4.5%	-18%
Food manufacturing	5.6%	6.1%	8%	4.5%	-19%
Beverage and tobacco product manufacturing	5.6%	6.1%	9%	4.5%	-19%
Textile mills	6.2%	6.3%	3%	4.5%	-27%
Textile product mills	6.1%	6.4%	5%	4.5%	-26%
Apparel manufacturing	6.3%	6.3%	0%	4.5%	-28%
Leather and allied product manufacturing	7.0%	6.9%	-2%	4.5%	-36%
Paper manufacturing	5.4%	6.0%	11%	4.5%	-15%
Printing and related support activities	5.4%	5.9%	9%	4.5%	-16%
Petroleum and coal products manufacturing	6.6%	6.8%	3%	4.5%	-32%
Chemical manufacturing (excl. petrochemical refining)	5.0%	5.8%	14%	4.5%	-10%
Petrochemical refining	6.0%	6.3%	5%	4.5%	-24%
Plastics and rubber products manufacturing	5.5%	6.0%	9%	4.5%	-17%
Wholesale trade	6.7%	6.6%	-1%	4.5%	-32%
Retail trade	6.7%	6.5%	-2%	4.5%	-32%
Transportation and warehousing	5.3%	5.8%	10%	4.5%	-14%
Information	5.3%	5.7%	7%	4.5%	-15%
Finance, insurance, real estate, and rental and leasing	5.3%	5.4%	0%	3.6%	-32%
Services	5.3%	5.4%	2%	4.5%	-14%

¹ The Fiscal Commission tax plan includes the repeal of the Modified Accelerated Cost Recovery System (MACRS). In this analysis, MACRS is modeled as being replaced with the cost recovery system proposed in the staff discussion draft released by former Senate Finance Committee Chairman Max Baucus (D-MT) in November 2013.

² The corporate sector includes all non-farm US corporate businesses except for S corporations, which are included in the noncorporate sector.

Source: EY analysis.

Table 6. Cost of capital by industry in the pass-thru sector under current law, the Fiscal Commission plan, and the GIT

	CURRENT LAW	FISCAL COMMISSION PLAN¹		GIT PLAN	
	Cost of capital	Cost of capital	Percent change	Cost of capital	Percent change
Pass-thru sector²	5.1%	5.1%	-1%	4.1%	-20%
Standard deviation in cost of capital	0.7%	0.5%	-29%	0.1%	-89%
Mining, quarrying, and oil and gas extraction	4.8%	5.0%	5%	4.1%	-15%
Oil and gas extraction	4.6%	4.9%	6%	4.1%	-12%
Mining (except oil and gas)	5.4%	5.4%	-1%	4.1%	-25%
Support for mining activities	5.2%	5.5%	5%	4.1%	-22%
Utilities	4.3%	4.8%	11%	4.3%	0%
Construction	5.9%	5.6%	-5%	4.1%	-31%
Manufacturing	5.1%	5.4%	5%	4.2%	-19%
Durable goods manufacturing	5.2%	5.4%	4%	4.2%	-20%
Wood product manufacturing	5.5%	5.3%	-3%	4.1%	-25%
Nonmetallic mineral product manufacturing	5.3%	5.4%	2%	4.1%	-23%
Primary metal manufacturing	5.0%	5.3%	6%	4.2%	-15%
Fabricated metal product manufacturing	5.1%	5.4%	5%	4.2%	-18%
Machinery manufacturing	5.2%	5.4%	5%	4.1%	-20%
Computer and electronic product manufacturing	5.5%	5.9%	6%	4.1%	-26%
Electrical equipment, appliance, and component manufacturing	4.9%	5.1%	5%	4.2%	-14%
Transportation equipment manufacturing	5.3%	5.6%	6%	4.1%	-22%
Furniture and related product manufacturing	5.3%	5.3%	0%	4.2%	-20%
Miscellaneous manufacturing	5.1%	5.4%	5%	4.1%	-19%
Nondurable goods manufacturing	5.0%	5.3%	5%	4.2%	-17%
Food manufacturing	5.1%	5.3%	5%	4.2%	-17%
Beverage and tobacco product manufacturing	5.1%	5.4%	6%	4.2%	-17%
Textile mills	5.5%	5.5%	-1%	4.1%	-25%
Textile product mills	5.4%	5.5%	1%	4.1%	-24%
Apparel manufacturing	5.7%	5.5%	-4%	4.2%	-27%
Leather and allied product manufacturing	6.1%	5.7%	-7%	4.0%	-34%
Paper manufacturing	4.9%	5.3%	8%	4.2%	-14%
Printing and related support activities	4.9%	5.2%	6%	4.2%	-15%
Petroleum and coal products manufacturing	5.7%	5.7%	-1%	4.1%	-29%
Chemical manufacturing (excl. petrochemical refining)	4.4%	4.9%	11%	4.1%	-6%
Petrochemical refining	5.3%	5.4%	2%	4.1%	-22%
Plastics and rubber products manufacturing	5.0%	5.3%	6%	4.2%	-16%
Wholesale trade	5.9%	5.6%	-5%	4.1%	-31%
Retail trade	5.9%	5.5%	-7%	4.1%	-31%
Transportation and warehousing	4.7%	5.1%	7%	4.2%	-12%
Information	4.7%	4.9%	4%	4.1%	-12%
Finance, insurance, real estate, and rental and leasing	5.2%	5.0%	-3%	4.0%	-22%
Services	5.0%	4.9%	0%	4.3%	-14%

¹ The Fiscal Commission tax plan includes the repeal of the Modified Accelerated Cost Recovery System (MACRS). In this analysis, MACRS is modeled as being replaced with the cost recovery system proposed in the staff discussion draft released by former Senate Finance Committee Chairman Max Baucus (D-MT) in November 2013.

² The noncorporate sector includes all non-farm US noncorporate businesses, as well as S corporations.

Source: EY analysis.

VI. LIMITATIONS AND CAVEATS

The sector, industry, and asset cost of capital estimates presented in this report are based on the EY cost of capital model and the data and assumptions described elsewhere in the report. Readers should be aware of the following limitations and caveats of the modeling approach, as well as those specific to this analysis.

- Estimates are limited by available public information. The analysis relies on information reported by federal government agencies (primarily the Bureau of Economic Analysis (BEA), the Bureau of Labor Statistics (BLS), and Census) and aggregate industry- and sector-level tax return information (from the IRS). The analysis did not attempt to verify or validate this information using sources other than those described in the report.
- Two reforms likely entail different revenue costs within the 10-year budget window. While this analysis helps contrast the potential effects of these two different approaches to tax reform on investment incentives, these plans had different revenue objectives and the business tax reforms were proposed within the context of broader packages. The Fiscal Commission plan was designed to slowly increase federal revenues to 21% of GDP, while the GIT was designed to be revenue neutral relative to the Bush Administration's 2005 policy baseline. Both plans included a variety of non-business tax provisions to achieve their respective revenue objectives.

Furthermore, the timing of the revenue effects associated with the proposed changes to the depreciation system under each plan would be different. The repeal of accelerated depreciation under the Fiscal Commission plan would result in an acceleration of revenue into the 10-year budget period, while expensing of new investment under the GIT would result in an acceleration of revenue losses into the 10-year budget period. Of course, allowing immediate expensing of new investment could have significantly different macroeconomic effects and an associated impact on federal revenues.

- Cost of capital estimates disregard potentially important benefits of lower corporate income tax rates. While this approach allows an evaluation of tax reform plans on incentives for marginal business investment, it assumes perfect competition. Many firms operate in imperfectly competitive markets that may give rise to economic profits, which are more influenced by statutory marginal tax rates. Further, differences in corporate income tax rates across countries may influence the geographic location of firm-specific activities, such as research and investment and the location of intangible assets.
- The cost of capital is a forward-looking concept on new investment and does not necessarily reflect the total burden of the tax system on a sector, industry, or asset type. The cost of capital only reflects taxes on new investment and does not include the taxes due on income from prior investments. Cost of capital estimates also typically only focus on taxes paid on the last dollar (i.e., marginal dollar) of investment and do not include the tax on above-normal returns. As such, this measure is useful for analyzing the effects of the tax system on a barely profitable investment, but not necessarily to measure the total burden of the tax system on an industry or company.
- The analysis does not model or include the housing sector. The Fiscal Commission and GIT plans envision not only changes to business investment, but also to the housing sector, primarily through reform of the deduction for home mortgage interest. This report only analyzes the impact of changes on the business sector. Approximately one-third of US capital stock was in the form of owner-occupied housing in 2012. The two tax plans could also be expected to affect the allocation of capital between the housing and business sectors.
- This analysis does not model or include international tax changes. All assets in this analysis are, in effect, assumed to be taxed as domestic investment. International tax rules can have significant effects on the incentives for where to locate investment.
- Policy assumptions are made about the 3.8% Medicare surtax on investment income and the R&E tax credit. This analysis considers the 3.8% Medicare surtax on investment income part of the payroll tax rather than the income tax; as a result, it is included under current law and assumed to remain in place under both the Fiscal Commission and GIT plans. Additionally, the R&E tax credit is excluded in the cost of capital estimates for current law because it is a temporary provision and expired at the end of 2013.

VII. CONCLUSION

This report analyzes the effects of two tax plans on investment incentives – the Fiscal Commission plan and the Growth and Investment Tax plan. The cost of capital, a measure of the real pre-tax rate of return that a barely profitable investment needs to earn to both cover taxes over its life and provide investors their required after-tax rate of return, provides some indication of how these two tax plans might affect investment incentives by sector and industry. Both the US Treasury Department and the CBO have used this measure and it is commonly used by a variety of government agencies, academics, and others to evaluate the effects of the tax system and tax policy changes on new capital investment.⁴⁹ The Administration recently used this measure in its Framework for Business Tax Reform, released in February 2012.⁵⁰

This report estimates that the cost of capital in the business sector is 5.4% and would increase to 5.6% under the Fiscal Commission plan and decrease to 4.3% under the GIT plan. From this perspective, the GIT can be expected to encourage additional investment as compared to the Fiscal Commission plan. Although both plan result in more equal treatment, the GIT has a more significant effect on the variation in the cost of capital, suggesting greater improvement in the allocation of capital within the economy. Specifically, this report's metric of the neutrality of the tax code across business investment – the standard deviation in cost of capital – decreases from 1.5% to 1.4% under the Fiscal Commission plan, but to 1.0% under the GIT plan. Finally, both plans are likely to offer economic benefits from a reduced statutory tax rate, a margin to which foreign direct investment and income shifting are sensitive.

APPENDIX A. COST OF CAPITAL/METHODOLOGY

The cost of capital for an investment is estimated using the framework first formalized by Hall and Jorgenson (1967) and later refined by Fullerton and King (1984) and described in detail by Gravelle (1994) and Mackie (2002). The cost of capital (net of depreciation) is given by:

$$c = \frac{(r + \delta - \pi)(1 - uz)}{(1 - u)} - \delta$$

where c denotes the cost of capital, r is the firm's nominal after-tax discount rate, δ is the rate at which the asset depreciates, π is the rate of inflation, u is the corporate income tax rates and z is the present value of depreciation allowances. The present value of depreciation, z , reflects the discount rate, the tax life of an asset, the depreciation schedules, and other elements of the depreciation system. The values of δ and z vary by type of asset as depreciation allowances for equipment are typically accelerated as compared to their economic lives.

Investor-level taxes and the deductibility of interest are accounted for by assuming that a firm can arbitrage between debt and real capital following Fullerton and Bradford (1981) and Fullerton, Gillette, and Mackie (1987). Investments are frequently financed with both debt and equity financing. Thus, this study calculates the cost of capital for a hypothetical new investment based on a weighted average of debt and equity financing.⁵¹

A further issue involves a firm's marginal source of equity finance; that is, whether the old or new view of dividend taxes applies. This report follows Auerbach and Hassett (2003) and assumes that one-half of equity finance operates under the old view, whereby dividend taxes affect investment decisions, and the other half of firms operate under the new view, whereby firms rely on retained earnings as the marginal source of finance and dividend taxes are capitalized into firm value.⁵²

The cost of capital for equity-financed investment includes the investor-level taxes on capital gains and dividends (i.e., the double tax on corporate profits), whereas the cost of capital for debt-financed investment reflects the deductibility of interest at the corporate level and the assumption that about one-half of debt holders are either tax-exempt or lightly taxed (e.g., pension assets/foreigners).

ENDNOTE

- ¹ Investment in an economy is allocated efficiently if it distributes goods and services to the activities that are most highly valued by consumers. Uneven tax treatment can lead to some goods and services being over or under supplied relative to what they would be without unequal treatment.
- ² Both tax plans also include significant changes to the individual income tax. For example, the top individual income tax rate under the Fiscal Commission and the GIT plans were also lowered to 28% and 30%, respectively. Both plans also included significant changes to the individual income tax base.
- ³ 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,” US Department of the Treasury, Office of Tax Analysis, May 25, 2006.
- ⁴ For example, see A Joint Report by the White House and the US Department of the Treasury, President’s Framework for Business Tax Reform, February 2012; The Bipartisan Tax Fairness and Simplification Act of 2011, S. 727, 112th Cong., 1st Sess. (2011); Paul Ryan, A Roadmap for America’s Future, Version 2.0, January 2010; Max Baucus, Staff Discussion Draft: Cost Recovery and Accounting, November 2013; and Dave Camp, International Tax Reform Discussion Draft, October 2011.
- ⁵ For example, see Dave Camp, International Tax Reform Discussion Draft, October 2011; The National Commission on Fiscal Responsibility and Reform, The Moment of Truth, December 2010; Bipartisan Policy Center Debt Reduction Task Force, Restoring America’s Future: Reviving the Economy, Cutting Spending and Debt, and Creating a Simple, Pro-Growth Tax System, November 2010; and The Bipartisan Tax Fairness and Simplification Act of 2011, S. 727, 112th Cong., 1st Sess. (2011).
- ⁶ The revenue effects of the business tax changes proposed under each plan, particularly those related to the depreciation system, would be quite different. Replacing accelerated depreciation with economic depreciation as proposed by the Fiscal Commission raises significant revenue in the near terms as depreciation deductions are reduced, but works in the opposite direction in the longer term as future depreciation deductions increase. Allowing all new investment to be expensed, as proposed under the GIT, has the opposite effect on the timing of revenues. Depreciation deductions are accelerated into the year in which new investment is made resulting in large upfront revenue losses, but with a reversal in future years due to a fall in depreciation deductions relative to present law.
- ⁷ For example, see Congressional Budget Office, Taxing Capital Income: Effective Rates and Approaches to Reform, October 2005; US Department of the Treasury, Treasury Conference on Business Taxation and Global Competitiveness: Background Paper, July 2007; and A Joint Report by the White House and the Department of the Treasury, The President’s Framework for Business Tax Reform, February 2012.
- ⁸ For a review of the literature, see Kevin Hassett and Glenn Hubbard, (2002), “Tax policy and business investment” in M. Feldstein and A. Auerbach (eds.), Handbook of Public Economics, Vol. 3, Elsevier North Holland, pp. 1293-1343.
- ⁹ The tax plan released by the National Commission on Fiscal Responsibility and Reform includes various scenarios (e.g., a “zero plan” that eliminates all tax expenditures and reduces the corporate income tax rate to 26%). The tax plan described and modeled in this analysis is the “illustrative plan” from the commission’s final report.
- ¹⁰ Although not considered by this report, the Fiscal Commission plan also includes a broad set of reforms affecting households more generally, such as converting the home mortgage deduction into a 12% mortgage interest credit, repealing the state and local tax deduction, limiting retirement savings plans such as IRAs and 401(k)s, limiting the deduction for employer sponsored health insurance, repealing the alternative minimum tax (AMT), repealing the personal exemption phase-out (PEP), and extending the limitation on itemized deductions for high-income taxpayers (the so-called “Pease” provision).
- ¹¹ This is calculated as a 9% reduction in the 35% top corporate income tax rate, or 31.85%. Note that the 9% is permanently reduced to 6% for the oil and gas industry and the deduction cannot exceed taxable income or 50% of wages related to the qualified activity.
- ¹² 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,” US Department of the Treasury, Office of Tax Analysis, May 25, 2006.

- ¹³ Ibid. The macroeconomic analysis of the tax reform plans considered by the 2005 Advisory Panel on Federal Tax Reform used a primarily closed economy model and found that the GIT would result in substantially greater gains in output as compared to the Simplified Income Tax (SIT), even though both plans achieved a similar amount of rate reduction. One major difference between the two plans was the immediate deductibility of new investment under the GIT, but not the SIT. Analyzing the plans in an open economy setting would account for the inflow of capital to United States in response to the lower US tax burden on capital and also an increase in the corporate income tax base due to less income shifting.
- ¹⁴ Sole proprietorships are taxed at individual rates.
- ¹⁵ Although generally outside the scope of this report, the GIT plan also would repeal or limit a number of other individual tax preferences; these include converting the home mortgage interest deduction into a 15% credit, repealing the state and local tax deduction, capping the exclusion for employer-provided health insurance, repealing the AMT, and permanently repealing the phase-out of personal exemptions for high income taxpayers. The repeal of the limitation on certain itemized deductions for high-income tax payers (the so-called “Pease” provision) is taken into account in this report.
- ¹⁶ In this example, the rate of return and discount rate are assumed to be the same and the immediate deduction exactly offsets the tax on the return to the investment over time (in present value). If the rate of return exceeds the discount rate (e.g., above normal returns), the above normal returns would continue to be taxed under the cash-flow tax; that is, the immediate deduction would not remove all of the tax on the return to the investment (in present value).
- ¹⁷ For example, see Andrew Abel and Janice Eberly, (2011), “How Q and cash flow affect investment without frictions: An analytic explanation,” *Review of Economic Studies*, 78(4), pp. 1179-1200; Jonathan Lewellen and Katharina Lewellen, (2010), “Investment and Cashflow,” Tuck School of Business Working Paper No. 2010-77; Ola Melander, (2009), “The Effect of Cash Flow on Investment: An Empirical Test of the Balance Sheet Channel,” *Sveriges Riksbank Working Paper Series No. 228*.
- ¹⁸ Some investment returns would also continue to be taxed under the business cash-flow tax. The immediate deduction for new investment under the business cash-flow tax removes the tax on a barely profitable investment but would continue to tax returns above this level. A recent study suggests that 63% of the corporate earnings might be viewed as above the return for a barely profitable investment. See Julie-Anne Cronin, Emily Y. Lin, Laura Power, and Michael Cooper, “Distributing the Corporate Income Tax: Revised U.S. Treasury Methodology,” US Department of the Treasury, Office of Tax Analysis Technical Paper 5, May 2012.
- ¹⁹ For example, see A Joint Report by the White House and the US Department of the Treasury, *President’s Framework for Business Tax Reform*, February 2012; *President’s Advisory Panel on Federal Tax Reform, Simple, Fair, and Pro-Growth: Proposals to Fix America’s Tax System*, 2005; Congressional Budget Office, *Taxing Capital Income: Effective Tax Rates and Approaches to Reform*, 2005; US Department of the Treasury, *Report to the Congress on Depreciation Recovery Periods and Methods*, July 2000; and, James Mackie, (2002), “Unfinished Business of the 1986 Tax Reform Act: An Effective Tax Rate Analysis of Current Issues in the Taxation of Capital Income,” *National Tax Journal*, 45(2), pp. 293-337.
- ²⁰ Above-normal returns or economic profits are returns to investment above the normal level that would be received in a competitive marketplace.
- ²¹ See Max Baucus, *Staff Discussion Draft: Cost Recovery and Accounting*, November 2013.
- ²² See Kevin Hassett and Glenn Hubbard, (2002), “Tax policy and business investment” in M. Feldstein and A. Auerbach (eds.), *Handbook of Public Economics*, Vol. 3, Elsevier North Holland, pp. 1293-1343.
- ²³ There are various rules designed to distinguish between debt and equity finance. For example, see US Congress Joint Committee on Taxation, *Present Law and Background Relating to Tax Treatment of Business Debt*, July 2011 (JCX-41-11).
- ²⁴ For a summary of the literature and consensus estimate, see Ruud de Mooij and Sjeff Ederveen, (2008), “Corporate tax elasticities: a reader’s guide to empirical findings,” *Oxford Review of Economic Policy*, 24(4), pp. 680-697. Specifically, the authors estimate an elasticity of 0.15.
- ²⁵ See Ruud de Mooij and Sjeff Ederveen, (2008), “Corporate tax elasticities: a reader’s guide to empirical findings,” *Oxford Review of Economic Policy*, 24(4), pp. 680-697.
- ²⁶ For example, see Randall Morck and Bernard Yeung, (2005), “Dividend Taxation and Corporate Governance,” *Journal of Economic Perspectives*, 19(3), pp. 163-180.

- ²⁷ See Raj Chetty and Emmanuel Saez, (2005), “The Effects of the 2003 Dividend Tax Cut on Corporate Behavior: Interpreting the Evidence,” *American Economic Review*, 96(2), pp. 124-129.
- ²⁸ See James Poterba, (2004), “Taxation and Corporate Payout Policy,” *American Economic Review*, 94(2), pp. 171-175.
- ²⁹ For example, see US Department of the Treasury, Report to the Congress on Depreciation Recovery Periods and Methods, July 2000 and Congressional Budget Office, Taxing Capital Income: Effective Rates and Approaches to Reform, October 2005.
- ³⁰ See US Department of the Treasury, Report to the Congress on Depreciation Recovery Periods and Methods, July 2000.
- ³¹ See Congressional Budget Office, Taxing Capital Income: Effective Rates and Approaches to Reform, October 2005.
- ³² See Michael Devereux and Rachel Griffith, (1998), “The taxation of discrete investment choices,” IFS Working Paper 98/16.
- ³³ Economic profit is the return to investment above the normal level that would be received in a competitive marketplace.
- ³⁴ See Michael Devereux and Rachel Griffith, (1998), “The taxation of discrete investment choices,” IFS Working Paper 98/16 and Michael Devereux and Rachel Griffith, (2002), “The Impact of Corporate Taxation on the Location of Capital: A Review,” *Swedish Economic Policy Review*, 9, pp. 79-102.
- ³⁵ For a summary of this literature, see Ruud de Mooij and Sief Ederveen, (2008), “Corporate tax elasticities: a reader’s guide to empirical findings,” *Oxford Review of Economic Policy*, 24(4), pp. 680-697.
- ³⁶ The Bureau of Economic Analysis reports that between 2008 and 2012 foreign direct investment as a percentage of gross private domestic investment has fluctuated between a high of 13% (in 2008) and low of 7% (in 2012).
- ³⁷ See Ruud de Mooij, (2005), “Will corporate income taxation survive?,” *De Economist*, 153, pp. 277-301.
- ³⁸ See Kimberly Clausing, (2009), “Multinational Firm Tax Avoidance and Tax Policy,” Presented at the Spring Symposium of the National Tax Association, Washington, DC.
- ³⁹ See A Joint Report by the White House and the US Department of the Treasury, President’s Framework for Business Tax Reform, February 2012; US Department of the Treasury, Report to the Congress on Depreciation Recovery Periods and Methods, July 2000; and Congressional Budget Office, Taxing Capital Income: Effective Rates and Approaches to Reform, October 2005.
- ⁴⁰ Structures, in addition to buildings, include assets such as mine shafts, petroleum pipelines, and railroad tracks.
- ⁴¹ Three categories of software are included in this analysis. Custom software is software tailored to the specifics of a business; prepackaged software is software that is used for non-specialized purposes and is sold in standardized form; self-created software is any in-house software expenditures. Acquired software that is “custom” and associated with a business is amortized over 15 years, while “off-the-shelf” software does not fall under Section 197 of the Internal Revenue Code (IRC) and, instead, falls under Section 167 of the IRC and is depreciated over 3 years. Self-created software is treated as immediately deductible. Additionally, three categories of scientific research and development are included in this analysis. Scientific research and development can be purchased in the form of contract work (i.e., the research is done “on behalf of” the business) in which case 65% of the contract research and development is treated as qualifying R&E. Otherwise, the purchased research and development is assumed to be purchased in a form such as a patent and amortized over 15 years under Section 197. Self-created scientific research and development is treated as immediately deductible. Scientific research and development that is qualifying R&E is expensed as the R&E tax credit is assumed to be expired under current law. All artistic originals are assumed to be self-created and, consequently, treated as immediately deductible based on the estimate of Carol Robbins, Mary Streitwieser and William Jolliff, R&D and Other Intangible assets in an Input-Output Framework: Experimental Estimates with U.S. Data, 2013. All advertising is assumed to be immediately deductible. Note that the BEA intangible capital stock data – even after it is supplemented with brand equity – does not include the entire intangible capital stock of the United States according to the estimates of Carol Corrado, Charles Hulten and Daniel Sichel, (2009), “Intangible capital and U.S. economic growth,” *Review of Income and Wealth*, 55(3), pp. 661-685.
- ⁴² The standard deviation is defined as the square root of the variance. For uses of this metric, see Don Fullerton, (1987), “The Indexation of Interest, Depreciation, and Capital Gains and Tax Reform in the United States,” *Journal of Public Economics*, 32(1), pp. 25-51; Don Fullerton and Yolanda Kodrzycki Henderson, (1989), “A Disaggregate Equilibrium Model of the Tax Distortions among Assets, Sectors, and Industries,” *International Economic Review*, 30(2), pp. 391-413; and US Department of the Treasury, Report to the Congress on Depreciation Recovery Periods and Methods, July 2000.

- ⁴³ The R&E credit is a temporary provision and assumed to be expired under current law.
- ⁴⁴ The cost of capital would be less than the after-tax rate of return required by investors for financial institutions due to the interest expense.
- ⁴⁵ The asset weights by industry are estimated primarily from the US Bureau of Economic Analysis detailed data for fixed assets and consumer durable goods and US Bureau of Labor Statistics multifactor productivity detail capital measures, with supplemental data from the US Census Bureau, the US Energy Information Administration, the IRS, the BEA 2007 benchmark input-output table, Carol Corrado, Charles Hulten and Daniel Sichel, (2009), “Intangible capital and U.S. economic growth,” *Review of Income and Wealth*, 55(3), pp. 661-685, and Carol Robbins, Mary Streitwieser and William Jolliff, *R&D and Other Intangible assets in an Input-Output Framework: Experimental Estimates with U.S. Data*, 2013.
- ⁴⁶ In aggregate, assets in the business sector are estimated to be 68% corporate (excluding S corporations) and 32% noncorporate (including S corporations).
- ⁴⁷ The percentage of debt-financed investment was computed in aggregate for the corporate non-financial sector (35%), the pass-thru non-financial sector (33%), and the financial sector (74%) through use of Flow of Funds data. Industry-specific variation around these three aggregates was then estimated from IRS statistics on the use of the interest expense.
- ⁴⁸ Petrochemical refining deviates from the 3-digit NAICS codes typically presented. It is defined by 325110, 325120, 32513M, 325188, and 32519 in the US Census Bureau’s Annual Survey of Manufacturers. Investment data from this survey are used to split the chemical manufacturing (NAICS 325) capital stock data into chemical manufacturing (excl. petrochemical refining) and petrochemical refining.
- ⁴⁹ *Supra* note 19.
- ⁵⁰ *Supra* note 19.
- ⁵¹ This and many other assumptions are based on James Mackie, (2002), “Unfinished Business of the 1986 Tax Reform Act: An Effective Tax Rate Analysis of Current Issues in the Taxation of Capital Income,” *National Tax Journal*, 45(2), pp. 293-337.
- ⁵² More recent empirical research suggests that the new view may be more prevalent among firms; see Kevin Hassett and Kathryn Newmark, (2008), “Taxation and Business Behavior: A Review of the Recent Literature,” *Fundamental Tax Reform: Issues, Choices and Implications*, MA: MIT Press.