A MISSED OPPORTUNITY:

The Economic Cost of Delaying Pro-Growth Tax Reform

Full Study
Donald Bruce, Ph.D.
The University of Tennessee, Knoxville

Tami Gurley-Calvez, Ph.D.
The University of Kansas Medical Center

Matthew Murray, Ph.D.
The University of Tennessee, Knoxville

January 2015
A Missed Opportunity: The Economic Cost of Delaying Pro-Growth Tax Reform

Donald Bruce, Ph.D.
The University of Tennessee, Knoxville

Tami Gurley-Calvez, Ph.D.
The University of Kansas Medical Center

Matthew Murray, Ph.D.
The University of Tennessee, Knoxville

January 2015

This research was commissioned by the National Association of Manufacturers. The views expressed in this study are those of the authors and are not necessarily shared by the National Association of Manufacturers or any of its employees or members.
Introduction

These are interesting times for federal tax policy, as consensus appears to be emerging that some form of pro-growth tax reform is necessary. Many in the business community support a lower maximum corporate tax rate, a shift in the treatment of foreign source income to a more territorial system, and other important changes in capital cost recovery and the tax treatment of research and development expenditures that encourage capital investment and accelerate cash flow. They also favor a broad approach that would extend the benefits of these changes to non-corporate pass-through entities as well as regular corporations. Republicans and Democrats agree that change is needed to help American businesses remain competitive.

The taxation of business income is a complex enterprise, so it is not surprising that little progress has been made despite the growing consensus on the need for reform. This political gridlock imposes a cost on all businesses and leads to considerable uncertainty. For example, with the expectation that corporate tax rates could drop, businesses are likely to put off new investment or hiring, or otherwise delay economically beneficial activity. Contributing to this general uncertainty is the fact that many important business tax provisions are temporary and require regular renewal by Congress, which often leads to delays and sometimes retroactive extensions.

At the same time, the U.S. business tax system has become increasingly out of sync with tax regimes in virtually all other developed economies. The maximum U.S. tax rates on corporate and other business income exceed those in other countries, and the United States is among the last few industrialized countries to apply a worldwide system, which taxes all income of American corporations regardless of where it is earned. This hinders international competitiveness of American enterprises, as most of our trading partners have lower corporate tax rates along with territorial systems that tax only income earned within their own borders.

The uncertainty in the tax policy arena has adverse effects on the macro-economy, with growth in GDP, investment and employment tracking below potential growth in a more favorable business tax environment. This study quantifies the economic impacts of delaying changes to the tax system by providing estimates of the economic benefits of broad-based pro-growth tax reform on GDP, investment and employment. The analysis applies to regular corporations and businesses that operate as pass-through entities. While there is much debate about the economic impact of business taxes, it is reasonable to expect some economic benefits from corporate tax rate reductions and other pro-growth reform initiatives. The analysis sets an upper bound of those economic impacts and provides important input to the ongoing discussion about federal pro-growth tax reform.

The analysis is based on the premise that pro-growth tax reform should occur within a broader tax reform effort. While one goal of that broader effort might be revenue neutrality, there is no need to impose such a constraint on every individual component of a comprehensive tax reform package. A fundamental notion in public finance is that an efficiency-maximizing tax system—one that minimizes the collective distortions to economic activity—should impose lower tax rates on more responsive or mobile tax bases. It is difficult to imagine a more distorted tax base today than business income, especially among multinational corporations.

It also is important to note that business taxes are ultimately borne by workers (through lower wages or employment) and consumers (through higher prices on final goods and services), and not just the
owners of capital. Despite a large volume of theoretical and empirical literature on the incidence of the corporate tax, consensus has proven elusive. Earlier analysis concluded that the owners of capital bear most of the burden of the corporate income tax, but more recent studies have indicated that workers bear more than half, and perhaps as much as 70 percent.¹

If workers bear any of the burden of the corporate tax, pro-growth tax reform that potentially reduces revenue can and should be viewed as pro-worker tax reform because it would increase employment and wages. Alternatively, even if the owners of capital bear most of the burden of the corporate income tax, it is important to recognize that many workers are owners of capital to the extent that they hold corporate stock directly or as part of their retirement savings. As such, workers could enjoy a separate longer-term benefit from a reduction in the tax rate due to the resulting increases in the values of their retirement accounts.

In gauging the upper-bound economic potential of pro-growth tax reform, the analysis considers a decidedly pro-growth tax reform package, including elements that have received broad political support from both parties. The study does not advocate for specific tax policy changes. Instead, the study provides estimates of the economic potential of a pro-growth tax reform package, including some elements that are rather aggressive. The study also does not provide estimates of likely tax revenues or advocate for dynamic scoring. While a static revenue estimate of such a reasonably aggressive pro-growth tax platform likely would be negative, a dynamic estimate would almost certainly be positive.

The study starts with a brief overview of the well-known problems with the current system of business taxation in the United States and then discusses a possible pro-growth tax reform plan. The analysis then takes a look at recent academic and policy literature on the macro-economic impact of pro-growth tax policies, with a particular focus on results derived from economic models. Finally, the authors modify and then combine these estimated impacts to provide an upper-bound estimate of the impact of pro-growth tax policy in GDP, investment and employment.

Problems with the Current U.S. Business Tax Regime

It is no secret that the maximum federal tax rate on corporate income is very high, at 35 percent. This rate has remained relatively constant in recent years while corporate tax rates in most other developed countries have fallen significantly. While some might argue that the presence of alternative taxes, such as value-added taxes, has allowed other countries to reduce their statutory tax rates on businesses, it is important to note that American businesses are subject to business income taxes and an array of sales and property taxes at the state and local levels. By just about any measure, American businesses face higher rates of tax than those in other countries.

The relatively high U.S. corporate income tax rate has generated expected responses. For example, some businesses have moved employment and capital investment to lower-tax nations and have retained earnings in these same places (OECD, February 2013). In addition, more and more American businesses have organized as partnerships, proprietorships and other “pass-through” entities that are taxed within the individual income tax system (Keightley and Sherlock, 2014). When those types of

¹ For a critical evaluation of the theoretical and empirical literature on the incidence of corporate income taxes, see Gravelle (2010 and 2011).
responses are not possible or already maximized, the high tax rates simply result in less economic activity than would otherwise take place.²

The fact that many businesses, and nearly two-thirds of manufacturing businesses, pay taxes through the individual tax system complicates discussions of tax rates. According to 2008 tax return data, pass-through entities accounted for more than one-third of business income and 94 percent of business returns. More than three-quarters of pass-through entities file a Schedule C sole proprietorship return, almost 14 percent file as S corporations and just more than 10 percent file as partnerships.³

Beyond the issue of high tax rates, the U.S. corporate income tax (and to a certain extent, the parallel individual income tax that applies to pass-throughs) is a complex amalgam of deductions, credits and other features, many of which are temporary in nature and make planning very difficult. One classic example is the U.S. capital cost recovery system. While the Modified Accelerated Cost Recovery system (MACRS) provides important benefits in the form of accelerated depreciation allowances, it can result in the non-uniform treatment of business investments, and it is costly in terms of administration and compliance. In recent years, policymakers have used the depreciation system for short-term stimulus, with provisions for so-called bonus depreciation and enhanced limits for expensing. The overall system of depreciation has changed in numerous ways mostly to further accelerate write-offs of capital investments. In contrast, most reform proposals would extend depreciable lives, thus making capital investments less attractive than under the current MACRS.

It is important to recognize that tax policies aimed at the cost of capital can have important impacts on employment. Tax rules that increase or decrease the cost of capital impact business-level decisions about the appropriate amount of capital and labor to employ in the production process. Further, these impacts can vary widely across sectors given the industry-specific extent to which capital and labor are fixed versus variable. An ideal tax system would create the fewest distortions to business decisions about capital and labor, except to promote the types of activities that generate positive spillovers (e.g., research and development).

The fact that most American businesses are non-corporate pass-through entities makes these issues relevant to the individual income tax system as well. Bruce, Deskins and Gurley-Calvez (2010) highlight the complexity of (and frequent changes to) depreciation policy for Schedule C sole proprietorships. Although only one-third of Schedule C filers claimed a depreciation deduction, it accounted for more than 20 percent of deductions among those firms that claimed depreciation.

On a similar note, the U.S. business tax code has long recognized the importance of research and development/experimentation activity, but it has never contained a permanent tax credit for these expenditures. Businesses can deduct some R&D expenditures, and the tax credit provides a complementary mechanism that enhances the capacity for cost recovery and improved cash flow. It is a widely held view that business R&D is critical to economic progress and creates positive spillovers for other businesses and for society at large. As a result, some central support is reasonable to promote more R&D activity than would otherwise occur. Unfortunately, the temporary nature of the R&D tax credit makes it very difficult for businesses to plan accordingly and likely results in a suboptimal level of R&D activity. The R&D credit was introduced in 1981 but has expired and been renewed on 16 occasions, sometimes on a retroactive basis.

---

² McBride (2012) provides an exhaustive survey of the recent literature on taxes and economic growth.
Another well-known problem with our current system of business taxation is the fact that the United States is one of a very small number of countries that still uses a worldwide tax system, in which businesses are taxed on all of their income regardless of where it is earned. Foreign source income is not taxed until it is repatriated to the United States, and credits are available for foreign taxes paid. Most of our major trading partners have adopted territorial systems in which taxes are levied only on the income that is earned within a country’s borders and foreign source income is either completely or largely exempt. A result is that a large amount of foreign-source income is effectively sitting in foreign accounts with little chance of ever being repatriated back to the United States. A recent estimate places this in the neighborhood of $2 trillion (Drabkin, Serwin and Tyson, 2013).

The system is further complicated by a short-term repatriation holiday enacted in 2004, during which companies could repatriate earnings to the United States at a much lower tax rate. IRS data reveal a significant degree of repatriation in response to the 2004 holiday (Redmiles, 2008). Since policymakers have shown they are willing to experiment with such holidays to receive at least some tax revenue from foreign source earnings, multinationals have even less incentive to repatriate existing balances without similar favorable treatment. Many businesses will simply await another holiday or fundamental reform that encourages broader repatriation.

A Pro-Business Tax Reform Plan

The National Association of Manufacturers (NAM) supports pro-growth tax policy that:

- Encourages economic growth, U.S. job creation and the ability of U.S. manufacturers to compete in world markets;
- Promotes simplicity and stability;
- Ensures that the tax burden is as low as possible, broadly based and nondiscriminatory; and
- Establishes competitive tax rates that are low enough to attract the capital formation and investment necessary to ensure durable economic growth.\(^4\)

The NAM plan for pro-growth tax reform has five key elements that further the fundamental goal of making the United States the best place in the world to manufacture and attract foreign direct investment. First is a maximum corporate tax rate of 25 percent or lower to address the goals of greater efficiency, enhanced international competitiveness and greater international fairness. For the purposes of this study, we assume a maximum tax rate of 25 percent since it has been commonly discussed and is a component of some recent proposals.

The second key element is a globally competitive international tax system that is closer to a territorial system than the current hybrid worldwide system. This change would work hand in hand with the lower corporate tax rate to foster international uniformity, fairness and competitiveness. Indeed, the simultaneous reduction in the maximum tax rate on corporate income would counter many of the perceived shortcomings of a territorial system for the United States. The analysis follows Drabkin, Serwin and Tyson (2013) in assuming a stylized territorial system along with a transition tax along the lines proposed in February 2013 by then-House Ways and Means Chairman Dave Camp (R-MI).

The third key element is a robust cost-recovery system. While the NAM policy agenda does not specify a plan, the analysis is based on full expensing of all capital equipment purchases. This would lower the cost of capital and improve cash flow, thus enabling businesses to pursue a larger number of profitable projects, and increase both investment and employment. It would also enhance fairness across sectors and types of capital, both domestically and internationally. The current system is not completely removed from such an approach, given the recent temporary policies allowing full or partial expensing (either through so-called “bonus depreciation” provisions or increases in Section 179 expensing allowances). Zwick and Mahon (2014) show that temporary bonus depreciation policies significantly increased business investment in the early and late 2000s.

The fourth key element involves a permanent policy toward research and development. R&D activity is essential to a competitive manufacturing sector and plays an important role in a healthy economy. The NAM plan calls for a strengthened and permanent R&D tax credit of 20 percent as opposed to the current 14 percent. A permanent and enhanced tax credit would further encourage investments that support productivity gains and higher earnings for workers. A strong commitment to public support for business R&D activities would promote international competitiveness and fairness.

The fifth and final component of the NAM plan involves parallel changes for non-corporate pass-through businesses. Specifically, this would include a lower rate on pass-through income, full expensing for capital equipment, and permanent and enhanced R&D provisions. Generally the provisions would mirror those for regular corporations and thus avoid making one mode of business more or less attractive than the other. Most American businesses, and about two-thirds of manufacturers, are organized as pass-through entities, so pro-growth tax reform must not be limited to C corporations alone. Expanding the reach of pro-growth tax reform to pass-throughs ensures fairness across business types and ensures that the cost of reform is not borne by one portion of the business tax base.

On a broader note, perhaps the most important feature of the NAM’s policy goals is the call for a more permanent, stable tax code for all businesses. The greater certainty would permit American businesses to engage in more efficient and productive long-range planning and would ensure that business decisions are made on the basis of economic factors rather than short-term tax rules. There is a small amount of literature on tax policy uncertainty, and the implications are one-sided—uncertainty hinders rather than helps business decision making and investment. A permanent, stable and, in many instances, simpler tax code would reduce the costs of administration and compliance.

Guidance from the Prior Literature

We are not the first to explore the potential macro-economic impacts of pro-growth tax reform, although much of the prior work examines one or a few of these proposed provisions in isolation rather than as a combined package. Additionally, the existing macro-economic analyses by the Joint Committee on Taxation (JCT) and others is either limited to a single provision or constrained by matters of revenue neutrality. Interestingly, the JCT projected a positive macroeconomic impact of the revenue-neutral Tax Reform Act of 2014 (HR 1) as introduced by then-Chairman Camp (Joint Committee on Taxation, 2014).

---

5 Two-thirds of manufacturing corporations and partnerships are pass-through entities. If one were to include sole proprietorships, the percentage would be greater.

6 See, for example, Domeij and Klein (2005) and Judd (1987).
In this section, we review the recent economic evaluations of the macro-economic effects of each of the five major elements in the NAM platform.

**Lower Corporate Tax Rates**

An extensive array of empirical studies has explored the economic effects of changes in corporate tax rates over time and across countries. Most studies find a negative relationship between tax rates and economic growth, but few have explored the possible impact of a large-scale reduction in the top corporate income tax rate along the lines considered here.

A notable exception is a 2010 report from the Milken Institute (DeVol and Wong, et al. 2010) that uses an economic growth model to explore a number of tax changes similar to those considered here. Specifically, it simulates the impact of a 13-percentage-point reduction in the maximum corporate income tax rate, from 35 percent down to 22 percent (the average among Organisation for Economic Co-operation and Development (OECD) countries at the time), phased in over five years.

This tax rate reduction was estimated to increase annual real GDP growth initially by 0.3 percentage points during the first three years, 0.2 percentage points for the next four years and 0.1 percentage points in the next two years. Growth in real gross private non-residential fixed investment was projected to exceed baseline growth by between 0.9 and 0.1 percentage points, with the impact steadily decreasing over time. Total nonfarm employment increased from a net addition of 90,000 jobs in the first year to a cumulative impact of more than 2 million jobs relative to baseline growth by the 10th year. Stronger growth in the earlier years is presumably due to the slack in the economy in the aftermath of the Great Recession.

The time period for the Milken analysis (beginning just after the recent recession), the size of the tax rate reduction and the phased-in nature of the change might lead us to view these impacts as too large. However, a more recent analysis by Gravelle (2014) yields similar impacts from a 10-percentage-point reduction in the maximum corporate tax rate that is not phased in. Applying a series of assumptions to general results from her earlier work (Gravelle and Smetters, 2006), Gravelle provides a set of estimates of the increase in output and wages that center on about 0.4 percent.

Based on our review of these studies, we assume that a 10-percentage-point reduction in the maximum corporate income tax rate would increase annual GDP by 0.3 percent, investment by 0.15 percent and total employment by 150,000 jobs.

**Shift to a Territorial System**

While much has been written about the merits and potential pitfalls of a territorial system of taxation for American multinationals, the issue has received relatively little attention in the form of serious modeling of the potential macroeconomic impact from such a change. The notable exception is a recent report from researchers at the Berkeley Research Group (Drabkin, Serwin and Tyson, 2013). Based on their earlier firm-level analysis of the economic impacts of a temporary repatriation tax holiday, they estimate the impact of a shift from the current system to a stylized territorial system.

---

7 See McBride (2012) for a recent overview.
Drabkin, Serwin and Tyson (2013) predict that such a stylized territorial system would result in about $114 billion per year in increased repatriated earnings. This would generate significant amounts of new economic activity in the form of increased investment and employment among affected firms and increased consumption by the owners of capital. In total, a shift to a territorial system would generate annual flows of about $22 billion in GDP, about $11 billion in new investment and about 154,000 new jobs. Just more than 70 percent of this activity would be the direct result of new activity among affected businesses, and the remainder would be indirect effects fueled by the consumption activity of the owners of capital.

It should be noted that the Drabkin, Serwin and Tyson (2013) analysis holds the maximum corporate income tax rate at the current 35 percent level. With a simultaneous reduction in the top rate to 25 percent, the actual economic impacts would be larger. Nonetheless, for the purposes of our investigation, we adopt the Drabkin, Serwin and Tyson results as reported.

While their analysis does not allow for a simultaneous reduction in business tax rates, the authors recognize that a shift to a territorial system would almost certainly be accompanied by a transition tax given the approximately $2 trillion in previously accumulated active foreign source earnings that could otherwise go untaxed. Consequently, they explore the impacts of a transition tax, mirroring that in the Tax Reform Act of 2014 as introduced by then-House Ways and Means Chairman Camp. They assume that about half of accumulated foreign earnings would be repatriated—about $1 trillion—and would generate a one-time increase in business investment of $99 billion, in GDP of $208 billion and in employment of 1.46 million jobs. Again, we use these estimates in our illustration of the combined economic impact.

**Robust Capital Cost Recovery**

Rapid cost recovery serves as an incentive to promote investment. Yet base broadening is a key element of most major pro-growth tax reform plans, and in practice this means a slower pace of cost recovery for business. Various proposals have called for the five-year amortization of R&D expenditures, elimination of the last-in-first-out (LIFO) inventory accounting method, amortization of advertising expenditures, capitalization of intangible drilling costs (IDCs) and slower depreciation schedules for asset cost recovery via elimination of the MACRS. All of these proposed changes would raise the after-tax cost of capital and discourage investment to achieve the primary goal of revenue neutrality.

In contrast, full expensing of all business costs and asset purchases would represent the most aggressive form of cost recovery and the strongest incentive for investment aside from direct subsidies. Expensing allows immediate cost recovery on input purchases and the acquisition of income-producing assets, thus enhancing business cash flow and removing distortions in the tax code by allowing businesses to recover costs as they are incurred. By enhancing business and worker productivity, expensing of investment costs may support job creation and earnings growth. Finally, by generally treating all capital purchases equally regardless of asset type or lifespan, expensing will result in lower administrative and compliance costs. Indeed for capital-intensive industries, cost recovery is not simply a matter of timing; it impacts all facets of investment decision-making.

The current MACRS, which accounts for 189 asset categories, provides some degree of accelerated cost recovery relative to most structural reform contenders, including plans by Camp, former Senate Finance Committee Chairman Max Baucus (D-MT) and current Senate Finance Committee Ranking Member Ron Wyden (D-OR). Each of these alternatives would extend depreciable lives, in turn reducing incentives for
capital investment and slowing cash flow. The JCT (2014) recognized that even the straight-line depreciation method proposed by Camp—arguably one of the most generous of the reform proposals—reduces the after-tax return from capital.

Elements of expensing and bonus depreciation have appeared prominently in the tax code, though the provisions have been subject to ongoing structural change and expiration/re-adoption, which creates significant uncertainty for investors. These provisions have been an important though unstable complement to MACRS. So-called “bonus depreciation,” for example, stood at 30 percent in 2012 and 50 percent in 2013, well below the 100 percent bonus of 2010. On Dec. 16, 2014, Congress extended bonus depreciation at 50 percent for the 2014 tax year.

Expensing under Section 179 has provided small and medium businesses with the opportunity to immediately deduct costs associated with modest levels of capital acquisition. In 2013, there was a $500,000 limit and a $2 million phase-out threshold for Section 179 expensing. While the level of qualified investment dropped to $25,000 in 2014, the limit was increased back to $500,000 in December 2014 on a retroactive basis.

There is considerable evidence that provisions enhancing capital cost recovery lead to greater investment and, in some instances, stronger economic growth. Academic work by Zwick and Mahon (2014) summarizes the literature noting a “consensus prediction” that bonus depreciation has a small but positive effect on investment (p. 3). The pair develops their own independent estimates by looking at the behavior of 120,000 corporate firms and concludes that bonus depreciation increased capital investment by 17.3 percent between 2001 and 2004, compared to 29.5 percent growth in the 2008 to 2010 window. A key finding is that firms seeing cash flow gains are the most likely to respond to bonus depreciation opportunities. House and Shapiro (2008) similarly find that bonus depreciation had large impacts on capital investment in 2002 and 2003. Part of this finding reflects the temporary nature of the provisions. Cohen and Cummins (2006), on the other hand, find less support for stimulative effects. While the range of estimates shows considerable variation, bonus depreciation does appear to have positive effects on business investment.

The JCT (July 3, 2014) evaluated a proposal that would create a permanent 50 percent bonus depreciation allowance. Because of the potential magnitude of this provision and its impact on investment and the economy, the JCT took into account the possible intervention of the Federal Reserve to temper economic growth. The estimated effects of the larger allowance include a 0.1 to 0.2 percent increase in GDP, depending on the model and assumptions employed by JCT. The investment response was significant, ranging from increases of 0.4 to 0.9 percent. Employment effects, however, were small, with a maximum estimate of 0.05 percent and a lower bound negative impact of 0.05 percent if the Federal Reserve responds aggressively to increased economic growth.

The JCT (May 2, 2014) also evaluated a proposal to permanently increase expensing under Section 179 from $25,000 to $500,000, with a $2 million phase-out and an indexing provision. While the JCT cited research showing the stimulative effect of such a provision, it concluded that the impacts were too small to capture with its models of the macro-economy. The U.S. Department of the Treasury (2010) concluded that by extending expensing (via 100 percent bonus depreciation) through 2011, $50 billion in new investment would result. No estimates were provided on how this would affect the macro-economy.
There is little empirical evidence on the consequences of a full expensing system. One exception is a study by the Tax Foundation (Schulyer, June 2014) that evaluated three cost recovery proposals (Baucus, Camp and Wyden) as well as a system of full expensing. The Tax Foundation developed both static and dynamic estimates of economic and revenue effects. Not surprisingly, the expensing system yielded the strongest effects on economic growth, much stronger than any of the other three plans that were evaluated. The long-term impacts include a 5.13 percent increase in GDP, a 15.4 percent increase in the capital stock and 885,300 jobs. These estimates are much larger than what would be implied by the existing literature. Gravelle (2014), for example, argues that complete elimination of the corporate income tax would boost investment spending by only 0.7 percent. Moreover, the Tax Foundation estimates do not account for possible intervention by the Federal Reserve to slow the heated pace of economic growth.

With these estimates in hand, we assume impacts that lie between the JCT (July 3, 2014) estimates regarding permanent bonus depreciation—an admittedly less-aggressive policy change—and the Tax Foundation (Schulyer, June 2014) estimates. Specifically, we assume that full and permanent expensing would increase annual GDP by 0.35 percent, investment by 1.2 percent and employment by 0.05 percent (or approximately 74,000 to 79,000 jobs per year).

**Enhanced and Permanent R&D Incentives**

Current tax policy allows for the immediate deduction of R&D expenditures and the temporary availability of tax credits to qualifying firms. Together these provisions are intended to provide additional stimulus to conduct research.

Policies to promote private-sector research have long been embedded in the tax code. The ability to deduct research expenditures in the year they are incurred under Section 174 has been an important means of fostering research and creating jobs. Similarly, the R&D tax credit was introduced in 1981 to further incentivize research that can yield productivity spillovers to the economy. The R&D credit has several components, including the alternative simplified credit (ASC), which provides a 14 percent nonrefundable tax credit for qualified research expenditures (QREs) in excess of a base amount, with a one-year carryback and 20-year carry forward. By providing the credit for activity in excess of the base amount, the intent is to stimulate additional research spending beyond levels that would typically occur. QREs include, among other things, the wages and salaries of workers engaged in research activities. So while the ASC incentivizes research activity, it also directly supports job creation. Together the R&D expensing provision and tax credit give taxpayers greater flexibility in realizing cost recovery.

Studies have shown that U.S. tax policy toward R&D is less generous than that of many other developed countries. For example, the OECD (October 2013) ranked the U.S. R&D tax policy 22nd in 2009. Business organizations, including the National Association of Manufacturers, the Information Technology and Innovation Foundation (ITIF) (Atkinson, 2010), along with academics (e.g., Tyson and Linden, 2012) and the Obama Administration have advocated a permanent and expanded credit ranging from 17 to 20 percent to foster additional research and to improve the United States’ position as a leader in global innovation. While the Camp plan proposed to make the R&D tax credit permanent, it also eroded the basic deduction for R&D expenditures through implementation of a five-year amortization schedule. The

---

8 The current system actually includes several different credits in addition to the ASC. For background see U.S. Government Accountability Office (2009), which discusses policy changes that might enhance the effectiveness of federal R&D tax policy.
JCT estimates that this provision alone would generate $192 billion in tax revenue. Weakening the R&D incentive would cause the United States’ position in the international community to diminish even further. On the other hand, maintenance of the deduction, coupled with an enhanced and permanent R&D tax credit, would increase the incentive to conduct research that enhances firm and worker productivity and overall economic growth.

Considerable empirical evidence shows that tax policy can spur research activity. Carroll et al. (2011) provide a review of the micro-economic literature that has focused on individual firm and entrepreneur responses to tax policy. This research generally seeks to identify how tax policy affects the net price (i.e., business cost) of conducting R&D. While the magnitude of responses shows considerable variation, there is compelling evidence that tax policy does affect research activity. Carroll et al. note that from a macro-economic perspective the current ASC leads to $10 billion in short-term research spending and $22 billion in long-term research spending, lending credence to the micro-economic studies.

A small number of studies have explored the consequences of an expanded ASC. The JCT (May 2, 2014) evaluated a permanent ASC of 20 percent with a base of 50 percent for QREs in the previous three years. JCT notes that the ASC could increase research spending by as much as 10 percent, but the effects on the macro-economy are simply too small to capture with their models. Carroll et al. (2011) considered a similar proposal for a permanent ASC of 20 percent. They rely on estimated price responses drawn from the literature and the consequences of a larger ASC for the price of conducting R&D. Their estimates, based solely on data for corporations, show an R&D spending increase of $5 billion to $11 billion, a long-term impact on employment of 100,000 jobs and significant increases in worker earnings.

The trade group ITIF (Atkinson, 2010) also evaluated a 20 percent ASC and estimated near-term job gains of 162,000 based on information on credit usage by corporations. This relatively large figure reflects in part the slack that was present in 2010 and thus the economy’s ability to create jobs with a smaller degree of crowding out; job gains would not be as pronounced if the economy was closer to full employment. In 15 years, the larger ASC would lead to a $66 billion increase in GDP. The channel for this increased output is productivity gains that accrue to the economy from greater research activity.

Finally, the Milken Institute (DeVol and Wong, et al. 2010) considered a 25 percent increase in the ASC (moving the credit from 8 percent to 10 percent). The dynamic model of the macro-economy used in the Milken report captures feedbacks from credits to growth and economic growth to credit usage (this is analogous to dynamic scoring in a revenue-estimating context). Their estimates show a 0.1 percent annual increase in GDP and a 4.8 percent increase in business fixed investment. Employment would jump by 510,000 by 2019 (a 0.4 percent gain), and manufacturing employment would increase by 316,000 (a 2.5 percent gain).

While none of the above studies specifically estimates the macro-economic impact of enhanced and permanent R&D incentives that align with the NAM proposal, the Milken Institute report does estimate impacts of a similar (yet now outdated) change along with a similar reduction in the top corporate income tax rate. We rely on the relative magnitudes of the estimated impacts from the Milken study to calculate estimated impacts for the NAM R&D incentive. Specifically, we apply the ratio of effects from the R&D incentive and the corporate tax rate reduction in the Milken study to our assumed effects of the corporate tax rate reduction. This amounts to annual increases of just over 0.16 percent of GDP.

---

9 See Appendix A of Carroll et al. (2011).
0.08 percent of investment and 0.024 percent of employment (or between 36,000 and 38,300 jobs per year).

**Tax Reform for Pass-Through Entities**

Pass-through entities such as general partnerships, limited partnerships and S corporations, file entity-level income returns with the IRS (e.g., forms 1065 and 1120S) but tax is not assessed at the entity level. These firms would be important beneficiaries of a pro-growth tax reform agenda. Firm-level income and deductions, including Section 179 depreciation deductions, are allocated to the partners or shareholders on K-1 forms. The partners and shareholders then report this income on their individual tax returns (Schedules D and E). Sole proprietorship income is similarly reported through the individual tax system on Schedule C. Taxes are then calculated based on the individual’s total taxable income, including interest income and earnings from wage and salary jobs. Thus, the statutory tax rate on pass-through income depends on the household’s total taxable income. In 2013, individual income tax receipts accounted for 47 percent of federal revenue (Office of Management and Budget, 2013) and we estimate that pass-throughs account for about 13 percent of individual income tax receipts.

While the NAM plan does not specify a specific tax rate for pass-throughs, for the purposes of this analysis, the analysis assumes a top tax rate of 25 percent on pass-through income and the same cost recovery and R&D reforms discussed under the corporate income tax. Moreover, this discussion is limited to the tax rate change, since the other two impacts are included in earlier sections. Although studies examine the macro-economic effects of individual income tax rate changes, none of the analyses address this particular set of policy changes. Thus, we review the general literature on individual income tax rate changes and make adjustments for the relative size of pass-through receipts in our estimates below.

A number of studies examine the impacts of individual income tax changes on GDP with any reductions in revenue offset by reductions in spending or deficit spending. This analysis however, estimates the economic impacts of pro-growth tax reforms without specifying when or how the revenue will be offset. However, it is important to note that the general caution from this literature that the ultimate macro-economic effects depend crucially on how rate reductions are financed (as well as how the Federal Reserve responds to tax-induced increases in economic growth). Dennis et al. (2004) estimate that a 10 percent cut in income tax rates generates a -1.5 to 0.8 percent change in GDP depending on model and financing assumptions. Holding revenue constant, Barro and Redlick (2011) estimate that a decrease in average marginal tax rates of 1 percentage point results in an increase of 0.5 percent in per capita GDP. In contrast to these modest estimates, Romer and Romer (2010) find that increasing tax revenue by 1 percent of GDP would decrease GDP by 2 to 3 percent. However, others have questioned assumptions in their model in the literature (e.g., Favero and Giavazzi, 2009).

Mertens and Ravn (2013) examine the short-run dynamic effects of personal and corporate tax changes and find that a decrease in the individual tax rate of one percentage point increases the tax base by 1.6 percent after one year. Carroll et al. (2001) find that a 10 percent decrease in tax rates results in an 8.4 percent increase in receipts. The elasticities implied by these studies are larger than those with offsetting revenue assumptions, but smaller than the Romer and Romer (2010) estimates. For the purposes of our investigation, we take the average of similarly calculated elasticities based on the reported results from Mertens and Ravn (2013) and Carroll et al. (2001). We further multiply this

---

10 See Gale and Samwick (2014) for an accessible overview of this literature.
average elasticity by 0.127 to account for the fact that income from pass-throughs represents about 12.7 percent of total income on individual tax returns (based on our calculations using IRS Statistics of Income data). We apply the end result to an average tax rate change of 1 percent, which is our estimate of the equivalent change in the overall marginal tax rate from reducing the top tax rate on pass-through income to 25 percent. The end result is an annual projected increase in GDP growth of about 0.073 percent.

Carroll et al. (2000a) estimate the effects of individual income tax rate changes on small business investment and find that a 5 percentage-point increase in tax rates reduces net investment by 9.9 percent. We apply a similar set of calculations to this estimate to arrive at an expected annual impact on investment of 0.048 percent as a result of the reduced maximum tax rate on pass-through income.

Finally, several studies examine the effects of tax rate changes on employment. Chetty (2012) synthesizes 17 studies, accounts for frictions such as adjustment costs, and estimates elasticities of 0.25 (extensive margin) to 0.33 (intensive margin). Mertens and Ravn (2013) find that a 1 percentage-point decrease in tax rates increases per capita employment by 0.8 percent. Carroll et al. (2000b) estimate an elasticity of wage payments to tax prices of 0.37. We adopt a similar approach to converting these estimates into a reasonable employment impact by averaging similarly calculated and deflated elasticities. This generates an annual employment impact of 0.051 percent or approximately 76,000 jobs.

Estimates of the Macro-Economic Potential from a Pro-Business Tax Reform Package

With these estimates in hand, we now turn to a consideration of what we view as a reasonable upper-bound impact of the NAM plan on GDP, investment and employment. We express these impacts relative to the August 2014 baseline projects from the Congressional Budget Office (2014) (CBO) and present estimated impacts graphically in Figures 1, 2 and 3 for GDP, investment and employment, respectively.

Beginning with Figure 1, we estimate that the pro-growth NAM tax plan would add almost 1 percentage point (about 0.9) to GDP growth on an annual basis, and that the initial-year impact would be slightly greater as a result of the territorial system transition tax. The cumulative 10-year impact between 2015 and 2024 would increase GDP by just more than $12 trillion relative to CBO projections. About 42 percent of this impact would result from lower tax rates on corporate and non-corporate pass-through income. A higher share—about 58 percent—of the combined effect would be attributable to the expensing and R&D provisions.

---

11 It is difficult to project impacts on real (inflation-adjusted) GDP because pro-growth tax reform would be expected to affect prices. A projection of a more appropriate GDP deflator series is beyond the scope of this project. Using the CBO (2014) GDP deflator, the cumulative real GDP impact between 2015 and 2024 would be about $10.7 trillion in 2015 dollars.
Figure 2, shows that the pro-growth tax reform plan would add nearly 1.5 percentage points to investment growth on an annual basis, amounting to a cumulative increase of just more than $3.3 trillion between 2015 and 2024. Again, the territorial system transition tax would add a modest amount in the first year. Most—about four-fifths—of the combined impact is the result of full expensing, with the corporate and individual tax rate reductions contributing about 10 and 3 percent, respectively. The R&D incentive contributes most of the remainder.

---

12 Using the CBO (2014) GDP deflator series, the cumulative impact on real investment would be nearly $3 trillion.
Finally, in Figure 3, the pro-growth plan would add between 492,000 and 522,000 jobs per year, or more than 6.5 million jobs over 10 years. The initial-year impact is higher by 1.46 million jobs due to the Drabkin, Serwin and Tyson (2013) estimates of the effect of the territorial system transition tax. About 31 percent of the combined ongoing employment impact arises from the corporate tax rate reduction, and a similar share results from the shift to a territorial system. The expensing and individual tax rate reductions contribute about 15 percent each, with the remainder resulting from the R&D incentives.

![Figure 3: Employment Projections (in Millions)](image)

**Conclusions**

Reduced tax rates on corporate and non-corporate pass-through income, robust capital cost recovery in the form of full expensing, enhanced and permanent R&D incentives, and a territorial system for taxing income of multinationals could add significantly to economic growth. Specifically, we calculate an annual GDP impact of slightly less than 1 percent, an annual investment impact of about 1.5 percent and an employment impact of approximately 500,000 jobs per year in excess of baseline projections.

These estimated impacts are significant and worthy of consideration in the ongoing discussion about the future of pro-growth tax reform. Additionally, we do not believe they are out of line with the prior literature.

Two caveats are in order. First, these estimates do not account for any possible monetary response from the Federal Reserve. It is not clear whether the Fed would respond to the enactment of pro-growth tax reform, but an analysis of a likely response is beyond the scope of this study. Second, the analysis does
not consider the extent to which the simultaneous enactment of these five major policy changes in the NAM plan would generate impacts that are smaller than the individual estimates in the literature.

On one hand, the Drabkin, Serwin and Tyson (2013) estimates from the shift to a territorial system are likely lower bounds given their assumption of a constant corporate tax rate. On the other hand, and by the same token, the estimates regarding expensing and R&D incentives are likely upper bounds. It is not clear whether the effects of reduced tax rates on corporate and pass-through income are larger or smaller than would be anticipated in the context of broader reforms. With all of this in hand, the authors view the combined estimates as reasonable and are confident that any adjustments to account for policy simultaneity would not substantially reduce them.
Sources

Atkinson, Robert D. January 26, 2010. Create Jobs by Expanding the R&D Tax Credit. ITIF.  


Carroll, Robert, Gerald Prante and Robin Quek. September 2011. The R&D Credit: An Effective Policy for Promoting Research Spending. Ernst & Young LLP.  


https://www.fas.org/sgp/crs/misc/R41743.pdf


[www.whitehouse.gov/sites/default/files/expensing_report.pdf](http://www.whitehouse.gov/sites/default/files/expensing_report.pdf)

