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FEATURE ARTICLE

Tax Reform and Incentives for Innovation

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The 112th Congress (2011-2013) held over 25 hearings on various aspects of tax reform.[2] One of the hearings held by the Senate Finance Committee in September 2011 covered tax reform and incentives for innovation. The author was an invited witness for this hearing.[3] Following is the author's written testimony submitted for the record modified slightly and with a conclusion added in order to fit the format of a journal article.[4]

Introduction

The topic of the hearing carried with it at least two messages. First, our federal tax system is in need of reform. Second, a tax system should be designed to support (or not hinder) the taxing jurisdiction's economic, societal and environmental goals. Innovation is a hallmark of our country and a key driver for economic growth, improvement in living standards, and a better environment.

This testimony addresses innovation and tax reform in the following areas:

I. Strategic tax reform.
II. How innovation ties to tax system design and reform.
III. Where current tax rules support innovation and where improvements might be made to better support (or not hinder) innovation.
IV. Comments specific to the research tax credit.
V. Additional recommendations (non-tax).

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[2] For a list of the hearings and links to the testimony and related documents, see http://www.cob.sjsu.edu/nellen_a/112th-hearings.htm.

[3] See hearing website at http://finance.senate.gov/hearings/hearing/?id=ef6a4c10-5056-a032-5212-fbf59e314035.

[4] The written testimony is far longer than the five minutes of oral testimony. The author's oral testimony has been reproduced in Nellen, "Tax Reform: Incentives for Innovation," *AICPA Corporate Taxation Insider*, Sept. 29, 2011; available at http://www.cpa2biz.com/Content/media/PRODUCER_CONTENT/Newsletters/Articles_2011/CorpTax/Innovation.jsp.

I. Tax Reform Considerations - Need for Strategic Tax Reform

Tax reform must be about more than hitting a certain revenue target or dealing with one problem in isolation of other problems. There must be a reason for change. As has been described in hearings before this committee and numerous reports from tax experts, as well as evidenced by a $345 billion annual tax gap, growth in the size of the federal tax law and the number of taxpayers seeking tax prep assistance, and concerns that the tax law is harming international competitiveness of U.S. firms, there are plenty of reasons for change.

Effective change requires that the goals for the change be identified. This enables an effective blueprint for the reform to be created. Articulation of the goals for reform also enables the effectiveness of the reform to be measured; that is, were the goals achieved? If not, what further changes are needed?

Creating the blueprint for a reformed tax system should be guided by principles of good tax policy. Consideration of principles such as equity, neutrality, economic growth and efficiency, transparency and simplicity can help identify strengths and weaknesses in the tax system and how to fix the weaknesses. A tax system that meets principles of good tax policy will be a stronger system.

Strategic tax reform identifies the reasons for change, articulates the goals to be achieved by change, and uses principles of good tax policy as the tools of design. Strategic tax reform should yield a stronger tax system that supports the jurisdiction's economic, societal and environmental goals.

II. Innovation, Tax Policy and Tax Reform

Investment in R&D has long been viewed by lawmakers, businesses and the public as a key contributor to economic growth.[5] This perspective has justified government funding of medical research, the space program and many other research activities. In 1981, this view supported creation of a research tax credit to address a "concern that the decline in investment in research and development had adversely affected this country's economic growth, productivity gains, and ability to compete in world wide markets."[6]

Certainly, a goal for tax reform should be to support (and not hinder) economic growth. Innovation is a driver of economic growth that can enable U.S. companies to be first to the global marketplace, create operating efficiencies for businesses and households, and lead to greater economic development that supports many businesses.

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[5] As noted by the Treasury Department: "Investments in research and experimentation produce the technological advancements that are an important determinant of productivity growth and improvements in U.S. living standards." See, Treasury, *Investing in U.S. Competitiveness: The Benefits of Enhancing the Research and Experimentation (R&E) Tax Credit*, 3/25/11, page 3; http://www.treasury.gov/resource-center/tax-policy/Documents/Research%20and%20Experimentation%20report%20FINAL.PDF.

[6] *TSR, Inc. and Sub. v. Comm'r.,* 96 TC 903 (1991) summarizing the 1981 legislative history that added IRC Section 44F (now Section 41) as part of the Economic Recovery and Investment Act (ERTA) (P.L. 97-34; 8/13/81).

Innovation can factor into tax reform in at least the following ways, listed and then explained below:

- Consideration in helping the system meet the tax principle of economic growth and efficiency.
- Use of the tax law as a vehicle for addressing the societal or spillover benefits inherent in R&D.
- Tax administration and compliance.
- Having a strong fiscal system to support innovation.

First, one principle of good tax policy *is economic growth and efficiency*. In its framework of describing ten principles of good tax policy, the AICPA Tax Division[7] describes "economic growth and efficiency" as "the tax system should not impede or reduce the productive capacity of the economy." This should be considered along with another principle – neutrality. A neutral tax system is one where the tax rules do not affect decision-making. This may sometimes seem to be in opposition to the economic growth and efficiency principle. It is not. Any tax system will have some effect on decision-making; it cannot be avoided. For example, a sales tax has an inherent effect on one's decision to buy a taxable item.

The economic growth and efficiency principle guides tax system design by minimizing adverse effects of the tax. For example, an income tax by its nature allows businesses to consider asset depreciation in measuring income. The selection of the depreciation life and method should not impede economic growth. For example, use of a 20-year depreciable life for a computer will enable measurement of taxable income but will have an adverse effect on economic growth.

Second, the tax system serves as one possible approach to address the fact that there are often spillover benefits to society of private investment in R&D.[8] This position has been noted as an economic justification for the research tax credit. In a 1985 study on the effectiveness of the credit, the Joint Economic Committee stated:

> "[T]he total rate of return on private R&D greatly exceeds the private rate of return. That is, private R&D gives rise to benefits to society at large well in excess of the profits it generates for the company that funds the R&D. Such "spillover benefits" or "neighborhood effects" thereby put R&D into the class of goods such as public health and sanitation, education, clean air and water, and defense that fall into the sphere of governmental responsibility."[9]

A company conducting research and incurring costs may not be able to completely reap the rewards of its research because some of the benefit will spill over to others. For example, although research leading to an innovative new drug can be protected by a patent to help a company obtain the

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[7] AICPA, *Tax Policy Concept Statement No. 1 – Guiding Principles of Good Tax Policy: A Framework for Evaluating Tax Proposals* (2001); available at http://www.aicpa.org/INTERESTAREAS/TAX/RESOURCES/TAXLEGISLATIONPOLICY/Pages/TaxReform.aspx; the author of this article was the lead author of this AICPA report.

[8] Another approach for compensating for the spillover benefits are direct government payments or grants.

[9] "The R&D Tax Credit: An Evaluation of Evidence On Its Effectiveness," A Staff Study prepared for the use of the Joint Economic Committee, 8/23/85, page 4.

economic benefits of its research, the fruits of the research will be enjoyed by others upon the patent's expiration. In addition, the existence of the patent and the knowledge gained from the research that created it may lead to developments by others for which the original inventor may not be fully compensated. Because a company may not receive all of the return from its research investment, but will instead share some of it with society, there is justification for public support of such research.

Also, the risks associated with R&D may lead to underinvestment in it, as noted by Congress when it enacted the research tax credit in 1981.

The OECD observes: "Given the contribution of research and development (R&D) to productivity growth, economic performance and the achievement of social objectives, it is generally agreed that governments have a role in encouraging appropriate R&D levels and expenditures."[10]

Providing compensation for the spillover benefits and encouragement for greater investment in R&D through the tax law rather than via direct government subsidy (such as a grant) enables market forces to identify appropriate R&D activities rather than a government agency. The tax approach, though, adds some complexity to the tax law and makes the IRS a reviewer of qualified research rather than an agency with scientific and technological expertise. A tax-based subsidy should consider this side effect in the design of the tax provision (such as by not making the definitions of qualified research too complicated to administer through the tax law).

Considering the first two points above, recognition of an economic justification for government support of R&D should be balanced with the need for a tax system to strive to meet the principles of simplicity, equity, neutrality and transparency.

Third, innovation should be considered in improving the administration of a tax system. For example, new web-based tools might be used to streamline the calculation, assessment and collection of taxes. Administration of the tax system should not be overlooked in tax reform, which often tends to look only at changing the tax base and rate.

Finally, tax reform can strengthen the revenue (and spending[11]) aspect of the federal budget. A healthier federal budget can help support investment, such as by keeping interest rates low. A sound tax system can also help the economy and investment. As noted by President Obama in the section of

[10] OECD, *Tax Incentives For Research and Development: Trends and Issues,* page 4; http://www.oecd.org/dataoecd/12/27/2498389.pdf.

[11] Spending exists in the tax law via special provisions that are not crucial to defining the tax base. These items, termed "tax expenditures," include special deductions, exclusions and credits. The benefit provided, such as via a tax credit for higher education expenses, could instead have been line item spending in an agency's budget to provide the benefit to the taxpayer.

the Administration's FY2012 budget report entitled "Competing and Winning in The World Economy":[12]

> "Putting the Nation on a sustainable fiscal path and getting our deficits under control are critical to making the United States competitive in the global economy." (page 31)
>
> "Reform our Tax Code to Foster Innovation and Competitiveness. …Now more than ever, when we want to compete and win in the world economy, we cannot afford a tax code burdened with special interest tax breaks. Successful comprehensive tax reform is a long process, often taking several years, but even though it is a daunting task, we cannot afford to shirk from the work. In an increasingly competitive global economy, we need to ensure that our country remains the most attractive place for entrepreneurship and business growth. As a first step toward reform, the President calls on the Congress to immediately begin work on reform that will close loopholes, lower the overall rate, and not add a dime to the deficit." (page 37)

III. Current Rules – Areas of Support for Innovation and Areas for Improvement

Areas that Support Innovation

The federal tax law includes a few provisions that incentivize or support innovation in some way. These provisions include:

- Section 174, Research and experimental expenditures, allows taxpayers to deduct research or experimentation expenses incurred in connection with a trade or business.
- Various credits including:
  - Section 41, Credit for increasing research activities (discussed in a separate section of this testimony)
  - Section 45C, Clinical testing expenses for certain drugs for rare diseases or conditions ("orphan drug" credit)
  - Section 48C, Qualifying advanced energy project credit
  - Section 48D, Qualifying therapeutic discovery project credit
- Section 172, Net operating loss deduction – allows for a net operating loss, such as may be created by a start-up company, to be carried back two years and forward 20 years.
- Section 179, Election to expense certain depreciable business assets – enables small companies to expense, rather than depreciate, tangible personal property, limited to the net income from the business. Offers support for acquiring equipment used for R&D activities, for example.

[12] OMB, FY2012 Budget, "Competing and Winning in the World Economy," at http://www.whitehouse.gov/sites/default/files/omb/budget/fy2012/assets/competing.pdf. This report also calls for simplifying and expanding the research tax credit and making it permanent (page 37).

- Section 1202, Partial exclusion for gain from certain small business stock – may help a "qualified small business" C corporation obtain equity financing.
- Section 1235, Sale or exchange of patents – allows individual inventors to treat certain patent dispositions as producing long-term capital gain income, rather than ordinary income.

Areas for Improvement

Some tax provisions can operate in such a manner as to have the unintended effect of hindering innovation, and some may be in need of modernization to better reflect today's ways of doing business. In a tax policy analysis, these provisions would raise red flags under the economic growth and efficiency principle. A few of these provisions are explained next.

1) *Limitations of tax credits*: Tax credits rate well under the principle of equity in that they are worth the same to all taxpayers regardless of tax bracket. However, they may not rate well under the principle of economic growth and efficiency. Most tax credits are nonrefundable and may only be used to reduce regular tax, not AMT.

   If a credit is designed to encourage a particular activity or help reduce the costs of risky investments that may have high rates of return, the benefit will be lost if the taxpayer owes no regular tax (such as due to a net operating loss (NOL)) or owes AMT.

   Possible solutions: Any credit designed to help a start-up company or one that may have a long product development cycle (such as is common in the biotech area), should be fully or partially refundable or a grant process should be considered instead. For example, the American Recovery and Reinvestment Act of 2009 (PL 111-5; 2/17/09; §1603) provided a grant in lieu of credit program for certain energy credits, administered by the Treasury Department. This allowed a cash benefit to be received by taxpayers even if they did not have sufficient tax liability to claim a credit. The grant approach may also enable funds to be received by taxpayers more quickly than under the credit avenue. However, the grant process would likely prove too costly and cumbersome for the thousands of taxpayers that claim the research credit but may be helpful to start-up companies.

   A credit designed to provide funds to taxpayers for engaging in a particular activity should be usable against AMT.

2) *Depreciation weaknesses*:

   - *Some MACRS lives too long*: Where a depreciable life is too long, taxable income is overstated in early years (prior to disposition of the asset) and the effective tax rate of owning the asset is higher than it should be. Where other countries use a shorter depreciable life for certain assets, U.S. companies can face competitive disadvantages. Depreciation lives that are too long may discourage businesses from investing in certain assets. If the assets are ones for which manufacturers qualified for the research

tax credit, part of the underlying purpose for the credit, to encourage economic growth and higher productivity levels, may not be fully achieved.[13]

Possible solutions: The depreciable lives of assets under the current MACRS system should be reviewed regularly to determine if they are in line with economic lives. Examples of MACRS lives that should be examined as being too long are computers and semiconductor manufacturing equipment which both have a five year MACRS recovery period, but a shorter life in practice.

- *Section 280F limitations*: Section 280F, *Limitation on depreciation for luxury automobiles; limitation where certain property used for personal purposes,* limits the depreciation that may be claimed on a passenger car. Some of these cars, particularly those designed to get more miles per gallon or use a renewable fuel source, were most likely designed by a business that claimed the research credit for the technology created. A limitation on the depreciation that can be claimed on the car each year acts as a disincentive to purchasing it.[14] More favorable depreciation for the car should act as an incentive to purchase it which could further stimulate research efforts.

  Possible solution: Exempt from Section 280F, cars that are rated at a specified (high) miles per gallon (mpg). The mpg amount could be increased every few years.

- *Section 179 expensing ignores intangible assets*: Section 179 helps small and medium size businesses by allowing a specified dollar amount of tangible personal property to be expensed rather than depreciated. The benefit is simpler recordkeeping and a lower after-tax cost for the equipment. On a temporary basis, Section 179 also applies to off-the-shelf software purchases. Both tangible and intangible assets are crucial to businesses operating in today's information age. Section 179 is out-dated for only applying to tangible personal property.

  Possible solution: Expand Section 179 to apply to both tangible and intangible personal property.

3) *Funding biases and missed opportunities*:

- *Section 1202*: Section 1202 provides a benefit to non-corporate taxpayers (such as individuals) who acquire original issue "qualified small business stock." If the stock is held over 5 years, only 50% of the gain is taxable to the shareholder.[15] Section 1045 allows for gain deferral if the proceeds from the sale of Section 1202 stock held over

[13] For example, a report of the House Committee on Small Businesses noted that small businesses are reluctant to replace heating and ventilation systems even though doing so would enable them to have more energy efficient equipment. The Committee notes that the disincentive is due to the 39-year life for such equipment that likely has a life of only 15 to 20 years. Per the report, "By reducing the 39-year depreciation holding period, the tax code could be updated to both encourage investment and promote the use of green technologies." *Seven Ways to Stimulate the Economy by Updating the Internal Revenue Code,* 4/10/08, page 10; http://democrats.smallbusiness.house.gov/Reports/small-business-committee-tax-report.pdf.

[14] There is an exception under Section 280F for "certain clean-fuel passenger automobiles," but this is a narrow exception (Section 280F(a)(1)(C)).

[15] Recent economic stimulus legislation has temporarily increased the gain exclusion percentage.

six months are invested in Section 1202 stock within sixty days. Section 1202 is an incentive for non-corporate taxpayers to invest in qualified small businesses. However, Section 1202 only applies to stock issued by a C corporation.

- *Unfavorable treatment of a loan to a start-up*: A start-up company, which might consist of one or just a few individuals with an innovative idea to explore, will have limited sources of funds. Such a venture is too risky for traditional type loans. Credit card financing is often used as a last resort but has very high interest rates. The start-up may not yet be at a stage to consider setting up a formal business structure such as a corporation that can issue stock to potentially attract funds. And, the venture may not have the funds for setting up such a structure. The founders may seek loans from friends and family members. These potential lenders may be reluctant though, because in addition to the risk, if the debt cannot be repaid, the loss will be a short-term capital loss (Section 166(d)).

  If a C corporation could be set up (time and costs can be prohibiting factors though), original issue stock held by individual investors would likely be Section 1244 stock (if the capitalization is $1 million or less). If Section 1244 stock becomes worthless, the shareholder can treat up to $50,000 of the loss as ordinary ($100,000 if married filing jointly (MFJ)); such loss would otherwise be a capital loss.

Possible solutions: Not all ventures involved in innovative work operate as C corporations. Yet such ventures are equally in need of funding. Consideration should be given to whether an incentive comparable to Section 1202 can be offered to individuals who invest in qualified partnerships or S corporations.

To help provide funds to start-up ventures, consideration should be given to modifying either Section 166(d) or Section 1244 to allow all or part of any investment loss to be treated as ordinary. To prevent abuse, particularly where the venture is not a corporation (registered with a state), some other documentation should be required of the venture, such as registering as a business with the state or city and issuance of a copy of that documentation along with a description of the venture and amount of funds loaned.

Another possible solution to encourage investment in start-ups engaged in R&D and innovative work is to provide a tax credit to the investor. This could be similar in concept to the New Market Tax Credit (Section 45D).

Some states have enacted tax incentives for individuals investing in start-ups. For example, Minnesota's Angel Tax Credit "provides incentives to investors or investment funds that put money into startup and emerging companies focused on high technology or new proprietary technology." The credit is refundable.[16]

[16] Minnesota Department of Employment and Economic Development, Angel Tax Credit; http://www.positivelyminnesota.com/Business/Financing_a_Business/DEED_Business_Finance_Programs/Angel_Tax_Credit.aspx.

Another approach would be to provide tax credits to the person starting the venture. For example, Nebraska's Advantage Microenterprise Tax Credit Act provides "tax credits to applicants for creating or expanding micro businesses that contribute to the revitalization of economically distressed areas through the creation of new or improved income, self-employment, or other new jobs in the area."[17] Such a credit should be refundable; it need not include the requirement to locate in a particular area. The Corporation for Enterprise Development (CFED) observes that this type of credit can also help tax administration and address the tax gap because the new entrepreneur will respond to the "positive incentive" to enter the tax system in order to claim the credit.[18]

4) *Opportunity for R&D cash*: The research credit only rewards research performed in the U.S. In evaluating the after-tax costs of R&D activities, companies with foreign subsidiary earnings offshore may find it is not cost effective to repatriate those earnings to be used in U.S. R&D activities. In addition, many countries offer research incentives which can further encourage the funds to remain offshore.

   Possible solution: Consider some type of repatriation tax holiday to encourage corporations to bring earnings (cash) to the U.S. A requirement could be added that the funds be used for innovation projects (R&D, worker training, purchase of R&D equipment, hiring, etc.).

IV. The Federal Research Tax Credit – Basics, Issues and Possible Improvements[19]

Brief Background to the Research Credit

IRC Section 41, *Credit for increasing research activities* ("research credit"), was enacted in 1981 as a temporary provision of the law to encourage greater investment in R&D activities in the U.S. The credit was set to expire after five years so its effectiveness could be determined before making this incentive a permanent part of the law. Since 1981, the credit expired and was renewed over ten times, the definition of qualified research expenditures (QRE) and qualified research (QR) changed,

[17] Nebraska Dept. of Revenue, Nebraska Advantage Microenterprise Tax Credit Act; http://www.revenue.ne.gov/incentiv/microent/microent.html.

[18] CFED, "Policy Innovation: New Entrepreneur Tax Credit," http://scorecard.cfed.org/downloads/pdfs/innovationBriefs/InnovBrief_NETC.pdf. CFED suggests that to be effective, the credit should be available to sole proprietors, include a system for reaching out to eligible entrepreneurs, have a system for tracking who is using the credit to help measure its effectiveness, and keep the credit simple so it is easy to administer, such as by utilizing information that already exists on other tax forms.

[19] Portions of this testimony are from previous testimony of the author submitted at the request of committee staff for a March 16, 2005 Senate Finance Committee hearing, "Expiring Tax Provisions: Live or Let Die?" S. Hrg. 109-163; http://finance.senate.gov/hearings/hearing/?id=489b8874-f79a-3b8b-6f12-9bec1647d515. Hearing report at http://finance.senate.gov/library/hearings/download/?id=a6a63de3-85b0-47a4-9f96-a4ef488d0af9.

the formula changed, and a taxpayer's R&D deduction was required to be reduced for the amount of the credit (IRC Section 280C(c)).[20]

The credit for increasing research activities was part of the Economic Recovery Tax Act of 1981 (ERTA) (P.L. 97-34, 8/13/81). ERTA also created ACRS to provide an "investment stimulus" necessary for economic expansion. ERTA has been described as a "tax reduction program [to] help upgrade the nation's industrial base, stimulate productivity and innovation throughout the economy…" In 1981, Congress was "concerned that the performance of the economy had fallen far below its potential."[21]

The federal research tax credit is intended to encourage increased research spending in the U.S. It was enacted to help companies overcome the reluctance to incur significant costs of research for uncertain rewards. "The Congress believed that the provisions of the Act, which are designed to stimulate a higher rate of capital formation and increased productivity, appropriately include incentives for greater private activity in research by operating businesses."[22]

The credit is currently set to expire on December 31, 2011 – its 15th expiration date since the first one in 1985. The credit has been extended 14 times, sometimes retroactively. It was allowed to expire once, for the period July 1, 1995 through June 30, 1996.

Policy Points: Based on legislative histories related to the research credit, the credit is intended to:[23]

- Encourage businesses to incur costs for research projects despite the reluctance owing to uncertain rewards and significant costs;
- Serve as an incentive to stimulate productivity to lead to greater private activity in research;
- Address the decline in R&D activities in the U.S. that adversely affect economic growth and competitiveness in world markets; and
- Encourage taxpayers to conduct research in the U.S.

The credit was designed to reward research beyond a base amount. The rationale for an incremental credit is that it does not reward research that would have been done anyway.

The credit's structure also benefits companies employing tech workers who tend to have higher than average wages. Some people describe the research credit as a jobs credit.[24] About 70% of QRE

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[20] IRC Section 280C(c) was added by the Technical and Miscellaneous Revenue Act of 1988 (PL 100-647) to require the taxpayer's Section 174 deduction to be reduced by 50% of the research credit. The Revenue Reconciliation Act of 1989 (PL 101-239) changed that to a 100% reduction with the option for the taxpayer to instead take a reduced credit. The election is made on Form 6765*, Credit for Increasing Research Expenses*.

[21] Joint Committee on Taxation, *General Explanation to the Economic Recovery Tax Act of 1981* (JCS-71-81), 12/31/81, Section III, page 17.

[22] Joint Committee on Taxation, *General Explanation of the Economic Recovery Tax Act of 1981* (JCS-71-81), December 31, 1981, page 120.

[23] For example, see Joint Committee on Taxation, *General Explanation of the Economic Recovery Tax Act of 1981* (JCS-71-81), 12/31/81, pages 119 to 121.

[24] For example, in ManuFACTS: R&D Tax Credit, the National Association of Manufacturers refers to the credit as a "jobs credit;" http://www.nam.org/~/media/C480FB95A9A645F590486A45AF26821D/RD_Credit.pdf.

consists of labor costs. As noted by the Treasury Department in its 2011 report on the credit, the "credit provides valuable support for … high-wage tech jobs."[25]

Credit formulas: The research tax credit is generated from "qualified research" (QR). The expenses of QR that qualify for the credit are wages, supplies and generally 65% of contract research expenses. In addition, certain payments to "energy research consortium" qualify as do certain payments by corporations to qualified organizations. Per the general rule of IRC Section 41(a):

> "For purposes of section 38, the research credit determined under this section for the taxable year shall be an amount equal to the sum of—
>
> (1) 20 percent of the excess (if any) of—
>
> (A) the qualified research expenses for the taxable year, over
>
> (B) the base amount,
>
> (2) 20 percent of the basic research payments determined under subsection (e)(1)(A) , and
>
> (3) 20 percent of the amounts paid or incurred by the taxpayer in carrying on any trade or business of the taxpayer during the taxable year (including as contributions) to an energy research consortium for energy research."

The key part of the credit is what is described at (1) above and is often referred to as the "regular credit." Today, instead of using the formula at (1) above, a taxpayer can elect to use the *alternative simplified credit* (ASC) described at Section 41(c)(5) as follows:

> "the credit determined under subsection (a)(1) shall be equal to 14 percent (12 percent in the case of taxable years ending before January 1, 2009) of so much of the qualified research expenses for the taxable year as exceeds 50 percent of the average qualified research expenses for the 3 taxable years preceding the taxable year for which the credit is being determined."

A taxpayer using the ASC formula may also claim the credit calculated under (a)(2) and (3) above.

A third formula, the *alternative incremental research credit* (AIRC) also existed from 1996 through 2008.

Modifications to the credit calculation are provided for start-up companies because they do not have a base year.

The formulas above are fairly straightforward to apply. Challenges in calculating the credit stem from identifying "qualified research" and QREs, establishing (and proving upon examination) the base amount (particularly for the regular credit where the base amount uses tax data from 1984 to 1988), and having appropriate documentation for the calculation (which can require records beyond what is needed for financial reporting and Section 174 purposes).

Taxpayer perspectives on the credit: Taxpayer views on the advantages and limitations of the research credit are highlighted by the following congressional summary of a 2009 hearing of the

[25] Treasury Dept., *Investing in U.S. Competitiveness: The Benefits of Enhancing the Research and Experimentation (R&E) Tax Credit*, 3/25/11, page 2; http://www.treasury.gov/resource-center/tax-policy/Documents/Research%20and%20Experimentation%20report%20FINAL.PDF. IRS data reported in "The Credit for Increasing Research Activities: Statistics from Tax Years 2004-2005," by Eurry Kim, Summer 2008 SOI Bulletin, Table 1 shows that about 75% of the QREs reported by C corporations was for wages for qualified services. Report available at http://www.irs.gov/pub/irs-soi/04-05crreac.pdf.

House Committee on Small Business entitled "Helping Small Business Innovators through the Research and Experimentation Tax Credit."[26]

> "The witnesses detailed that the R&D tax credit is vital for American companies looking to stay ahead in increasingly global economy. They emphasized that capital and research lead to new inventions, product, and ultimately jobs. However, since capital and research can take place almost anywhere in the world, it is important for the U.S. economy to keep pace with the rest of the world; changes need to be made. The panel argued that the credit needs to be made a permanent part of the tax code so that firms can rely on the incentive when planning their research budgets. Additionally, the witnesses noted that the complexity of the provision needs to be reduced so that more and more small businesses can take advantage of the credit."

Similar views have been expressed by larger businesses, lawmakers and others. For example, the 2011 Treasury report on the credit states:[27]

> "The Research & Experimentation (R&E) tax credit encourages innovation and provides a powerful incentive for businesses to continue to invest in research projects. Investments in research and experimentation produce technological advancements that drive productivity growth and improvements in U.S. living standards. Businesses may under invest in research, however, because they may not be able to capture the full benefit of their spending. The R&E tax credit is designed to address this underinvestment and to increase the total amount of research activity undertaken in the United States."

Additional statements on the rationale for a research tax credit are included in the Appendix.

Who claims the credit: The research tax credit is claimed by a wide range of businesses in terms of size and industry sector. IRS data for C corporations claiming the research credit for 2005 shows the following:[28]

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[26] House Committee on Small Business, hearing notice at http://republicans.smbiz.house.gov/News/DocumentSingle.aspx?DocumentID=146836. Summarized in House Rpt. 111-695 (12/23/10); http://www.gpo.gov/fdsys/pkg/CRPT-111hrpt695/html/CRPT-111hrpt695.htm. Hearing transcript, http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_house_hearings&docid=f:50947.pdf.

[27] Treasury Dept., *Investing in U.S. Competitiveness: The Benefits of Enhancing the Research and Experimentation (R&E) Tax Credit*, 3/25/11, page 1; http://www.treasury.gov/resource-center/tax-policy/Documents/Research%20and%20Experimentation%20report%20FINAL.PDF.

[28] "The Credit for Increasing Research Activities: Statistics from Tax Years 2004-2005," by Eurry Kim, Summer 2008 SOI Bulletin; http://www.irs.gov/pub/irs-soi/04-05crreac.pdf.

Industrial sector	Percentage of total claimants	Percentage of total credit amount claimed
Manufacturing	43.6	71.2
Wholesale trade	5.3	3.1
Information	9.5	10.0
Professional, scientific, and technical services	29.5	10.2
All other	12.1	5.5

In terms of size of the claiming business, in 2005, 14% of claiming C corporations had business receipts under $25,000 and represented 3% of the total credit claimed by 11,290 C corporations. C corporations with $250 million or more of receipts represented 10.5% of total claimants and 79% of the credit claimed.[29]

For tax year 2008, 12,736 corporations claimed the credit (up from 11,290 in 2005). The dollar amount claimed in 2008 was $8.3 billion (up from $6.4 billion in 2005). In addition, in 2008, approximately 64,000 individuals claimed $463 million of research tax credits.[30]

Effectiveness: Various studies have shown that the research tax credit has had a positive impact on the amount of research conducted. A 1989 Government Accountability Office (GAO) report, *The Research Tax Credit Has Stimulated Some Additional Research Spending*, stated that the research credit "raised corporate spending on R&E above the level that otherwise would have been achieved."[31] This study, based on a sample of 800 corporations and economic models, concluded that the credit "stimulated between $1 billion and $2.5 billion of additional spending for the 5 years 1981 through 1985." Such an increase represented an increase of 15 cents to 36 cents for every dollar of foregone tax revenue due to the credit.[32]

As noted in the Treasury Department's 2011 report calling for an enhanced research credit, "studies show that the credit produces approximately a dollar for dollar increase in current research spending and that this amount could be larger in the longer run."[33]

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[29] *Supra*, Figures B and C.

[30] 2005 data from IRS report, *supra*; 2008 data from Treasury Dept., *Investing in U.S. Competitiveness: The Benefits of Enhancing the Research and Experimentation (R&E) Tax Credit*, 3/25/11, page 5; http://www.treasury.gov/resource-center/tax-policy/Documents/Research%20and%20Experimentation%20report%20FINAL.PDF.

[31] GAO, *The Research Tax Credit Has Stimulated Some Additional Research Spending*, GAO/GGD-89-114, Sept. 1989, page 22; http://archive.gao.gov/d26t7/139607.pdf.

[32] 1989 GAO report, *supra*, pg. 22.

[33] Treasury Dept., *Investing in U.S. Competitiveness: The Benefits of Enhancing the Research and Experimentation (R&E) Tax Credit*, 3/25/11, page 2; http://www.treasury.gov/resource-center/tax-policy/Documents/Research%20and%20Experimentation%20report%20FINAL.PDF.

Design Considerations Relevant to the Credit's Effectiveness

This section notes some of the questions that need to be examined in helping to make the research tax credit as effective as possible in achieving its goal of promoting and supporting U.S. research. It should be noted though, that the most significant improvement would be to make it permanent so it can be more effectively relied upon and incorporated into long-term research and financial planning decisions that businesses must make.

1. Non-permanence

On December 31, 2011, the federal tax research credit expired for the 15th time since this temporary provision was added to the Internal Revenue Code in 1981.

Research activities generally involve a long-term view; thus, research incentives that focus on the short-term cannot be fully beneficial and effective. Also, in making long-term plans, a short-term and uncertain incentive will not factor completely into all aspects of the decision-making process. Therefore, with only a temporary credit, the complete goal of increasing research activities may not be fully realizable by businesses, and ultimately, the U.S. economy. Additional support for a permanent credit is the premise that increased research activity increases productivity and growth in GDP, wages and labor skills.

Also, arguably, lack of a permanent incentive puts the U.S. at a competitive disadvantage in the global economy because many countries offer permanent incentives. Many of these countries actively pursue U.S. companies encouraging them to open R&D facilities in their country and to take advantage of tax savings opportunities.

The temporary nature of the credit and its often retroactive reinstatement pose problems for financial reporting purposes. For GAAP purposes, companies may not assume that the credit will be retroactively reinstated. If the credit has expired, it cannot be considered in determining the company's expected effective tax rate. Additional problems arise for fiscal year companies because the credit typically expires in the middle of their year.

2. Missing Guidance

Despite enactment in 1981 and significant changes in 1986 and 1989, there are parts of the regulations under Section 41 that have not yet been finalized. Likely causes for the delay are the temporary nature of the provision and the complexity of certain terms. The IRS-Treasury Priority Guidance Plan for 2011-2012 released in September 2012 lists two outstanding projects under Section 41. This is not the first time these topics have been on the plan.[34]

- Regulations on gross receipts and controlled groups of the research.
- Regulations to define and explain the exceptions for "internal use software."

[34] Treasury Dept. and IRS, *2011-2012 Priority Guidance Plan*, 9/2/11, pages 11 - 12; http://www.irs.gov/pub/irs-utl/2011-2012_pgp.pdf.

3. Regular credit

The regular credit of Section 41(a) uses a base period of 1984 to 1988. Gross receipts in the base and more recent four years factor into the formula to determine if the taxpayer's percentage of gross receipts devoted to QRE today is greater than in the base period. Limitations on a "fixed base percentage" and the base amount result in a somewhat complicated formula. Yet, once the dollar amounts are known, the calculation itself is straightforward, although a bit difficult to explain, causing some transparency concerns. The numerous definitions, calculations and limitations of the regular credit can make it less obvious as to what must be done to increase the credit.

Example: Corporation R's data needed to calculate the research credit for 2010:

Research credit data:

Year	Gross Receipts (GR)	Qualified Research Exp. (QRE)
1984	$28,000,000	$3,000,000
1985	$32,000,000	$4,200,000
1986	$31,000,000	$5,000,000
1987	$34,000,000	$6,200,000
1988	$43,000,000	$6,800,000
[1989 – 2005 – information omitted]		
2006	$48,000,000	$8,400,000
2007	$60,000,000	$10,200,000
2008	$68,000,000	$11,000,000
2009	$76,000,000	$12,000,000
2010	$80,000,000	$10,000,000

Research Credit Calculation for R Corporation:

Step 1 - determine the "fixed base percentage":

$$\text{Fixed base percentage} = \frac{\text{total qualified research expenses 1984 - 1988}}{\text{total gross receipts 1984 - 1988}}$$

$$= \frac{\$3{,}000{,}000 + 4{,}200{,}000 + 5{,}000{,}000 + \$6{,}200{,}000 + 6{,}800{,}000}{\$28{,}000{,}000 + 32{,}000{,}000 + 31{,}000{,}000 + 34{,}000{,}000 + 43{,}000{,}000}$$

$$= \frac{\$25{,}200{,}000}{\$168{,}000{,}000} = 15.00\%$$

Because 15.00% is below the maximum fixed base percentage of 16%, 15.00% is used.

Step 2 - determine base amount:

Base amount = fixed base % X average annual gross receipts of R for the four preceding tax years

Average annual gross receipts from 2006 to 2009 =

[$48,000,000 + 60,000,000 + 68,000,000 + 76,000,000] ÷ 4 = $63,000,000

Base amount = 15.00% x $63,000,000 = $9,450,000

Minimum allowable base amount is 50% of the current year QRE:

50% x $10,000,000 = $5,000,000

Because $9,450,000 is greater than the minimum base amount, $9,450,000 must be used.

Step 3 - determine credit:

20% x [qualified research expense - base amount] + 20% of basic research payments

20% x [$10,000,000 - $9,450,000] + 20% x $0 = **$110,000**

Thus, the $10,000,000 of 2010 QRE generated a $110,000 credit (1.10% of QRE).

Per IRC §280C(c), R Corporation must reduce its R & E expense deduction on its 2010 return by $110,000 (the amount of the credit), or it may choose instead to take a reduced credit and not change its R & E deduction. R would have generated a higher credit if its 2010 research expenses were greater, its base years' research expenses were less, its base years' gross receipts were more, and/or its gross receipts in the prior four years were less.

Some taxpayers who used a greater portion of their gross receipts for R&D in the base period than is possible today given a change in their operations will not generate a research credit under the regular formula, even though they are engaging in R&D and face the same risk and spillover effects as other companies that have a different base picture and can more easily generate a credit.

Under the regular credit formula, if the actual base amount is less than 50% of the current year QRE, then 50% of current year QRE must be used as the base amount. For example, if a company's base amount is $50 and its current year QRE is $120, its base amount for calculating the credit is $60 (50% of current year QRE), rather than $50 (the actual base amount). Since a lower base amount generates a higher credit, the 50% base limitation reduces this taxpayer's research tax credit.

The 50% base amount limitation serves as a cap on the credit (basically limits it to 10% of QRE – which is then further reduced to 6.5% by §280C(c)). This 50% base rule serves to limit the credit for companies with a large increase in QRE over the base amount.

Example: Base amount = $10

Current QRE = $20

Credit = 20% x $10 = $2

Modification: Base amount = $10

Current QRE = $30

Credit = 20% x $15 = $3 (so additional $10 of current QRE only generated $1 of credit (10%, not 20%)).

A 1995 GAO study found that for 1992 almost 60% of corporations were subject to the 50% minimum base rule.[35] IRS data for C corporations for 2005 indicated that 76.1% were subject to the 50% base limitation (down from 83.8% in 2001).[36]

4. Size of the Benefit

While the regular research tax credit formula uses a 20% rate and the ASC a 14% rate, the effective rate is smaller due to the incremental nature of the credit and the reduction required by IRC Section 280C(c). The maximum credit possible for the regular credit is 6.5% of the current year's qualified research expenditures (QRE). Also, since not all Section 174 expenditures qualify as QRE, the ratio of the credit to total Section 174 R&D expenditures is in most cases less than 6.5%.

The ASC does not include a base limitation like the regular credit does. The GAO has recommended that a 50% limit be added "to reduce economic inefficiencies and excessive revenue costs resulting from inaccuracies in the base of the research tax credit."[37]

The selection of limited categories of R&E expenditures that qualify for the research credit can have varying impacts on different industries. For example, a labor-intensive taxpayer may be able to generate a higher research tax credit than a capital-intensive one because depreciation is not a QRE.

Competition for R&D work is a global one, and companies must evaluate where to locate their R&D work based on availability of equipment and human talent, operating costs and incentives. Many countries offer incentives for research both through the tax system and direct grants. Reform of the current research credit and consideration of other possible incentives for innovation should consider what other countries offer and the effect on corporate investment and R&D and the economy. Among OECD countries, the U.S. provides one of the lowest subsidies for R&D.[38]

5. Alternative Minimum Tax (AMT)

The research tax credit cannot be used to offset AMT; any unused credit can be carried back one year and then carried forward 20 years. However, for corporations that are in an AMT position for several years, the research tax credit will only be usable in some future year (assuming the carry forward period does not expire for the taxpayer). The value of the credit in encouraging research is reduced when the benefit will not be realizable for a company until a future year.

6. IRS Examinations

The research tax credit is a focal point of IRS examinations due to the impact of the credit on a taxpayer's tax liability, and examinations improve voluntary compliance. The IRS has issued

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[35] GAO, *Additional Information on the Research Tax Credit*, GAO/T-GGD-95-161, May 10, 1995, page 6.

[36] "The Credit for Increasing Research Activities: Statistics from Tax Years 2004-2005," by Eurry Kim, Summer 2008 SOI Bulletin, Figure D; http://www.irs.gov/pub/irs-soi/04-05crreac.pdf.

[37] GAO, *Tax Policy: The Research Tax Credit's Design and Administration Can Be Improved*, GAO-10-136, 11/6/09, page 39; http://www.gao.gov/products/GAO-10-136.

[38] Measured using the "B index, 23 countries including France, Canada, Australia and China, provide a higher subsidy. OECD (2009), "Tax treatment of R&D," *OECD Science, Technology and Industry Scoreboard 2009*, OECD Publishing. doi: 10.1787/sti_scoreboard-2009-en.

examination guides to its auditors and a few industry directives on how to handle certain issues, such as costs of developing internal use software.[39]

IRS concerns with research credits claimed on amended returns led to such claims constituting a Tier 1 issue for the IRS.[40] This means that all such claims will receive some level of review by the IRS. The IRS also issued an audit guide on the claims. In it, the IRS summarizes its concerns with many of the claims:[41]

> "There is a growing trend among taxpayers, and their representatives, to submit prepackaged material to support research credit claims. These submissions are usually delivered to examiners in multiple binders. While the submissions often set forth the methodology employed in preparing the research credit claim, the submissions frequently fail to substantiate that the taxpayer paid or incurred qualified research expenses ("QREs") as claimed." …
>
> "A significant number of RC claims are prepared using a hybrid method that does not properly establish the required nexus between QREs and qualified research activities (QRAs)."

Additional examination issues stem from lack of guidance (such as on internal use software) and the level of documentation and "nexus" between the expenses and the qualified research project. Complexities in the definition of QR (Section 41(d)) which involves multiple definitions and tests can raise issues between taxpayers and the IRS.

7. Industrial Age into the Information Age

The research credit was designed before widespread use of the Internet, web-based products and services, and even wider use of computers and software. Section 41 should be reviewed to be sure it addresses the type of R&D going on in the world economy today. For example, a modification to the credit in 1986 added a rule that generally, internal-use software does not qualify for the credit (Section 41(d)(4)). Exceptions exist where such software is used in QR or a production process that qualifies as QR or as provided in Treasury regulations (no final regulations exist).[42] In 1986, internal-use software was likely viewed as something that might organize a company's accounts receivables. Today, internal-use software may be something that represents a company's entire business operation (such as software developed for web-based services sold to customers). Yet, because the software is not sold or used in a production process, it might be viewed as internal-use with the development costs not treated as QRE.

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[39] The IRS website with links to many of the IRS guides on the credit is at http://www.irs.gov/businesses/article/0,,id=101382,00.html.

[40] Industry Directive #1 (2007) - http://www.irs.gov/businesses/article/0,,id=169273,00.html and Industry Directive #2 (2009) - http://www.irs.gov/businesses/corporations/article/0,,id=202712,00.html.

[41] IRS, Research Credit Claims Audit Techniques Guide (RCCATG): Credit for Increasing Research Activities, May 2008; http://www.irs.gov/businesses/article/0,,id=183208,00.html.

[42] See Announcement 2004-9, 2004-6 IRB 441, for background on the internal-use software regulations.

Possible improvements for the research tax credit include:

- Make the research credit permanent.
- The regular credit's base years of 1981 to 1988 are arguably too old to justify what a credit should be more than 20 years later.[43] Also, records may not exist or be adequate to enable an acquirer business to accurately calculate the regular credit. Consideration should be given to either updating the base years and having a system enacted for regular updates or repealing the regular credit.
- Consider removing or modifying the 50% base limitation for the regular credit as it has the effect of reducing the credit generated on higher amounts of QREs which likely indicates that more research was conducted.[44] Avoid adding a minimum base requirement to the ASC as it reduces the value of the credit for companies with significant increases in QREs, which is what the credit is intended to encourage and reward.[45]
- Consider only having one formula for the research tax credit for simplification purposes. The use of two different formulas requires taxpayer time to evaluate which is better in any year. Multiple credits also mean additional time spent by the IRS providing guidance. S. 1203 (111th Congress) proposed to let the regular credit expire and make the ASC permanent. Advantages of this approach include that fewer definitions are involved (for example, "gross receipts" is only relevant for the regular credit), taxpayer and IRS time need not be spent trying to verify QRE and gross receipts for a set of years in the past for which they may not have adequate records.
- Allow the research tax credit to be used against AMT.
- Allow small and start-up businesses to have a refundable credit.
- To reduce audit difficulties and disputes, restate the purpose of the credit and what types of research activities qualify. In addition, the IRS should be encouraged to follow the GAO recommendation to "organize a working group that includes IRS and taxpayer representatives to develop standards for the substantiation of QREs that can be built upon taxpayers' normal

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[43] As noted by Treasury: "The regular credit formula, which determines the base amount with reference to the firm's research intensity (the ratio of its research spending to gross receipts) in the 1984 to 1988 period, clearly is outdated. There is little reason to believe that the firm's ratio of research spending to gross receipts from more than two decades ago, when multiplied by its average gross receipts over the prior four years, is an appropriate base for the taxpayer. In the context of a permanent R&E credit, that base amount will become increasingly irrelevant and arbitrary." Treasury Dept., *Investing in U.S. Competitiveness: The Benefits of Enhancing the Research and Experimentation (R&E) Tax Credit*, 3/25/11, page 8; http://www.treasury.gov/resource-center/tax-policy/Documents/Research%20and%20Experimentation%20report%20FINAL.PDF. Similarly, see GAO, *Tax Policy: The Research Tax Credit's Design and Administration Can Be Improved*, GAO-10-136, 11/6/09, page 16; http://www.gao.gov/products/GAO-10-136.

[44] The 2009 GAO report, supra, page 16, suggests that the effect of the 50% base limit for the regular credit was to create a "windfall" for those taxpayers subject to it. It may be that this interpretation is because the nature of the regular credit formula results in a tax credit of 10% of current year QRE when the 50% base limit applies. Thus, it doesn't look like an incremental credit in that situation. The GAO statement takes the perspective that the taxpayer had too low of a base amount. Another perspective, illustrated in the next footnote, is that current year QRE were higher than in base years and the 50% limit prevents all of the QRE increase from getting full benefit of the credit.

[45] For example, under the ASC, if current year QRE = $500 and the average of the prior 3 years of QRE is $150, a credit of $59.5 is generated (14% x [$500 x (50% x $150)]). This rewards the taxpayer for a greater amount of QRE (and QR) in the current year. If the base were limited to 50% of current year QRE, the taxpayer's credit would be reduced to $52.5 (14% x [$500 x (50% x $250]]).

accounting approaches, but also exclude practices IRS finds of greatest threat to compliance, such as high-level surveys and claims filed long after the end of the tax year in which the research was performed."[46]

- To address concerns regarding credits claimed for the first time on amended returns, additional information can be provided and requested on business tax returns to help ensure that all taxpayers are aware of what R&D expenditures may qualify for a credit. For example, a statement can be provided explaining the credit with the question, "Did you engage in qualified research?" There will be times when taxpayers may need additional time beyond the extended due date to compute their research credit, such as due to an acquisition or time needed to gather the necessary records to calculate the credit or determine how much of the R&D was qualified research.
- Review Section 41 in light of the types of business activities of today rather than the 1980s. In particular, consider whether the general exclusion for internal-use software should be clarified to be sure that it is not overly broad given the nature of how software is used today and of web-based technologies.
- Evaluate what an appropriate research credit benefit should be. This evaluation should consider the economics of spillover benefits and benefits to be derived to the economy from greater private investment in R&D, what other countries do to stimulate greater R&D spending, and the interaction with other tax incentives.
- As corporate tax reform discussions focus on reducing the corporate tax rate, consideration should be given to the global competitive realities that, not only do other OECD countries have a lower statutory rate, but they also tend to offer research tax incentives as well.

V. Additional Recommendations (non-tax)

- Study what other countries do to encourage and benefit from private R&D.
- Consider whether any federal programs and expenditures hinder innovation in some way.
- In making any changes or additions to provide assistance for innovation, consider the varying needs of start-ups and small businesses versus larger businesses.
- Consider the bigger picture for U.S. innovation that also includes the need for and availability of high quality education opportunities for everyone. Relevant education to promote innovation extends beyond science, math and engineering but also includes liberal studies and entrepreneurial business knowledge and skills.
- Consider the recent work of OECD on fostering innovation (see the *Innovation Strategy: Getting a Head Start on Tomorrow*). This project aims to help answer the questions of how governments can better encourage greater innovation and how government can be innovative.[47]

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[46] GAO, *Tax Policy: The Research Tax Credit's Design and Administration Can Be Improved*, GAO-10-136, 11/6/09, page 40; http://www.gao.gov/products/GAO-10-136.

[47] OECD, *OECD Innovation Strategy: Getting a Head Start on Tomorrow* (May 2010); http://www.oecd.org/document/15/0,3746,en_2649_34273_45154895_1_1_1_1,00.html

- To better understand how much the government is investing in R&D and for data analysis, implement accountability measures that track not only direct spending on R&D, but also the spending in the tax law tied to special rules such as the research tax credit.[48]

Conclusion

Tax reform discussions since at least 2007, have called for lowering the corporate tax rate to improve the competitiveness of U.S. firms in light of other countries having lowered their corporate tax rates.[49] To lower the corporate tax rate in a revenue neutral manner, it has been suggested and computed that many tax preferences must be cut back or eliminated. In an October 2011 report, the Joint Committee on Taxation suggested that to lower the rate to 28% in a revenue neutral manner would include replacing MACRS depreciation with the slower Alternative Depreciation System, eliminating expensing of R&D costs and it was presumed in their calculation that there would be no research tax credit since it would expire at the end of 2011.[50] Needless to say, to achieve a lower corporate tax rate and maintain or even strengthen incentives for innovation will be challenging. In addition, lawmakers also need to consider the effect and cost of individual tax reforms, paying for the continuation of any of the 2001/2003 tax cuts and international tax reform needs.

In terms of incentives for R&D, in addition to items noted in the author's 2011 testimony, lawmakers should also consider the results achieved by a few European countries that adopted "patent boxes" where certain types of income generated from R&D work is taxed at a lower rate.[51]

Corporate reform will require modernizing the tax law to reflect today's global business environment, rapid changes in technology, and the reality that to sustain and grow economic activity, a tax system likely needs to not only not hinder innovation, but likely has to provide incentives to encourage R&D to be performed in the jurisdiction. We will see how tax reform proceeds in the 113th Congress and whether the extensive discussions during the time period of the 112th Congress lead to actual

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[48] The White House's R&D Dashboard is a good start. It should include both direct spending and tax expenditures. See http://www.whitehouse.gov/blog/2011/02/10/rd-dashboard-makes-federal-rd-data-transparent-and-accessible.

[49] See U.S. Treasury Dept., Approaches to Improve the Competitiveness of the U.S. Business Tax System for the 21st Century, Dec. 2007; available at http://www.treasury.gov/resource-center/tax-policy/Documents/Approaches-to-Improve-Business-Tax-Competitiveness-12-20-2007.pdf. In addition, House Ways and Means Committee Chairman Camp proposed lowering the corporate rate from 35% to 25% (see his proposal of October 2011 at http://waysandmeans.house.gov/taxreform/). President Obama called for lowering the corporate rate in a revenue neutral manner in his 2011 State-of-the-Union address (http://www.whitehouse.gov/the-press-office/2011/01/25/remarks-president-state-union-address).

[50] See Nellen, "The Rough Road to a 28% Corporate Tax Rate," *AICPA Corporate Taxation Insider*, Nov. 10, 2011; available at http://www.cpa2biz.com/Content/media/PRODUCER_CONTENT/Newsletters/Articles_2011/CorpTax/TheRoughRoadtoa28PercentCorporateTaxRate.jsp.

[51] For more information on patent boxes, see Peter R. Merrill, James R. Shanahan, et al, "Is It Time for the United States to Consider the Patent Box?," *Tax Notes*, March 26, 2012; available at http://www.pwc.com/en_US/us/washington-national-tax/assets/Merrill0326.pdf. Also see June 2011 information from the United Kingdom at http://www.hm-treasury.gov.uk/press_57_11.htm.

reforms of the U.S. tax system. The work to design effective tax reforms will certainly be quite challenging, but not impossible.

Appendix

Rationale for the Research Tax Credit

President Obama (2011)

"The R&E tax credit is a powerful incentive for private firms to make investments in the research and development necessary to keep a pipeline of new and improved products coming to market, which is critical to economic growth and job creation. Yet the United States currently ranks 24th out of 38 countries in the generosity of our R&E tax incentives. That's why, as part of corporate tax reform, the President supports making the R&E tax credit permanent to give businesses the certainty they need to make these important investments. In addition, the Administration wants to expand the credit by about 20 percent, the largest increase in the credit's history, and simplify it so that it is easier for firms to take this credit and make the investments our economy needs to compete."[52]

Treasury Department (2007)

"The R&E credit is an example of a targeted tax incentive that attempts to correct a market failure. Without a subsidy, the private market might not allocate enough resources to research because private inventors cannot reap the full benefit of their inventions. It can be difficult for inventors to charge all those who use or benefit from their invention. For example, an invention might be copied by others, or it might pave the way for further improvements. Because the inventor might not be able to collect the invention's full return, he has an insufficient incentive to conduct research and develop innovations. He foregoes investments in research that produce social benefits in excess of their private costs. A tax subsidy is one way to increase the return available to the private inventor, and correct for the failure of the private market to reward innovation sufficiently."[53]

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[52] FY2012 Budget, "Competing and Winning in the World Economy," page 37; available at http://www.whitehouse.gov/sites/default/files/omb/budget/fy2012/assets/competing.pdf.

[53] Treasury Dept., *Background Paper, Treasury Conference on Business Taxation and Global Competitiveness*, 7/27/07, pages 9 – 10; http://www.treasury.gov/press-center/press-releases/Documents/07230%20r.pdf. Note: this background paper points out problems with the credit and other incentives to help justify elimination of preferences in exchange for a much lower corporate tax rate.

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