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TAX REFORM OPTIONS: INCENTIVES FOR INNOVATION

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TAX REFORM OPTIONS: INCENTIVES FOR INNOVATION

TUESDAY, SEPTEMBER 20, 2011

U.S. SENATE,
COMMITTEE ON FINANCE,
Washington, DC.

The hearing was convened, pursuant to notice, at 10:06 a.m., in room SD–215, Dirksen Senate Office Building, Hon. Max Baucus (chairman of the committee) presiding.

Present: Senators Bingaman, Kerry, Wyden, Schumer, Cantwell, Nelson, Carper, Cardin, Hatch, Grassley, Snowe, Kyl, and Crapo.

Also present: Democratic Staff: Russ Sullivan, Staff Director; Diedra Henry-Spires, Professional Staff; Amber Roberts, Tax Exempt Organization Policy Staff Member; Lily Batchelder, Chief Tax Counsel; and Holly Porter, Tax Counsel. Republican Staff: Chris Campbell, Staff Director; and Nick Wyatt, Tax and Nomination Professional Staff Member.

OPENING STATEMENT OF HON. MAX BAUCUS, A U.S. SENATOR FROM MONTANA, CHAIRMAN, COMMITTEE ON FINANCE

The CHAIRMAN. The committee will come to order.

Apple cofounder Steve Jobs once said, and I quote him: "Innovation distinguishes between a leader and a follower."

Thirty years ago, on the heels of the 1982 recession, a divided Congress passed the first Federal research and development tax credit to help stimulate economic growth. The United States became the world's leader in funding research.

This ushered in years of innovation and investment in groundbreaking research. Since then, United States companies have changed the world with revolutionary inventions. These include microprocessors, mobile phones, solar panels, office software, personal computers, and social networking.

The United States still leads the world in international patent filings. We risk losing that title. While our international patent applications fell slightly from 2006 to 2010, China's tripled. We are not doing enough to support our research and development, and this puts our country's competitiveness at risk.

Today, out of the 21 OECD nations, the United States ranks 17th in tax incentives for research and development. And American companies have little certainty that the main tax incentive for research and development, the R&D credit, will continue.

Since 1981, we have relied on 14 short-term extensions to renew the credit. This undermines the potential of the tax credit to provide the certainty businesses need to generate meaningful growth.

Today, again, in the wake of a recession, Congress must do its part to support American ingenuity. Development and innovation here at home will boost our economy, and they will help create jobs so desperately needed.

Economists, such as Gregory Tassey of the National Institute of Standards and Technology, argue that technology is the single-most important determinant of long-term growth. Technology creates new market opportunities. This increases productivity and quality, and helps businesses create good-paying jobs and profits.

Today we discuss how we can most effectively encourage R&D to help create jobs here at home. Clearly, the world is a much different place than it was 30 years ago when we first created the R&D tax credit. We are not the only country thinking along these lines. Competition is now fierce as other nations try to lure scientists and investors to their shores. Now, more than ever, it is crucial that we remain the leader in R&D.

To understand this issue and help businesses create jobs, we at the Finance Committee must think like inventors. In doing so, we must also structure any tax incentives to get the most bang for our buck given our enormous fiscal challenges.

Clearly, tax credits are not the entire solution. But we can look to improve the incentives to innovation through tax reform.

Yesterday we took a major step forward. Senator Hatch and I introduced a permanent R&D tax credit, the Growth Research Opportunities With Tax Help Act, otherwise known as the GROWTH Act. This bill would make the research and development tax credit a permanent part of the tax code. Making this tax credit permanent will provide certainty.

It is really nuts, frankly. The R&D tax credit has been like a yo-yo. It has been up and down and up and down. Businesses cannot depend on it. Sometimes it is extended, sometimes it is not. Sometimes they have gone a period of time when it has not been extended.

We tell businesses, "Oh well, Congress will extend it." Yes, we will do that. But nevertheless, if we are always extending it, why don't we just make it permanent? I think it would be a lot better.

Making this tax credit permanent will provide that certainty. It will help spur economic growth for generations to come.

The bill also simplifies and enhances the tax credit, making America more competitive in the global race for jobs and investment. I suspect we will hear from some of our witnesses today on other ways to improve the credit. I want to hear those ideas.

So let us be innovative. Let us think like inventors. Let us be creative. Let us understand what drives businesses to innovate. Let us support that innovation. And most importantly, let us lead, not follow.*

[The prepared statement of Chairman Baucus appears in the appendix.]

The CHAIRMAN. Senator Hatch?

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*For more information, *see also,* "Tax Incentives for Research, Experimentation, and Innovation," Joint Committee on Taxation staff report, September 16, 2011 (JCX–45–11), *https://www.jct.gov/publications.html?func=startdown&id=4358*.

OPENING STATEMENT OF HON. ORRIN G. HATCH, A U.S. SENATOR FROM UTAH

Senator HATCH. Thank you, Mr. Chairman. I appreciate your comments. And thank you for holding this hearing. It could not come at a better time.

The economic growth that will ultimately drive lasting job creation lags behind that of previous recoveries, and economists increasingly fear that we are at risk for a double-dip recession.

In response to the increasingly dire economic picture, the President recently urged Congress to take up and pass legislation that would promote job growth.

For reasons I will not get into here, individuals from both parties have objected strongly to the President's jobs proposal. However, there are steps that this Congress could take today to start turning the economy around and create American jobs, and those steps begin with the promotion of innovation.

The importance of innovation to job creation is not just a belief of mine. It was a central teaching of the early 20th-century economist Joseph Schumpeter. Schumpeter argued that innovation is essential to economic change and growth. Of course, research is essential in discovering innovations.

So then the question becomes, how can we be assured that research and development is occurring at a pace that ensures innovation and economic growth?

Generally speaking, the answer is by promoting a vibrant free market. A private sector fortified by economic liberty and the rule of law is our strongest engine of economic growth—not the Federal Government, by the way. With a robust private sector, capital flows to innovations and technologies that will profit not only those who invest in them, but society as well. However, there can be cases where those performing R&D create significant positive externalities.

Those investing in and performing R&D may create great benefits for society at large. Yet, they are not always able to capture much benefit for themselves through increased profits. Though an innovation might be quite valuable for our society, researchers and developers are not always able to capitalize on those innovations.

To correct this problem of positive externalities, the government does act to promote research and development in certain limited contexts. One way the government steps in is by awarding inventors patents, to give them an exclusive right to sell their invention for a certain set number of years.

Sometimes the government directly funds R&D. This has proven particularly useful with respect to national security. In addition, for decades, the government has also provided tax incentives to promote and reward R&D. Since 1954, there has been a deduction for R&D expenditures. This is a permanent feature of the tax code.

The deduction for R&D expenditures is an incentive to perform R&D. It has also proven to be a significant simplification, saving taxpayers and the IRS from having to debate the useful life of intellectual property resulting from R&D.

Since 1981, there has also been a credit for R&D expenditures. The United States' R&D credit has always been incremental in nature. One cannot claim a credit based on all R&D expenditures, but

only to the extent one's R&D expenditures exceed a certain base amount.

The rationale for this has been that there is no need for the government to give a credit for R&D that would have been done even in the absence of a credit. Instead, the R&D credit has always been focused on the margin, on the increment above and beyond R&D that would have been performed anyway.

This is not the way that all countries structure their R&D tax incentives. Some grant an R&D benefit for any and all R&D expenditures.

One of the keys to successful tax policy is permanence. The tax policy goal of economic growth is undercut by temporary provisions. Unfortunately, the R&D credit has always been temporary. It has sunset numerous times over the course of the last 30 years, and it is currently scheduled to sunset yet again in a mere 3 months, at the end of 2011.

The temporary nature of the credit significantly undermines its incentive effect. So I am pleased, Chairman Baucus, that you and I introduced a bill just yesterday to extend permanently the R&D credit. I am glad to be joined in this effort not only by you, but also by a number of our colleagues on the Finance Committee.

As Congress contemplates actions to stimulate job growth, it would do well to start with this hearing today. Reauthorizing the R&D credit and making it permanent would be a real lift for our economy.

I personally want to thank you for your leadership on this issue. It has been a pleasure to work with you over these many years.

You are absolutely right. We have to make it permanent so that businesses can rely on it, plan on it, and continue to move ahead from a research and development standpoint, and I think you deserve a lot of credit for that.

Thank you, Mr. Chairman.

[The prepared statement of Senator Hatch appears in the appendix.]

The CHAIRMAN. Thank you, Senator.

The committee will now move into Executive Session.

[Whereupon, at 10:18 a.m., the hearing was recessed, reconvening at 10:34 a.m.]

The CHAIRMAN. I would like to call the witnesses to the table.

Again, I thank all Senators. Senators who wish to stay for the hearing are certainly invited to do so. We all might learn something.

Our first witness is Dr. Scott Wallsten. Dr. Wallsten is the vice president for research at the Technology Policy Center and a senior policy fellow at the Georgetown Center for Business and Public Policy.

Second is Michael Rashkin. Mr. Rashkin is the author of "A Practical Guide to Research and Development Tax Incentives: Federal, State and Foreign."

The next witness is Annette Nellen. Ms. Nellen is a professor of accounting and finance at San Jose State University's College of Business.

Finally, Dr. Dirk Pilat. Is that correct? Yes? Good. Thank you. Dr. Pilat is head of the Structural Policy Division for the Organiza-

tion for Economic Cooperation and Development Directorate for Science, Technology, and Industry.

Thank you all very much for coming. This is an extremely important subject. And I encourage you to summarize your statements for about 5 or 6 minutes. Statements will automatically be included in the record.

Dr. Wallsten, you are first.

STATEMENT OF DR. SCOTT WALLSTEN, VICE PRESIDENT FOR RESEARCH AND SENIOR FELLOW, TECHNOLOGY POLICY INSTITUTE, AND SENIOR POLICY FELLOW, GEORGETOWN CENTER FOR BUSINESS AND PUBLIC POLICY, WASHINGTON, DC

Dr. WALLSTEN. Thank you, Mr. Chairman, Senator Hatch, and members of the committee, for inviting me to testify here today. My name is Scott Wallsten, and I am vice president for research and senior fellow at the Technology Policy Institute, as well as a senior policy fellow at the Georgetown Center for Business and Public Policy.

Research and development plays a crucial role in our economy and our future welfare. Two factors, however, suggest that there could be a gap between the optimal and actual levels of R&D activity in the economy.

First, R&D exhibits classic positive externalities. In other words, its benefits extend beyond the innovator as others build on it. But because firms base their R&D spending on their own expected returns, not the social expected returns, they invest less than they would if they could appropriate all their returns. That is, by themselves, businesses are likely to invest fewer resources than is efficient from society's overall perspective.

The private returns to R&D are difficult to measure, but studies suggest that, in industrialized countries, they are probably about 20 to 30 percent, significantly higher than returns to other investments. Measuring the so-called research spillovers and, thus, the total returns to R&D is even more difficult, but a wealth of studies suggest that they are substantially higher than private returns.

If the marginal private returns are so high, why don't firms invest more? The answer is the second reason there may be a gap between optimal and actual levels of R&D activity.

Primarily because of its riskiness and the inability of the researcher to provide full information to financiers, the cost of capital for research may be higher than for other goods. Both factors suggest that government can play an important role in supporting R&D, ranging from conducting R&D itself, to directly financing others to do it, to creating incentives for others to invest their own money in it. And, indeed, the government does all those things.

In 2010, Federal agency budgets included about $149 billion for R&D spending. That represented a general upward trend over the previous decade in real dollars, though R&D budget obligations decreased by about 3.5 percent in fiscal year 2011.

To be effective, however, government R&D activities must generate R&D that would not happen otherwise. If government merely subsidized R&D that firms or others would have undertaken anyway, then the government support would have zero effect, and would simply crowd out other sources of finance.

Identifying the areas government should fund is not always easy. Industry spends far more than the government on R&D. According to the National Science Foundation's most recent data, in 2008, industry funded about $268 billion in R&D. The trick for government is to figure out how to generate R&D that would not happen without subsidies.

Achieving this goal is probably easiest in the case of basic research, where private returns may be small, especially in the short run, but the total returns may be large, especially when they diffuse among lots of researchers. And government does spend more on basic research than industry does. While only about 4 to 5 percent of industry R&D spending is on basic research, nearly half of all Federal non-defense R&D is on basic research.

But stimulating additional research is more difficult for government policy in the case of applied R&D or projects closer to commercialization, where the private sector has stronger incentives to provide funding.

In theory, research projects do exist, even ones very close to yielding commercializeable products, that industry does not expect to be profitable, but whose total benefits would exceed costs and, thus, justify government support. Unfortunately, we generally have no good way to identify those projects.

Understandably, government typically tries to fund projects most likely to succeed, especially if a metric of success is whether the subsidy yielded a payoff. But in that case, government risks basing funding decisions on the same criteria the private sector would use. If that happens, the program as a whole may appear to be successful, but, if government funding simply replaced private funding, then the program is not effective at all.

In part for that reason, direct government funding of commercializeable industrial research has a mixed track record, at best. The first step in making those programs more successful would be designing them in such a way that they could be rigorously evaluated. Such evaluations would mean, at a minimum, tracking projects and firms that did not receive subsidies, as well as those that did, and, in the best case, introducing evaluation tools such as randomization.

However, government has shown no interest in rigorous evaluation of corporate subsidies in the past, and no evidence suggests it will in the near future either.

The R&E tax credit, however, is different from direct R&D subsidies. Unlike direct subsidies that, by definition, require difficult decisions that yield winners and losers, the tax credit encourages R&D more broadly and appears to be a rather successful policy tool that most studies find does stimulate additional R&D.

Although the R&D tax credit should be considered successful, two factors have probably blunted its effectiveness. First, its lack of permanent status reduces its ability to coax firms to do more R&D. Because firms tend to smooth their R&D spending over time, their responses to temporary policies are likely to be muted.

A temporary tax credit will, therefore, have limited effectiveness. That is, if firms do not have confidence that the credit will remain in effect, they will probably not increase their R&D spending by as much as they would if the credit were permanent.

A permanent R&D tax credit would be more consistent with the way companies make decisions regarding R&D spending and is more likely to have the intended positive effect on private spending.

A second reason the tax credit may not have been as successful as it could have been is related to how it determines which expenditures are eligible. In order to be effective, the credit must generate new R&D, not just subsidize R&D that would have happened anyway.

For this reason, the credit appropriately requires defining qualified expenditures and setting a baseline amount. Neither of those is simple, and a recent GAO report found that the credit was inadvertently subsidizing some R&D spending that would have occurred anyway, in part because the baseline level of spending was calculated using data more than 20 years old.

Updating and simplifying the process for determining eligible expenditures is also likely to increase the effectiveness of the tax credit, if that makes it possible to better target the credit to do R&D.

Stimulating new research in the U.S. requires additional policies, as well. For example, most R&D expenditure are for scientists and engineers, and their supply is relatively fixed in the short run. More spending on R&D without increasing the number of scientists and engineers may result in higher salaries for people already doing R&D, but not more R&D itself.

The most effective way to increase the supply of scientists and engineers in the U.S. is to attract the best from wherever they are, which requires looser immigration policies. While immigration is beyond the scope of this committee, it nevertheless remains an important complement to tax policy if the goal is to encourage new R&D.

In short, R&D is crucial to our future well-being. The R&E tax credit is one of the few government policies that is widely recognized as successfully stimulating additional R&D.

Its effectiveness would be strengthened, first, by making it permanent and, second, by careful consideration of what is considered baseline spending and what is eligible for the credit.

Thank you.

[The prepared statement of Dr. Wallsten appears in the appendix.]

The CHAIRMAN. Thank you, Dr. Wallsten.

Mr. Rashkin, you are next.

STATEMENT OF MICHAEL D. RASHKIN, AUTHOR, "PRACTICAL GUIDE TO RESEARCH AND DEVELOPMENT TAX INCENTIVES: FEDERAL, STATE AND FOREIGN," SARATOGA, CA

Mr. RASHKIN. Good morning, Chairman Baucus, Ranking Member Hatch, and distinguished members of the committee. Thank you very much for inviting me to testify here today.

The CHAIRMAN. You might want to pull your microphone closer, Mr. Rashkin, so we all can hear you better.

Mr. RASHKIN. All right.

The CHAIRMAN. Thanks. Much better. Thank you.

Mr. RASHKIN. Thank you very much for inviting me here to testify today. It is truly an honor to participate in this legislative process.

My name is Michael Rashkin. I am the author of "The Practical Guide to Research and Development Tax Incentives." I have been a tax lawyer practicing for almost 40 years. During that time, I have worked for companies that invented the minicomputer, the personal computer, and the plug computer. So I have seen the development of the information age from inside companies that helped create the technologies for the information age.

The testimony I give here today is on my own behalf and not on behalf of any company or organization.

The United States is a very innovative country. We have the greatest universities. We have the greatest high technology companies. We spend more money on research and development than anywhere else in the world, and we have Silicon Valley, which is the center of innovation in the entire world.

And yet, we see things are going wrong. We see that jobs are leaving the United States. Capability, manufacturing capability, is leaving the United States, and even design capability is leaving the United States.

So why is this happening? Well, there are a number of factors, of course. There are labor rate disparities. There is the high cost of medical care. There are deficiencies in our science and technology education system.

But there is one factor that I believe we have not been giving enough attention to, and that is our tax system. Our tax system is part of a process which is working to cause the export of jobs and technology from this country. And, if we wanted to design a system to do that, we could not have done a better job.

So let me explain to you how this process works. You can see on this chart——

The CHAIRMAN. I cannot see it. It is too small. Is it in your statement?

Mr. RASHKIN. I can describe it, Senator.

The CHAIRMAN. All right.

Mr. RASHKIN. The first step in the process is that the government provides subsidies for basic research through the NSF and other government agencies, and we do a great job of that.

We also provide subsidies for private companies to do product development research, and sometimes that product development research is based on the basic research that has already been subsidized by the government.

Companies then take this technology that they have developed, and they park it in tax havens. This gives them the ability to earn profits on a tax-free basis outside the United States.

They then receive foreign incentives from countries that would like to attract them. The result is, we have a manufacturing or an R&D facility in a foreign country, we have foreign jobs, foreign R&D, no U.S. jobs, no U.S. revenue.

Is it any wonder that we have an employment and deficit problem? And this process creates a very long-term problem because, as it continues, it becomes irreversible. And it has become irreversible for many industries.

But this process has been caused by the tax code, and we could reverse this process by making changes to the tax code. And I am recommending three steps that we could take.

The first one is to eliminate tax deferral for tax haven profits. By allowing companies to put their technology in a tax haven and operate tax-free outside the United States, we are basically giving U.S. companies an engraved invitation to set up foreign manufacturing and technology operations. Why should our tax system provide an artificial advantage for foreign operations as opposed to U.S. operations?

Step two, we should increase the R&D credit to 30 percent, but make the credit applicable only to innovative research and breakthrough products. Currently, the R&D credit applies to ordinary research and development. Why should the U.S. Government be financing the ordinary day-to-day activities of U.S. corporations? We should increase the rate to 30 percent, make it applicable to innovative research, and make the U.S. a magnet for breakthrough technologies.

Step three, we should provide, for companies that develop products in the United States and manufacture in the United States, a zero or low tax rate. If we do that, then, instead of companies looking for which country to put their products in, to manufacture their products in, they will be looking at which State to put the products in, and we would reinvigorate the manufacturing industry in the United States.

So, if we do these steps, as you can see on the chart in my presentation, the result will be U.S. jobs and R&D instead of foreign jobs and R&D.

Now, I would like to switch now to talking about the R&D credit. The R&D credit has been the primary tool for incentivizing industrial research. Unfortunately, I believe the R&D credit has not been effective.

There is something called the one-to-one ratio, meaning you get $1 of increased R&D for each $1 of tax benefit. I think this is a very poor return. Who would have thought that we can set up an R&D credit, give a company $1, get $1 back, and assume that that is a success? I think that is a failure.

So we have to do something that will multiply the benefit that we give companies. First of all, we should make the R&D credit applicable to small companies. The R&D credit at this point only applies to cash-rich large companies. Small companies do not have tax liability. They cannot utilize the R&D credit.

We should make the credit refundable or transferrable.

Two, the credit is much too complex. We must simplify the credit by eliminating incrementality, limiting the credit to wages of technical personnel, eliminating the loss of the section 174 deduction, and eliminating the separate basic research credit.

We should also eliminate stock option compensation in the qualified research expenditure base. There is no reason for us to be subsidizing the exercise of employee stock options.

The CHAIRMAN. I am going to have to ask you to summarize, Mr. Rashkin.

Mr. RASHKIN. I will be happy to take your questions.

[The prepared statement of Mr. Rashkin appears in the appendix.]

The CHAIRMAN. Thank you very, very much. That was very interesting.

Ms. Nellen?

STATEMENT OF ANNETTE NELLEN, PROFESSOR, DEPARTMENT OF ACCOUNTING AND FINANCE, COLLEGE OF BUSINESS, SAN JOSE STATE UNIVERSITY, SAN JOSE, CA

Ms. NELLEN. Good morning, Chairman Baucus, Ranking Member Hatch, and members of the committee. My name is Annette Nellen. I am a tax professor at San Jose State University. I am both a CPA and an attorney.

My testimony today is based on over 20 years of experience working with the tax law, particularly time devoted to understanding the tax treatment of R&D, software, intangibles, and the Internet, as well as tax policy and reform.

Much of my writing, including blogging, is focused on promoting tax reforms that follow principles of good tax policy and reflect 21st-century ways of living and doing business.

Thank you for the opportunity to testify today.

The topic of this hearing is a welcome one in that it carries 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 the taxing jurisdictions' economic, societal, and environmental goals.

Innovation is a hallmark of our country and a key driver of economic growth, improvement in living standards, and a better environment. Innovation must be considered in tax reform at least to be sure the tax law does not hinder innovation, thereby harming economic growth.

Tax reform should also consider whether there are economic reasons for the tax system to help support innovation. I believe such reasons exist. The question then becomes how. This is a complicated question involving various aspects of tax law, including depreciation, treatment of investment, AMT, international tax rules, and direct financial support in the form of tax credits.

Innovation should also be considered in administration of the tax system. Too often, tax reform focuses only on the base and the rates rather than, also, on administering the tax system.

Tax innovation brings to mind the research credit, but there are additional provisions relevant to innovation, such as the deduction for R&D under section 174 and the capital gains incentive for inventors under section 1235.

There are also provisions that potentially hinder innovation. I will point out a few of these obstacle provisions and suggest some improvements. I will also note a few possible improvements of the research credit. My written testimony includes further details.

First, any incentive offered as a tax credit will not help companies such as startups operating at a loss, or a business that owes AMT. Thus, any credit intended as an incentive or to provide financial support should be useable against AMT and refundable.

Alternatively, for startups, a grant-type program, similar to that used for certain energy credits in the American Recovery and Reinvestment Act of 2009, should be considered.

Next, depreciation. Many Modified Accelerated Cost Recovery System lives, such as for computers, are too long. Also, R&D leads to new and better computers, cars, and equipment. If there are limitations on claiming depreciation for these items, such as a section 280F limit on car depreciation, there will be a reluctance for businesses to purchase the innovative products.

Improvements include a review of MACRS lives and repeal or cutback of the section 280F limitations, particularly for cars that use new technologies to achieve high mileage rates.

Also, the section 179 expensing election should be brought into the 21st century by also applying it to the purchase of intangible assets.

Next, consider targeted incentives to help provide funds to companies to engage in innovation, particularly small startup ventures. Section 1202 provides a benefit to individuals investing in qualified C corporations. Why not a similar benefit to encourage equity investment in partnerships and S corporations?

Innovators with a great idea need funding beyond a maxing out of their credit cards. More individuals would be willing to fund emerging innovators if any possible bad debt could be treated as ordinary loss, such as has been allowed for certain equity investments under section 1244 for over 50 years.

Tax-based approaches used in some States to incentivize angel investors or the innovators themselves should also be considered.

Finally, I offer a few suggestions for improving the research tax credit so it can better reach its goal of supporting more R&D activities in the U.S. The research credit will expire for the 15th time at the end of this year. Research activities involve a long-term view. Thus, research incentives that focus on the short-term cannot be fully beneficial and effective.

Short-lived incentives compare unfavorably to permanent incentives offered by other countries. Temporary incentives, even if likely to be renewed, cannot factor into the long-term research and financial planning decisions that companies must make. The short-term perspective of the current credit diminishes the benefits our economy could otherwise achieve through a tax credit. The research credit should be made permanent.

Next, the credit was created in the industrial era. It needs to be brought into the information age, such as by reconsidering the exception for internal use software, which is a key component of web-based products and services that did not even exist in 1981.

Finally, as corporate tax reform discussion focuses 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, they also tend to offer tax incentives for R&D.

Thank you. I look forward to your questions.

[The prepared statement of Ms. Nellen appears in the appendix.]

The CHAIRMAN. Thank you, Ms. Nellen.

Dr. Pilat?

STATEMENT OF DR. DIRK PILAT, HEAD, STRUCTURAL POLICY DIVISION, ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT DIRECTORATE FOR SCIENCE, TECHNOLOGY, AND INDUSTRY, PARIS, FRANCE

Dr. PILAT. Chairman Baucus, Ranking Member Hatch.

The CHAIRMAN. Could you bring the microphone a little closer, too?

Dr. PILAT. I will. Thank you very much for inviting the OECD to testify here today. My name is Dirk Pilat. I am an economist working at the OECD, with over 15 years of experience in innovation policy.

At the OECD, we collect the best possible data from countries on their investments in R&D, and we also analyze the factors and policies that drive innovation and growth. My testimony will, first, look at the use of R&D tax incentives across the globe and then examine some of the international evidence on their impact.

R&D tax incentives are now widely used in OECD and non-OECD countries. Today, 26 out of the 34 OECD member countries offer such incentives to businesses. Among the non-OECD countries, Brazil, China, India, the Russian Federation, and South Africa also provide tax incentives for R&D. Germany is the only G7 country that does not offer such incentives at the moment.

The existing schemes differ significantly across countries in terms of their generosity, their design, and how they explicitly target different firms or specific areas. Most countries apply a system where an R&D tax credit is provided on the volume of R&D expenditure undertaken, while others, including the United States, target R&D incentives to the incremental R&D expenditure.

Some countries target firms that conduct basic or collaborative research, and many provide more generous incentives for small and medium-size enterprises. Some countries also provide special incentives for small firms and young firms. Some of these differences are illustrated in more detail in our written testimony.

Tax incentives for business R&D are typically part of a broader set of policies to support business investment in R&D, which also includes direct support, such as grants, or R&D procurement contracts.

Estimates of the costs of most of these systems are shown in figure 1 of our written testimony. It illustrates that some OECD countries basically provide all their support for business R&D through direct systems, while others, like the United States, rely much more on direct support for business R&D. A third group of countries, like Canada and also Japan, relies mainly on R&D tax incentives.

A general trend among many OECD countries has been to make their R&D tax incentives more generous. Another has been to increase the availability and simplicity of the use of these systems, with many countries moving towards volume-based credits.

The evidence on the effectiveness of R&D tax incentives comes from a wide range of studies from countries that often are very different. What works in a small European country, obviously, may not work in the United States and vice versa. Nevertheless, we believe such studies may illustrate some of the possible impacts.

The available evidence shows that R&D tax incentives do increase business expenditure on R&D, with the effects typically being larger in the long run than in the short run. The evidence also suggests that smaller firms seem to be more responsive to the R&D tax incentive than larger firms, typically because these firms are much more credit-constrained. The evidence also suggests that the impact is affected by policy design, with estimates for incremental R&D tax credits typically being higher than those with volume-based R&D tax credits.

The stability of the R&D tax incentive scheme over time also plays an important role. Expectations that R&D incentives are permanent strengthen their impact on R&D investment.

Finally, let me come to the issue of R&D fiscal incentives and the location of innovative activities. In recent years, several governments have also started to use innovation policies to attract R&D activities of multinational firms. The evidence suggests that the decisions of multinational enterprises (MNEs) to conduct R&D in a certain country are certainly influenced by the availability of tax incentives.

However, it also suggests that other factors are typically more important. These factors include access to local science and technology, proximity to university research and centers of excellence, availability of a skilled workforce, including engineers and scientists, and strong intellectual property rights. And, if the focus is on development, not on the research but mainly on development, access to a large market is particularly important, as well.

Multinational firms typically first draw up a short list of preferred locations on the basis of such economic fundamentals and consider government support in the short list of locations only at a later stage when they have already looked at whether the economic fundamentals are correct.

It is clear, of course, that when having two or more relatively similar locations, especially when such competition happens in a small region, government support and R&D tax incentives can tilt the investment decision of a firm in one way or the other.

This concludes my testimony. Thank you, and I look forward to your questions.

[The prepared statement of Dr. Pilat appears in the appendix.]

The CHAIRMAN. Thank you, everybody, very much. Very interesting.

A basic question that is arising here in the Congress is, what if we were to very significantly broaden the base and lower the rate, get rid of a lot of these so-called tax expenditures, including the R&D tax credit, and, in return, we had a very low rate?

Your response? I know there are different industries. Some industries use the credit more than others. That may be worse than rough justice.

But your thoughts about, generally, not increasing the tax credit, the R&D tax credit, not greater incentives, but going the other direction, eliminating many of the credits, deductions, exclusions that we have in the code. One might be the R&D tax credit. Let us assume, for the sake of discussion, that that is on the list.

Let us just go the whole way. We have $1 trillion worth of tax expenditures in this country a year. I am not saying get at the

whole $1 trillion. We raise about $1 trillion in income tax a year. But let us say we—here's the basic question: would companies tend to innovate, spend what they want to spend on research and innovation if the rate were a lot lower than it is today? That might also get to the haven question, because, obviously, a disparity of rates makes it more attractive for a U.S. company to look at another country, a haven country, and to locate some of its facilities there.

I will just throw it open. If anybody has a strong view on that subject, raise your hand. Let us get at it.

Mr. RASHKIN. Yes. First of all, I would say that I do not think the R&D credit is very effective. I do not think it actually increases any R&D or any innovation. Companies do R&D for strategic purposes. They have to make products to compete with other companies. And all the economic studies, the GAO report, for example, points out that there is a lot of wasted money that is paid to companies for research they would otherwise do.

If we reduce the tax rate, it would have no effect on innovation, and it would also give us an opportunity to do other things, such as eliminate the tax-free nature of tax havens.

In other words, if we made tax havens taxable, we expanded subpart F, but we had a lower rate, that would be acceptable to—I believe that would be acceptable to American industry, and it would cut out all the games we have to play by putting technology offshore, all these cost-sharing agreements and things of that nature, and companies would be looking to do business in the United States instead of overseas.

The CHAIRMAN. Does anyone else have a thought on that question or maybe a response to Mr. Rashkin?

Dr. Wallsten?

Dr. WALLSTEN. So, first, to your question. My answer is probably unsatisfying, but——

The CHAIRMAN. I want to hear what you want to say.

Dr. WALLSTEN. The answer is, it depends.

The CHAIRMAN. I do not care whether I am satisfied or not. Just say what you think.

Dr. WALLSTEN. The answer is, it depends. By simply lowering the taxes overall, it will change the relative returns of lots of different types of investments for the firm, and then they will sort of change. It will sort of reorder the marginal returns of each type of investment.

Whether that means more innovation or less probably depends on what the net effect of the tax rate on investment in R&D is and, also, relative to how it affects their returns on other types of investments.

So the answer is, I do not know, but it is probably a more complicated answer.

But also, to respond just to Mr. Rashkin's point, it is important to minimize the amount of infra-marginal subsidies, the extent to which we subsidize research that would have occurred anyway.

But most studies do find that the tax credit is effective on the margin. And getting an extra $1 of R&D is actually quite a good outcome. I do not know how you would expect to get more than $1 from $1.

The CHAIRMAN. Ms. Nellen?

Ms. NELLEN. Yes. I think lowering the corporate tax rate would help R&D, because money that is not——

The CHAIRMAN. In return, we are going to also lower the credit.

Ms. NELLEN. Yes. Because lowering the rate, less money going to tax—if you look at tech companies, they do not tend to pay much in dividends, so it is going to go back into R&D. So I think there is certainly a benefit there.

The CHAIRMAN. Dr. Pilat, what do you think about it? I do not want to cut you off. I just do not have a lot of time here.

Dr. PILAT. Perhaps two points. One is, I think that the U.S. is now the largest spender on business R&D because of the R&D tax credit, and I think that is something we need to recognize. That is one element in your policy mix.

The second point is, I think that we always think that R&D is perhaps a little bit special, in a sense, that there are spillover effects to the rest of the economy, which is the reason why you might want to perhaps give a credit.

The CHAIRMAN. I was stunned—perhaps "stunned" is too strong a word—when you said that Germany does not have a credit. Germany is doing pretty well.

Dr. PILAT. And in fact, actually, a number of countries do not have them. Finland is another country which does not have a tax credit, Switzerland is another one, and Sweden.

The CHAIRMAN. I assume those other countries give other benefits to their private sector.

Dr. PILAT. Most of them——

The CHAIRMAN. Do or do not?

Dr. PILAT. Most of them basically provide support to business R&D through direct support: grants, loans, procurement sometimes, and, of course, also, they support universities, research institutes, and so on.

The CHAIRMAN. Senator Grassley, you are next.

Senator GRASSLEY. I would like to ask you and also Senator Hatch—but Senator Hatch is not here—to pay attention to my first question, and to ask you if I could work with you on your bill to ensure that small businesses are not disadvantaged from some unnecessary restrictions that are in the tax code.

The CHAIRMAN. I will speak for Senator Hatch and say he will work with you.

Senator GRASSLEY. Well, thank you very much. And you too.

The CHAIRMAN. Yes.

Senator GRASSLEY. Thank you.

And I say to the panel, before I ask the question, and I will start out with Ms. Nellen, but if anybody else—I do not have to have all your opinions. But if there is any light you can shed on this, I would appreciate it.

Oftentimes, small businesses may not take advantage of the existing R&D credit just because they or their practitioners were not aware that they were eligible.

When they do realize that, they often do not have resources to reconstruct the records needed to claim the original R&D credit. This leaves them with only being able to claim the alternative simplified credit.

However, the Treasury Department has taken the position that taxpayers cannot claim the alternative credit if they did not elect to do so on their original return. That means that they cannot amend it.

So those businesses that do not have the resources to hire an army of tax lawyers and accountants essentially get no credit for their research activities.

GAO, in a 2009 report, found these taxpayers are "materially disadvantaged by the election limitations and there appears to be no reason for this prohibition."

You may remember, Mr. Chairman, that this is something that, when Dean Zerbe was a staff person, he would keep bringing up to us.

So I would like the panel's thoughts, starting with Dr. Nellen, on whether or not the prohibition on claiming the alternative simplified credit on amended returns is appropriate and what public policy is served by the restriction, and do any other countries have such limitations?

Ms. NELLEN. Thank you. I cannot talk about other countries, but that is an administrative burden that could be changed by saying, on the amended return, you could elect either one, because clearly, if you do not have the records going back to 1984 to 1988, you are going to be disadvantaged.

Another thing that might help is, if there are companies that just are overlooking the credit for some reason, maybe on the return itself, there should just be a statement, "Do you engage in this type of activity?"; bring it to their attention so they also have the opportunity to do that.

But so far as the change, so far as what they would claim on an amended return, there seems to be no policy reason why it should be restricted to one or the other.

Senator GRASSLEY. Do any of the others have a contribution to that? Go ahead.

Dr. PILAT. Just two small points. First is, I think quite a number of countries have tried to simplify access to the tax credits. Canada, for instance, has recently undertaken a number of steps to make it easier for smaller companies to get access to the tax credit.

Secondly, there are a couple of countries, including France, which have special credits for small firms and even for young firms, for startup firms, to make it easier for them to get access, because, as I mentioned earlier on, a lot of the small firms are more credit-constrained. So they often have more problems in sort of spending on R&D.

Senator GRASSLEY. Anybody else?

Mr. RASHKIN. I would say this is an incentive, and the public policy for it should be to allow companies to take the maximum incentive that they can obtain. And there does not seem to be any public policy to try to limit them by administrative means.

Senator GRASSLEY. Over the past several months, on another issue, we have heard from various academics and executives on the need for tax reform. They have testified that certainty regarding tax rates and a switch to a territorial system of taxation are important for America's businesses.

If such changes are made on a revenue-neutral basis, it would seem likely that you would have to broaden the tax base in exchange for the reforms.

The written testimony from the OECD highlights the fact that research tax incentives are now widely used in OECD countries, and non-OECD countries. So it seems that we should retain some sort of research tax credit. However, it is fair to question the effectiveness and efficiency of existing credits.

It is important to understand whether the credit is mainly being used by those who would be conducting research and developmental activities regardless of the credit.

We heard, in November 2009, quoting GAO, "Large corporations have dominated the use of the research tax credit." I will not go on with that quote.

Data from the Joint Committee on Taxation supports the finding. So it seems that the credit is not being utilized much by small businesses that are the engines of our economy. Testimony from the OECD indicates that some countries are implementing targeted research tax incentives.

So my question to Dr. Pilat and Professor Nellen is, what are the advantages and disadvantages to providing targeted research tax incentives, such as enhanced research credits for startups and small businesses, and can targeted incentives be structured without significant compliance or administrative costs?

Dr. PILAT. I am not a tax expert, and I am definitely not an expert on the U.S. system. So in that sense, I can only talk from international experience.

I would say that the advantage is clearly that small firms are important undertakers of R&D, particularly new firms. Startup firms play an important role. So to give incentives to these firms in one way or the other—and this can also be through other means, like the Small Business Innovation Research system, which the U.S. has—is probably important.

The disadvantage, of course, is that it increases the complexity of the system. These small firms are more difficult to reach, to target, than larger firms.

The international experience is typically that large firms are the main beneficiaries of R&D tax credits.

Senator GRASSLEY. Professor Nellen?

Ms. NELLEN. Thank you, Senator. For a startup company, if they are going to have losses, they are not going to have any tax liability. And then, even going into the future, when they first start generating some income, they will have net operating losses to carry back. So they are not necessarily in need of the credit, but they are in need of funds.

So perhaps another approach that would get them this necessary funding—because I think you see companies of all sizes, just some individual with some great idea that they would like to pursue but is limited on where they are going to get funding.

Some States do provide things through credits. Maybe the Federal Government could work with the States in providing even an additional amount. Perhaps even a thought about a grant for startups, because then they get the money sooner when they actu-

ally need it for their startup as opposed to waiting until they file a return and request a refundable credit.

Senator GRASSLEY. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

Senator Bingaman?

Senator BINGAMAN. Thank you, Mr. Chairman. Thank you all for being here.

One of the issues, sort of the broad issue, is whether it makes more sense for us to put tax dollars into direct support of this technology development or try to do it through this research and development credit.

I have a statement here that someone wrote out for me that I think I would be interested in getting your reaction to.

It says, "Economic analysis has shown that the Federal Government is able to stimulate about $1 of additional R&D expenditures for every $1 it spends on R&D through direct funding." On the other hand, analysis shows that the R&D tax credit stimulates anywhere from $.20 to $.50 in additional private spending for every $1 of foregone revenue.

Do you generally agree with that, that it is not nearly as effective for us to be trying to do this through the tax code?

Dr. Wallsten?

Dr. WALLSTEN. Actually, I disagree with that. I think direct government spending on R&D has big, important benefits, especially, as I said, with more basic research. And then, whenever government is funding something that would not have happened anyway—it will not stall defense R&D, for example—that is likely to have big spillovers too.

The problem is, when government tries to directly fund research projects, especially those that are more applied or closer to being commercialized, the people who are making the funding decisions, they try to pick the projects that are most likely to be successful. And those projects that are most likely to be successful may also be the ones that the private sector is likely to fund, because that is exactly the criterion that the private sector uses.

So, if government wants to look for these projects that would not be privately profitable, but would be socially beneficial, even if they are close to commercialization—but it is hard to develop a mechanism to do that.

The grant managers who are making these awards, they do not want to fund lots of projects that fail, even though, if you are trying to fund particular projects, many of them will fail.

What is the right number of failures? I have no idea. But, if every one of them is successful, it probably was not a successful government policy, because R&D is risky.

But nobody wants to be the one to fund lots of projects that fail.

Senator BINGAMAN. I think there was some mention of the SBIR program, Small Business Innovation Research program. Those are direct government grants to folks who want to do research, as I understand it, in small businesses, primarily, and my State has a lot of entrepreneurs who apply for and receive SBIR grants to pursue those.

I guess the question is, is that a good way for us to be funding them—that is, direct funding, that is the way Germany is doing

it—or are we better off telling them—setting up some kind of refundable tax credit for anybody who wants to do anything?

Dr. WALLSTEN. Well, if I might. Actually, I did a lot of work on the SBIR program, studying it. It was part of my dissertation, and then I published papers on it later on.

What I found—and this is a long time ago now—was that SBIR funding tended to crowd out private funding dollar for dollar. It funded lots of projects that yielded commercializeable products, but that by itself does not mean that the government subsidy was necessary.

You find lots of companies that seem to exist now solely for the purpose of getting SBIR grants. They get hundreds of them every year. They are called "SBIR mills." And so, is this successful? I do not know. For those, it is probably not.

On the other hand, it is a problem—for small businesses, it is a problem. As Dr. Pilat said, they tend to be more credit-constrained and, as Ms. Nellen and Mr. Rashkin both pointed out, if they do not have taxable earnings, they cannot benefit from the credit.

So it is a tough problem because, on the one hand, you do not want to just fund things that would have happened otherwise. On the other hand, they do not seem to benefit much from the credit as it is constructed.

Senator BINGAMAN. Mr. Rashkin, let me ask you one other question. Then you can answer either the question I asked or the previous one.

You have some ideas for how we could make the R&D tax credit less complex, and I fear that most of your ideas are not incorporated in the new bill that Senator Baucus and Senator Hatch have proposed.

You are suggesting we ought to eliminate incrementality. We ought to limit the credit to wages of technical personnel. We ought to eliminate the loss of the section 174 deduction. And we should make provision, I guess, by limiting the credit to the wages of technical personnel, to also automatically ensure that stock option compensation would not qualify, or maybe not. I guess that is a separate thing, because you could have technical personnel who are being compensated through stock options.

But in your view, it makes sense for us to make those changes in anything we wind up enacting.

Mr. RASHKIN. Yes, because, when the credit is complex, people really do not know what benefit they are going to get from the credit. And, if they do not know what benefit they are going to get from the credit, they just do not even consider it as an incentive.

And I feel that is what has been happening for the past 31 years. For the past 31 years, we do not, at this point, have any idea of any products that have been developed because a company has received some kind of R&D incentive.

Now, we know with direct grants—and that gets back to your other question—we know with direct grants, the money that has been given by the Defense Advanced Research Projects Agency, the National Science Foundation, we have many examples of breakthrough technologies that have created new industries.

But with regard to the R&D credit, the fact of the matter is, companies are going to do R&D. They are going to do the R&D that

gives them the biggest return. If you give them an incentive, the R&D that is done is at the bottom of the barrel. You are not going to get the high quality R&D as a result of the R&D credit. You are going to get the least quality R&D as a result of the R&D credit.

So I feel direct grants are more applicable. And I think, with regard to the SBIR grants, there is a study of the top 100 R&D innovations every year by *R&D Magazine*, and the companies that receive the SBIR grants are a very large percentage of those as compared to large companies receiving R&D credits.

Senator BINGAMAN. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

Senator Wyden?

Senator WYDEN. Thank you, Mr. Chairman. First of all, Mr. Chairman, we have had a long series of hearings on tax reform, and I commend you for holding this one, because I think this is particularly important. And my own sense is that the tax code is driving money, certainly, the investment dollar to tax shelters rather than innovation. And getting at this issue the way you have is, I think, exactly what we have to be doing.

The CHAIRMAN. Thank you.

Senator WYDEN. I commend you for it.

Let me ask you a question, Mr. Rashkin, if I could, about the chart you put together on page 2, because I think this is right at the heart of an important issue.

People know generally that there are tax breaks for doing business overseas. You go to any supermarket, people will tell you, "Hey, get rid of those tax breaks, that is outrageous." And they associate them with manufacturing jobs and the like.

But I think what you are laying out on page 2 is a new dimension that really has not been focused on, because I think what you are saying on page 2 is that tax breaks like deferral, where a business shuts down here, goes overseas, does not pay taxes to the American government until they bring the money back, that process is also hurtful to the cause of getting more research and development done in the United States. Is that correct?

Mr. RASHKIN. That is correct. I have been involved as a consultant to companies who had absolutely no reason, no business reason, to set up R&D operations outside the United States, and they did it primarily to take advantage of the benefits that I have outlined in this chart.

And so the U.S. is losing jobs, losing technology simply to allow companies to reduce their tax rate.

Senator WYDEN. Because you have done a lot of work in high tech, and it has been an area I have been interested in over the years, could you give us a couple of examples just on the point you were talking about, where you saw technology that you watched in this space over the last couple of years take the R&D offshore?

Mr. RASHKIN. Well, I could just say that this is a very generic tax structure, that, if you were a high-technology company and you went to a big 4 accounting firm or an international tax lawyer, what they would tell you is, what you should do is set up a tax haven company in the Caymans, Bermuda, or somewhere else, set up a cost-sharing agreement to put that technology in that country,

and basically, from then on, you are going to be able to earn tax-free profits on that technology for your foreign operations.

And then, also, the way the tax law works with regard to transfer pricing, the more activities that you have offshore, the more profits you have offshore. So our tax law, the transfer pricing, the intangible taxation, the subpart F rules, they are all forcing manufacturers to go offshore to reduce their tax rates.

Senator WYDEN. As far as I am concerned, Mr. Rashkin, the chairman can have you testify about twice a day, because it seems to me this transfer pricing is also at the heart of the upcoming debate.

For example, I came to the conclusion a while back, apropos of the chairman's point, that competitive rates solved a lot of problems.

One of the problems with transfer pricing, which is not addressed in some of the ideas for territorial reform and the like, is you can generate the sale one place and you can book the profit somewhere else, so that we could actually have more transfer pricing under some of these territorial regimes.

So you advocate—just so I have it correct—you would like to see the corporate rate in the vicinity of 25 percent, which kind of puts you right about where all the mainstream reform proposals are, the Bowles-Simpson proposal, almost all of them. Is that right?

Mr. RASHKIN. That is correct.

Senator WYDEN. And do any of you want to add any thoughts particularly on that last point with respect to the competitiveness of the corporate rate? It seems to me it is one of the encouraging things about the tax reform debate, that virtually all the reform proposals are coming in now about in the same ballpark. So I know several of you had comments on that, and my time is about out.

Did you want to add anything on the corporate rate?

Dr. PILAT. Perhaps not on the corporate rate. One comment from some of our work is that we do find that a lot of intellectual property is stored in places which you would not expect to be a place where a lot of R&D is taking place. So we do find that certain small islands are places where there is a lot of intellectual property.

As I mentioned in my earlier statement, we do not find, unlike Mr. Rashkin, that companies go out and invest in R&D in different locations mainly because of R&D tax incentives. The main reason they go somewhere is because of the market. It is because they can find science and research there. They can find scientists and engineers there. These are some of the main factors which seem to drive international location of R&D.

Senator WYDEN. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

Senator Carper, you are next.

Senator CARPER. Thanks, Mr. Chairman.

To our witnesses, welcome. Good to see you all. Thanks for joining us and for sharing your thoughts.

When considering any change to the tax code, I look at the issue really through a prism of four questions that I like to ask. And the first of those four questions is, will a proposal encourage economic

growth and provide what I describe as a nurturing environment for job creation?

The second question is, will it be fiscally responsible and provide the certainty and the predictability that both families and businesses say that they need?

The third question is really the golden rule kind of question: is the proposal fair, is it arguably fair?

And the fourth is, does the proposal make the tax code more simple or more complicated?

Those are the four questions I ask. The R&D credit affects or touches on just about all of these four questions. I agree that businesses need more certainty when it comes to making their research investments, and it makes sense to permanently extend the R&D credit.

I also agree that the current credit is greatly in need of simplification, maybe modification. You all have given us a lot to chew on here today.

I think a number of good proposals have been put forth to address these issues, including some that you all have mentioned. However, as this committee undertakes efforts to reform the tax code later this year, I also believe that it is critically important to enact proposals that strengthen productivity and the underpinnings of long-run economic growth.

And with that having been said, I want to direct a question, if I could, to Mr. Rashkin.

In your testimony, sir, you suggested that the 20-percent credit for R&D is, I think you said, inadequate and should be raised in order to increase the after-tax return to R&D investments by companies.

I would like for you to make the case for a higher percentage. And then I would like the other witnesses on the panel to weigh in in response.

Mr. RASHKIN. I believe, in order for an incentive to be effective, it really has to present a significant reduction in cost. The 20-percent rate also has an incrementality feature, and it also is subject to the 174 loss of deduction. And, when you take into account all these other restrictions and limitations, even though it is 20 percent, probably the effective rate of benefit to the company might be somewhere between 5 and 10 percent. And I do not think 5 or 10 percent is going to make much of a difference in a company making a decision to make a new product or not make a new product.

Now, the 30 percent that I am recommending is 30 percent, a flat 30 percent. We have no incrementality. We do not have any loss of 174 deduction. But we focus it only on innovative, breakthrough products. We should not be giving the R&D credit for people making new steering wheels or very ordinary things.

And so, therefore, the overall fiscal cost would probably be lower, even though you are giving 30 percent as a higher rate.

Senator CARPER. How do we make that judgment as to what qualifies? Some people are really big on steering wheels.

Mr. RASHKIN. I realize that there is a problem with setting the line, but I think it is better to have that problem than it is to let everything qualify. And so I think, when I take a look, for example,

at the solar energy credit, where we have a 30-percent rate, and in the calculations I have been involved in, I feel that they are very compelling.

When you get 30 percent, you really want to go out there and take advantage of that and put that solar panel on your company's roof.

Senator CARPER. Or your car's roof.

Mr. RASHKIN. Yes, even your car. So I think it has to be of that magnitude to really catch the attention of corporate decision-making.

Senator CARPER. Thanks for that. Let me just go down the list—would you go first, sir, please?

Dr. PILAT. Just two comments. One is that I think that the issue of refundability is definitely one issue which is important particularly for small firms that do not always have the income streams, basically. So you do need to think about that, I think, if you want to reach small firms.

The second point I would like to make is, at the moment, compared to other OECD countries, the U.S. system is not very generous. But I think you have to look at this in a broader context.

The U.S. does provide a lot of support for business R&D through direct support, and that has definitely certain advantages. So it is a question of balance.

Senator CARPER. Thank you. Please?

Ms. NELLEN. I think, in the context of us talking about lowering the corporate rate to increase the research credit rate, that might cause a problem with revenue neutrality, obviously.

I think looking at why you want to incentivize the R&D, and part of it, to get back to an earlier question, is that it is also compensating for some reluctance to engage in really risky products that might really be very beneficial to our society, where there is an economic need for that.

I would encourage looking at the section 280C cutback, because, if you are really trying to incentivize this, why then cut it back a little bit? I think that was probably done for revenue reasons, but I think lowering the corporate tax rate should be looked at.

Also, I would encourage an incremental credit, because otherwise you are awarding research that would be done anyway. It perhaps does not make a lot of sense.

Senator CARPER. Mr. Chairman, can I have one more comment? Please?

Dr. WALLSTEN. Right. So you are asking, assuming the credit is good, what is the right level. And I think that is sort of an empirical question, and I do not know of any studies that look at what are the different effects of different tax rates, say, across countries. I think that would be a useful study and would help us know. I do not know that we are getting the biggest bang for the buck possible, even setting aside the question of incrementality, which is an important one as well.

But I think it is an important question, and I do not think we have an answer to it yet.

Senator CARPER. This is a good panel, Mr. Chairman. Thank you all very much for your observations. Thanks.

The CHAIRMAN. I just want to focus a little more on jobs. Do any of the four of you think the current credit helps to create jobs? And would it make a difference if it is increased a little bit?

We have such high unemployment. If you add under-employed, it gets up there, 20 percent maybe.

Ms. NELLEN. I think it does have certainly a big tie to jobs, because the bulk of what you are giving the credit for is actually for the wages being paid to those doing the research. And I think there is a harm to the economy of not having the permanent credit, because, when companies are thinking where they are going to engage in their R&D, they cannot factor our credit into long-term planning. Yet, in other countries that have a permanent incentive, that can be done.

I think, also, the type of work that is being incentivized by the R&D credit, they are high-wage jobs, high-skill jobs, and I think that would be a big plus to have a permanent credit to help get the tech companies and others saying, "Yes, we are going to go back and engage in more R&D."

Mr. RASHKIN. I disagree on that. I disagree with the concept that the R&D credit creates jobs. You mentioned Dr. Tassey, and a quote from Dr. Tassey is, "As currently structured, the U.S. R&D credit probably has, at most, a minor and transitory effect on industry R&D spending." And as I said, we do not have any evidence in 31 years of any products that have resulted from the R&D credit.

Even the GAO report says, "In reality, it is impossible for policymakers to know how much research spending taxpayers would have done without the credit."

The CHAIRMAN. Let me ask a different question. We want to generally simplify the tax code. There are many who think that dramatic simplification—broadening the base, lowering the rates—will in and of itself result in greater economic efficiency and encourage companies, CEOs, to focus more on products, less on the tax code.

Do you agree? And if so, generally, what simplification do you suggest? How far should we go, and to what degree should it include incentives like R&D?

Dr. WALLSTEN. I do not think it is right to think of the R&D tax credit as part of jobs, at least in the short run. In the long run, I think it can be important, but, as Ms. Nellen said—I believe it was Ms. Nellen—most R&D expenditures are on wages, basically, compensation.

And unemployment among people with doctorates and science and engineering degrees is really low. Unfortunately, the latest data is 2008. So I am sure it is higher than it was then, but it was 1.7 percent, according to the National Science Foundation.

And so, if you do not do something to increase the supply of those people, then increasing spending on R&D just leads to higher wages, which is great for them, and may even attract more people in the longer run. But it is not a short-term jobs program, although it is hugely important for economic growth.

Other tax issues probably have much bigger effects on short-run employment.

The CHAIRMAN. Dr. Pilat?

Dr. PILAT. Just one comment. I think the evidence in the United States shows that most of the jobs are being created in young firms and new firms and startups, and, of course, the R&D tax credit system does not reach these firms directly. I do agree with Dr. Wallsten that a lot of these impacts of the R&D system basically come in the long run, basically because it increases growth, and some of these job effects will flow through to the economy.

The CHAIRMAN. That is an interesting point. I cannot forget the testimony of a CEO of a high-tech company in—it might have been Silicon Valley, I am not sure—but he made a passionate plea to increase the R&D tax credit, saying other countries give such big breaks, greater than does the United States.

One of the countries was already mentioned by one of you, Canada. He mentioned Canada as one major competitor. Then he said, of course, in China, it is even worse, that is, the incentives the Chinese give to R&D are much greater.

It just struck me that—it was a smaller company; it was not a big one. But if he is right, and he certainly thinks he is right, why do you not agree with him?

Mr. RASHKIN. If you take a look at some of these countries that have very high R&D incentives, part of the reason is they have structural problems in doing R&D in those countries. For example, Canada does not generate a lot of Ph.Ds. It is hard for them to get companies——

The CHAIRMAN. Why is that?

Mr. RASHKIN. Their educational system. There was a study of that done by their chamber of commerce or something that ranked them very low in the world in Ph.Ds. And you need those people to do advanced research. And you will find that the countries with the highest research incentives are the ones that have the most—the structural problem makes it difficult to do research there.

And you were questioning, well, which countries do not have it. Sweden, for example, does not have an R&D incentive, and yet they are spending almost 6 percent of their GDP on R&D.

A lot of the countries that——

The CHAIRMAN. What explains that?

Mr. RASHKIN. Why is that? I think it is because they have a very good educational system, and they have good overall planning for R&D. I wish I knew all the answers to that one.

But the point is, as you mentioned, Germany does not have it either, Switzerland does not have it. It is the countries that—I feel—the countries that feel that they have to overcome other problems, they are the ones that are creating high R&D incentives, and it is not necessarily the model that we have to follow: because they have it, we have to have it.

And, if you look in Dr. Pilat's presentation, you will see that, when you take a look at combined R&D incentives plus R&D grants, out of the 38 countries there, the United States is fifth. So we do a very good job of financing R&D between direct grants and R&D incentives.

The CHAIRMAN. Senator Grassley?

Senator GRASSLEY. I have just one question, Mr. Chairman, and this would be to Mr. Rashkin and Ms. Nellen.

You both suggested that the R&D credit should be refundable. Refundable credits, from our work on the Finance Committee, since they become grants administered by the Internal Revenue Service, seem to have a long history of fraud and abuse, is what we found out.

So, could you speak to what other countries do and how we can prevent fraud and abuse if we decide to go to the refundable credit route?

Ms. NELLEN. A few things I would suggest just looking at, perhaps for younger companies, for that to be the option of getting a refundable credit, since they do not have tax liability. For an older company, if they do have a bad year, they would perhaps have NOL they can carry back and get some funds there. So I think there would be some simplification of maybe only limiting the refundable part to startup companies, like in the first 5 years.

And also, your point about the fact that the IRS ends up being the one to determine whether proper research was done, that really speaks to, I think, trying to keep the credit as simple as possible and not adding additional requirements, and I think that is a problem, for example, if you add that it has to be some breakthrough innovation. It would be very difficult for the IRS to audit that.

The current definitions that are actually in the credit are fairly strict on that it has to be done in process of experimentation, and that already exists. So I think you do want to be careful that we are not putting too much burden on the IRS to make it unrealistic to engage in that.

But the refundability should apply, I think, for just the startup companies.

Senator GRASSLEY. Mr. Rashkin?

Mr. RASHKIN. I would say if we were able to simplify the credit, for example, if we were able to limit the credit to technical wages, wages of engineers and other technical people, then we would eliminate a lot of the discussion of what qualifies and does not qualify, and also if we eliminate things like the incrementality.

So we should be able to come up with a particular dollar amount that the small company is entitled to, and they should be able to apply for it and get a check.

There are some States—we do have a number of States that do have this type of program, and I think what they do is, you have to submit a form prior to receiving the money from the government, and they have to approve it before you actually get the right to receive the money.

So maybe there has to be a process like that, where the claim is validated before the check is sent out to the company.

Senator GRASSLEY. Maybe I should not count out you other two. Do you have anything you want to add?

Dr. PILAT. Just perhaps to stress the point just made by Mr. Rashkin. Actually, Norway does exactly the same thing, that you have to sort of have the credit preapproved before it is actually provided to a company.

Senator GRASSLEY. Thank you, Mr. Chairman.

The CHAIRMAN. Does anybody know in Sweden, Norway, Switzerland, the percentage of doctorates awarded, Ph.Ds in science or math, compared to the United States?

Dr. PILAT. I have the numbers here, but it would take me a second to look for it, if you would like.

The CHAIRMAN. That is all right. We will look it up. We can look it up. Anything else that anybody wants to add?

Ms. NELLEN. A comment on the Ph.Ds. Not all of the research is done by Ph.Ds. It is done by college graduates in engineering and other degrees, as well.

The CHAIRMAN. That is true. Thanks very much. I appreciate you all.

The hearing is adjourned.

[Whereupon, at 11:46 a.m., the hearing was concluded.]

APPENDIX

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

Hearing Statement of Senator Max Baucus (D-Mont.)
Regarding Tax Reform and Incentives for Innovation
As prepared for delivery

Apple co-founder Steve Jobs once said, "Innovation distinguishes between a leader and a follower."

Thirty years ago, on the heels of the 1982 recession, a divided Congress passed the first federal research and development tax credit to help stimulate economic growth.

The United States became the world's leader in funding research. This ushered in years of innovation and investment in groundbreaking research. Since then, U.S. companies have changed the world with revolutionary inventions. These include the microprocessor, the mobile phone, solar panels, office software, personal computers and social networking.

The U.S. still leads the world in international patent filings, but we risk losing that title. While our international patent applications fell slightly from 2006 to 2010, China's tripled. We aren't doing enough to support our research and development sectors, and this puts our country's competitiveness at risk.

Today, out of the 21 OECD nations, the U.S. ranks 17th in tax incentives for research and development. American companies have little certainty that the main tax incentive for research and development – the R&D credit – will continue. Since 1981, we have relied on 14 short-term extensions to renew the credit. This undermines the potential of the tax credit to provide the certainty businesses need to generate meaningful growth.

Today, again in the wake of a recession, Congress must do its part to support American ingenuity. Development and innovation here at home will boost our economy, and they will help create jobs.

Economists, such as Gregory Tassey of the National Institute of Standards and Technology, argue that technology is the single most important determinant of long-term growth. Technology creates new market opportunities. This increases productivity and quality. This helps businesses create good-paying jobs and profits.

Today we discuss how we can most effectively encourage R&D to help create jobs here at home.

Clearly, the world is a much different place than it was 30 years ago, when we first created the R&D tax credit. We are not the only country thinking along these lines. Competition is now fierce as other nations try to lure scientists and investors to their shores. Now more than ever, it is crucial that we remain the leader in research and development.

To understand this issue and help businesses create jobs, we at the Finance Committee must think like inventors. In doing so, we also must structure any tax incentives to get the most bang for our buck, given our enormous fiscal challenges.

Clearly, tax credits are not the entire solution, but we can look to improve the incentives for innovation through tax reform.

Yesterday, we took a major step forward. Senator Hatch and I introduced a permanent R&D tax credit – the Grow Research Opportunities with Tax Help Act, or the GROWTH Act.

This bill would make the research and development tax credit a permanent part of the tax code. Making this tax credit permanent will provide certainty, and it will help spur economic growth for generations to come.

The bill also simplifies and enhances the tax credit, making America more competitive in the global race for jobs and investment.

I suspect we'll hear from some of our witnesses today on other ways to improve the R&D tax credit, and I want to hear those ideas.

So let us think like inventors. Let us be creative in our solutions. Let us understand what drives businesses to innovate. Let us support that innovation. And most importantly, let us lead, not follow.

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STATEMENT OF HON. ORRIN G. HATCH, RANKING MEMBER U.S. SENATE COMMITTEE ON FINANCE HEARING OF SEPTEMBER 20, 2011 TAX REFORM OPTIONS: INCENTIVES FOR INNOVATION

WASHINGTON – U.S. Senator Orrin Hatch (R-Utah), Ranking Member of the Senate Finance Committee, today delivered the following opening statement at a committee hearing examining a variety of tax incentives and their impact on innovation and economic growth:

Thank you, Chairman Baucus, for holding this hearing. It could not come at a better time. The economic growth that will ultimately drive lasting job creation lags behind that of previous recoveries, and economists increasingly fear that we are at risk for a double-dip recession.

In response to the increasingly dire economic picture, the President recently urged Congress to take up and pass legislation that would promote job growth. For reasons that I will not get into here, individuals from both parties have objected strongly to the President's jobs proposal. However, there are steps that this Congress could take today to start turning the economy around and create American jobs, and those steps begin with the promotion of innovation.

The importance of innovation to job creation is not just a belief of mine. It was a central teaching of the early 20th Century economist Joseph Schumpeter. Schumpeter argued that innovation is essential to economic change and growth.

Of course, research is essential in discovering innovations.

So then the question becomes, how can we be assured that research and development is occurring at a pace that insures innovation and economic growth?

Generally speaking, the answer is by promoting a vibrant free market. A private sector fortified by economic liberty and the rule of law is our strongest engine of economic growth — not the federal government. With a robust private sector, capital flows to innovations and technologies that will profit not only those who invest in them, but society as well.

However, there can be cases where those performing R&D create significant *positive externalities*. Those investing in and performing R&D may create great benefits for society at large. Yet they are not always able to capture much benefit for themselves through increased profits. Though an innovation might be quite valuable for society, researchers and developers are not always able to capitalize on those innovations.

To correct this problem of positive externalities, the government does act to promote research and development in certain limited contexts. One way the government steps in is by awarding inventors patents that give them an exclusive right to sell their invention for a certain set number of years. Sometimes, the government directly funds R&D. This has proven particularly useful with respect to national security.

In addition, for decades the government has also provided tax incentives to promote and reward R&D. Since 1954, there has been a deduction for R&D expenditures. This is a permanent feature of the tax code. The deduction for R&D expenditures is an incentive to perform R&D. It has also proven to be a significant simplification, saving taxpayers and the IRS from having to debate the useful life of intellectual property resulting from R&D.

Since 1981, there has also been a credit for R&D expenditures. The United States' R&D Credit has always been *incremental* in nature. One cannot claim a credit based on all R&D expenditures, but only to the extent one's R&D expenditures exceed a certain base amount. The rationale for this has been that there is no need for the government to give a credit for R&D that would have been done even in the absence of a credit. Instead, the R&D credit has always been focused on the margin, on the increment above and beyond R&D that would have been performed anyway.

This is not the way that all countries structure their R&D tax incentives. Some grant an R&D tax benefit for any and all R&D expenditures.

One of the keys to successful tax policy is permanence. The tax policy goal of economic growth is undercut by temporary provisions. Unfortunately, the R&D credit has always been temporary. It has sunset numerous times over the course of the last 30 years, and is currently scheduled to sunset yet again in a mere three months — at the end of 2011. The temporary nature of the credit significantly undermines its incentive effect.

I am pleased, Chairman Baucus, that you and I introduced a bill just yesterday to extend permanently the R&D credit. I am glad to be joined in this effort not only by Chairman Baucus, but also by a number of our colleagues on the Finance Committee.

As Congress contemplates actions to stimulate job growth, it would do well to start with this hearing today. Reauthorizing the R&D credit, and making it permanent, would be a real lift for our economy.

Again, Mr. Chairman, thank you for scheduling this important and timely discussion.

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Tax Reform Options: Incentives for Innovation

Testimony before the
Senate Finance Committee
United States Senate

Annette Nellen
Professor
College of Business
San José State University

September 20, 2011

Good morning Chairman Baucus, Ranking Member Hatch, and distinguished members of the Committee. Thank you for the opportunity to testify here today regarding tax reform options and incentives for innovation. My name is Annette Nellen and I am a professor at San José State University and director of the graduate tax program.[1] I am both a CPA and attorney. Prior to joining San José State in 1990, I was a tax practitioner with Ernst & Young and worked at the IRS as a revenue agent and lead instructor. My testimony today is based on my over 20 years of experience working with the tax law, particularly considerable time devoted to studying, teaching and writing about the tax treatment of R&D, software, intangibles, the Internet, and e-commerce, as well as tax policy and tax reform. Since 2007, I have focused much of my writing (including blogging) on "21st century taxation," to promote tax reform that follows principles of good tax policy and reflects 21st century ways of living and doing business.[2]

The topic of this hearing is a welcome one in that it carries 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 is a key driver for economic growth, improvement in living standards, and a better environment.

My remarks address 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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[1] This testimony represents the views of Professor Annette Nellen and not necessarily those of her employer or any organization of which she is a member.

[2] The 21st Century Taxation website and blog can be found at http://www.21stcenturytaxation.com.

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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 our 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.[3] 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."[4]

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.

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.

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[3] 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.

[4] *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).

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[5] 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.[6] 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."[7]

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 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."[8]

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[5] 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 testimony was the lead author of this AICPA report.

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

[7] "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.

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

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[9]) 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 the Administration's FY2012 budget report entitled "Competing and Winning in The World Economy:"[10]

> "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, which allows taxpayers to deduct research or experimentation expenses incurred in connection with a trade or business.

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[9] 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.

[10] 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).

- 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.
- 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 an 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.[11]

  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 passenger car. Some of these cars, particularly those designed to get more miles per gallon or 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.[12] 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.

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[11] 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.

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

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.[13] Section 1045 allows for gain deferral if the proceeds from the sale of Section 1202 stock held over 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 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

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

money into startup and emerging companies focused on high technology or new proprietary technology." The credit is refundable.[14]

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 microbusinesses 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."[15] 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.[16]

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[17]

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, the formula changed, and

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[14] 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.

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

[16] 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.

[17] 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.

a taxpayer's R&D deduction was required to be reduced for the amount of the credit (IRC Section 280C(c)).[18]

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."[19]

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."[20]

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:[21]

- 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.[22] About 70% of QRE consists

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[18] 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*.

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

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

[21] 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.

[22] 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.

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."[23]

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 House Committee

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[23] 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.

on Small Business entitled "Helping Small Business Innovators through the Research and Experimentation Tax Credit."[24]

> "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:[25]

> "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 underinvest 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:[26]

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

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[24] 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.

[25] 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.

[26] "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.

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.[27]

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.[28]

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."[29] 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.[30]

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."[31]

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 will expire 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

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27 *Supra*, Figures B and C.

28 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.

29 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.

30 1989 GAO report, *supra*, pg. 22.

31 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.

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 poses 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.[32]

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

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

[32] 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.

[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 chose 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 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.[33] IRS data for C corporations for 2005 indicated that 76.1% were subject to the 50% base limitation (down from 83.8% in 2001).[34]

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."[35]

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.

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

[34] "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.

[35] 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.

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.[36]

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 carryforward 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, as it should be due to the impact of the credit on a taxpayer's tax liability and examinations improve voluntary compliance. The IRS has issued examination guides to its auditors and a few industry directives on how to handle certain issues, such as costs of developing internal use software.[37]

IRS concerns with research credits claimed on amended returns led to such claims constituting a Tier 1 issue for the IRS.[38] 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:[39]

> "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.

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[36] 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.

[37] 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.

[38] 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.

[39] 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.

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).[40] 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.

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.[41] 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.[42] 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.[43]

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

[41] 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.

[42] 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.

[43] 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

- 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 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."[44]
- 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 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.

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]]).

[44] 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.

- 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.[45]
- 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.[46]

I hope this testimony on incentives for innovation is helpful in your crucial work to reform our tax laws to enable them to meet principles of good tax policy and address today's ways of living and doing business. I would be pleased to take your questions. Thank you.

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[45] 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

[46] 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.

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."[47]

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."[48]

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[47] 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.

[48] 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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Senate Finance Committee Hearing
"Tax Reform Options: Incentives for Innovation"
September 20, 2011

Responses to Questions for the Record From Ms. Annette Nellen

Questions from Chairman Baucus

1. What types of companies (in terms of industries and/or size) do we need to target the credit towards, if any? How else could we change the credit so that it is more effective at stimulating growth and job creation?

   Response: Companies know if they are engaged in R&D. Also, when R&D is of a sufficient amount relative to other expenses, companies need to show the R&D expenses as a separate line item on their income statement. So, I don't believe any additional effort at "marketing" the credit is needed. What would be of greatest benefit to making the credit more effective would be to make it a permanent credit so that companies can factor it into R&D financing and timing decisions. Keeping the requirement that only research performed in the US qualifies will help the economy.

2. Many different types of government incentives and subsidies were brought up over the course of our hearing. If we had to pick one of either a grant program, loan supports, or tax incentives, which is preferable and why? Ms. Nellen mentioned the Section 1603 grant-in-lieu-of-credit for energy projects as a possible model for improving the incentive of the tax credit. If we pursued that route, is there any justification for using the tax code rather than just a grant program, to administer incentives for R&D? Is the tax code a good way to identify, evaluate and reward R&D activities?

   Response: I mentioned the Section 1603 grant approach as possibly an approach that would be more beneficial to start-up companies that need dollars for R&D, but likely do not have any tax liability to obtain immediate benefit of the credit. An alternative would be to make all or a percentage of the credit refundable for a company below a specified age and size, with the balance carried forward.

   The tax credit model is sufficient to reward R&D. A grant approach, though, can enable taxpayers to obtain the funds earlier than possible with a tax credit. Another advantage of a grant approach would be if there was a desire to place a maximum, aggregate limit on how much credit/grant could be obtained each year. Companies would have to apply for the grant and the amount awarded would be capped. This would have to be weighed against the possible negative effects if companies who do not get the grant dollars, for whatever reason, move their R&D to a jurisdiction that will provide support.

3. You suggest one improvement that could be made is for the IRS to work with taxpayer representatives to develop standards for the substantiation of qualified research

expenditures that are built on taxpayer's normal accounting approaches. How would this work? What would this proposal entail?

Response: This suggestion was made by the GAO and a model exists within the IRS from prior projects. The GAO suggestion is from 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.

There are examples of the IRS working with taxpayer groups, such as Tax Executives Institute, Inc. (TEI) to develop procedures, such as was done for a Joint Audit Planning Process in 2003 (http://www.irs.gov/pub/irs-utl/09-17-03_joint_audit_planning_process_with_cover.pdf) and the Quality Examination Process in 2010 (http://www.tei.org/news/TEINewsFeed/Lists/Posts/Post.aspx?ID=51 and http://www.irs.gov/businesses/article/0,,id=224139,00.html). The IRS could meet with industry and practitioner groups, such as TEI, AICPA, ABA, NAM and others to derive an audit approach that would be more efficient for both taxpayers and the IRS.

Questions from Senator Hatch

4. How should the law draw a bright-line for what is qualified research, and what is not? Apparently much of the administrative burden of the R&D credit is because of debate back and forth as to whether a given activity qualifies for the R&D credit. How would you solve that? And, possibly related to that, do any of you have any ideas on how the IRS should write the regulations regarding Internal-Use Software? I am assuming the generation-long hold-up in issuing those regulations is the difficulty in drawing lines as to which Internal-Use Software should qualify for the R&D credit, and which should not?

   Response: There is a definition of R&E at Reg. 1.174-2. Arguably, this definition should be sufficient for research credit purposes and would reduce some confusion with the credit. The amount of R&D expenditures that qualify for the credit are already reduced in that only wages, supplies and 65% of contract research expenses qualify.

   The exclusion of internal-use software is outdated and should be revisited. When that prohibition was added in the mid-1980s, we did not have Internet activities and web-based businesses where software although not sold to customers, is not really internal use in that it is a key part of what generates gross receipts for the company. A reconsideration of the exclusion should include whether the requirement that the activity meet the R&E definition of Reg. 1.174-2 is sufficient to identify software for which a credit should be available.

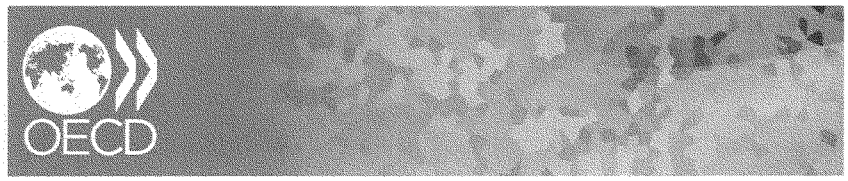
5. You and Mr. Rashkin both suggested that the R&D credit perhaps should be refundable. However, doesn't a requirement of taxable income have the advantage of requiring the claimant have some minimal level of business success?

If even those without any tax liability, or without any profits, or without any income could claim a credit, wouldn't there be a lot more charlatans claiming the credit? Isn't having taxable income as some sort of minimal threshold likely to weed out a lot of charlatans?

Also, how would the IRS handle the volume of R&D credit claims it would have to audit if the Credit became refundable?

Response: Refundability is justified in that the credit exists to encourage companies to take greater risks and increase research activities. A concern though with refundability is that a company may incur losses rather than cut off an unproductive research project, due to aid in the form of a refundable credit. To address this concern, the credit could be made refundable for only the first 5 years that an entity exists, with limits to prevent formation of related entities to try to continue access to a refundable credit.

Because the credit is intended to encourage R&D rather than to reward R&D that would have occurred without the credit, the refundable credit could be available only when claimed on a timely filed (with extension) tax return, rather than on an amended return.



Testimony by the Organization for Economic Cooperation and Development

United States Senate Committee on Finance

Tuesday, September 20, 2011

Tax Reform Options: Incentives for Innovation

The International Experience with R&D Tax Incentives

Chairman Baucus, Ranking Member Hatch, Members of the Committee: Thank you for inviting the OECD to appear today to testify on the international experience with tax incentives for R&D.

The OECD was founded 50 years ago to foster economic prosperity and development by supporting policy makers around the world with advice on "better policies for better lives." In that context, we collect the best possible data from countries on their investments in research and development (R&D) and innovation, and analyze the factors and policies that drive innovation and growth. Our testimony will primarily focus on the international experience with tax incentives for R&D investment.

The policy rationale for public support for R&D

Innovation is well known to be an important driver of economic growth and investments in R&D are among the factors that drive innovation. Many governments encourage business investment in R&D, often with the aim of correcting or alleviating two main market failures:

- Difficulties by firms to fully appropriate the returns to their investment. Returns on investments in R&D are difficult to appropriate by firms as some of the resulting knowledge will leak out or "spill over" to other firms, to the benefit of society. This leads firms to 'underinvest' in innovation. Policy instruments such as intellectual property rights, grants, and R&D tax incentives can help address this problem.
- Difficulties in finding external finance, in particular for small start-up firms. Innovation is a highly uncertain activity with large differences in the information available to inventors compared to investors. This may imply that external capital for innovation will only be available at a high cost.

In recent years, several governments have also started to use innovation policies to attract R&D activities of multinational corporations. The reason is that in a context of growing internationalization of R&D activities, government support might make a country a relatively more attractive location for R&D investments than its competitors. However, the available evidence suggests that government support is often only of minor importance for the decisions of multinationals to locate their R&D facilities in a particular country; other factors such as access to markets and to a country's knowledge base, or the availability of researchers tend to be more important.

Tax incentives for R&D are often considered to have some advantages over direct support for R&D, including procurement of R&D or grants. They are a market based tool that aims at reducing the marginal cost to firms of R&D activities, leaving firms to decide on which R&D projects to fund.

Tax incentives for R&D are expected to lead to an increase in private investment in R&D, which in turn should lead to an increase in innovation outcomes and ultimately to an increase in long run growth. The policy might also have indirect effects, *e.g.* on raising the wage level of researchers as more R&D increases demand for their skills, on the (re)location of R&D activities and on R&D start-up decisions.

Tax incentives, as other forms of direct funding, entail potential deadweight losses, since they might support R&D activities that would have taken place even in the absence of support. The design of the support schemes should therefore aim at minimizing these deadweight losses (OECD, 2006a).

This testimony will first look at the use of tax incentives for R&D investment in the OECD area and a few emerging economies and then examine the international evidence on the impacts of R&D tax incentives.

Use of R&D tax incentives across countries

R&D tax incentives are now widely used in OECD and non-OECD countries. Today, 26 out of the 34 OECD member countries offer R&D tax incentives to business. Amongst non-OECD countries, Brazil, China, India, the Russian Federation, Singapore and South Africa also provide tax incentives for R&D.

In Finland, Switzerland and Germany, all countries that currently do not provide tax incentives for R&D, there has been some debate about their future introduction. On the other hand, New Zealand and Mexico have withdrawn their R&D tax incentives schemes.

The existing R&D tax incentives schemes differ significantly across countries in terms of their generosity; their design and how they explicitly target different firms or specific areas.

Tax incentives for R&D include expenditure-based tax incentives – most importantly R&D tax credits, R&D tax allowances and payroll withholding tax credit for R&D wages – and income-based tax incentives – most importantly regimes that tax royalty income and other income from knowledge capital at a preferential rate.

Most OECD and emerging economies apply a system where an R&D tax credit is provided on the volume of R&D expenditure undertaken (*e.g.* Canada, Japan, United Kingdom, France, Norway, Brazil, China and India) while others target R&D tax credits to incremental R&D expenditure (*i.e.* expenditure in excess of some baseline amount). R&D tax allowances are available in Denmark, Czech Republic, Austria, Hungary, and the United Kingdom. Payroll withholding tax credit for R&D wages, which are deduction from payroll taxes and social security contributions, are also being used in Belgium, Hungary, the Netherlands and Spain.

Some countries target firms that conduct basic research; and many provide more generous incentives for small and medium-sized enterprises (SMEs). Some countries also differentiate according to the age of a firm. France, for example, has a scheme for young companies, while others encourage industry-science collaboration. The US recently introduced a more generous credit for R&D in energy. Finally, some countries have regimes that tax royalty income and other income from knowledge capital at a preferential rate (*e.g.* partial inclusion or reduced statutory tax rate) such as the patent/innovation box regimes in the Netherlands and Belgium, or a preferential regime for profits arising from patents, which was recently announced in the United Kingdom. Some of these differences are illustrated in Table 1 and discussed in Appendix 1. Appendix 2 reports details on the design of R&D tax incentives in the G7 countries and in other selected OECD countries in 2009.

Table 1. Details of differences in R&D tax incentives schemes across selected OECD countries, 2009

Design of the R&D tax incentive scheme	*Volume base R&D tax credit*	Australia, Canada, France, Norway, Brazil, China, India
	Incremental R&D tax credit	United States
	Hybrid system of a volume and an incremental credit	Japan, Korea, Portugal, Spain
	R&D tax allowance	Denmark, Czech Republic, Austria, Hungary, UK
Payroll withholding tax credit for R&D wages		Belgium, Hungary, Netherlands, Spain
More generous R&D tax incentives for SMEs		Canada, Australia, Japan, United Kingdom, Hungary, Korea, Norway
Targeting	*Special for energy*	United States
	Special for collaboration	Italy, Hungary, Japan, Norway
	Special for new claimants	France
	Special for young firms and start-ups	France, Netherlands, Korea
Ceilings on amounts that can be claimed		Italy, Japan, United States, Austria, Netherlands
Income based R&D tax incentives		Belgium, Netherlands, Spain
No R&D tax incentives		Estonia, Finland, Germany, Luxembourg, Mexico, New Zealand, Sweden, Switzerland

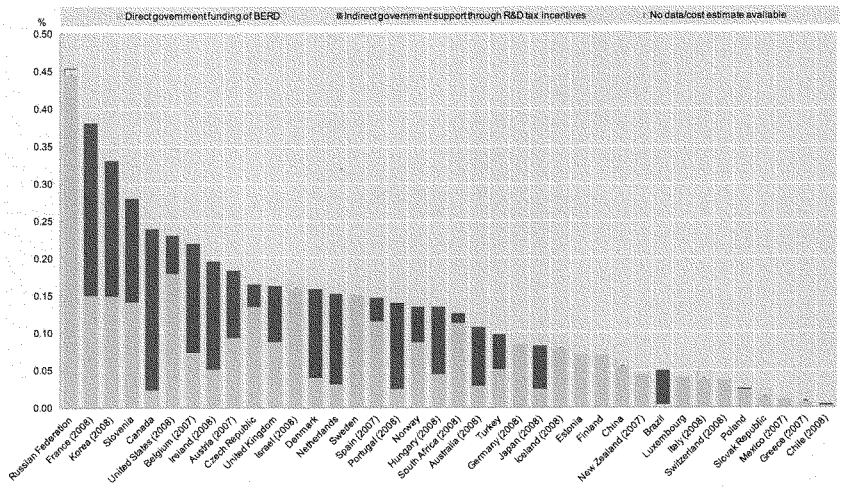
Note: R&D tax allowances are tax concessions up to a certain percentage of the R&D expenditure and can be used to offset taxable income; R&D tax credits reduce the actual amount of tax that must be paid.

Source: OECD (2010a).

Support for business R&D through the tax system is typically part of a broader set of policies to support investment in R&D, which also includes direct support, such as grants, loans or procurement contracts. Estimates of the costs of tax incentives and direct support for business R&D relative to GDP, based on an OECD survey, are shown in Figure 1. Significant cross-country differences exist in the policy mix: some OECD countries do not offer R&D tax incentives at all (*e.g.* Estonia, Finland, Germany, Luxembourg, Mexico, New Zealand, Sweden and Switzerland), others like the United States and Spain rely more on direct support and a final group of countries that includes Canada and Japan mainly relies on R&D tax incentives to support R&D investment. Some countries offer R&D tax incentives, but an estimate of their costs is not available (China, Greece, Iceland, Israel, Italy, the Slovak Republic and the Russian Federation).

Figure 1. Direct government funding of business R&D (BERD) and tax incentives for R&D, 2009

As a percentage of GDP



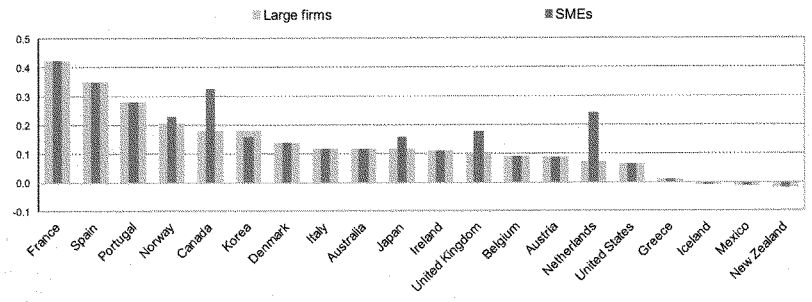
Statistical data for Israel: The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Source: OECD (2011), *OECD Science, Technology and Industry Scoreboard 2011*, based on OECD R&D tax incentives questionnaires, January 2010 and June 2011; and OECD, Main Science and Technology Indicators Database, June 2011.

The overall costs associated with the R&D tax incentives schemes depend both on the uptake of the scheme by firms and on the design of the tax incentives in a country. Significant differences exist in the generosity of R&D tax incentives across countries and within countries between small and large firms (Table 1 and Figure 2). Notable changes have occurred over the past few years (Figure 3).

The general trend among OECD countries has been to adjust their R&D tax incentives to make them more generous and simpler to use. The increasing generosity of the scheme is outlined in Figure 3 with the majority of countries offering a higher tax subsidy in 2008 relative to the one offered in 1999 both for large and small firms. Exceptions are Denmark, Mexico and Italy. In order to compare the generosity of tax incentives in a country, Figure 2 and Figure 3 compare "tax subsidy rates" across countries; this rate estimates the tax subsidy (if positive) or tax burden (if negative) on an additional dollar of R&D.

Figure 2. Tax treatment of R&D: Tax subsidy rate for USD 1 of R&D, large firms and SMEs, 2008

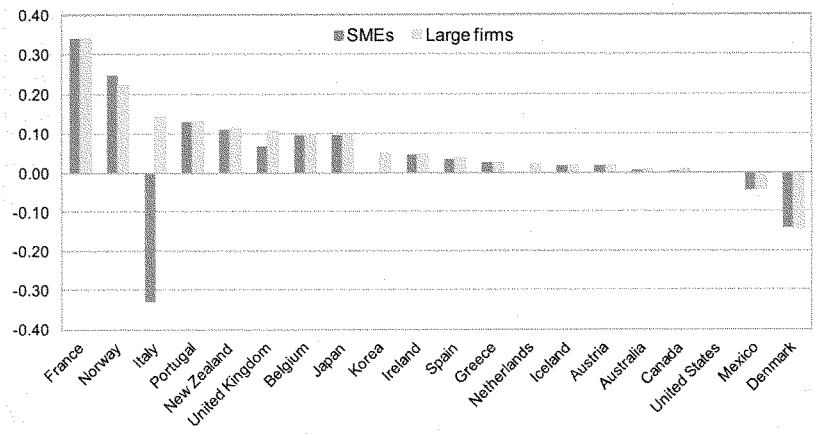


Note: The tax subsidy rate is calculated as 1 minus the B-index. The B-index measures the before-tax income needed to break even on one dollar of R&D outlays and is calculated for representative small and large corporations in a country. The tax subsidy rate is reported for a profitable firm able to claim tax credits/allowances. The subsidy rate calculations only include expenditure-based tax incentives and does not account for income-based tax incentives.

Source and further detail: *OECD Science, Technology and Industry Scoreboard 2009.*

Figure 3. Tax treatment of R&D: Change in the tax subsidy rate for USD 1 of R&D between 1999 and 2008

Large firms and SMEs



Note: see notes to Figure 2.

Source and further detail: *OECD Science, Technology and Industry Scoreboard 2009.*

The general trend has been to increase the availability, simplicity of use and generosity of R&D tax incentives. France (in 2008) and Australia (in 2010) replaced their relatively complex hybrid volume and incremental-based schemes with simpler and more generous volume-based schemes.

Belgium, Ireland, Korea, Norway, Portugal and the United Kingdom have increased their tax credit rates or the ceilings of eligible R&D in recent years. Canada introduced new administrative rules to facilitate access to its R&D tax credit program, improve consistency and predictability, and enhance the quality of the claims process. China extended its R&D tax credit to all firms working in key areas of technology (biotech, ICT, and other high tech fields) even if these firms are located outside the specially designated "new technology zones".

Contrary to this trend, Mexico and New Zealand have recently repealed their R&D tax incentives. Mexico converted its R&D tax credit to direct assistance in 2009. New Zealand had introduced an R&D tax credit in 2008 but has since repealed it taking effect from the 2009-10 fiscal year.

Recently, R&D tax incentives have also been used to help firms cope with the financial crisis, although usually on a temporary basis. Japan and the Netherlands, for example, temporarily increased the ceilings of eligible R&D. Japan also allowed a longer carry-forward of unused R&D credits, recognizing that several firms would not be in position to claim the totality of their R&D tax credit because of their likely fall in profits following the economic downturn. In 2009, France offered to refund all pending claims from the previous years. Before 2009, firms would have had to wait up to three years before getting the refund of their unused credit. Following the introduction of this scheme in 2009, firms were able to get a refund from their unused credits earned over the last three years. This measure is expected to have increased forgone tax revenue to USD 6 billion in 2009 (0.29% of GDP).

Effectiveness of R&D tax incentives

The effectiveness of R&D tax incentives is typically not only evaluated on how much R&D investment is spurred by the R&D tax incentive, but also on whether this increased expenditure translates into an increase in innovation output and to a long-run increase in economic growth and productivity. More generally, R&D tax incentives are expected to contribute to higher welfare in a country.

Evaluations of R&D tax incentives also often seek to understand the channels underlying a possible increase in the amount of R&D caused by the policy. For example, by how much do R&D tax incentives increase investment for firms that are already investing in R&D; how many firms that were not yet investing in R&D are induced to invest in R&D due to the tax incentives; and how does the presence of R&D tax incentives across countries affect the decision of firms to locate their R&D investment in different tax jurisdictions (*e.g.* countries, but also US federal states).

Evidence on the impact of R&D tax incentives on R&D investment

The effectiveness of R&D tax incentives on increasing R&D investment can be evaluated by estimating the private "R&D price elasticity", which measures the percentage change in R&D investment resulting from tax relief for every percentage change in its after-tax price (also called the user cost of R&D), or the incrementality ratio, which measures the change in R&D investment per dollar of foregone tax revenue that is spent on R&D fiscal incentives.

Evidence from econometric estimates suggest that the responsiveness of investment in R&D to its price (measured as the R&D price elasticity) is greater in the long run than in the short run (Hall and van Reenen, 2000; Parsons and Phillips, 2007; Lokshin and Mohnen, 2009; Ientile and Mairesse, 2009

and references therein). This is likely due to the adjustment costs that firms have to incur when increasing their investment in R&D (*e.g.* the hiring of scientists and engineers).[1]

Evidence also suggests a different impact on small relative to large firms. Smaller firms seem to be more responsive to R&D tax incentives (*e.g.* Lokshin and Mohnen, 2007; Hægeland and Moen, 2007 and Baghana and Mohnen, 2009). This is consistent with small firms being more credit constrained than large firms, since they are less likely to have collateral.

The evidence also suggests that the incrementality ratio is affected by policy design with estimates for incremental R&D tax credits generally above 1, and below 1 for volume-based R&D tax credits (Parsons and Phillips, 2007 and; Lokshin and Mohnen, 2009).

The incremental credit is meant to target tax relief to R&D expenditure that would not have occurred in the absence of the credit. In tax planning, to maximize the amount of tax relief, incremental credits may have the unintended effect of distorting the timing of R&D expenditure (Hollander, Haurie and L'ecuyer, 1987 and Lemaire, 1996).

On the other hand, volume tax credits do not provide additional incentives to increase R&D investment from previous years since, conditional on their current level of R&D, firms will receive a tax credit regardless of their past investment.

An incremental scheme supports more firms with high R&D growth relative to a volume-based scheme which supports equally all R&D performing firms. A combination of volume and incremental tax incentives (hybrid schemes) maintains the level of R&D investment, and simultaneously rewards high growth in R&D investment (Criscuolo *et al.*, 2009).

The stability of the R&D tax incentive over time may also play a role: expectations that R&D incentives are permanent, proxied by their stability over time, seem to strengthen the impact of the policy on R&D investment (Guellec and van Pottelsberghe de la Potterie, 2003).

R&D tax incentives may also affect the overall level of R&D investment in a country by encouraging R&D by firms that have not previously invested in R&D. As noted above, R&D tax incentives schemes can provide special provisions for new claimants (*e.g.* France) or start-ups (*e.g.* France, Netherlands and Korea). At the same time, fiscal incentives might not be sufficient to spur a firm's decision to invest in R&D. However, the scarce empirical evidence on this issue suggests that the presence of an R&D tax incentive is associated with a higher probability of firms becoming R&D performers (Corchuelo, 2009 and Hægeland and Moen, 2007).

Evaluations of the impacts of R&D tax incentives on R&D expenditure are faced with several difficulties.[2]

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1. Using estimates across a broad range of studies between 1990-2006 in the US, Canada and other OECD countries Parsons and Phillips (2007) find an estimated median long-run elasticity of -1.09: a 10% reduction in the price of R&D would lead to a 10.9% increase in the long run. OECD work (2005) shows that a 1 standard deviation rise in the ratio to GDP of public subsidies for private R&D (worth 0.04 percentage points of GDP in the average country) is estimated to raise business R&D by ¼%. A 1 standard deviation increase in the generosity of the tax system for R&D (measured by the 'B-index', where [1 – B-index] is the tax subsidy per unit of R&D) is estimated to raise business R&D by 1¾%. The direct budgetary cost would be around 0.055 percentage points of GDP in the average country.

2. These include difficulties in measuring effective tax rates on R&D, data availability, and estimation problems (including endogeneity, time lags, as well as indirect effects on firms that did not receive the fiscal incentives).

Evidence on the impact of R&D tax incentives on innovation output

R&D tax incentives are expected to lead not only to higher R&D expenditure but also to higher innovative outcomes, proxied by more product and process innovations, higher sales from innovative products or more patents, and increased productivity in the long run. However, a measured increase in R&D expenditure might not necessarily translate into an increase in innovation output and therefore might not lead to a long-run increase in productivity growth. Mitigating factors include:

- Firms might "relabel" their outlays: following the introduction of a tax incentive firms might relabel some of their existing non R&D activities as R&D investment. This would lead to a spurious increase in measured R&D. The available evidence suggests that the incidence of this factor is relatively small, particularly in the long term (see for example Hall, 1995 for the US, and Mansfield, 1986 for Canada, the US and Sweden).
- The introduction of an R&D tax incentive would likely cause an increase in the wages of scientists and engineers, due to the inelastic supply of such workers, at least in the short run. Part of the potential benefits of the R&D tax incentives are therefore "eroded" by an increase in the cost of R&D, rather than inducing only an increase in the volume R&D performed.
- Finally, projects financed through R&D tax incentives might be those with the lowest marginal productivity. If there are decreasing marginal returns to R&D, the additional R&D induced by an R&D tax incentive might be less productive.

Thus far, the evidence on the impact of R&D tax incentives on innovation output remains scattered.

Evaluation of these impacts are difficult both because of imperfect measure of innovation output – *e.g.* patents and available measures of product and process innovations – and the variable time lags between R&D investments in various types of R&D (research versus development, projects, technology areas, etc.) and the resulting innovation output.

The available evidence suggests a positive effect of R&D tax incentives on innovative sales or the number of new products (*e.g.* Czarnitzki, Hanel and Rosa, 2005; de Jong and Verhoeven, 2007). However, innovations brought about by R&D tax incentives schemes might not have the same features as innovations funded privately by the firm or by government grants.

For example, the Norwegian R&D tax incentive scheme has been found to increase innovation outcomes (both product and process innovations) that are new to the firm but not innovations that are new to the market or innovations that are patented. This outcome may also be linked to particular features of the Norwegian scheme, however, *e.g.* most subsidized firms are SMEs, and the scheme includes a cap on the total level of support available. Both of these features might hamper the effectiveness of the policy in stimulating innovations with high social returns (Cappelen, Raknerud and Rybalka, 2008).

The assessment of the impact of R&D tax incentives on innovation outcomes is difficult. In particular, the benefits of the incentives might spillovers to firms that did not directly receive the incentives, including those that are not located within the boundary of a country, especially if these firms are linked to recipients on the value chains (as suppliers or customers), or within larger (multinational) groups or even because they are competitors. Therefore the benefits of R&D tax incentives might not be limited to the host country where R&D is carried out, but also in foreign countries where knowledge capital is employed. This cross-border aspect makes it difficult to assess innovation outcomes.

Evidence on the impact on productivity growth and welfare

Ultimately, tax incentives should also lead to higher productivity growth and increased welfare.

The evidence on the effectiveness of R&D tax incentives on productivity growth is scarce, but points to a positive correlation between R&D tax incentives and productivity (Brouwer *et al.*, 2005 and Lokshin and Mohnen, 2007).

Estimates of the effectiveness of R&D fiscal incentives on welfare require a full cost-benefit analysis. This must take into account the full direct and indirect effects of the policy, the implementation and compliance costs, and the impact of distortionary taxes needed to finance the incentives.

Although some studies have attempted to provide such estimates (Parsons and Phillips, 2007 and Lokshin and Mohnen, 2009), they depend heavily on the assumptions made. Keeping this caveat in mind, available cost-benefit analysis (Russo, 2004) and simulations suggest a positive net welfare gain from R&D tax incentives.

Evidence on the effect on wages

Fiscal incentives for R&D aim at increasing the volume of R&D investment. However, part of these incentives might lead to an increase in the wages of - or the cost to firms of hiring - R&D scientists and engineers. This might be due to inelastic supply of scientists or search costs for scientists and engineers, between firms and R&D workers and incentive schemes for R&D workers (Goolsbee, 1999). Studies that have looked at this issue remain scarce and are strongly constrained by the availability of suitable data. The available studies tend to find that the increase in R&D wages does not correspond to a change in quality of researchers (*e.g.* more experienced scientists; or a change in the mix of scientists towards the higher skilled), which would imply an improvement in the quality of the inputs into the innovation process (see for example Hægeland and Moen, 2007 and Lokshin and Mohnen, 2008).

Evidence on the impact of R&D tax incentives versus direct support (grants)

Governments face the question of which policy tools are best suited to incentivize innovation. R&D tax incentives are non-discretionary, and available to all (potential) R&D performers and therefore are industry, region and firm neutral, even if, as shown in Table 1, some countries provide preferential treatment to specific groups of firms or types of R&D investments.

Grants, on the other hand, can be directed to specific projects and missions that the government considers to have high social returns, *e.g.* in areas such as defence, health or energy.

The nature of the R&D projects funded through grants and those funded by R&D tax incentives is also likely to differ (David at al., 2000). Firms are likely to use R&D tax incentives to fund projects with expected (after-tax) positive private rate of return, not necessarily those that have the highest social returns but that are not funded by firms because they have low private returns. Thus, R&D tax incentives might not be the most efficient tool to address private R&D investment decisions that ignore knowledge spillovers. Direct R&D grants might be better suited to bridge the spillover gap between the private and social returns to innovation, since they target projects with the highest expected social returns. However, grants are subject to the discretion of government agencies that award such grants, not to the firms that undertake the R&D.

A study for Norway (Hægeland and Moen, 2007) provides a ranking of different policy tools according to their impact on R&D investment and the private returns to R&D. The study found that the policy with the largest impact on R&D investment were R&D tax incentives, followed by grants from Norway's research council, government agencies and the European Union. It also found that the returns to R&D projects financed by a firm's own funds are on average higher than those of projects financed by R&D tax incentives, which in turn are higher than those projects financed by grants. However, the study did not provide a ranking of policy tools according to their social returns. Furthermore, caution should be exercised in applying the results of Norway to other countries.

Evidence also suggests an additional effect of direct support relative to R&D tax incentives. For small and young firms in particular, direct support might help to certify the "good quality" of firms and projects, and reduce problems associated with information asymmetry (*e.g.* Lerner, 1999; Blanes and Busom, 2004). This in turn would lower the cost of capital of firms receiving grants when applying for external sources of financing. In addition, grants, loans and loan guarantees may provide more assistance to young and small firms, relative to tax incentives if the latter do not allow for carry-over provisions or cash refunds. Since young/small firms are typically in a loss position in early years of an R&D project, they have no taxable income and thus no tax payable that tax incentives can be deducted against.

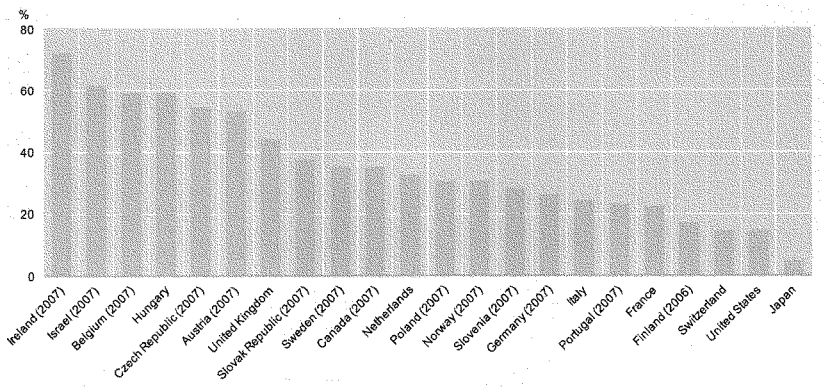
R&D fiscal incentives and the location of innovative activities

Multinational firms account for a substantial share of R&D expenditure: in small open economies, such as Ireland, Israel, Belgium, Hungary, the Czech Republic and Austria, the R&D expenditure of affiliates of foreign multinationals accounts for more than half of total business R&D expenditure of all resident firms (Figure 4). National and local governments may use R&D tax incentives to attract multinationals' R&D investment. Some recent support programs explicitly include a focus on increasing the "attractiveness" of a country as a host location for R&D (*e.g.* in France).

The effects of R&D tax incentives on the location choice of R&D investment by MNEs remains a relatively unexplored issue.

Figure 4. R&D expenditures of foreign-controlled affiliates, 2008

as a percentage of business expenditure on R&D



Source. OECD Science, Technology and Industry Scoreboard 2011, based on OECD, AFA, FATS and AMNE Databases, May 2011.

Estimation of the impact of R&D tax incentives on the location of R&D investment are particularly difficult due to the scarcity of relevant data and the complex interaction of tax regimes across and within countries. A limited number of studies have analyzed this issue across countries (Hines, 1994; Hines and Jaffe, 2000; Bloom and Griffith, 2001 and Billings, 2003) or across states within countries (Wilson, 2008).

The available evidence suggests that the volume of R&D conducted in one country responds to changes in the cost of doing R&D in competitor countries (Bloom and Griffith, 2001). A similar conclusion was reached in a study within the US of R&D tax (incentives) competition across states (Wilson, 2008). This study found that the availability of R&D fiscal incentives in (neighbouring) US states is associated with the relocation of firms conducting R&D towards states with more generous R&D fiscal incentives, leading to an estimated net effect of these state-level incentives at the national level that is near to zero. Analysis of data on the R&D activities of multinational enterprises (MNEs) suggests that the growth rate of R&D by affiliates of resident MNEs is higher in countries providing R&D tax incentives than in those countries that do not offer such schemes (Billings, 2003), again suggesting that the MNE's decisions of conducting R&D in a particular country is correlated with the availability of tax incentives in that country and other potential destination countries.

However, evidence from surveys on multinational enterprises and econometric evidence suggest that even if tax incentives might affect the location of MNEs R&D investment, there are other factors that are more important. These factors include access to local science and technology, proximity to university frontier research and centres of excellence, availability of a skilled workforce, engineers and scientists, and strong intellectual property rights. These factors are particularly important for MNEs laboratories aimed at doing basic research (the "R" in R&D) (*e.g.* Thursby and Thursby, 2006; Belderbos *et al.* 2007; Alcacer and Chung, 2007; Branstetter *et al.*, 2006). Other factors, such as access to local markets and proximity to other corporate activities, such as production sites, and proximity to local customers influence the location of R&D labs engaged in development (the "D" in R&D) and in the transfer and commercialization of knowledge from the MNE R&D centre to the host country lab (Defever, 2006 and von Zedwitz and Gassman, 2001).

Location-based incentives (including R&D tax incentives) seem to play some role especially in the final stages of the decision making process, particularly when different countries are 'bidding' for the same investment (OECD, 2011a) What typically happens is that MNEs first draw up a short list of preferred sites on the basis of economic fundamentals, while in a later stage they consider and/or actually seek for government support in the shortlisted locations. It is clear that when having two or more relatively similar location alternatives (especially when such competition occurs within a region), government incentives can tilt the investment decision. At the same time, the existence of such incentives, often provided in a selective and non-transparent way, creates scope for rent-seeking behaviour.

Tax incentives as part of a broader innovation strategy

While OECD work (Jaumotte and Pain, 2005a and 2005b) has found evidence that tax incentives are effective in increasing R&D expenditures, tax incentives are typically part of a broader strategy to foster innovation. Elements of such a strategy include a strong business environment for innovation and entrepreneurship, investment in education and research, a well-functioning system of intellectual property rights, etc.

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Appendix 1. The design of tax incentives

Most OECD countries provide fiscal incentives through tax credits or enhanced allowances. Tax credits allow a direct deduction from the tax payable, while enhanced allowances provide an additional tax deduction (above the normal deduction rate of 100% for wages, and standard depreciation for capital costs) from corporate taxable income. The main difference between the two mechanisms is that the former directly reduces the tax liability, while in the latter approach the reduction in tax liability depends on corporate income tax rates. R&D tax incentives may apply to all qualified R&D expenditures (volume-based credits) or only to the additional amount of R&D expenditure above a certain base amount (incremental credits).

Several issues have to be considered when designing R&D tax incentives. Firstly, the tax liability position of targeted firms needs to be considered: at the extreme, firms that are not tax liable would not benefit from tax allowances nor tax credits in the absence of carry forward/backward rules or refundable credits. This would make unincorporated businesses undertaking R&D ineligible. Secondly, the general fiscal environment affects the generosity of some fiscal measures - the effective value of an R&D tax allowance is lower the lower the rate of corporate income tax - while the value of others, such as R&D tax credits, are independent of the corporate income tax.

R&D tax credits and allowances are often targeted at corporations and are therefore deducted against corporate income tax. Some countries do not provide refunds for credits that cannot be claimed where the firm is in a loss making position (*e.g.* as firms often are in their early stage). This is an important distinction between tax credits/allowances and cash subsidies.

Box 1. Design considerations: fiscal support for business R&D

The target group. Governments can make fiscal support for R&D accessible to all companies, or target support (possibly more generous support) to particular groups of firms (*e.g.* SMEs). This can be done by:

- Placing upper limits on the amount of tax credit that can be claimed (upper limits are more likely to be attained by larger companies than by SMEs).
- Giving higher tax credit rates and/or greater flexibility for SMEs *e.g.* cash refunds or unused credits.

Minimum thresholds can increase the efficiency of policy as administrative costs can be high for small applications.

Labelling of activities and claiming the tax credit. The definition of R&D is typically based on the *Frascati Manual* (OECD, 2002). However, most countries have produced their own lists of types of R&D that qualify.

Qualified R&D expenditure. Three types of expenditure can qualify for fiscal incentives:

- Expenditure on wages related to R&D. This lower the corporate tax base or corporate tax payable. This reduces employer social security contribution and payroll taxes and gives an incentive for hiring scientists and engineers to work on R&D projects,
- Current R&D expenditure. This includes wages and all consumables used in the R&D process.
- Current and capital R&D expenditure. This enlarges the incentive for companies, but increases the public cost of the policy.

The base amount of incremental tax credit can take two forms:

- Rolling average base. The base amount is computed as the average R&D expenditure of the previous x years.
- Fixed base. The base amount equals the average R&D expenditures during a fixed reference period. This average can then be indexed to sales or inflation to stay relevant.

Carry-over provisions and cash refunds. These provisions allow unused portions of the credit to be carried forward or backward to previous fiscal years. Carry forward provisions are particularly important for SMEs, as these tend to have limited current corporate income against which the credit can be applied, while many younger firms are carrying losses from previous periods. Cash refunds can also replace carry forward provisions. The time value of funds should be taken into account when calculating refunds. Delays in effecting cash refunds need to be avoided in order to making this tool efficient.

Source: Van Pottelsberghe *et al.* (2003).

In addition, target groups need to be selected, eligible expenses must be defined and a choice must be made between a tax credit that applies to all R&D outlays (volume) or a credit based on additional spending on R&D (incremental) (see Box 1).

The most common scheme used by countries is a volume-based tax incentive with current R&D (*e.g.* United Kingdom (Figure 5a), Czech Republic, Norway, Denmark) or current and machinery and equipment (M&E) R&D as eligible expenditures (*e.g.* Canada (Figure 5b), Australia, Austria, France and Italy). These countries usually also provide more generous support to SMEs through higher tax exemption rates. Referring to the examples in Figure 5a and 5b, it can be calculated that a small British firm would reduce its corporate tax liability by 0.16 for each unit of eligible R&D, while in Canada, the tax credit of 35% would reduce the corporate tax liability of a small firm by 0.35 for each unit of eligible R&D (up to a limit of CAD 3 million), and 0.20 per unit thereafter.[3]

Other approaches also exist. For example, some countries consider only incremental current R&D as eligible R&D for tax purposes (*e.g.* The United States and Ireland) or use a hybrid scheme considering both volume and incremental R&D as eligible expenditures (*e.g.* Portugal (Figure 6a), Japan and Spain). Alternatively, moving away from the schemes set out in Figure 5, some countries consider only R&D personnel wages as eligible R&D and deductions would in such case apply to the "corporate wage and social contribution" tax instead of the general corporate income tax (*e.g.* Belgium and Netherlands, see Figure 6b).

Figure 5. Examples of simple R&D tax incentive schemes by type of spending

Current R&D; capital R&D, *i.e.* machinery and equipment – M&E – and building

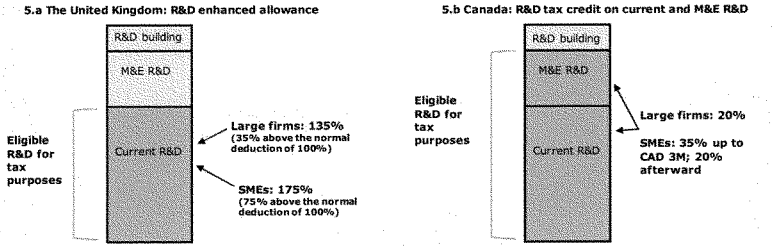
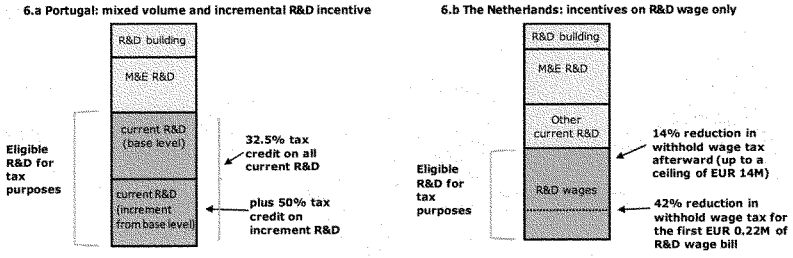


Figure 6. Example of main deviations from simple R&D tax incentive schemes



3. For enhanced allowance, corporate income tax rate must be taken into account to estimate the tax liability reduction. For a small UK firm with a corporate income tax rate of 21%: [175% -100% (normal deduction rate)]*21% = 0.16 unit in reduction of income tax liability.

Incremental vs. level-based schemes

- Incremental tax credits are more efficient for the government (they minimise the amount of "subsidized" R&D that would have been undertaken even in the absence of support, *i.e.* the level of deadweight loss), however, they are also more complex to implement.
- Volume-based schemes are more straightforward, less subject to fluctuations but costlier and tend to finance larger firms.
- Generally, most countries are moving to volume-based incentives.

Using a volume-based scheme has the advantage, for firms claiming incentives, of being simple and generous. However, this approach might be costly as it also subsidises R&D expenditure that would have been performed in the absence of R&D tax incentives.

The main advantage of using only incremental R&D as the eligible base is that it ensures that the cost to the government is incurred only where there is an increase in R&D. As such, it minimises the amount of "subsidized" R&D that would have been undertaken even in the absence of support. However, incremental-based schemes are more complex to design and to implement. Complex systems can significantly increase the cost of applying the tax credit and even deter some firms from applying if application costs are, or are perceived to be, higher than the uncertain benefits.

Tax credit for R&D wages

- A tax credit for R&D wages reduces the tax wedge, *e.g.* the difference between what it costs to pay workers (wages, social security/withholding taxes) and wages of workers.
- It acts as a subsidy to early stage wage costs whereas tax credits for current and capital R&D expenditures generally subsidise later-stage capital expenditures.
- It may be easier to control and may be less influenced by company accounting than company profits.
- It is relatively well suited for small firms that might not be in a profit making position and therefore would not benefit from tax credits or allowances.
- It can help build/retain human talent.

A recent trend in OECD countries has been to target R&D tax incentives to offset employer social security contributions and other taxes on labour income. The rationale is that by reducing social charges, companies can reduce their monthly operating costs and therefore increase cash flow. This is particularly important since wages typically make up a large part of total R&D costs, although this ratio can vary depending on the nature of the R&D activity. Increasing cash flow is particularly important for small, research-intensive firms with little revenue but high investment in intellectual and human capital. Furthermore, by subsiding human capital, the incentives may contribute to retaining human talent.

However, since the supply of scientists and engineers workers cannot increase quickly and therefore cannot respond to an increase in demand in the short run (*i.e.* it is "inelastic"), an increase in R&D investment due to the tax incentive would lead to higher wages for R&D workers (given the scarce supply relative to demand), instead of a higher quantity of inventive activity. While this "wage effect" can also arise with the more traditional R&D tax scheme, the effect might be acerbated when the only R&D eligible activity is R&D wages.

Finally, the choice between the level or incremental eligible expenditures can also apply to R&D incentives applying to wage bills. Governments can choose between providing tax incentives for the employment of all R&D workers or only for newly hired researchers[4]. The trade-off between simplifying the scheme and minimizing the amount of "subsidized" R&D would still need to be taken into account.

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4. This scheme, however, might have the unintended effect of giving firms the incentives of artificially increasing churning amongst R&D staff where previously hired researchers are let go and either rehired, or replaced with less experienced staff.

Temporary vs. permanent programs

The efficiency of a tax incentive program can also be affected by whether it is a temporary or a permanent program, since the temporary nature of a scheme increases the uncertainty of the incentives for firms. While the generosity of a tax incentive is believed to have an impact on the amount and location of R&D performed, another important aspect in firms' R&D decisions is for how long the tax incentive will continue. Some projects might just be undertaken to benefit from temporary tax incentives, while other R&D projects might be delayed, advanced or performed abroad if the planning horizon for those projects extends beyond the scheduled end of the tax incentive program. However, not all R&D firms would be affected in the same way by a temporary program. Firms undertaking R&D projects to be completed within a year (or a few years) would be less likely affected than those with R&D projects covering several years (Guenther, 2008).

A fuller picture: multi-faceted schemes, sub-national tax incentives, and innovation tax incentives

In fact, some countries use several different schemes at the same time. For instance Belgium offers a tax credit on R&D capital assets and fiscal incentives in the form of a reduction in taxes and social security contributions for R&D employees. The Netherlands, in addition to providing fiscal incentives on labour costs, also offers R&D tax allowances for self-employed workers spending at least 500 hours per year on R&D.

In addition to national R&D tax incentives (provided by central governments), some sub-national governments also provide their own R&D tax incentives that are usually combined with the national ones. For instance, in Canada, most provinces provide R&D tax credits for R&D performed in their provinces. Likewise, in the United States, 40 states currently have some type of R&D tax incentive, up from 35 in 1996 (Miller and Richard, 2010).

The presence of sub-national R&D tax incentive programs increases the overall generosity of the tax relief provided to firms. While these additional tax reliefs provided by sub-national governments are believed to increase R&D performed by local firms, the overall effect on national R&D investment is not clear, in particular as increases in one region might coincide with decreases in neighbouring regions.

Some countries have also introduced fiscal measures to stimulate innovation more broadly by extending the eligible base to expenses in advanced technology solutions (such as "green" technology in Belgium) and to the acquisition of intangible assets such as patents, licences, know-how and design (*e.g.* Spain, Poland). China also applies lower income taxes to high-technology enterprises and software development enterprises located in certain new technology zones. Finally, some countries also provide tax incentives on the outcomes of innovative activities by reducing the tax burden on income generated from patents (Belgium, Ireland) or income generated from all qualified R&D projects (the Netherlands).

More details on some of the characteristics of R&D tax incentive schemes in selected OECD countries and in some non-OECD countries are included in Appendix 2.

Appendix 2. R&D tax incentives for G7 countries and other selected countries, 2009

R&D tax incentives for G7 countries and other selected countries, 2009

Country/ MainTax Incentive	Description of Tax Incentive			Forgone tax revenue
	Rates	Expense base	Deducted from/Ceiling	
CANADA				
SR&ED Tax Credit (permanent program)	35% on volume for small Canadian-owned firms for first $3M R&D and 20% afterward. 20% for large firms.	Current cost and machinery and equipment (M&E)	Tax payable (benefit is taxable). No ceiling on R&D eligible.	2002: CAD 2.3B (0.21% GDP) 2008: CAD 3.2B (0.22% GDP)
	Other characteristics of the main tax incentive: Cash refund for small Canadian-owned firms. Carry-back (3 years) and carry-forward (20 years) available for all firms. Complete write-off of all current and capital (other than buildings) R&D expenditures.			
	Recent significant changes: in 2008: Tax ceiling to benefit the 35% rate has been increased from $2M to $3M; enlarged SMEs definition to claim the 35% rate. Up to 10% of R&D carried out outside of Canada is now eligible for the credit.			
FRANCE				
Research tax credit (CIR) (permanent program with temporary measures)	30% on volume for first EUR 100 million and 5% afterward. The 30% rate is increased to 50% (1st year) and 40% (2nd year) for firms claiming tax credit for the first time.	Current cost and depreciation of all capital assets. Note that salaries and social security contribution of new Ph.D researchers is counted twice (for 24 months after hiring) to estimate eligible R&D.	Tax payable (benefit non-taxable). No ceiling on R&D eligible (at lower rate).	2004: EUR 547M (0.03% GDP) 2008: EUR 1.5B (0.08% GDP) **2009: EUR 5.6B (0.29% GDP)**
	Other characteristics of the main tax incentive: Complete write-off of all current expenditures.			
	Recent significant changes: 2008: Tax credit calculated on volume-base only (instead of the hybrid scheme). The tax ceiling to benefit the 35% increased from EUR16M to EUR100M. 2009: immediate refund of all unused credit for all firms (instead of 3 years waiting period) as a temporary measure.			
GERMANY	No R&D tax incentives at the moment			EUR 0
	Recent significant changes: The new German Federal Government has agreed to introduce R&D tax credit before 2012.			
ITALY	10% on volume; 40% if carried out with universities or public research organisations.	Current cost and M&E	Tax payable. Ceiling of EUR 50M of eligible R&D.	n.a
R&D tax credit	**Other characteristics of the main tax incentive:** No refund and no carry-over. Complete write-off of all current expenditures.			
	Recent significant changes: This scheme (10% credit) has been implemented in 2007.			
JAPAN				
R&D tax credit (permanent program with temporary measures)	12% on volume for SMEs and 8-10% for large firms (depending of their R&D intensity) and; 5% on incremental R&D (average R&D of the previous 3 years as baseline)	Current cost and M&E depreciation.	Tax payable. Maximum credit value of 30% of tax liability (20% on level plus 10% on increment).	2003: JPY 105B (0.02% GDP) 2007: JPY 629.9B (0.12% GDP)
	Other characteristics of the main tax incentive: No refund but carry forward for 1 year available only if R&D expenditures are higher than the prior year. 2009 to 2010: carry-forward available until 2011. Alternative incremental-based scheme available for SMEs (20% credit applied on the difference between R&D expenditures and one-tenth of the average sales from the last 3 years)			
	Recent significant changes: 2009 (and for FY 2009 and 2010): maximum credit value increased from 30% to 40% and carry-forward possible until FY2012;			
UNITED KINGDOM				
R&D tax allowance (permanent program)	175% on volume for SMEs and 130% for large firms.	current cost.	No ceiling but firms must spend at least GBR 10K to be eligible for the credit	2002: GBR 390M (0.04% GDP) 2008: GBR 820M (0.06% GDP)
	Other characteristics of the main tax incentive: Refund available for SMEs (refund of GBR 24 by GBR 100 of eligible R&D). Carry-forward (infinite) available for all firms. Complete write-off of all current expenditures			
	Recent significant changes: 2008: rates increased (from 125% to 130% (large firms); from 150% to 175% (SMEs)); enlarged definition of SMEs (from 250 employees and GBR 50M of turnover to 500 employees and GBR 100M of turnover);			
UNITED STATES				
R&D tax credit (temporary program)	-20% incremental credit for eligible expenditures above a calculated base amount (regular research credit); or - Different rates apply for the alternative incremental research credit (AIRC) and the alternative simplified credit (ASIC). (firm must choose between the 3 schemes)	current cost.	Tax payable. (benefit is taxable). Ceiling of 50% of R&D eligible to the regular research credit rate of 20%. Maximum credit value of 25% of tax liability.	2005: USD 5.1B (0.17% GDP) 2008: USD 7.1B (0.18% GDP)
	Other characteristics of the main tax incentive: Refund not available but carry-forward for 20 years available for all firms. The calculated base amount (to estimate the amount of increment research expenses) is different for established firms and start-ups. Introduced an Energy tax credit (20% (volume based) on 100% expenditures contracted out to public research organization and some small firms). Complete write-off of all current expenditures.			
	Recent significant changes: 2009: Increased the research credit for energy research and allowed to claim a refundable credit for certain unused research credits in lieu of depreciation allowance for eligible qualified property			

R&D tax incentives for G7 countries and other selected countries, 2009 *(cont'd)*

Country/ MainTax Incentive	Description of Tax Incentive			Forgone tax revenue
	Rates	Expense base	Deducted from/Ceiling	
AUSTRALIA				
R&D Tax Credit (2010) (program to be reviewed in 2014)	45% on volume for small firms and 40% for other firms.	Current and machinery and equipment (M&E)	Tax payable. No ceiling but firms must spend at least AUD20K to be eligible for the credit.	2004: AUD 485M (0.04% GDP) 2008: AUD 820M (0.07% GDP) 2010: n.a.
	Other characteristics of the main tax incentive: Small firms (aggregate turnover of less than AUD 20M) can claim refund instead of carry-forward. No ceiling on R&D expenditure amount refunded. Carry-over available for all firms. Complete write-off of all current expenditures.			
	Recent significant changes: 2010: Australia moved from a mixed "volume and incremental-based" R&D tax allowance scheme (125% on level + 175% on increment) to a simpler volume-based tax credit (described above); Enlarged small firm definition (from less than AUD 5M of turnover to less than AUD 20M), and removal of the ceiling (AUD 2M of R&D) eligible for refundable credit.			
AUSTRIA				
R&D Tax Credit (Research premium) R&D allowance (not included in forgone tax revenue)	8% on volume or; 125% on volume (firm can choose between the tax credit and research premium.)	All R&D as covered by Frascati (currents + M&E + Capital)	Tax income (R&D allowance) or Tax payable (tax credit). Ceiling of EUR 100K for contracted-R&D, no ceiling on in-house R&D	2005: EUR 121M (0.04% GDP) 2008: EUR 340M (0.12% GDP)
	Other characteristics of the main tax incentive: Refund available for all firms within the year the expenses are incurred. Another scheme (R&D allowance for economically viable inventions) is available for activities resulting in a patents but eligible expenditures are narrowingly defined (narrower than FM R&D).			
	Recent significant changes: While firms can choose between a tax credit and a tax allowance, the decrease in the corporate income tax rate in the previous years (without changing the R&D allowance rate) makes the R&D tax credit financially more interesting than the R&D allowance.			
BELGIUM				
Payroll withholding tax credit for R&D wages	75% reduction of R&D wage bill.	Research wages and social contributions (includes in-house resesarchers and those contracted-out from universities or some public research organizations)	Reduction of withholding tax on wages. No ceiling on eligible R&D wage bill.	2004: EUR 307M (0.11% GDP) 2008: EUR 460M (0.14% GDP)
R&D tax credit/allowance	allowance rate at 114.5% or conversely a tax credit of 5%. At a corporate tax rate of 33.99, both schemes are cost-equivalent for the government.	Capital assets (could also include green technology (broader than FM R&D))	Tax income (R&D allowance) or Tax payable (tax credit)	
Deduction for patent income (broader than R&D incentives)	80% deduction (decrease the effective income tax rare to 6.8% level)	gross patent income (licences, royalties as well as patent remuneration embedded in the sales prices of goods and services)	Taxable income	
	Other characteristics of the main tax incentive: The payroll withhodling tax credit works like refund (through wage tax system), while unused credit (from the tax credit scheme) can be refunded after 5 years. Complete write-off of all current expenditures.			
	Recent significant changes: Increased payroll withholding tax credit rate (from 65% to 75% in 2009) and allowance rate (from 114.5.to 115.5% in 2010). 2009: Simplified the scheme by applying a single rate (75%) for all category of researchers (in-house researchers; those affiliated to eligibles universities or public research organisations; and those affiliated to young innovative companies (small firms with at least 15% of R&D intensity)). 2007: introduction of the patent income deduction scheme.			
CZECH REPUBLIC				
R&D tax allowance	200% on volume	current cost.	Taxable income. No ceiling on R&D eligible.	2005: CZK 861M (0.03% GDP) 2007: CZK 1.12B (0.03% GDP)
	Other characteristics of the main tax incentive: Refund not available but carry-forward for 3 years available for all firms.Complete write-off of current expenditures available.			
	Recent significant changes: No significant change in the last years.			
DENMARK				
R&D tax allowance	200% on volume	Current costs	Tax income. No ceiling applied to eligible R&D.	2008: DKK 1.15B (0.06% GDP)
	Other characteristics of the main tax incentive: Refund not available. Note that Denamrk also provides tax incentive for foreign R&D researchers and key staff through lower personnal wage tax for the three (25% instead of 31%) to five years (31% instead of 38.4%). Complete write-off of all current expenditures.			
	Recent significant changes: Removal of the 2007 pilot tax incentive scheme on collaborative R&D tax credit (150% allowance if R&D performed jointly with eligible university). 2010: Companies and individuals can get a deduction in the taxable income for donations given to non-for profit R&D organizations.			

R&D tax incentives for G7 countries and other selected countries, 2009 *(cont'd)*

Country/ MainTax Incentive	Description of Tax Incentive			Forgone tax revenue
	Rates	Expense base	Deducted from/Ceiling	
HUNGARY				
R&D tax credit on large projects (over HUF 100M)	Different rates by regions (25-50%) + size (additional 10-20%)	All R&D as covered by Frascati (currents + M&E + Capital)	Tax payable. Maximum credit value of 80% of tax liability (all incentives taken into account).	2004: EUR 19B (0.09% GDP) 2008: EUR 24B (0.09% GDP)
R&D wage tax credit	15% for small firms, 10% otherwise.	wage and contributions of R&D workers and software developers		
R&D allowance	300% if joint project with university or public research organisation	current costs (with a ceiling of HUF 50M)		
	Other characteristics of the main tax incentive: Refund not available but carry-forward up to 5 years. In addition to the above tax incentives, Hungary also provides a accelerated depreciation for R&D capital (50%) and allows a R&D reserve (50% of pre-tax profit retained and if the amount is used for R&D purpose in the next 6 years, the amount is tax exempted).			
	Recent significant changes: 2008: limit of the R&D reserve increased from 25% to 50%.			
IRELAND				
R&D tax credit	25% on incremental current R&D (with baseline set as R&D level in 2003); and 25% on volume for R&D building	current cost and machinery and equipment (incremental scheme) and R&D building (volume scheme).	Tax payable. No ceiling on eligible R&D.	2004: EUR 81M (0.05% GDP) 2007: EUR 165M (0.09% GDP)
	Other characteristics of the main tax incentive: Refunds available for all firms to be paid over a period of 33 months (starting in 2010). Carry-back (1 year) also available. Complete write-off of all current expenditures.			
	Recent significant changes: 2009: increased credit rate (from 20% to 25% on incremental R&D); unused credit can now be refunded (with 3 installments) over a period of 33 months. Increased credit rate of R&D building (from 20% to 25%) and allow a shorter period to claim the credit for R&D building (from 4 years on strait-line (25% per year) depreciation basis to full amount the year the expenditures is incurred (100%))			
KOREA				
R&HRD tax credit (permanent program since 2009)	25% volume-based tax credit for small firms; 3% to 6% for large firm (depending of firm R&D intensity) or; 50% on incremental R&D for small firms (with average R&D expenditures of the previous 4 years as baseline); 40% for large firms.	current costs	Tax payable. No ceiling on eligible R&D.	2008: KRW 1911B (0.19% GDP)
Facilities R&HRD tax credit (temporary pgm.)	10% on volume	M&E	Tax payable. No ceiling on eligible R&D.	
	Other characteristics of the main tax incentive: No refund available but carry-forward available (M&E) up to 5 years. Korea also provides tax incentive for foreign R&D researchers through exemption (100%) of personnal wage tax for the first 5 years (to be validated by Korea). Complete write-off of all current expenditures.			
	Recent significant changes: in 2008, increased credit rates (from 15% to 25% for small firms on current cost and from 7% to 10% for all firms on M&E); in 2010, new R&D tax incentives are expected for pre-designated strategic growth industries (30% for small firms, 20% for other firms) and original-sourcing-technology R&D (35% for small firms, 25% for other firms).			
NETHERLANDS				
Payroll withholding tax credit for R&D wages (permanent program with temporary measures)	50% (64% for start-ups) reduction on the first EUR 150,000 (EUR 220,000 in 2010) of R&D wage bill; 18% afterward.	Research wages and social contributions	Reduction of withholding tax on wages. Ceiling of EUR 14M for eligible R&D wage bill.	2003: EUR 329M (0.07% GDP) 2008: EUR 445M (0.07% GDP) 2009: n.a.
	For self-employed with at least 500 hours on R&D, income tax deduction of EUR 11,806 (EUR 12,031 in 2010). Additional EUR 5,904 (EUR 6,017 in 2010) for start-ups.		Tax payable	
Innovation income box (broader than R&D ncentives)	2010: decrease the effective income tax rate to 5% level	income from qualified R&D projects (broader than FM R&D)	Tax income	
	Other characteristics of the main tax incentive: The payroll withhodling tax credit works like refund (through wage tax system), while unused credit (from the innovation income box) can be carried-forward up to 5 years. Projects must be pre-approved with detailed information on cost. Complete write-off of all current expenditures.			
	Recent significant changes: 2009 and 2010:Rates and ceilings have been gradually increased (2008 rates were 42% for the first EUR 110,000 of R&D wage costs and 14% for the remaining (up to a ceiling of EUR 8M). 2009: R&D definition was extended to include development of services based on software; extended the eligible income from patents to income from all eligible R&D projects with more generous conditions (from effective tax rate of 10% to 5% and removal of the maximun amount of eligible income)			

R&D tax incentives for G7 countries and other selected countries, 2009 *(cont'd)*

Country/ MainTax Incentive	Description of Tax Incentive			Forgone tax revenue
	Rates	Expense base	Deducted from/Ceiling	
NORWAY				
R&D Tax credit (permanent program)	18% on volume for small firms and 20% of for other firms.	current costs	Tax payable. Ceiling of NOK 5.5M for in-house R&D and NOK 5.5M for contracted-out R&D to eligible public research organizations.	2003: NOK 1.3B (0.08% GDP) 2008: NOK 1B (0.07% GDP)
	Other characteristics of the main tax incentive: Refund available for all firms within the year the expenses are incurred. Note that project must be pre-approved by the government agency. Complete write-off of all current expenditures.			
	Recent significant changes: In 2009, ceilings were increased (from total NOK 8M (NOK 4M for both in-house and contracted R&D) to NOK 11M).			
POLAND				
Technology purchase tax credit (permanent program)	150% on volume-based (to check with Poland –they said tax credit)	M&E, patents and intangible assets. Note the eligible expenditures are not based on R&D (borader than Frascati R&D definition).	Tax income. No ceiling on eligible R&D.	2006: PLN 1.9M (0.00% GDP) 2008: PLN 1.5M (0.00% GDP)
	Other characteristics of the main tax incentive: Refund not available but carry-forward for 5 years available for all firms. Complete write-off of all current expenditures.			
	Recent significant changes: 2010: the government intents to introduce an additional R&D tax incentive (accelerated depreciation) for the enterepreneurs granted with the status of R&D Centre (firms with R&D intensity of at least 20% with turnover higher than PLN 5M (EUR 1.2M).			
PORTUGAL				
R&D tax credit (temporary program)	32.5% volume-based tax credit and 50% on incremental R&D (with average R&D expenditures of the previous 2 years as baseline)	current cost	Tax payable. Ceiling of EUR 1.5M for incremental R&D, and max total credit at 35% of tax liability.	2005: EUR 81M (0.05% GDP) 2009: EUR 142M (0.09% GDP)
	Other characteristics of the main tax incentive: Refund not available but carry-forward up to 15 years. Complete write-off of all current expenditures.			
	Recent significant changes: The former R&D tax incentive scheme establishment in 1997 was suspended in 2004 and 2005, restaured in 2006 (under severe budget countraints) and reinforced in 2009. 2009: increased rate (from 20% to 32%) and ceiling for eligible incremental R&D (from EUR 0.75M to EUR 1.5M)			
SPAIN				
R&D tax credit (permanent pgm. since 2009)	25% volume-based tax credit and 42% on incremental R&D (with average R&D expenditures of the previous 2 years as baseline) and:	current costs	Tax payable. Maximum credit value of 35% of tax liability.	2002: EUR 205M (0.02% GDP) 2008: EUR 262M (0.02% GDP)
	8% on volume	M&E		
Payroll withholding tax credit	17% reduction on R&D wage bill or 40% reduction of social contribution of newly hired researchers.	Research wages and social contributions for new researchers	Reduction of withholding tax on wages.	
Innovation Tax credit (not included in the foregone tax revenue)	8% on volume	advanced technology solutions and acquisition of intangibles such as patents, licences, know-how and	Tax payable. Ceiling of EUR 1M of eligible expenditures.	
	Other characteristics of the main tax incentive: no refund available but carry-forward up to 5 years (R&D tax credit). Complete write-off of all current expenditures.			
	Recent significant changes: From 2007 to 2009, R&D tax credit rates decreased (they were at 50% incremental and 25% volume in 2007) to compensate for the overal decrease of the corporate income tax. Note the R&D tax credit were scheduled to be phased-out completely in 2011 but a new decree ensure continuity of the tax credit in 2009.			
Selected non-OECD countries				
BRAZIL				
R&D tax allowances	160% on volume	Current cost	Taxable income.	n.a.
CHINA				
R&D tax allowances	150% on volume	Current cost	Taxable income. No ceiling on R&D eligible.	n.a.
	Other tax incentive programs: General tax reduction (from 25% to 15% income tax rate) for R&D firms located in certain new technology zones or investing in key areas such as biotech, ICT and other high tech fields. This lower income tax rate is also available to high-technology enterprises and software development enterprises located in certain new technology zones.			
	Recent significant changes: Before 2008: The 150% R&D allowances was available only for R&D firms located to new technology zones, it has now been extended to all R&D firms working in key areas (biotech, ICT and other high tech fields).			
INDIA				
R&D tax allowances	150% on volume	Current cost and Machinery and Equipment	Taxable income.	n.a.

Source: OECD NESTI R&D questionnaire, January 2010; OECD (2010a); Warda (2009); and national sources.

Senate Finance Committee Hearing
"Tax Reform Options: Incentives for Innovation"
September 20, 2011

Responses from OECD to Written Questions

Questions from Chairman Baucus

1. ***What types of companies (in terms of industries and/or size) do we need to target the credit towards, if any? How else could we change the credit so that it is more effective at stimulating growth and job creation?***

Response: Government support, such as the R&D tax credit, should generally be targeted on areas where there public benefits (spill-overs) from such support are the largest. This is why some OECD countries target basic research, which tends to have larger spill-over effects than applied research. However, the short-term effects of support for basic R&D are typically quite small, considering the long lags involved. Moreover, such research is typically primarily undertaken in large firms. Consideration could also be given to providing more generous incentives for small & medium-sized enterprises, as is the case in several OECD countries, as these firms are typically more credit constrained than large firms, in particular in the current economic context. The available evidence suggests that smaller firms seem to be more responsive to R&D tax incentives than larger firms.

2. ***Many different types of government incentives and subsidies were brought up over the course of our hearing. If we had to pick one of either a grant program, loan supports, or tax incentives, which is preferable and why? Ms. Nellen mentioned the Section 1603 grant-in-lieu-of-credit for energy projects as a possible model for improving the incentive of the tax credit. If we pursued that route, is there any justification for using the tax code rather than just a grant program, to administer incentives for R&D? Is the tax code a good way to identify, evaluate and reward R&D activities?***

Response: The OECD is not in a position to comment on specific elements on the US tax code. However, most OECD countries prefer to use a combination of policy instruments to support R&D and innovation, as this will enable them to address multiple market failures. R&D tax incentives are non-discretionary, and available to all (potential) R&D performers and therefore are industry, region and firm neutral, even if, some countries provide preferential treatment to specific groups of firms or types of R&D investments. Grants, on the other hand, can be directed to specific projects and missions that the government considers to have high social returns, e.g. in areas such as defence, health or energy. The nature of the R&D projects funded through grants and those funded by R&D tax incentives is also likely to differ. Firms are likely to use R&D tax incentives to fund projects with expected (after-tax) positive private rate of return, not necessarily those that have the highest social returns but that are not funded by firms because they have low private returns. Thus, R&D tax incentives might not be the most efficient tool to address private R&D investment decisions that ignore knowledge spillovers. Direct R&D grants

might be better suited to bridge the spillover gap between the private and social returns to innovation, since they target projects with the highest expected social returns. However, grants are subject to the discretion of government agencies that award such grants, not to the firms that undertake the R&D.

3. ***Have countries which focus their incentives on small and medium sized enterprises seen disproportionate growth in the number of startups and new businesses?***

Response: We are only aware of one study that has addressed this question to a limited extent. The study found that large firms, especially those that implement innovations, are more likely to use the tax incentives, while small and medium enterprises (SMEs) encounter some obstacles to using them. Secondly, the policy only had significant effects in large firms. The main conclusion from the study was tax incentives in Spain increased innovative activities by large and high-tech sector firms, but were used only randomly by SMEs (see Corchuelo B.C., 2009 The Effects of Fiscal Incentives for R & D in Spain. Business Economics Working Papers, Universidad Carlos III, Departamento de Economía de la Empresa). Unfortunately, it is not clear to what extent these conclusions can be extended to other countries with different R&D tax incentive schemes.

4. ***According to your testimony (see figure 3), the U.S. has not increased its R&D subsidy rate over the last 10 years, while many other OECD nations have increased them dramatically. Have those countries seen an increase in R&D jobs over the past decade to reflect the changes in subsidies?***

Response: Tax incentives for R&D have been found to lead to an increase in private investment in R&D, which often also involves an increase in the number of R&D jobs. However, there have been very few evaluations on whether recent changes in R&D tax credits have contributed to increases in R&D jobs. Moreover, the introduction of an R&D tax incentive, or an increase in its generosity, may also cause an increase in the wages of scientists and engineers. This is due to the inelastic supply of such workers, at least in the short run, which may drive up wages instead of leading to an increase in R&D employment.

Questions from Senator Hatch

5. ***How should the law draw a bright-line for what is qualified research, and what is not? Apparently much of the administrative burden of the R&D credit is because of debate back and forth as to whether a given activity qualifies for the R&D credit. How would you solve that? And, possibly related to that, do any of you have any ideas on how the IRS should write the regulations regarding Internal-Use Software? I am assuming the generation-long hold-up in issuing those regulations is the difficulty in drawing lines as to which Internal-Use Software should qualify for the R&D credit, and which should not?***

Response: The definition of R&D used for R&D tax credits is typically based on the OECD's *Frascati Manual* (OECD, 2002), which provides detailed guidance on the measurement of R&D. However, most countries have produced their own lists of types of R&D that qualify. Three types of expenditure can qualify for fiscal incentives:

- Expenditure on wages related to R&D.
- Current R&D expenditure, including wages and all consumables used in R&D.
- Current and capital R&D expenditure.

The decision on what to include is partly a trade-off. The more is included, the larger the incentive for companies to undertake R&D, but the larger the public cost of the policy.

6. What is your opinion on an incremental credit verses a volume-based credit?

Response: Incremental tax credits are more efficient for the government, as they minimise the amount of "subsidised" R&D that would have been undertaken even in the absence of support, i.e. the level of deadweight loss. However, they are also more complex to implement. Volume-based schemes are more straightforward and less subject to fluctuations but have larger budgetary implications and tend mainly to finance larger firms. They also do not provide additional incentives to increase R&D investment from previous years since, conditional on their current level of R&D, firms will receive a tax credit regardless of their past investment. Incremental R&D tax credits tend to have a stronger impact than volume-based tax credits if the goal is to increase R&D expenditure. However, to maximize the amount of tax relief, incremental credits may have the unintended effect of distorting the timing of R&D expenditure in tax planning. In addition, an incremental scheme supports firms with high R&D growth relative to a volume-based scheme which supports equally all R&D performing firms. Several countries have recently opted for a combination of volume and incremental tax incentives (hybrid schemes), that help maintain the level of R&D investment, and simultaneously rewards high growth in R&D investment. Finally, incremental tax credits tend to be somewhat more complex to administer than volume-based tax credits.

Testimony of Michael D. Rashkin

United States Senate Committee on Finance

Tax Reform Options: Incentives for Innovation

September 20, 2011

Chairman Baucus, Ranking Member Hatch, and distinguished Members of the Committee:

My name is Michael D. Rashkin. I am author of the *Practical Guide to Research and Development Tax Incentives: Federal, State, and International*. It is a great honor to appear before this committee and assist in the legislative process. I have been practicing tax law for almost 40 years. During that time I have worked for Digital Equipment, which invented the minicomputer, Apple Computer, which developed the personal computer, and Marvell Semiconductor, which created the plug computer. So I have been able to view the development of the information age from inside companies whose technologies helped create the information age. The testimony I give today is on my own behalf and not on behalf of any company or organization.

I. The Tax Code and Innovation

Congress has long used the tax code to spur innovation. Since 1954, R&D costs could be currently expensed, and since 1981 a tax credit has been provided for R&D expenditures. The code provides several other R&D incentives, such as faster write-offs of R&D equipment and the favorable treatment of stock option costs, among others.

II. Current Economic Environment

However, our changing economic environment requires that we find new and unconventional ways of encouraging innovation. American companies used to develop and make their products in the U.S., but we are now witnessing a debilitating outsourcing cycle where taxpayer subsidized R&D is used to create overseas jobs, in the following manner:

1. Government agencies such as the NSF subsidize basic research;

2. Congress provides tax and other subsidies to encourage companies to create products, often based upon government-funded basic research;
3. Through cost sharing and other arrangements, companies park the resulting intellectual property in tax havens; and
4. Attracted by foreign incentives and low U.S. taxation, companies manufacture overseas, creating few U.S. jobs and providing little U.S. tax revenue.

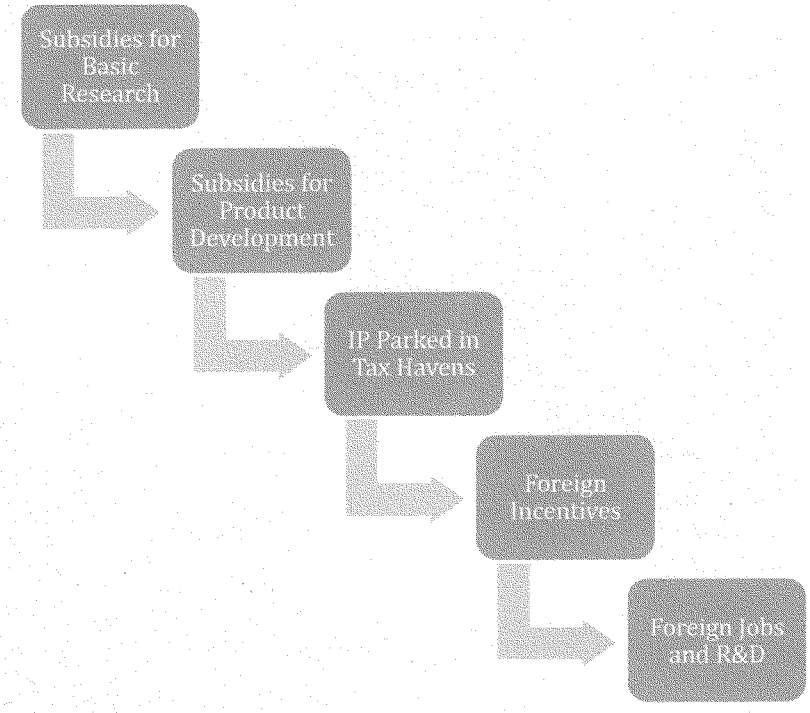

Fig. 1: The Job-Loss Cycle

Is it any wonder that we have an employment and deficit problem?

The impact of this cycle is especially deleterious because **the loss of U.S. manufacturing portends the eventual loss of U.S. R&D activity.** If allowed to continue, this cycle becomes irreversible, and it already has in some industries.

III. Breaking and Reversing the Cycle

Our tax system helped create this cycle and we can reverse it with the following three-step program:

Step One: Eliminate tax deferral for tax haven profits.

This is an essential first step in stopping the job hemorrhaging. By allowing companies to generate tax-free profits in tax havens, the tax code strongly invites them to set up R&D and manufacturing operations outside the US. **Under any international tax reform, tax haven profits must be taxed.** Why should our tax system provide an artificial advantage to overseas operations? Additionally, if we concurrently reduced the corporate tax rate to 25%, we would improve our national competitiveness and gain the support of corporate America.

Step Two: Increase the R&D tax credit rate to 30%, but make the credit applicable only to innovative research and breakthrough products.

Breakthrough products create new industries and jobs, and we should encourage such research with a tax incentive. We should not incentivize routine, risk free research because that is the function of the free market. The current credit provides a tax benefit of about 5% (although the nominal rate is 20%), which hardly makes a difference. By increasing the credit rate to 30%, and making other changes I will describe later, the U.S. would become a magnet for advanced research.

Step Three: Provide a zero or low-income tax rate for products developed in the U.S. that are manufactured in the U.S.

By providing this incentive to manufacturers and their suppliers, and by removing the tax haven advantage, we would reverse the foreign outsourcing trend and reinvigorate the U.S. manufacturing industry. This incentive is similar to but broader and less restrictive than the patent box arrangements that have been initiated in some European countries.

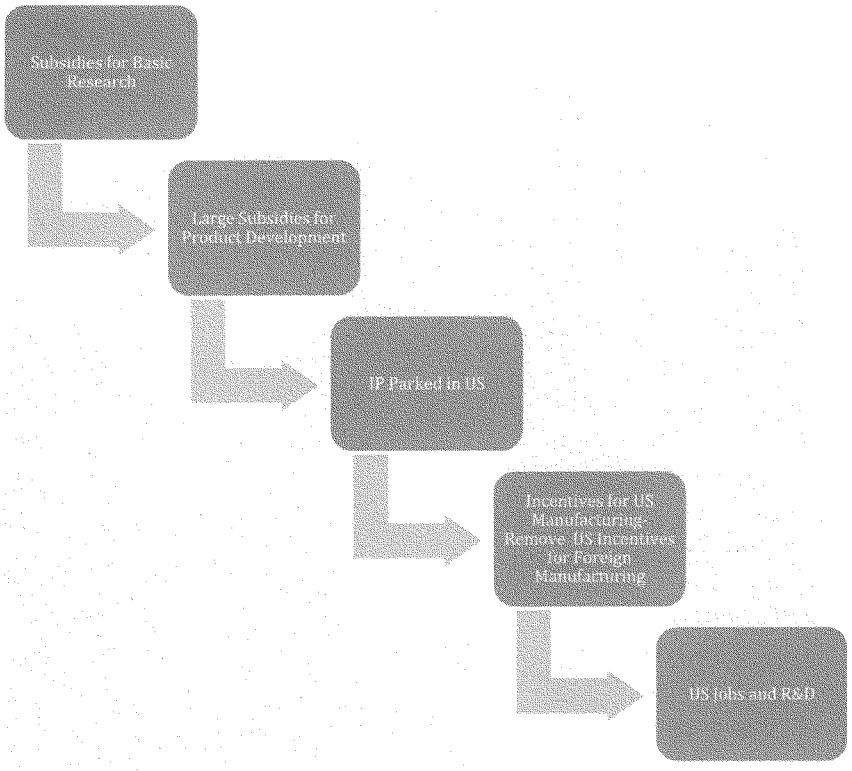

Fig. 2: Breaking The Cycle

IV. Reforming the Ineffective R&D Credit

The R&D credit has been our primary tool for encouraging industrial research. Unfortunately, **it has been ineffective and has not increased R&D spending**. Economic studies report a paltry one-to-one benefit, but even this is overstated because these studies overlook that R&D spending is strategic in nature and does not respond to minor tax incentives.

But with some modifications, in addition to the ones previously discussed, the credit can be greatly improved and become very effective.

1. **We should make the credit refundable or transferable for small businesses.** The credit now benefits large cash-rich companies, but not cash-deprived start-ups.

2. **The credit is too complex.** We must simplify the credit by:

    a. Eliminating incrementality;
    b. Limiting the credit to wages of technical personnel;
    c. Eliminating the loss of the §174 deduction; and
    d. Eliminating the separate basic research credit.

3. **Stock option compensation should not qualify for the credit.** Since there is no employer cash outlay, there is no justification for subsidizing stock option compensation.

The tax expenditure savings from limiting the credit to innovative research and eliminating stock option expense should more than make up for the increase in credit rate and the other enhancements.

V. Summary

By adopting these proposals, we would dramatically enhance the tax environment for innovation in the United States. I look forward to your questions.

SPECIAL REPORT
tax notes

The Dysfunctional Research Credit Hampers Innovation

By Michael D. Rashkin

Michael D. Rashkin has spent over 35 years in prominent high-technology companies in various management positions, including vice president of taxes, CFO, general manager, director of marketing, and international general counsel. He has a long association with the research credit, lobbying for it at its inception in 1981, testifying before Congress on its behalf in 1984, and writing *Practical Guide to Research and Development Tax Incentives — Federal, State and Foreign* (2d ed. 2007). The opinions expressed herein are entirely his own.

The research credit represents a substantial financial investment in America's strategy for technological development. Unfortunately, the investment has not been a wise one. This report explains that the credit fails to encourage increased research spending and innovative research and does not go to the companies that need it. Moreover, the amount of the incentive is not significant enough to have an effect, and the complexity and administration of the credit is too Byzantine to generate the expected motivation.

This report suggests that our economic conditions make this an opportune time to revisit the credit and consider how we can improve it. The credit has long lacked clear objectives; now is the time for Congress to create some. It should be designed to help finance small, innovative companies; encourage innovative research; and create jobs in the United States. Those objectives can be accomplished by providing refundable credits to small companies, focusing the credit on innovative research, simplifying it, making it permanent, turning over some administrative functions to the National Science Foundation, and providing a low tax rate on products made and developed in the United States. If those goals could be accomplished, the credit would have a far-reaching effect on our economy. This report is intended to prompt new thinking in policymakers in the hopes of turning a dysfunctional credit into a highly effective one.

Table of Contents

I. Introduction

"The Research & Experimentation (R&E) tax credit encourages innovation and provides a powerful incentive for businesses to continue to invest in research projects."[1]

Treasury Report, March 25, 2011

"As currently structured, the U.S. R&E credit probably has had at most a minor and transitory effect on industry R&D spending."[2]

Dr. Gregory Tassey, National Institute of Standards and Technology

Despite economic and competitive pressures, the United States is by all measures still the world

[1]Treasury Department, "Investing In U.S. Competitiveness: The Benefits of Enhancing the Research and Experimentation (R&E) Tax Credit" (Mar. 25, 2011), *Doc 2011-6342, 2011 TNT 59-41* (Treasury report).

[2]Gregory Tassey, "Tax Incentives for Innovation: Time to Restructure the R&D Tax Credit," 32 *J. Tech. Transfer* 605, 615 (2007).

leader in science and technology.[3] But in the face of stiff international competition, it is important we do all we can to maintain that leadership. The federal government has many programs to encourage scientific and technological achievement. Those take the form of outright grants — often made through the National Science Foundation (NSF), the Defense Advanced Research Projects Agency (DARPA), the National Institutes of Health, and many other agencies — and tax incentives, primarily in the form of tax credits for research activities. With the expanding budget deficit, all those programs are subject to challenge, and it is important that each delivers the benefits to our economy that are expected from them. It is well documented that government grant programs have been effective in producing breakthrough innovations that have made incalculable contributions to our economy and our society.[4] Those include the Internet, lasers, GPS technology, nanotechnology, speech recognition, and even bar codes.

But what about the research credit under section 41? In the 30 years of the credit's existence, American industry has yet to announce any significant invention or product that has resulted from the credit. Yet, Treasury recently proposed spending $106 billion on the research credit over 10 years.[5] In this report, I argue that the research credit has been ineffective, that it benefits the wrong companies and encourages the wrong kind of research, and that by diverting funding and attention from where it could be most useful, the credit is hobbling American innovation. Treasury's proposal is therefore the high-technology equivalent of a bridge to nowhere.

Although some have recommended decommissioning the credit,[6] doing so in our current political environment would be as difficult and as seemingly endless as decommissioning a nuclear power plant. A more practical approach would be to repair the credit and make it useful. Fortunately, the situation is remediable — but only if our legislators are willing to take an in-depth look at the credit's deficiencies in a manner that they have not done before and then reshape the credit to align it with the needs of our economy.

If properly designed, research tax credits can spur innovative research, help create new and better products, and improve national economic well-being. But as Part III of this report points out, the credit now goes to the wrong companies (large ones rather than small ones) and for the wrong kind of research (evolutionary rather than innovative). Further, the amount of the credit is insufficient, and its structure is too complex to serve as an incentive. More significantly, the credit does little to add jobs and thus does little to increase the standard of living for ordinary citizens. Part IV of this report describes how we can solve these problems by: making the credit refundable for small companies, requiring innovative research; increasing the credit rate to 30 percent; eliminating the business credit limitations on the use of the credit; simplifying the credit; making it permanent; having the NSF help administer the credit; and providing a 10 percent corporate income tax rate on products made in the United States that were developed here. Despite its current ineffectiveness, the research credit enjoys the enthusiastic support of industry, Congress, the White House, and many consultants and think tanks. That support is based on several incorrect assumptions. Before discussing the credit's shortcomings and how they can be addressed, Part II of this report explains why the reasons underlying the support for the current credit are unsound. Appendix I offers a proposed bill that incorporates the recommendations of this report and demonstrates how the research credit can be simplified to occupy only a few pages of the tax code.

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[3]In a 2008 study, the Rand National Defense Research Institute found that the United States continues to lead the world in science and technology:

> The United States accounts for 40 percent of total world R&D spending and 38 percent of patented new technology inventions by the industrialized nations of the Organisation for Economic Co-operation and Development (OECD), employs 37 percent (1.3 million) of OECD researchers (FTE), produces 35 percent, 49 percent, and 63 percent, respectively, of total world publications, citations, and highly cited publications, employs 70 percent of the world's Nobel Prize winners and 66 percent of its most-cited individuals, and is the home to 75 percent of both the world's top 20 and top 40 universities and 58 percent of the top 100.

Titus Galama and James Hosek, "U.S. Competitiveness in Science and Technology," *Rand National Defense Research Institute* (2008), *available at* http://www.rand.org/pubs/monographs/MG674.html.

[4]*See* NSF, "Nifty 50," a description of 50 NSF-funded breakthrough inventions, innovations, and discoveries, *available at* www.nsf.gov/about/history/nifty50/index.jsp. For innovations funded by DARPA, see the history section of the DARPA website, *available at* http://www.darpa.mil/About/History/History.aspx. In the biotechnology field, federal support of some kind has been given for the development of most of the blockbuster drugs on the market today. Steven P. Vallas et al., "Political Structures and Making of U.S. Biotechnology," in *State of Innovation* (2011), at 67.

[5]Treasury report, *supra* note 1.

[6]Martin A. Sullivan, "Time to Scrap the Research Credit," *Tax Notes*, Feb. 22, 2010, p. 891, *Doc 2010-3269, 2010 TNT 34-3.*

II. Deficiencies in Supporting Arguments

In a free-market capitalist economy, it is fair to question why corporations in the business of making products need the government's money to help them make those products. However, it seems that even the most ardent free-market fundamentalists don their ideological blinders when it comes to research credits. This is a case in which business executives, economists, legislators, and academics all agree that it is a good idea for government to subsidize ordinary business activities. That is an incredible degree of consensus for an idea that completely contradicts the economic ideology of many who support the research credit. One reason for this consensus is that science and innovation are so important to our economy and military that pragmatism overwhelms ideology, and bipartisanship is achieved here like nowhere else. But it is also the result of several arguments that have been developed to support the research credit — arguments that provide proponents deceptive comfort that they are offering the nation the fitting solution.

Those arguments have gone unchallenged for the most part, leaving policymakers to simply accept their verisimilitude. They have also squashed any motivation to examine whether we even need a research credit, what its objectives should be, and how we should best structure the credit to meet those objectives. The prevailing nature of the arguments is illustrated by the fact that many of them are used in the recent Treasury report as reasons for making the research credit permanent and increasing the alternative simplified credit rate from 14 to 17 percent. Unfortunately, as discussed below, those supporting arguments are seriously flawed and misleading.

A. The Economic Spillover Argument

"Businesses may underinvest in research . . . 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."

Treasury report, March 25, 2011

It is the accepted economic theory of credit supporters that because of spillovers of research and development benefits, product innovators do not capture all the economic benefits from the products they create, and because the market fails to fully reward innovators for their research efforts, they will underspend on R&D. It is therefore argued that the government should provide a subsidy to make up the difference to properly incentivize R&D activities. For example, if a company produces a drug that cures cancer or produces a research instrument that would allow other companies to make product innovations, the societal benefits would be much greater than the returns the inventors would accrue from royalties or product sales. Consequently, this argument makes the case that because the inventor would not capture all the benefits from the discovery or innovation, the government should provide a subsidy to make up for the loss of benefits.

Analysis: This argument, which has been used to justify R&D tax incentives throughout the world, has many commonsense failings.

1. This argument requires one to accept that the free-market system does not work in producing innovation. In other words, the invisible hand is not doing the job, and government must help out. This concept contradicts the neoclassical economic theory that any interference with the workings of the market distorts its effectiveness. It is difficult to believe Congress would knowingly endorse an incentive that is based on a theory of fundamental market failure. The fact that the research credit has received bipartisan support over the past 30 years indicates only that many legislators are likely unfamiliar with the underlying economic justifications for the credit.[7]

2. The success of many extraordinary companies that have generated billions of dollars in profits from the production of high technology products demonstrates that market returns are great enough that the government does not have to provide further incentives. These are companies such as Apple, Microsoft, Intel, Cisco, HP, General Electric, and Google. Can anyone seriously make the argument that Apple needed an R&D incentive to create the iPad or that Google needed a tax incentive to create or improve its search engine? It thus seems that the market sufficiently rewards innovation, and government intervention is not needed to provide additional motivation.

3. There are many activities other than corporate R&D for which the R&D spillover argument can be made. An obvious example is textbook publishing, the whole purpose of which is to create spillover benefits. It is clear that the value to society in the form of the knowledge obtained by students from the use of the textbooks is greater than the revenue from textbook sales. Under the spillover theory, a case can be made that government should

[7]This argument is also described in a Congressional Research Service report by Gary Guenther, "Research and Experimentation Tax Credit," RL31181 (July 15, 2009), *Doc 2009-17118, 2009 TNT 144-12* ("Firms generally cannot capture all the returns to their R&D investments, even in the presence of patents, trademarks, and other instruments of intellectual property protection, and their strict enforcement. Numerous studies have found that the average social returns to private R&D investments greatly exceed the average private returns.").

provide textbook publishers a tax credit for developing better textbooks. It is the nature of our economy that many industries provide benefits to society greater than the nominal revenues they receive. If a tax incentive were merited simply because the benefits produced were greater than the revenues received, the list of industries entitled to tax incentives would be endless, as would be our budget deficit.

4. The economists are theoretically correct, and if inventors could capture all the benefits from their products, there would be more R&D; however, this does not in any way mean that if the government offers a tax credit, inventors do more R&D. There is no evidence that a research credit serves as a replacement motivator for lost spillover benefits. Moreover, economists have been unable to determine how much spillover actually occurs and how much tax incentive would be necessary to make up the difference. Clearly, the amount of spillover is not uniform: Some new products provide a lot of spillover, others none at all. For those that do not provide spillover, the research credit is a superfluous bonus to the product developer. Further, the spillover theory as applied to the research credit does not take into account that many high-technology and biotechnology companies receive spillovers themselves from research done by other companies as well as foundational research done by sources such as universities and government laboratories. Thus, the spillover argument is a nice abstract and theoretical concept, but it is hardly the stuff on which to base tax policy.

B. The 'Dollar-for-Dollar' Myth

"Recent 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."

Treasury Report, March 25, 2011

"In reality, it is impossible for policymakers to know how much research spending taxpayers would have done without the credit."

Government Accountability Office, 2009[8]

Proponents argue that economic studies generally show that each dollar of research credit increases R&D spending by at least one dollar and that those studies prove the effectiveness of the research credit.[9] This contention has undeservedly become somewhat of a truism and has resulted in the research credit becoming an integral part of the nation's science and technology plans. In a momentous speech before the National Academy of Sciences on April 27, 2009, President Obama established a goal that the United States achieve a level of R&D spending of at least 3 percent of GDP. U.S. R&D spending has not reached 3 percent of GDP since 1953 when R&D data was first recorded, and even during the height of the space race the country reached a high of only 2.7 percent. To help achieve that 3 percent target, the president proposed that the research credit be made permanent, but he upped the research credit effectiveness ante by noting that it provides a two-to-one return, producing $2 dollars of R&D spending for each dollar of credit.

Analysis: As will be shown below, any actual increase in R&D as a result of the research credit is questionable, and even if that purported increase did take place, the results are not significant enough to warrant such a large expenditure of tax dollars or deserve such a strategic role in the country's science and technology policy.

1. The amount of increased R&D reported by the studies and trumpeted by lobbying groups is trivial; a dollar of increased R&D for each dollar of credit paid out by the government only demonstrates the weak incentive effect of the credit.[10] Moreover, the amount is inconsequential considering the $405 billion that the United States is projected to spend in 2011. If U.S. companies were to earn credits of $10 billion in 2011, according to the one-to-one theory they would generate $10 billion of added R&D, which would represent only 2.5 percent of total U.S. R&D spending.[11]

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[8]GAO, "The Research Tax Credit's Design and Administration Can Be Improved," GAO-10-136 (Nov. 2009), at 16, *Doc 2009-26846, 2009 TNT 234-22.*

[9]For a survey of these economic studies, see Bronwyn Hall and John Van Reenen, "How Effective Are Fiscal Incentives for R&D? A Review of the Evidence," 29 *Res. Pol'y* 449 (2000).

[10]Early reports showed a lower rate of effectiveness:

> Early studies of the responsiveness of research spending to price reductions (the price elasticity) found that the price elasticity for research was substantially less than one, generally in the range of -0.2 to -0.5, implying that a one percent reduction in the price of research would eventually lead to an increase in spending between 0.2 percent and 0.5 percent. [Footnote omitted.] However, more recent research suggests a stronger behavioral response. Recent estimates indicate that the tax price elasticity for research spending is around -1. This means that the research credit produces a dollar for dollar increase in research spending, although some studies find larger effects. [Footnote omitted.] Thus, the research credit appears to be cost effective from a budgetary perspective, especially when the social return to investment is factored in. Moreover, recent studies have found that tax incentives may have a larger effect on research spending in the longer run than in the short run, presumably because research spending takes time to adjust to changes in the cost structure.

Treasury report, *supra* note 1, at 4.

[11]Battelle and *R&D Magazine*, "2011 Global R&D Funding Forecast," *R&D Magazine*, Dec. 2010, *available at* http://www.

(Footnote continued on next page.)

2. The credit does not have a multiplier effect. To be viewed as successful, a tax incentive credit should provide leverage, and the increased R&D spending should be multiple of the tax dollars invested. The credit was never intended to give a company a dollar so that it could spend that dollar.

3. The studies fail to take into account the quality of the increased R&D spending. Credit backers consider the research credit successful even if the additional spending is for routine or evolutionary products, as opposed to innovative or revolutionary products.

4. Many of the economic studies evidencing the increase in R&D spending are founded on an incorrect critical assumption. They assume that R&D spending is more elastic (in economic terms) than it actually is and that a lower cost of R&D would result in greater spending than actually occurs. Much R&D spending is strategic in nature and inelastic, with companies responding to market needs and competitors' products.[12] For example, the many companies following Apple into the tablet market are not doing so because of tax incentives; they are doing so because of market forces and the need to challenge competitor products. In other words, companies do R&D because they have to create products to compete regardless of whether there is a tax incentive.

There are some who believe that the research credit has no impact at all. The following observation by reporter Howard Gleckman shows a more realistic perspective on the benefits of the research credit:

> In the 20 years I've been at *Business Week*, we often have corporate executives who come through the office to talk about one thing or another. And they make their pitch for whatever it is, and then I ask them, usually off the record, about provisions like the R&D credit. And I can tell you that in 20 years, I've never had a single corporate executive from the pharmaceutical industry or the high tech industry, or anyplace else tell me that they have done a dime's worth of research that they otherwise wouldn't have done as a result of the R&D credit. They spend lots of time and effort reallocating costs so they can take advantage of the credit, but they don't actually do any more research.[13]

5. The studies were not done in a controlled environment. The economic studies analyzing the impact of the research credit are known as contrafactuals, which is a professional way of saying "what if?" When clinical trials for drugs are performed, there must be a controlled group to isolate the effect of the drug being studied. We cannot do that in an economic analysis of past years, so instead we imagine what would have happened if there were no research credits in the years being studied. When we look backward at our economy and try to isolate the effect of the research credit, the exercise is more in the nature of guesswork than science. We do not know why R&D increased or decreased in any particular year, because there are many factors that could have had an effect on R&D spending, such as interest rates, business cycle fluctuations, inflation, or natural disasters, with the research credit being only a very minor factor. The absence of a controlled environment makes the studies unreliable and unscientific, and although an interesting subject for discussion, they are hardly the basis for distributing billions of dollars of taxpayer money.

6. The failure of American industry to point to any product successes resulting from the research credit can only be interpreted as an admission that the credit does not really produce an increase in R&D. With all the lobbying that goes into the effort to make the research credit permanent, it is truly remarkable that industry has not yet shown us the product innovations that would not have occurred without the research credit.

C. The Competitiveness Fallacy

"Among nations with a tax incentive for research, the United States now provides one of the weakest incentives, below our neighbors Canada and Mexico, and behind many Asian and European nations."

Dr. Robert D. Atkinson, Information Technology and Innovation Foundation[14]

Proponents of the credit argue that if we do not have a tax incentive for R&D, U.S. companies will conduct their R&D in countries that do. They also argue that the U.S. incentives are not generous enough compared with those of other countries.

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rdmag.com/uploadedFiles/RD/Featured_Articles/2010/12/GFF2 010_FINAL_REV_small.pdf.

[12]Tassey, *supra* note 2, at 607 ("A major problem with these studies is that they do not take the strategic nature of R&D into account and may not be correctly specifying the relationship between the tax incentive and corporate decision-making.").

[13]Transcript of Tax Analysts conference, "Tax Incentives — Do They Work, and Are They Worth the Cost?" (Apr. 7, 2006), *Doc 2006-7563, 2006 TNT 77-15.*

[14]Robert D. Atkinson, "Expanding the R&D Tax Credit to Drive Innovation, Competitiveness and Prosperity," 32 *J. Tech. Transfer* 617, 622 (2007).

Analysis: This argument overlooks the relative insignificance of the credit in location decisions and overestimates the attractiveness of foreign incentives.

1. There are several factors that go into the decision about where to locate an R&D facility, and the research credit is not highest on the list. The most important factor is the availability of technical talent to perform the necessary work. The second is the cost of employing scientists and engineers. The third factor is whether the country has the infrastructure — such as broadband, local information technology support, and consistent utility services — to support a sophisticated R&D center. The fourth factor is government assistance through direct subsidies, tax credits, or other tax incentives. In many countries, R&D tax incentives are only a minor part of the entire array of tax incentives.

2. The biggest magnets for R&D investment are China and India, but it is not because of their research tax incentives. R&D activity is growing rapidly in China and India because those countries have an abundance of high-quality technical talent at a very low cost, and both countries are making a concerted effort to provide the infrastructure required to support R&D activities. For the cost of one engineer in the United States a company can hire several in India or China. The tax incentives offered in those countries are just icing on the cake. In comparison with China and India, the cost differentials with the United States are so great that the research credit would have almost no influence at all for a company making a location decision.

3. Countries with the most attractive research tax incentives are usually the least attractive places to have a research facility. For example, Mexico may have very generous research tax incentives, but for most companies it is impractical to operate there because the talent pool is inadequate. Canada, another neighbor, also has inviting tax incentives, but it is a relatively small nation that does not do a good job of generating Ph.D. graduates, ranking last in one study of 17 peer countries.[15] Within Europe, Portugal and Spain have among the highest levels of R&D incentives in the OECD but are among the lowest in the OECD in the amount of dollars spent on R&D in relation to GDP. Both spend a little more than 1 percent of their GDP on R&D, as compared with the United States, which currently spends 2.7 percent of GDP on R&D.[16] None of the above-mentioned countries can come close to matching the resources available in the R&D hotbeds of the world, so they must ratchet up their R&D incentives to attract high-technology companies. It is unnecessary for the United States to match the incentives of countries that are struggling to compete. Countries with the highest tax incentives are generally using them to compensate for the lack of other factors critical to operating an R&D facility.

4. Moreover, U.S. incentives are actually much better comparatively than critics appreciate. Although some countries appear to have attractive incentives, there are practical problems that make them less attractive. For example, when U.S. companies do research overseas, they often do not want the resulting intellectual property (IP) to be owned in the country where the research is being done. They usually prefer to have the IP owned in a tax haven. But many countries will not allow a tax credit if the IP is not owned in the country where it is developed. Australia, China, and South Korea are some of the countries that have that requirement. The United States does not have such a requirement: A company can do research here, get a tax credit, and park the IP in a tax haven to limit its tax on the resulting income. Also, countries often limit the amount of useable research credit in a year to a percentage of the company's tax liability. Because U.S. companies try to limit the amount of taxable income they earn in countries where they do R&D, their tax planning in effect reduces the impact of the available research incentives. U.S. companies often will find that the way they structure their overseas R&D operations will limit the attractiveness of foreign R&D tax incentives.

5. Therefore, the United States does not have a competitive need to match the R&D incentives of other countries. The R&D tax incentive is only a minor factor in decisions about where to locate an R&D operation; countries with high R&D incentives are often impractical R&D sites; and, in any event, the tax structuring of U.S. companies often reduces the impact of incentives offered by other countries.

III. Deficiencies of the Research Credit

The prior section debunked arguments used to support the need for a research credit. But the fact that those arguments do not stand up does not mean the research credit cannot be useful. It means mostly that the research credit is being supported for the wrong reasons. In fact, it is possible to create a research credit that is useful to the economy. But unfortunately, the current research credit has many deficiencies that render it impotent:

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[15]*See* Conference Board of Canada, "How Canada Performs," *available at* http://www.conferenceboard.ca/hcp/Details/education/Phd-graduates.aspx.

[16]*See* NSF, Science and Engineering Indicators: 2010, Table 4-11.

Amount of Research Credit by Business Receipts of Corporate Taxpayers
(in thousands of dollars)
Tax Years 2005-2008
[All figures are estimates based on samples.]

Size of Business Receipts (in whole dollars)	2005	2006	2007	2008
Under $25,000	199,665	218,247	266,722	259,250
$25,000 under $100,000	19,753	21,059	18,186	23,219
$100,000 under $250,000	27,140	24,046	32,076	29,092
$250,000 under $500,000	31,664	27,605	30,248	33,854
$500,000 under $1 million	38,823	48,219	35,565	33,297
$1 million under $2.5 million	71,645	75,388	83,522	84,405
$2.5 million under $5 million	78,395	72,206	90,710	91,134
$5 million under $10 million	114,133	588,823	110,575	96,910
$10 million under $50 million	295,652	324,498	354,479	347,441
$50 million under $100 million	152,216	180,668	206,938	182,221
$100 million under $250 million	312,249	273,002	273,726	326,015
$250 million or more	5,022,141	5,457,363	6,757,004	6,796,532
Total	**6,363,476**	**7,311,124**	**8,259,753**	**8,303,369**

Source: IRS Statistics of Income division: 2001-2008 Corporate Returns Data.

- the credit goes to the wrong companies;
- the credit is given for the wrong kind of research;
- the amount of the credit is an insufficient incentive;
- the credit is not easily calculable;
- the credit is ineffectively administered; and
- the credit does not significantly increase jobs in the United States.

A. The Credit Goes to the Wrong Companies

If the purpose of the research credit were to encourage innovation, one would think that it would be targeted at startup companies. In fact, innovative startup companies do not benefit from the credit. By their nature they do not make profits, do not pay taxes, and do not receive any benefit from the research credit.[17] However, large, successful, and generally less innovative companies, with billions of dollars of cash, receive the lion's share of the credit. While large companies can fund their research from profits or from external financing, early-stage startup companies have difficulty finding funding from any source. Even venture capitalists are uninterested in companies that are years away from a commercial product, and the shortage of patient long-term capital for those startup firms is one of the weaknesses of our innovation system.[18]

In sum, those who need the research credit do not get it, and those who do not need it, get it.

Unwittingly, Congress has successfully developed a research credit that is biased against small businesses. In effect, the government is subsidizing large business in competing against small business. Of the $8.3 billion in research credits reported on 2008 federal tax returns, $6.8 billion (82 percent) went to companies with revenues exceeding $250 million, while only $282 million (3.4 percent) went to companies with revenues less than $100,000. Of the 12,736 businesses that claimed the credit in 2008, only 2,034 had revenues less than $100,000. In his January 25 State of the Union Address, the president emphasized the importance of helping small businesses, and many business and congressional leaders have echoed the same sentiments. Yet, the research credit does exactly the opposite.

B. The Credit Goes for the Wrong Research

The credit does not now encourage innovative research. It attempts to encourage "qualified research," which is not at all related to innovation. The IRS had contended that that term requires companies to discover information that exceeds, expands, or refines common knowledge of skilled professionals,[19] but industry argued that any research should qualify, and it has won that battle.

The statute requires qualified research to involve the discovering of information through a process of experimentation.[20] In the scientific world, the discovering of information is often associated with

[17]Of course, the credits earned during the startup period can be carried over and used once the company is making profits, when the need for the credits is much less critical for the financing of the enterprise.

[18]Fred Block, "Innovation and the Invisible Hand of Government," in *State of Innovation* (2011), at 18-19.

[19]T.D. 8930, *Doc 2001-286, 2000 TNT 250-3.*

[20]Section 41(d).

basic research in that one must be looking for information that is not already known. In industrial research, companies generally are not discovering information but are using existing information to design products.[21] While the IRS had interpreted the statute as written, taxpayers argued that to require them to actually discover information would create an impossible standard. After jousting with taxpayers for nearly 20 years, Treasury and the IRS finally capitulated and in 2001 issued proposed regulations[22] (that were eventually finalized[23]) saying that taxpayers would no longer be required to discover information.

The regulations now focus on the requirement that a taxpayer engage in a process of experimentation. Product research qualifies if a taxpayer engages in a process of evaluating one or more alternatives, and the capability or method of achieving a result, or its appropriate design, is uncertain at the beginning of the research.[24] Since almost every product design problem requires the evaluation of one or more alternatives and involves initial uncertainty as to the appropriate design, taxpayers generally have no problem meeting that standard.

By watering down the standard to that minimal level, almost any type of technological research qualifies regardless of whether it is innovative and regardless of whether it attempts the kind of bold advances that would result in payoffs to our economy. In fact, by setting such a low threshold for qualifying research, the credit may produce the perverse effect of actually encouraging companies to pursue the least innovative of their potential research projects. Assume that a high technology company has the budget to do 50 research projects without benefit of the credit but can do another three projects with the help of the credit. Clearly, the first 50 projects are the most important to the company and likely the most innovative and significant to the economy. The remaining three projects that would be undertaken only because of the credit are likely to be less promising, less innovative, and less significant to the company and the economy. Thus, credit dollars in many cases may be funding marginal projects that will not provide the payback expected by Congress.[25]

C. The Credit Rate Is Too Low

For an incentive to be effective, it must provide a large enough benefit to motivate a business to undertake the desired action. Although the regular credit rate of 20 percent is significant, it has been watered down by many limitations and restrictions so that the actual benefit is only a fraction of the 20 percent rate. The vitiating factors include the loss of an amount of research and experimentation deduction equal to the amount of credit claimed, the 50 percent limitation on increases of qualified expenses (see Part III.E.2 below), and the general business tax credit limitations, which together can bring the effective credit rate down to less than 5 percent. Also, since the credit applies only to "qualified research expenses," a term that does not include all categories of R&D expenditures (fixed asset depreciation and overhead, for example, are excluded), the effective rate of the credit when compared with a company's actual R&D expenditures is even lower. An incentive that provides only a small fraction of the costs of engaging in an innovative and risky project is in fact not an incentive at all.

D. The Credit Is Not Easily Calculable

When corporate executives review a proposed R&D project, there is no easy way for them to determine the amount of credit the project will produce. The calculation of the regular credit requires knowledge of the company's total research expenditures for the current year (not just for a particular project), the company's gross receipts for the four prior years, the kinds of expenditures that constitute qualified research, whether there will be any corporate acquisitions that will affect the calculation of the base period amount, whether the company is subject to the general business tax credit limitations, whether the company's base amount is subject to the 50 percent rule (see Part IV.E.2 below), and so on. If the project will span several years, the executive would also want to forecast the amount of credit that would be generated by the project in future years — almost an impossible task. The alternative simplified credit makes the calculation much easier, but the rate is lower and the calculation of the credit's incremental rule has its own problems (see Part IV.E.2 below). If the opacity of an

[21]But industrial research may involve the discovery of information as well. This often happens, for example, in the semiconductor industry, where the laws of physics are tested to the limits to make products smaller and faster, and in the biotechnology industry, where the secrets of nature are discovered in the development of new products.

[22]REG-112991-01, *Doc 2001-30940, 2001 TNT 242-5.*

[23]T.D. 9104, *Doc 2004-150, 2004 TNT 7-20.*

[24]Reg. section 1.41-4(a)(5)(i).

[25]Alternatively, the company may choose not to use its credit dollars to increase its research, or it may simply use them to add resources to projects it otherwise would undertake. Under the current rules, we hand over money to corporations, but we have no idea how those credit dollars are being used.

incentive does not permit a businessperson to determine how much benefit it would provide, the incentive will not have a very big impact on his decision-making.

The effectiveness of an incentive varies inversely with its complexity, and the research credit is as convoluted an incentive as can be. As a result, companies often do not know how much credit they have earned until they have filed their tax returns and been audited. The complexity is caused largely by the many rules Congress has devised to achieve specific legislative purposes, to restrict qualified activities, or to limit the amount of credit that can be earned or used in a year. But by setting clear objectives and using some common sense, the statutory jumble can be winnowed down. As will be described in Part IV and demonstrated in Appendix I, it is possible to shorten the credit statute to one or two pages and eliminate the complexity in related code sections as well.

E. The Credit Is Not Effectively Administered

When a government enacts an incentive, it should be administered and promoted in a way that maximizes the effect of the incentive, or else the incentive is just wasting taxpayer dollars. The United States does not have a plan or agency for promoting the use of the research credit. Instead, it has the IRS, whose job is in effect to do the opposite. The IRS is there to minimize the amount of credit that a taxpayer claims on its tax return. It is not that the IRS is wrong to do its job, but as a result of the nature of the interaction between the IRS and taxpayers, taxpayers are never really sure of the amount of research credit they are entitled to. After dealing with the credit for 30 years, Treasury and the IRS have yet to adequately clarify what qualifies for the research credit. In those areas where ambiguity remains — and there are many — the IRS is aggressive on audit. As a result, taxpayers don't know how much credit they are entitled to until their audit is complete.[26] When this adversarial factor is added to the complexity of calculation and the insufficiency of the amount of the incentive, it is unsurprising that the credit does little to increase research spending.

F. The Credit Does Not Add U.S. Jobs

As Sen. John McCain, R-Ariz., recently found out to his embarrassment, the iPhone is not manufactured in the United States even though it was designed here.[27] Although the intention of the research credit is to encourage companies to develop new products, nothing in the law requires them to manufacture in the United States the products they designed here. It is a common story in the high technology and biotechnology industries that products that are invented in the United States are made elsewhere. Billions of dollars are invested in manufacturing plants overseas to make products that have been developed in the United States with the assistance of U.S. tax dollars. That is partly because of low overseas costs and partly because of the tax benefits of manufacturing outside the United States, but the research credit does little to prevent the outward flow of manufacturing jobs.

IV. Improving the Credit

Having now pointed out the deficiencies in the arguments supporting the credit and in the structure of the credit itself, it is appropriate to ask whether a research credit is a useful policy tool or whether it should be eliminated and the funds either be returned to the treasury or reallocated to the many grant programs that have proven successful. At the outset, the answer depends on whether there are worthwhile goals that a research credit can achieve. It has been fairly demonstrated that there are three important needs in our economy over which there is little disagreement: (1) financing of early-stage innovative activity; (2) increases in innovative activity; and (3) increases in employment related to innovative activity. By focusing on achieving those three objectives, a research credit can be very useful and effective. This report recommends eight changes to the research credit to allow it to meet those three needs and to make it a useful part of the nation's science and technology policy:

- make the credit refundable for startups and small companies;
- require innovative research;
- increase the credit rate to 30 percent;
- eliminate the general business credit limitations on the use of the credit;
- simplify the credit by eliminating its incremental nature, eliminating the loss of section 174 deductions, and limiting qualified research expenses to wages paid to technical people;
- make the credit permanent;

[26]In a 1989 report, the GAO estimated that about 20 percent of the credit used by large corporations was disallowed on audit. It does not appear that the current rate of disallowance has changed much since then. GAO, "The Research Credit Has Stimulated Some Additional Research Spending," GAO/GGD-89-114 (Sept. 1989), at 18-19.

[27]Rebecca Stewart, "McCain Flunks Made in America 101," *CNN.com*, Mar. 6, 2011, *available at* http://politicalticker.blogs.cnn.com/2011/03/06/mccain-flunks-made-in-america-101/.

- empower the NSF to promote the credit and provide determinations on whether a proposed research project qualifies for the credit; and
- provide a corporate tax rate of 10 percent on products made in the United States as a result of research performed here.

A. Make the Credit Refundable for Startups

It is generally recognized that startups and small companies exhibit a high degree of innovation. Over the last two decades their innovative nature has resulted in a greater increase in R&D investment by smaller companies than that of larger companies. One report has noted that while the ratio of industry R&D investments to U.S. GDP more than doubled between 1980 and 2000, most of that increase was attributable to substantial increases in R&D intensity by firms with fewer than 5,000 employees.[28] One indication of the increasing innovation of those small firms is the number of R&D 100 Awards[29] won by Small Business Innovative Research (SBIR) companies. The SBIR competitive program is a mechanism by which the federal government supports the R&D of small firms through direct grants. In 1982 those firms won only one R&D 100 Award, but in 2006 they won 22 out of the 100 awards, evidencing the growing importance of small business to national innovation.[30]

As noted above, startups have a hard time raising capital, and since they do not make profits, they cannot benefit from the research credit. A solution is to make the credit refundable to small companies. If a company does not have a tax liability, it will receive a check from the government for the amount of the credit earned.[31] This is not a new idea. Several states and nations have implemented similar programs. Arkansas, Connecticut, Hawaii, Iowa, Louisiana, Michigan, New Jersey, Pennsylvania, and West Virginia all have some form of refund or assignment program that allows taxpayers without a state income tax liability to benefit from the state research credit. Austria, Canada,[32] France, the Netherlands,[33] New Zealand, and the United Kingdom also have various refunding mechanisms.[34]

Thus, the small businesses that do not have an income tax liability should receive a refund for the credit they earn. Alternatively, they should be able to sell their credits to other taxpayers or be allowed to offset their credit against employment taxes or other liabilities.

B. Require Innovative Research

Different kinds of research have different economic effects and investment criteria, and Congress should take those differences into account in designing the research credit. In the case of improvements to an existing product, the economic impact is relatively limited. However, when the manufacturer strikes out to develop a new product category, the economic effects can be much more dramatic. A new product category represents a product the company previously did not market and for which it may have to form a new division, build a new plant, and hire marketing, administrative, and operations personnel. R&D activities for those kinds of products can have significant positive effects for the company and the economy, but those kinds of R&D projects are costlier and riskier than product improvement projects. The company may have to hire highly paid research personnel, acquire the necessary intellectual property, and acquire new research equipment. Because the company may have had little or no experience in the new market, it would have a greater chance of failure than if it were merely improving an existing product. That is the kind of investment for which a company may have difficulty obtaining financing or convincing its board of directors that the investment is a smart one. Here, government assistance can make things more feasible, and it would be much more appropriate, considering the potentially greater returns to the economy.

The government should get out of the business of subsidizing routine product research, and the credit should be reserved for the development of breakthrough products that create new product categories or innovative enhancements to existing

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[28]Robert M. Hunt and Leonard I. Nakamura, "The Democratization of U.S. Research and Development after 1980," 2006 Meeting Papers 121, Society for Economic Dynamics (2006).

[29]The R&D 100 awards are granted annually by *R&D Magazine* and have been in effect since 1963.

[30]Fred Block and Matthew R. Fred, "Where Do Innovations Come From? Transformations in the U.S. National Innovation System, 1970-2006," in *State of Innovation* (2011), at 154-172.

[31]One study found: "The simulation experiments that we carried out so far suggest that the preferential treatment of smaller firms for R&D tax credits is justified. R&D tax credits are more effective in stimulating R&D investment in small firms and are quite wasteful in terms of cost-benefit for large firms." Pierre Mohnen and Boris Lokshin, "What Does It Take for an R&D Tax Incentive Policy to Be Effective?" United Nations University, UNU-MERIT, Working Paper Series 2009-014 (Feb. 23, 2009).

[32]A federal credit refund is allowed to a qualifying Canadian-controlled private corporation. In addition, the following provinces provide refundable credits: British Columbia, New Brunswick, New Foundland, Labrador, Ontario, and the Yukon.

[33]Credit applies against the payroll tax.

[34]Michael D. Rashkin, *Practical Guide to Research and Development Tax Incentives: Federal, State and Foreign*, (2d ed. 2007), chapters 10 and 11. These rules change frequently, and current information should be researched.

products. As an example, under this proposal, research on Apple's first iPad would have easily qualified, but any succeeding models would not unless the improvements were very innovative in nature. Since the development of breakthrough products is usually costly and risky but at the same time provides the greatest benefit to the economy, the credit rate should be increased as described below.

C. Increase the Credit Rate to 30 Percent

As noted above, the research credit now represents only a few percentage points of the total cost of research activities. To create a compelling reason for companies to invest in breakthrough products, the incentive offered must also be compelling, and the research credit rate should be increased to 30 percent. While that may appear extravagant, if the rate increase is combined with narrowing the research credit to cover only breakthrough and innovative technologies, the total amount of credit expended by the government would be much smaller than the amounts currently provided. Breakthrough technologies are inherently riskier and costlier to develop. They are the ones that provide greater benefits to society as a whole and are the ones that require a greater incentive. It also should be noted that the 30 percent rate is only moderately higher than the 25 percent rate that applied when the credit was first introduced in 1981.

D. Eliminate the Business Credit Limitations

The general business credit rules limit the use of some credits, including research credits, by preventing them from reducing the company's tax liability below the amount of the 20 percent tentative minimum tax (TMT).[35] As a result of the TMT limitation, many corporations are unable to fully use the research credits they earn during a year, and they accumulate large amounts of unused credits that can be carried forward for up to 20 years. Credits that are earned but unused in a year are unlikely to serve as a strong incentive to increase research that year because the credit will not provide the business any current cash benefit. If the company is generating excess credits in future years as well, the excess credits may never be used. Even if the amount of research credits earned by the company later diminishes so that carryover credits can be used to offset a future-year liability, those carryover credits will have little influence on increasing research expenditures in the year they are used. Consequently, credits that are limited by the TMT may become useless as an incentive even though they ultimately may benefit the corporate taxpayer. That is not an effective way to award tax incentives.

The use of research credits also is subject to a second limitation that applies if it is greater than the TMT limitation. Under that second limitation, the research credit combined with a company's other business credits cannot exceed 25 percent of the company's net regular tax liability exceeding $25,000.[36] For corporations with lots of income, the TMT limitation generally will be greater (resulting in less useable credit) than the second limitation, but companies with small amounts of income may be in a lower regular tax bracket and find that the second limitation will be greater.

The limits on the amount of credit that can be used in a year undermine the incentive effect of the credits earned in that year. Moreover, the carryover of those credits to future years does not provide any incentive effect in those years. These limitations should be eliminated, and taxpayers should be able to fully offset their tax liabilities with research credits in the year the credits are earned.

E. Simplify the Credit

The most important rule for creating a tax incentive is simplicity. There are some commonsense ways to remove complexity from the research credit:

- eliminate the loss of R&D deductions;
- eliminate the incremental nature of the credit;
- eliminate the separate calculation for basic research payments; and
- limit qualified research expenses to wages paid to scientists, engineers, and technicians, including supervisory personnel.

1. Eliminate the loss of section 174 deductions. As a result of a taxpayer earning a research credit, its section 174(a) deductions (expense treatment for R&D expenditures) are reduced in an amount equal to the amount of the research credit.[37] Alternatively, taxpayers can take an unreduced section 174 deduction if they elect to take a reduced credit. Although the objective is to prevent taxpayers from receiving a full research deduction as well as a full research credit, that two-step method of calculating the credit obfuscates its true benefit — and anything that confuses business people detracts from the efficacy of the credit. To simplify matters, the loss of the section 174 deductions and the election to reduce the credit should be eliminated.

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[35]Section 38(c)(1)(A).

[36]Section 38(c)(1)(B). The net regular tax is the regular tax reduced by credits allowable under code sections 27 to 37.

[37]Section 280C(c). The amount of the lost deduction equals the amount of credit computed under section 41(a) and not the amount of credit that is used in offsetting the taxpayer's liability for the year. Section 280C(c)(1).

2. Eliminate the incremental nature of the credit. Through a set of extremely complex rules, the regular credit attempts to reward increases in R&D intensity (as measured by the amount of qualified research expenditures over gross receipts) by applying the 20 percent credit only for qualified research expenses that exceed a base amount. The base amount is computed by multiplying a taxpayer's average gross receipts for its prior four tax years by the fixed-based percentage, which inexplicitly equals the aggregate amount of qualified research for years 1984 through 1988 divided by the amount of the aggregate gross receipts for that period. Those rules do not apply to startups, which have their own set of complex and equally discouraging rules. The incremental rules have done too good a job of diminishing the amount of credit that can be earned by companies. Congress has thus counteracted them by providing a second and more forgiving incremental method of calculation known as the alternative simplified credit (ASC). The ASC applies a 14 percent credit to qualified research expenditures that exceed 50 percent of the average R&D expenditures incurred by a company in its prior three years.

Those complicated incremental rules are self-defeating because they make it unlikely that a businessperson can determine whether the expenditures for a particular project are incremental or nonincremental. If that were not enough, there are also limitations on the amount of the credit that can be earned if research spending becomes too large. For the regular credit, the base amount can never be less than 50 percent of the amount of qualified research expenditures for a year. That means that the credit is only 50 percent beneficial for any company affected by the rule: If the company increases R&D by $1, it will get a credit on only 50 cents. That rule affects many taxpayers that claim the research credit. IRS statistics show that in 2005, 88 percent of taxpayers computed the credit using the incremental method requiring the computation of a base amount,[38] and of those taxpayers, 76.1 percent were subject to the 50 percent limitation.[39] Perversely, the companies that are accelerating their research expenses most quickly are the ones subject to the limitation.

The major effect of the incremental rules is that they add complexity and uncertainty to the calculation of the credit, and they limit the benefit of the credit for companies that do too good a job of increasing their research spending. Under the current mechanism, it is difficult for businessmen or their advisers to estimate how much a company would benefit from a given research project or whether the credit would be limited by the 50 percent rule. To eliminate that uncertainty, the incremental rules should be abolished and the research credit rate should be applied to the total amount of qualified research conducted by a company. Consequently, the ASC rules also should be eliminated, since without an incremental requirement for the regular credit, the ASC rules lose their raison d'etre.

3. Eliminate the separate basic research credit. Very few companies take advantage of the credit for basic research payments, which provides a 20 percent incremental credit for payments for research performed by universities and other research organizations. In 2008 taxpayers reported only $320.7 million in basic research payments, which probably generated very little credit as a result of the incremental nature of the credit. The incremental feature of the basic research credit calculation is even more complex than the incremental calculation of the regular credit, requiring a calculation of a "qualified organization base period amount". For 2008 the total QOBPA reported by claimants was $983 million, exceeding the amount of basic research payments reported for the year.

The reason for the separate incremental calculation is that Congress did not want to discourage basic research payments when taxpayers' qualified research expenditures did not exceed the base amount. To avoid that, Congress set up a separate incremental calculation for basic research payments. If, as suggested, the incremental nature of the regular credit is eliminated, then the incremental calculation for basic research payments also should be eliminated. In any event, that separate calculation should be eliminated just because of the undue complexity it adds to the code and the minimal benefit it provides. Instead, basic research payments should be treated as qualified research expenses (QREs).

4. Limit QREs to wages of technical personnel. Companies and their accounting firms devote a great deal of effort to determining which employees are involved in research, and a research credit is often taken for lawyers, marketing people, sales people, and administrative personnel who somehow are deemed to be part of the research process. The effort to broaden the scope of research to include people who are not scientists or engineers becomes contentious with the IRS. To simplify matters, QREs should only include the wages of

[38]Until tax years beginning after 2008, taxpayers were allowed to elect another method, known as the alternative incremental credit, which did not require the computation of a base amount.

[39]Eurry Kim, "The Credit for Increasing Research Activities: Statistics From Tax Years 2004-2005," *Statistics of Income Bulletin* (Summer 2008), at 182.

scientists, engineers, and technicians; sales, marketing, and administrative people should be excluded even if they have an engineering degree. That approach would allow a company to easily determine the amount of credit it is entitled to and also would prevent audit disputes.

However, the code now limits qualified research to people who do research and to those who directly supervise or directly support research activities. That has led to many disputes over who is involved in direct supervision and who is involved in indirect supervision. The direct supervision requirement is a contrived one because R&D organizations are often informal. Direct supervisors often do research themselves, which makes it difficult to develop a hierarchy of supervision. Any scientist or engineer involved in a qualified project should qualify for the credit regardless of whether his supervisory activities are direct or indirect, and this is both equitable and easy to administer. But those indirect supervisors must be scientists or engineers as well.

Also, supplies and computer rental payments should be eliminated from the definition of qualified research expenses. This recommendation is merely to achieve simplicity and avoid controversy. For 2008, supplies constituted about 15.9 percent of the qualified research expenses reported by taxpayers, and computer rental payments constituted less than 1 percent of reported qualified research expenses.[40] Clearly, computer rental payments are not significant enough to deserve special treatment. For the sake of simplicity, we should not design general incentives to solve the problem of a small group of taxpayers, regardless of the equities. The resulting complexity undermines the incentive's effectiveness and is self-defeating. Regarding supplies, there has been an ongoing controversy with the IRS about whether they represent nonqualified depreciable property. To avoid that controversy and streamline the code, supplies should be eliminated from the definition of qualified research expenses. The loss to the taxpayer would be compensated for by an increase in the credit rate, as suggested above.

F. Make the Credit Permanent

Research projects and product roadmaps are often planned over several years, and if Congress intends businesses to incorporate the research credit into their investment analysis, it should provide certainty that the benefit will be in place when it comes time to do the research. If appropriately amended to cure its deficiencies, the credit should be made a permanent part of the code.

G. Empower NSF to Help Administer the Credit

There is perhaps no organization that understands scientific and engineering innovation as well as the NSF. As stated on its website, the NSF is an independent federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense." It has an annual budget of more than $7 billion ($7.8 billion has been requested for fiscal 2012), and it funds approximately 20 percent of all federally supported basic research conducted by America's colleges and universities. The NSF's mission includes all fields of fundamental science and engineering, and it supports high-risk, high-payoff ideas. The NSF funds research and education in most fields of science and engineering through grants and cooperative agreements to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations, and other research organizations throughout the United States. It considers proposals submitted by organizations on behalf of individuals or groups for support in most fields of research. Awardees are chosen from proposals asking for a specific amount of support for a specific project.

Although the NSF concentrates on basic and applied science, it is ideally suited to appreciate and evaluate innovative development research performed by industry. It certainly has the expertise, and it has a process in place for reviewing large numbers of proposals. The NSF now receives more than 42,000 proposals per year and evaluates them in a transparent, in-depth manner. Moreover, a key focus of the NSF's strategic five-year plan through fiscal 2016 is linking the results of fundamental research to national and global policy areas and engaging the science and technology workforce and the United States overall in meeting national challenges. It would be a convenient extension of the NSF's charter to have it evaluate product proposals to make determinations about whether they meet the innovation standard for qualified research. The foundation's exposure to the work being done by industry also would help it in formulating plans for the basic and applied research done in the United States.

Many of the disputes with the IRS over whether research qualifies for the research credit can be avoided by having the NSF evaluate research projects and determine whether they qualify for the credit. That would be an entirely voluntary program. The NSF's determination should be appealable by the taxpayer but would be binding on the IRS so as to provide the financial certainty that a businessperson needs to invest in risky projects.

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[40]IRS Statistics of Income division: 2008 Corporate Returns Data.

The NSF also should be given the role of promoting the credit and making small companies throughout the United States aware of the benefits available for innovative research.

By setting a high standard of innovation for the research credit and having the NSF review project proposals, it may seem that the research credit takes on the nature of a grant program rather than a tax credit program. Despite similarities, there are key differences. In a grant program, the amount of funding is determined either in the grant proposal or the solicitation. In a tax credit program, the amount of funding is left completely up to the company proposing the project. Also, the companies proposing a project have complete discretion as to the product area in which they wish to do research, and they are not limited by the charter or strategy of any particular agency. The NSF has an outstanding record, and its insertion into the research credit program can only increase the chances of that program's success.

H. Incentivize Products Made in U.S.A.

Sometimes, if you can't beat 'em, join 'em. When it comes to manufacturing, our foreign competitors are beating us by providing a more attractive tax picture for manufacturers. As it now stands, our tax system plays right into the hands of those foreign nations by allowing U.S. multinationals to defer U.S. tax on profits they earn in foreign countries. We also allow them to shift to offshore tax havens intangibles that were produced in the United States that may have been subsidized by government grants or research credits. Although the Obama administration is aware that our tax system in effect provides companies an incentive to export jobs, it is unlikely that lawmakers will actually reform the system to encourage companies to create jobs rather than export them.

However, if instead of taking on the quixotic task of reforming the tax system, lawmakers included with the research credit an additional incentive for companies to manufacture in the United States the products that they developed here, that legislation might have a chance. We would be decreasing taxes on corporations rather than increasing them, and we simultaneously would be adding jobs, thereby making groups on both sides of the political spectrum likely proponents of the incentive. There are many countries that provide deep corporate tax breaks to manufacturers, and to make an incentive effective, the United States would have to do the same. In Malaysia, Singapore, and Thailand, for example, a company can obtain a manufacturing tax holiday under which it does not have to pay any tax for an extended period (up to 15 years in Singapore).

Therefore, to make an impact, the United States should provide a 10 percent tax rate for products made and developed here. With that incentive, U.S. corporations that are now manufacturing offshore would have to seriously reconsider manufacturing in the United States. An added benefit is that the profits made here would not have to be taxed again on repatriation, which is the case with offshore manufacturing. With such an attractive tax situation, even foreign companies would consider designing and making products here. There may be some WTO issues with such an incentive, because the WTO rules generally discourage countries from incentivizing domestic sourcing. However, it does not seem that the other countries offering those incentives have had any problems with the WTO.

A 10 percent tax rate on domestic manufacturing would be a game-changer and exactly what our economy needs. When tied into the requirement to conduct research in the United States, the incentive would be a double winner.

V. Conclusion

The research credit represents a substantial financial investment in America's strategy for technological development, and we should ensure that money invested is spent wisely. The current research credit is ineffective because it does not encourage increased research spending, does not encourage innovative research, and does not go to the companies that need it. Moreover, the amount of the incentive is not significant enough to make an impact, and the complexity and administration of the credit is too Byzantine to generate the expected motivation. Our economic condition makes this an opportune time to revisit the credit and see how we can improve it. The research credit has long lacked a clear objective, and Congress should design it to help finance small, innovative companies, encourage innovative research, and help create jobs in the United States. Those objectives can be accomplished by providing refundable credits to small companies, by focusing the credit on innovative research, simplifying the credit and making it permanent, turning over some administrative functions to the NSF, and providing a low tax rate on products made and developed in the United States. If those things could be accomplished, the credit would have a far-reaching impact on our economy. Hopefully, this report will kindle some thoughts for those in Washington responsible for research credit legislation and will help begin the process to turn good intentions into a good incentive.

Appendix I
Proposed New Statute

The following proposed statute takes into account the recommendations made in Part IV. This proposal should be viewed as a starting point for discussion. In particular, the definition of innovative qualified research should be discussed among those in the high technology and biotechnology industries to provide more precise and appropriate language to describe innovative research.

111TH CONGRESS
1ST SESSION
H.R. xxxx

To amend the Internal Revenue Code of 1986 to provide incentives to improve America's research competitiveness.

IN THE HOUSE OF REPRESENTATIVES
_____, 2011
Representative _____ introduced the following bill; which was referred to the Committee on Ways and Means

A BILL

To amend the Internal Revenue Code of 1986 to provide incentives to improve America's research competitiveness, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Innovative Research Tax Credit Act of 2011."

SECTION 2 ADDING NEW SECTION 41A.

(a) In General. — Subpart D of part IV of subchapter A of chapter 1 (relating to business related credits) of the Internal Revenue Code of 1986 is amended by adding the following new section:

"SEC. 41A INNOVATIVE RESEARCH CREDIT

"(a) For purposes of section 38, the innovative research credit determined under this section for the tax year shall be an amount equal to the sum of

"(1) 30 percent of wages as defined in section 3401(a) (other than stock option income determined under section 83) and contract research expenses paid or incurred during the tax year for the performance of innovative qualified research within the United States by scientists, engineers, and technicians, excluding sales, marketing, administrative, and manufacturing personnel, in the course of the carrying on of any trade or business of the taxpayer;

"(2) 20 percent of amounts paid or incurred by the taxpayer in the carrying on of any trade or business of the taxpayer during the tax year (including contributions) to an energy research consortium (as defined in section 41(f)(6)); and

(3) 20 percent of basic research payments as defined in section 41(e)(2).

"(b)(1) The term 'innovative qualified research' means activities that involve the creation of a new product category or represents a significant enhancement over existing product technology in terms of performance, energy consumption, cost, use, or size, and requires the use of new technological techniques or design methods to achieve those improvements. Any funded research, as defined in section 41(d)(4) and the regulations thereunder, is excluded from innovative qualified research.

"(b)(2) The term 'new product category' means a category of product not previously produced by the taxpayer and that incorporates functions that are substantially different from other products have been produced by the taxpayer. A determination by the National Science Foundation that a product meets the requirements of paragraph (b)(1) should be deemed conclusive.

"(b)(3) The term 'contract research expenses' means 65 percent of any amount paid or incurred by the taxpayer to any person (other than an employee) for innovative qualified research. In the case of amounts paid or incurred with respect to qualified research consortia defined in section 41(b)(3)(C), '75 percent' shall be substituted for '65 percent' in the first sentence of this paragraph. In the case of amounts paid by the taxpayer to an eligible small business (as defined in section 41(b)(3)(D)(ii)), an institution of higher education (as defined in section 3304(f)), or a federal laboratory (as defined in 41(b)(3)(D)(iv)), '100 percent' shall be substituted for '65 percent' in the first sentence of this paragraph.

"(b)(4) Trade or business requirement disregarded for some startup ventures. A taxpayer shall be treated as meeting the trade or business requirement of paragraph (a)(1) if at the time wages and contract research expenses are paid or incurred, the principal purpose of the taxpayer in making those expenditures is to use the research in the active conduct of a future trade or business of the taxpayer or one or more persons with whom the taxpayer would be treated as a single taxable under section 41(f)(1).

"(b)(5) Allocations —

"(A) Passthrough in the case of estates and trusts. — Under regulations prescribed by the Secretary, rules similar to the rules of subsection (d) of section 52 shall apply.

"(B) Allocation in the case of partnerships. — In the case of partnerships, the credit shall be allocated among partners under regulations prescribed by the Secretary.

"(b)(6) Special rules for passthrough credit. In the case of an individual who —

"(1) owns an interest in an unincorporated trade or business,

"(2) is a partner in a partnership,

"(3) is a beneficiary of an estate or trust, or

"(4) is a shareholder in an S corporation, "the amount determined in subsection (a) for any tax year shall not exceed an amount (separately computed for each person's interest in that trade or business or entity) equal to the amount of tax attributable to that portion of a person's taxable income that is allocable or apportionable to the person's interest in that trade or business or entity. If the amount determined under subsection (a) for any tax year exceeds the limitation of the preceding sentence, that amount may be carried to other tax years under the rules of section 39.

"(c) Effective Date. — The amendments made by this section shall apply to amounts paid or incurred after _____.

(b) Credit Allowed as Part of General Business Credit. — Section 38(b) of the Internal Revenue Code of 1986 is amended by adding after the end of paragraph (4), the following new paragraph:

"(4A) the innovative research credit as determined under section 41A,"

(c) Credit Included as a Specified Credit — Section 38(c)(4)(B) of the Internal Revenue Code of 1986 is amended by removing the period at the end of paragraph (ix) and adding a comma in its place, and adding after the end of paragraph (ix), the following new paragraph:

"(x) the research credit determined under section 41A."

(d) Section 38(c)(1)(B) Limitation Inapplicable — Section 38(c)(1) is amended by adding the following sentence at the end of the subsection: "Under regulations prescribed by the Secretary, paragraph (B) does not apply with respect to section 38(b)(4)(A)."

There would have to be some related amendments. For a small company (defined as having revenues of less than $25 million), to the extent the credit exceeds the taxpayer's tax liability, any excess credit should be paid out as a refund, or the taxpayer should be allowed to sell or otherwise transfer its credits.

As a result of eliminating the incremental feature of the credit, it is unnecessary for the statute to deal generally with affiliated companies or to deal with acquisitions and dispositions of trade or businesses, thereby adding to the simplicity of the proposed statute. Rules regarding short tax years also would be unnecessary.

To provide for a 10 percent rate for products developed and manufactured in the United States, section 199 could be amended to provide a deduction in an amount sufficient to reduce the manufacturers' tax rate down to 10 percent. For example, with a deduction equal to 71 percent of taxable income related to those products, the effective tax rate on that income for a 35 percent corporate rate taxpayer would be about 10 percent.

Appendix II

How the TMT Limitation Works

The alternative minimum tax was put in place by the Tax Reform Act of 1986 to provide a minimum level of taxation for taxpayers that had done such a good job of tax planning that their tax liabilities became nil or insignificant. While the AMT has become infamous for its unpredictable and often unfair taxation of individuals, it applies to corporations as well.[41] The corporate TMT rate is 20 percent of alternative minimum taxable income, and for the most part AMTI is similar to regular taxable income, except for some adjustments to regular taxable income and the addition of some preference items. Technically, the 20 percent liability is known as the TMT, and the AMT liability equals the TMT less the regular tax.[42]

When a company has research credits, they are combined with its other business credits, and the total credits that can used in a year is limited to the amount of the net income tax liability (defined in this case as the sum of the regular tax and the AMT) that exceeds the amount of the TMT.[43] Since the TMT is computed at a 20 percent tax rate, the general effect of the limitation is to ensure that the company's credits cannot reduce the corporate tax below 20 percent of AMTI.

When a company has several different business credits available to it, there is a special rule that determines the order in which credits are used in a particular year, thus affecting which credits are used currently and which are carried forward to future years.[44] Under those rules, the order in which credits are used is determined based on the order in which they are listed in the code section. Section 38 lists 36 different business credits, and the research credit is listed fourth. Some credits are not subject to the TMT limitation. The code accomplishes this by treating the TMT as zero in those cases.[45] The TMT also is treated as zero for a small business if the average annual gross receipts for its prior three-tax-year period do not exceed $50 million.

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[41]Before enactment of the AMT, corporate taxpayers had been subject to a minimum tax on tax preferences, with that tax being added to the regular tax.

[42]Section 55.

[43]Section 38(c)(1)(A).

[44]Section 38(d)(1).

[45]Section 38(c)(4).

Michael D. Rashkin

Responses to Follow-Up Questions from the Committee and Supplemental Information Related to Questions from Chairman Baucus

Re: Senate Finance Committee Hearing
"Tax Reform Options: Incentives for Innovation"
September 20, 2011

(The responses follow after each question; supplemental information is at the end)

Questions from Chairman Baucus

1. What types of companies (in terms of industries and/or size) do we need to target the credit towards, if any? How else could we change the credit so that it is more effective at stimulating growth and job creation?

   Answer. The research credit should address the two glaring weaknesses in our country's innovation system: the lack of financing for promising start-ups, and the offshoring of manufacturing jobs for products we create in the U.S. We should not target particular industries or technologies, but we should target the type of research activity that adds to our economic well-being.

   Innovative start-up companies with great product ideas cannot find private capital to enable them to commercialize their products.

   > While private sector venture capital gets much of the attention, private venture capital firms are generally reluctant to invest in firms that are still years away from having a commercial product. Angel investors, who are willing to take greater risks over long periods of time, play a greater role in supporting early stage firms as do venture funds set up by nonprofits and state governments… **The shortage of patient, long-term capital for these start-up firms continues to be one of the major weaknesses of this whole innovation system.** (*State of Innovation*, Block and Keller, 2011, p. 18-19.) (Emphasis added.)

   This is a worldwide issue, and as a result, many countries have credit schemes that favor smaller companies. One study has found that targeting smaller firms is effective:

   > "The simulation experiments that we carried out so far suggest that the preferential treatment of smaller firms for R&D tax credits is justified. R&D tax credits are more effective in stimulating R&D investment in small firms and are quite wasteful in terms of cost-benefit for large firms." (Pierre Mohnen and Boris Lokshin, "What Does It Take for an R&D Tax Incentive Policy to Be Effective?" United Nations University, UNU-MERIT, Working Paper Series, #2009-014 (Feb. 23, 2009).

Targeting smaller companies will probably require a grant in-lieu of program similar to section 48D, which is discussed in the responses to questions 2 and 5.

Once companies create great new products, it is vital that they manufacture them in the U.S. The example of Apple Computer demonstrates that American industry is great a creating products but is not so great at creating U.S. manufacturing jobs. The solar energy industry is becoming another glaring example. We lead the world in solar technology, but China leads in solar manufacturing. We are becoming the research arm of China.

In order to encourage U.S. manufacturing we could adopt either of the following two alternatives: 1) we could provide a low tax rate (anywhere from 0 to 10%) for income from products that are made in the U.S that have been developed in the U.S; or 2) we could make as a condition to receiving the credit that any resulting products be made in the U.S., or that at least 50 percent of resulting manufacturing jobs be located in the U.S., and the failure to manufacture in the U.S. would result in a recapture of the credit.

It is not necessary to choose particular industries that would qualify for the credit. Instead, we should look at the nature and impact of the work, and this is discussed below.

2. Many different types of government incentives and subsidies were brought up over the course of our hearing. If we had to pick one of either a grant program, loan supports, or tax incentives, which is preferable and why? Ms. Nellen mentioned the Section 1603 grant-in-lieu-of-credit for energy projects as a possible model for improving the incentive of the tax credit. If we pursued that route, is there any justification for using the tax code rather than just a grant program, to administer incentives for R&D? Is the tax code a good way to identify, evaluate and reward R&D activities?

Answer. There is a significant difference between a grant program and grant-in-lieu program under the tax code. Under a grant program the granting organization picks the subject areas for which it wishes to receive proposals, whereas under a grant in-lieu program, the taxpayer can choose whatever product it would like to pursue, as long it falls within the overall conditions of the program. As an example of a grant program, the DOE announced that it wished to receive grant proposals with regard to improving certain kind of battery technologies, and has in fact awarded a large amount of money to companies working on battery technology. But under a grant-in-lieu program it is the taxpayer who decides what type of product that it wishes to create, and as long as the proposed product meets the conditions set for the credit or grant, then it should be approved.

A good example of a grant-in lieu program is the section 48D therapeutic discovery project credit. Under this program taxpayers were free to choose whatever project they wished and would receive a credit or grant in-lieu as long it met the section 48D(d)(3) selection criteria. Under this criteria, consideration had to be given to those projects that showed reasonable potential to result in new therapies, to treat areas of unmet medical need, to prevent, detect, or treat chronic or acute diseases and conditions, to reduce long-term health care costs in the United States, or to significantly advance the goal of curing

cancer, and to take into consideration projects that had the greatest potential to create and sustain high quality, high-paying jobs in the United States, and to advance United States competitiveness in the fields of life, biological, and medical sciences. These criteria provided a lot of leeway for taxpayers to work on whatever technology they wished as long it fell within these very broad parameters. A similar process could be put in place for the research credit, except that the product area guidelines would not be necessary. Section 48D was dealing only with the biotech area whereas the research credit deals with the entire economy. Instead the focus should be on the nature of the research and not the subject of the research.

Since the tax code puts decision-making in the hands of the innovators, while a grant program puts the decisions as to what innovations to pursue in the hands of the government, the tax code is a more fitting tool to encourage innovation in a market economy. But both grants and the tax code are useful and each can be used for the circumstance where they are most suitable.

3. In your testimony you argued that the credit should be limited to truly innovative and groundbreaking research. Could you give a possible set of criteria for making such a distinction? I am also interested in understanding the difference between a proposal that requires firms to apply for a 30% credit and a government grant program. What is the material difference?

Answer. Qualifying research should be innovative and have a significant impact on the economy. So we need a two-part test, one, which deals with innovation, and one that deals with the economic impact. For innovation, there is already a set of criteria in place in this country for determining if a product is innovative, and that is the patent law. Under the patent law an invention is patentable if it is new, useful, and not obvious to one having ordinary skill in the art. We use this standard for giving monopolies to inventions, so why can't we use it to give out tax credits? Every inventor has a good idea as to whether the invention he or she is working on meets that standard, and there are a large number of experts available that can advise on this. So this standard would be a known quantity for the engineering community.

But in addition, we want more than new and useful products, we want products that create new industries and result in new factories. Many patentable inventions result in evolutionary cost reductions and performance enhancements. These improvements represent important progress but the government does not need to encourage routine R&D activity. We should limit government tax credits to inventions of products that are new product categories for a company, or, if the company has previously produced such a product, the new product must represent a new generation of technology, exhibiting significant increases in functionality and performance and be based upon a fundamentally new design.

Thus qualifying research could be defined as follows:

> Qualified research means research towards the development of a product that would qualify as a patentable invention (regardless of whether the taxpayer actually applies for a patent) and which would represent a product category never before produced by the taxpayer, or represents an enhancement of a product previously produced by the taxpayer if such enhanced product results in significant increases in functionality and performance and is based upon a fundamentally new design. If greater than 50% of the content of a product meets the foregoing test, the entire product will be deemed to qualify.

When companies create innovative new products, they grow, and when they grow they create jobs, and this is the type of activity we should encourage.

With regard to the difference between a proposal that requires firms to apply for a 30% credit and a government grant program, see the response to question 2.

Questions from Senator Hatch

4. How should the law draw a bright-line for what is qualified research, and what is not? Apparently much of the administrative burden of the R&D credit is because of debate back and forth as to whether a given activity qualifies for the R&D credit. How would you solve that?

Answer. A more contentious issue than defining research is the documentation requirements that the IRS imposes. Most taxpayers do not maintain project accounting systems that provide the connection between their expenditures and particular projects. Instead taxpayers send out surveys to their engineers asking them what projects they worked on and how much time they spent on them. The Service believes these surveys are unreliable because they are self-serving and they are not contemporaneous. To solve this, the statute should be amended to make clear that such surveys would be deemed acceptable documentation of the amount of time an employee spent on a project if they are completed within 75 days of year-end and if signed by the employee under penalties of perjury.

In addition, companies and their accounting firms devote a great deal of effort to broadening the categories of employees that are involved in research, and a credit is often taken for lawyers, marketing people, sales people, and administrative personnel who somehow are deemed to be part of the research process. To simplify matters, qualified research expenses should only include the wages of scientists, engineers, and technicians; sales, marketing, and administrative people should be excluded even if they have an engineering degree. This approach would allow a company to easily determine the amount of credit it is entitled to and would also prevent audit disputes.

As to the definition of qualified research, please see answer to question 3.

And, possibly related to that, do any of you have any ideas on how the IRS should write the regulations regarding Internal-Use Software? I am assuming the generation-long hold-up in issuing those regulations is the difficulty in drawing lines as to which Internal-Use Software should qualify for the R&D credit, and which should not?

Answer. Perhaps we can solve this internal software issue by dividing internal-use software between infrastructure software and customer product software. Infrastructure software would include all the nuts and bolts software a company runs on, such as its accounting, payroll, stock option, human resources, supply chain, and manufacturing operations software. These should not qualify for the credit as they represent the routine business activities that the government should not subsidize. This leaves us with what may be called customer product software. Here there are two categories: one where the software itself is the product, such as a search engine, or social networking software, and the other is where the software helps deliver a product, such as software for an ATM machine, or software that allows you to buy a ticket at the airport. Only the software that is actually the product should qualify for the credit and such software should qualify under the same rules as any product. Software that helps deliver the product should not qualify for the credit. Such software is just part of a company's delivery infrastructure and although the development of such software could require very innovative development work, this business activity is not in the nature of what the government should subsidize.

5. You and Ms. Nellen both suggested that the R&D credit perhaps should be refundable. However, doesn't a requirement of taxable income have the advantage of requiring the claimant have some minimal level of business success?

Answer. It is true taxable income shows some business success. But when it comes to start-ups, that is not so important. Steve Jobs and Steve Wozniak are examples of people with no business history and no college degrees, who together formed the greatest high technology company in the world.

If even those without any tax liability, or without any profits, or without any income could claim a credit, wouldn't there be a lot more charlatans claiming the credit? Isn't having taxable income as some sort of minimal threshold likely to weed out a lot of charlatans?

Also, how would the IRS handle the volume of R&D credit claims it would have to audit if the Credit became refundable?

Answer. The IRS very successfully handled a similar type of program under section 48D (qualifying therapeutic discovery credit). In order for a taxpayer to receive a credit or grant, it had to receive certification of its proposal. Section 48D required the IRS and the Secretary of Health and Human Services to establish a qualifying therapeutic discovery

project program to consider and award certifications. The total amount of credits that could be allocated under the program was not to exceed $1,000,000,000 for the 2-year period beginning with 2009. Each applicant for certification under was required to submit an application containing required information and the IRS was required to approve or deny an application under within 30 days of the submission.

As mentioned above, in determining which proposals would be certified, the IRS was required to take into consideration only those projects that showed reasonable potential to result in new therapies, or to prevent, detect, or treat chronic or acute diseases and conditions, to reduce long-term health care costs, or to significantly advance the goal of curing cancer, and those projects that have the greatest potential to create high-paying jobs in the United States, and to advance United States competitiveness.

The IRS and the HHS had to act quickly and efficiently to satisfy statutory mandates in certifying qualifying investments. There were 5,663 applications received of which 81.3 percent were approved, and of those, 98 percent elected to receive grants instead of credits. The Treasury Inspector General for Tax Administration found that the IRS met legislative requirements when awarding the credits and grants to program recipients and despite the unprecedented short time period allotted by the law for creating the QTDP Program, the IRS achieved its goal.[1]

The efficiency of the IRS in handling this program should give us confidence of their ability to handle a similar program with regard to the research credit. Of course there will be some people who try to defraud the system, but this risk would be minimized by the use of a certification procedure.

6. In your testimony it states, "Congress provides tax and other subsidies to encourage companies to create products, often based upon government-funded basic research; through cost sharing and other arrangements, companies park the resulting intellectual property in tax havens."

   If the R & D used to create the intellectual property is conducted in the United States, should we be concerned if the resulting intellectual property is located in a foreign jurisdiction? Would you please elaborate on your statement?

   Answer. We should be very concerned—because we are losing jobs and competitiveness as a result. Once a U.S. company has its IP is offshore, then it becomes very beneficial to locate manufacturing and other functions offshore. If a company manufactures in the U.S. it is subject to a 35% tax. If it can get its IP offshore, and get a foreign tax holiday, it can pay zero tax. Moreover, if it can put other functions offshore it can increase it foreign income and further reduce its U.S. tax. This is why the statistics show that U.S. companies have a disproportionate share of their income outside the U.S. It is not an

[1] Treasury Inspector General For Tax Administration, *Legislative Requirements Were Met When Awarding Credits and Grants for the Qualifying Therapeutic,* Discovery Project Program, September 14, 2011 Reference Number: 2011-40-100.

accident. They arrange it this way to avoid U.S. tax, and our tax code encourages them, almost forces them, to do it.

Once manufacturing is offshore it starts what has been described as a chain reaction. First the product process R&D goes offshore, followed by design R&D. Eventually the company loses the capability to design and manufacture in the U.S. It starts with IP migration offshore but ends with the loss of U.S. R&D capabilities. This has happened and is happening in many industries and the tax code is very culpable. There are many products we can no longer can design or make in the U.S. and there are more that we are losing every year. This is not only an economic issue but a military one as well. An excellent discussion of this process can be found in *Restoring American Competitiveness* by Gary Pisano and Willy Shih (Harvard Business Review, July – August, 2009)

7. Why do you suggest we not have an incremental credit and instead have a volume-based credit?

Answer. There are two reasons for suggesting a volume-based credit. First, the incremental feature of the credit does not work. There is a fatal contradiction in the theory of the incremental feature. Although the incremental feature of the credit is computed on a full-company basis, the credit is actually earned on a project-by-project basis. So, for example, if a vice-president of engineering wanted to determine the amount of credit that would be earned from a particular project, he or she would have no way of determining that because incrementality is not determined on a project-by-project basis. It would be necessary for that VP to know the overall R&D credit history of the entire company, as well as the amount of R&D for planned for the entire company the for the current year, and then somehow determine whether the R&D for the particular project in question created incremental spending or not. This is of course not feasible and is never done in the real world. The incremental feature is only a theoretical concept, not a real one.

The second reason is that for an incentive to be effective, the amount of the incentive has to be clearly identifiable. With a volume-credit, the amount of benefit is clear. Understandably, there is a concern that the volume-credit would provide a benefit for research that would in any event be done even without the credit. This is a valid concern, and it is for this reason that the credit should be limited to very innovative projects that provide big economic returns to the country.

Question from Senator Wyden

8. In response to my questions during the hearing, you said the current tax system contributes to the loss of jobs and technology. Can you explain how the current tax system results in less research and development in the U.S.?

Answer. Our system of tax deferral encourages companies to locate functions offshore. The company's IP is the starting point because it represents most of the value of a high tech or biotech company. If the IP can be put offshore then most of the profits of the company can be offshore as well. Once the IP is offshore the tax umbilical with the U.S. is cut. The company is now free to manufacture offshore. If it can obtain a tax holiday somewhere, it can manufacture at a very low tax rate, often zero, versus the U.S. rate of 35%.

But it does not stop at manufacturing. There are at least three ways that our tax system encourages less R&D in the US.

(1) Cost sharing. Usually IP is transferred offshore through a cost sharing arrangement. But these require costly buy-in payments (now technically platform contributions) to the U.S parent for pre-existing technology. If the R&D could be done in a foreign country, these buy-in payments can be avoided or reduced. The IRS is attempting to limit the benefits of these cost-sharing agreements, but the *Veritas* case puts the IRS regulations in doubt. Ironically, if the IRS is successful it provides companies with greater incentive for putting R&D offshore.

(2) Transfer pricing. Under the section 482 transfer pricing regulations the more functions a company can place offshore, the more profits it can justify having offshore. If R&D is offshore, then with less activities and risks in the U.S., the U.S. parent company can earn less income and pay less tax.

(3) Foreign tax incentives and U.S. tax deferral. Often, as a necessary condition to obtain a manufacturing tax holiday in a foreign country, it will be necessary for a U.S. company to put an R&D operation in the foreign country providing the holiday. For example, the Economic Development Board of Singapore will often require a company to hire a specific number of engineers in order to obtain Pioneer Status (a tax holiday of up to 15 years). But the only reason this makes sense is because with the IP offshore, the protection of our tax deferral system allows the company to earn large amounts of offshore profits without paying U.S. tax. So first the IP goes (tax lawyers call this IP migration), then the manufacturing (this is called offshoring), and then the R&D goes offshore (Friedman refers to this to as a consequence of the flat world). And yet, so much of this is is a result of our tax system which quietly and insidiously eats away at our economy.

Supplemental Information of Michael D. Rashkin
Related to Questions from Chairman Baucus on September 20

1. In response to the testimony that Canada needs high R&D tax incentives because it has some structural problems, such as a low number of Ph.D. graduates, Chairman Baucus asked why Canada had that problem.

Answer. The Conference Board of Canada gives Canada a grade of D in comparison to peer countries when it comes to Ph.D. graduates, and has cited a Canadian federal government report that listed some of the underlying reasons.[i]

Among the reasons cited in the government report is over-reliance on cost reduction rather than innovation as the main competitive strategy among Canadian firms. In addition, the report notes that "Canada's private sector does not provide strong enough incentives for students to strive for advanced science and technology skills and for business management skills. Compared to firms in the U.S., Canadian firms across most industries hire fewer Ph.D. graduates and pay them less; this may be one reason why there are fewer students pursuing doctoral studies in Canada."[ii]

2. In response to the testimony that Sweden spends a very high percentage of its GDP on R&D without any R&D tax incentives, Chairman Baucus asked what were the reasons for this achievement.

Answer. Sweden's economy is dominated by high-technology oriented multinationals, of which Ericson is a prime example. These multinationals spend a high percentage of their revenue on R&D (Ericson spends about 15% of its revenue on R&D) and since they make up a large percentage of the Swedish economy, the country as a whole spends a relatively large amount on R&D. The fact that these companies have invested heavily in R&D without an R&D tax incentive is good indicator that tax incentives are not essential for R&D investment. Note that Sweden's percentage of R&D to GDP, the second highest in the world after Israel, is 3.6%, and not over 5%, as was stated in the testimony on September 20.

3. Chairman Baucus asked if companies would tend to innovate and spend what they want to spend on research and innovation if the corporate rate were a lot lower than it is today and if tax incentives such as the R&D credit were eliminated?

Answer.

A. The question appears to assume that the R&D credit now increases R&D spending, but there is no certainty that the R&D credit provides such increase. The 2009 GAO report, Dr. Gregory Tassey of NIST, and the OECD all express caution in appraising the effectiveness of the credit.

2009 GAO Report:

"In reality, it is impossible for policymakers to know how much research spending taxpayers would have done without the credit."[iii]

Dr. Gregory Tassey:

"As currently structured, the US R&E credit probably has had at most a minor and transitory effect on industry R&D spending."[iv]

OECD Testimony at September 20 Senate Finance Committee Hearing, p. 8:

Even if there were a perceived increase in R&D spending this may not lead to an increase in innovation because:

"The introduction of an R&D tax incentive would likely cause an increase in the wages of scientists and engineers, due to the inelastic supply of such workers, at least in the short run. Part of the potential benefits of the R&D tax incentives are therefore "eroded" by an increase in the cost of R&D, rather than inducing only an increase in the volume R&D performed.

Finally, projects financed through R&D tax incentives might be those with the lowest marginal productivity. If there are decreasing marginal returns to R&D, the additional R&D induced by an R&D tax incentive might be less productive.

Thus far, the evidence on the impact of R&D tax incentives on innovation output remains scattered."

B. Lowering the corporate tax rate would not by itself stop corporations from locating their intellectual property in tax havens and moving operations offshore.

It would remain cost effective for taxpayers to place their valuable intangibles in tax havens, and a reduction in the corporate rate would actually facilitate such transfers by reducing the cost of buy-in payments under cost sharing agreements. Once the intangibles are owned in a tax haven, corporations can set up operations offshore without having to worry about US tax. As long as there are countries willing to offer tax holidays, our tax system will continue to encourage the export of US jobs. Only by currently taxing tax haven profits can we stop this.

C. Conclusion. Eliminating the R&D credit and lowering the corporate tax rate would not diminish innovation, but it would not stop the export of jobs and technology resulting from tax haven incentives. Only be taxing tax haven profits can we reverse the flow of jobs outside the US.

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[i] See Conference Board of Canada: A Report Card on Canada, http://www.conferenceboard.ca/hcp/Details/education/Phd-graduates.aspx.

[ii] Industry Canada, *Mobilizing Science and Technology to Canada's Advantage* (Ottawa: Author, 2007), p. 32.

[iii] GAO, "The Research Tax Credit's Design and Administration Can Be Improved," GAO-10-136 (November, 2009), p. 16.

[iv] Tassey, Gregory "Tax Incentives for Innovation: Time to Restructure the R&D Tax Credit," 32(6) *Journal of Technology Transfer* 605-615, p.615 (Dec. 2007).

TECHNOLOGY POLICY INSTITUTE
Studying the Global Information Economy

Statement of Scott Wallsten, PhD
Vice President and Senior Fellow, Technology Policy Institute

The Role of Government in Promoting R&D

Before the U.S. Senate Finance Committee

September 20, 2011

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Thank you, Mr. Chairman, Senator Hatch, and members of the Committee for inviting me to testify here today. My name is Scott Wallsten, and I am vice president for research and senior fellow at the Technology Policy Institute as well as a senior policy fellow at the Georgetown Center for Business and Public Policy.

Research and development plays a crucial role in our economy and our future welfare. Two factors, however, suggest that there could be a gap between the optimal actual levels of R&D activity in the economy.

First, R&D exhibits classic positive externalities. In other words, its benefits extend beyond the innovator as others build on it. But that very feature also means that the innovator does not earn all the returns to the investment. Because firms base their R&D spending on their own expected returns, not the social expected returns, they invest less than they would if they could appropriate all the returns. That is, by themselves businesses are likely to invest fewer resources than is efficient from society's overall perspective.

The private returns to R&D are difficult to measure, but studies suggest that in industrialized countries they are probably about 20-30 percent—significantly higher than returns to other investments. Measuring the so-called research "spillovers," and thus the total returns to R&D, is even more difficult, but a wealth of studies suggest that they are substantially higher than the private returns.[1]

If the marginal private returns are so high, it is reasonable to ask why firms don't invest more. The answer is the second reason to believe there may be a gap between optimal and actual levels of R&D activity.

Primarily because of its riskiness and the inability of the researcher to provide full information to financiers, the cost of capital for research may be higher than for other goods. [2]

Both of these factors suggest that government can play an important role in supporting R&D, ranging from conducting R&D itself, to directly financing others to do it, to creating incentives for others to invest their own money in it.

And, indeed, the government does all of those things. In 2010, federal agency budgets included about $149 billion for R&D spending. That represented a general upward trend over the previous decade in real dollars, though R&D budget obligations decreased by about 3.5% in FY 2011.[3]

To be effective, however, government R&D activities must generate R&D that would not happen otherwise. If government merely subsidized R&D that firms or others would have undertaken anyway then the government support would have had zero effect and simply crowded out other sources of finance.

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[1] Bronwyn H. Hall, Jacques Mairesse, and Pierre Mohnen, *Measuring the Returns to R&D*, Working Paper (National Bureau of Economic Research, December 2009), 22, http://www.nber.org/papers/w15622.

[2] Ibid.

[3] http://www.aaas.org/spp/rd/rdreport2012/tbli10.pdf

Identifying the areas government should fund is not always easy. Industry spends far more than the government on R&D. According to the National Science Foundation's most recent data, in 2008 industry funded about $268 billion in R&D.[4]

The trick for government is to figure out how to generate R&D that would not happen without subsidies. Achieving this goal is probably easiest in the case of basic research, where private returns may be small, especially in the short run, but the total returns may be large, especially when they diffuse among lots of researchers.

And, in fact, government does spend more on basic research than industry does. While only about 4-5 percent of industry R&D spending is on basic research,[5] nearly half of all federal non-defense R&D is on basic research.[6]

But stimulating additional research is more difficult for government policy in the case of applied R&D or of projects closer to commercialization, where the private sector has stronger incentives to provide funding.

In theory, research projects do exist—even ones very close to yielding commercializable products—that industry does not expect to be profitable but whose total benefits would exceed costs and thus justify government support. Unfortunately, we generally have no good way to identify these projects.

Understandably, government typically tries to the fund projects most likely to succeed, especially if a metric of success is whether the subsidy yielded a payoff. But in that case, government risks basing funding decisions on the same criteria the private sector would use. If that happens, the program as a whole may appear to be successful, but if government funding simply replaced private funding then the program was not effective at all. In part for that reason, direct government funding of commercializable industrial research has a mixed track record, at best.

The first step in making those programs more successful would be designing them in such a way that they could be rigorously evaluated. Such evaluations would mean, at a minimum, tracking projects and firms that did not receive subsidies as well as those that did, and in the best case, introducing evaluation tools such as randomization. However, government has shown no interest in rigorous evaluation of corporate subsidies in the past, and no evidence suggests it will in the near future, either.

The R&E tax credit, however, is different from direct R&D subsidies. Unlike direct subsidies that by definition require difficult decisions that yield winners and losers, the tax credit appears to be a rather successful policy tool that most studies find does stimulate additional R&D.[7]

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[4] http://www.nsf.gov/statistics/seind10/c4/c4h.htm

[5] Derived from table 4-2 http://www.nsf.gov/statistics/seind10/tables.htm#c4

[6] In FY 2010 the government allocated about $30 billion for basic research, $31 billion for applied research, and $83 billion for development, although about 90% of development funding was for defense. http://www.aaas.org/spp/rd/rdreport2012/tbli05.pdf

[7] Bronwyn Hall and John Van Reenen, "How Effective are Fiscal Incentives for R&D? A Review of the Evidence," *Research Policy* 29 (2000): 449-469.

Although the R&D tax credit should be considered a successful policy, two factors have probably blunted its effectiveness.

First, its lack of permanent status reduces its ability to coax firms to do more R&D.

Because firms tend to smooth their R&D spending over time, their responses to temporary policies are likely to be muted. A temporary tax credit will, therefore, have limited effectiveness. That is, if firms do not have confidence that the credit will remain in effect, they will probably not increase their R&D spending by as much as they would if the credit were permanent. A permanent R&D tax credit would be more consistent with the way companies make decisions regard R&D spending and is more likely to have the intended positive effect on private spending.

A second reason the tax credit may not have been as successful as it could have been is related to how it determines which expenditures are eligible. In order to be effective, the credit must generate new R&D, not just subsidize R&D that would have happened anyway. For this reason the credit appropriately requires defining qualified expenditures and setting a baseline amount. Neither of those are simple, and a 2008 GAO report found that the credit was inadvertently subsidizing some R&D spending that would have occurred anyway, in part because the baseline level of spending was calculated using data more than 20 years old.[8]

Updating and simplifying the process for determining eligible expenditures is also likely to increase the effectiveness of the tax credit if that makes it possible to better target the credit to new R&D.

Stimulating new research in the U.S. requires additional policies, as well. For example, most R&D expenditures are for scientists and engineers, and their supply is relatively fixed in the short run. More spending on R&D without increasing the numbers of scientists and engineers may result in higher salaries for people already doing R&D, but not more R&D itself.[9] The most effective way to increase the supply of scientists and engineers in the U.S. is to attract the best from wherever they are, which requires looser immigration policies. Moreover, a 2009 study by Arlen Holen at the Technology Policy Institute found that looser immigration policies would also increase economic growth and revenues to the Treasury.[10] While immigration is beyond the scope of this committee, it nevertheless remains an important complement to tax policy if the goal is to encourage new R&D.

In short, R&D is crucial to our future well-being. The R&E tax credit is one of the few government policies that is widely recognized as successfully stimulating additional R&D. Its effectiveness would be strengthened first by making it permanent and, second, by careful consideration of what is considered baseline spending and what is eligible for the credit.

Thank you.

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[8] United States Government Accountability Office, *The Research Tax Credit's Design and Administration Can Be Improved*, November 2009, http://www.gao.gov/new.items/d10136.pdf.

[9] Austan Goolsbee, "Does Government R&D Policy Mainly Benefit Scientists and Engineers?," *American Economic Review* 88, no. 2 (May 1998): 298-302.

[10] Arlene Holen, "The Budgetary Effects of High-Skilled Immigration Reform," *SSRN eLibrary*, 2009, http://ssrn.com/paper=1407280.

COMMUNICATIONS

STATEMENT OF ALLIANTGROUP

TAX REFORM OPTIONS: INCENTIVES FOR INNOVATION
BEFORE
UNITED STATES SENATE COMMITTEE ON FINANCE
ON
SEPTEMBER 20, 2011

MAKING THE R&D TAX CREDIT WORK FOR SMALL AND MEDIUM BUSINESSES

alliantgroup welcomes the opportunity to submit comments for the record for the September 20, 2011, Senate Finance Committee hearing to examine tax reform options for incentives for innovation.

alliantgroup is the national leader in working with small and medium businesses and their accountants – assisting them in qualifying for the Research and Development (R&D) tax credit. We are proud to have worked with thousands of companies across the country in the last 10 years to ensure that they benefit from this important incentive provided by Congress – resulting in the creation of thousands of jobs. Our comments are based on our unmatched experience working with small and medium businesses seeking to benefit from the R&D tax credit.

We commend the Committee for holding this hearing and especially Chairman Baucus and Ranking Member Hatch for introducing legislation that would make the R&D tax credit permanent as well as increasing the credit amount from 14% to 20%. The purpose of this statement is to highlight those changes that we encourage the Committee to consider that will greatly enhance the benefit of the R&D credit for small and medium businesses.

As the Committee heard in the testimony by OECD, a number of countries provide additional incentives for small and medium-size enterprises. By contrast, the US R&D tax credit provides no additional incentives for small and medium businesses. In fact, US tax policy actually erects barriers that limit these businesses from enjoying the incentives of the R&D tax credit.

The negative impact of these barriers is made clear by the findings of the GAO 2009 report to the Committee on the R&D tax credit which highlighted the small amount of overall dollars of the R&D tax credit that go to small and medium businesses.

These roadblocks in the tax code and regulations work against small and medium businesses taking the R&D tax credit and act directly against our nation's goals of fostering economic productivity and encouraging job growth. This is especially troubling in light of the testimony the Committee heard from OECD that small firms are more responsive to R&D tax incentives. Thus, current tax law and regulations operates against small and medium businesses taking the

R&D tax credit and is especially prejudicial against the very firms that would be most responsive to such a credit.

The good news is that with a few minor changes in the law and regulations, the R&D tax credit will provide significant benefits to small and medium businesses. These changes should be considered for the Committee's proposed legislation to make the R&D credit permanent as well as any extensions of the R&D credit and any jobs bill.

ALLOW THE R&D TAX CREDIT AGAINST THE AMT

The top barrier for small and medium businesses taking the R&D credit is that the credit cannot be used to reduce the business owners' alternative minimum tax (AMT). This means, that a business owner of a pass-thru entity that is subject to the AMT cannot use the R&D credit to reduce her taxes. alliantgroup has found in reviewing tens of thousands of tax returns that 8 out of 10 businesses that would otherwise benefit from taking the R&D credit will receive little to no benefit from the R&D credit because the credit cannot be used to reduce AMT. Given that the vast majority of small and medium businesses are organized as pass-thru entities, the potential benefit of the R&D tax credit to encourage innovation and create jobs is greatly diminished.

The Senate Finance Committee made the right policy call in allowing the R&D tax credit to be taken against AMT in enacting the Small Business Jobs Act of 2010 last year. We have seen first-hand that this simple change in the law has translated into providing significant benefit to thousands of small and medium businesses and helped create a small city worth of jobs. The only drawback is that this legislation was good for only one year – 2010. alliantgroup encourages the Committee to make this common sense change permanent in its proposed legislation. We are pleased to note that the Committee also heard support from its witnesses for allowing the R&D tax credit against the AMT.

ALLOW TAXPAYERS TO ELECT ASC ON AN AMENDED RETURN

As the Committee proposes to change the R&D tax credit to allow solely for the alternative simplified credit (ASC), it is vital that the statute make clear that the ASC can be elected by businesses on amended returns. Currently, businesses can elect to take only the traditional R&D tax credit on an amended return not the ASC.

Congress created the ASC in Section 104 of the Tax Relief and Health Care Act of 2006 (P.L. 109-432). The ASC was intended to broaden the number of companies that would be eligible to take advantage of the incentives provided by the R&D tax credit.

The policy intent of the ASC – expanding the number of companies eligible for the R&D tax credit – has been largely successful. The ASC has been especially beneficial for small and medium companies that could not take the regular R&D tax credit because of difficulties with the base years (and often substantiating expenditures in the base years).

However, a significant limitation for businesses – especially small and medium businesses – is the restriction in the regulations, published temporarily in 2008 and made permanent earlier this year, that do not allow a taxpayer to elect the ASC on an amended return. 1.41-9 (b)(2)("An election under section 41(c)(5) may not be made on an amended return."). There is nothing in the statute that requires such a limitation.

alliantgroup sees first-hand the negative impact of this regulation. We are aware of thousands of companies that are performing activities that qualify for the R&D tax credit but are being prevented by this regulation from benefitting fully from this important tax incentive – and at times are discouraged from even taking the ASC on their current return.

Therefore, because of this regulation, thousands of our nation's most innovative small and medium businesses are not receiving the assistance intended by Congress through the R&D tax credit.

While the regulation bars all companies regardless of size from electing ASC on an amended return, we find in practice this limitation falls especially heavily on small and medium business. Small and medium business owners do not have the benefit of sophisticated in-house tax departments and aren't aware of the R&D tax credit or don't know they are eligible for this tax incentive. A 2009 Government Accountability Office (GAO) underscores the fact that the R&D credit has primarily benefitted the largest corporations – noting that the largest corporations have dominated the use of the research credit. GAO found that 65 percent of the credits were claimed by 549 large corporations.[1]

It is often only after the company has been engaging in R&D for a number of years that they may learn for the first-time that they are eligible for the R&D tax credit. These small and medium companies should not be punished for failing to have a large tax department and for focusing their time trying to expand and grow their business rather than poring over the tax code.

The current regulation effectively places small and medium businesses at a disadvantage to larger business. Further, the regulation is denying the tax incentive intended by Congress and supported by the administration to encourage innovation and new technology – creating new jobs and strengthening our economy.

In reviewing the issue of allowing an ASC election on an amended return, GAO found:

> IRS officials agreed that permitting changes in credit elections could require examiners to audit some taxpayers' credits twice; however, **they saw no problem with allowing taxpayers to claim either alternative credit on an amended return if the taxpayer had not previously filed a regular credit claim for the same tax year**. (p. 35, emphasis added)

GAO further noted:

> **Taxpayers** that fail to claim the research credit on timely filed tax returns are **materially disadvantaged by the election limitations** that apply to any subsequent claims they file on amended returns. **There appears to be no reason to prohibit taxpayers from electing either the ASC or AIRC method of credit computation on an amended return** for a given tax year, as long as they have not filed a credit claim using a different method on an earlier return for that same tax year. (p. 35-36, emphasis added)

Allowing taxpayers immediately to make an election to ASC on an amended return will mean that more taxpayers will choose the easier path – sparing both themselves and the IRS the arduous and painful process of looking at books and records from 1984-1988.

It is understandable given the GAO's findings that the GAO report recommended that in order to allow more taxpayers to benefit from the reduced recordkeeping requirements offered by ASC, that the Secretary of Treasury should:

> **Modify credit regulations to permit taxpayers to elect any of the computational methods** prescribed in the IRC in the first credit claim that they make for a given tax year, **regardless of whether that claim is made on an original or amended return.** (p. 39, emphasis added)

For the benefit of jobs and innovation, even prior to the Committee considering the legislation introduced by Chairman Baucus and Ranking Member Hatch, alliantgroup would encourage the committee to ask Treasury to change this job killing regulation and in the alternative to make clear in any jobs bill or extension of the R&D credit that the ASC can be elected on amended return.

As background, the statute creating ASC makes no requirement that the ASC election can only be made on an original return (i.e. not allowed on an amended return):

> An election under this paragraph shall apply to the taxable year for which made and all succeeding taxable years unless revoked with the consent of the Secretary. IRC 41(c)(5)(C).

A fairer reading of the statute, and consistent with basic principles of tax administration, is that an election can be made on any open tax year. The statute is clear that the election applies to any succeeding tax year – and says nothing of limiting that election only to an original return. The regulation is creating a significant limitation to making the election that is without support in the statute.

The Joint Committee on Taxation "bluebook" description of the legislation similarly provides no support for barring an ASC election on an amended return: "An election to use the alternative simplified credit applies to all succeeding taxable years unless revoked with the consent of the secretary." [ii]

When Congress desires to limit a taxpayer's ability to make a claim on an amended return – it has certainly shown the ability to write that limitation into the statute. For example, in IRC 280C(c)(3)(C) the statute provides:

> An election under this paragraph for any taxable year shall be made not later than the time for filing the return of tax for such year (including extensions), shall be made on such return, and shall be made in such manner as the Secretary may prescribe.

No such limiting language on filing an election on an amended return was included with the creation of the ASC and IRC 41(c).

When the temporary regulations were put forward in 2008, there was little official discussion as to why the bar on claiming the ASC on an amended return was put in place. The comment did not point to any statutory support for the provision and simply noted that the bar was in conformance with the alternative incremental credit. For a regulation that causes significant harm to thousands of small and medium businesses by denying them the incentives of the R&D Tax Credit and kills thousands of jobs, it is the thinnest of reeds to justify all this damage under the rubric of consistency. It is time for this hobgoblin to go.

It was good news for small and the medium businesses that Sen. Grassley raised this issue of taking the ASC on amended return during the Committee hearing. We appreciate the Senator underscoring the importance of this issue and the need for change and also note that in Senator Grassley's questions to the witnesses they agreed that businesses should not be subject to such a barrier in taking the ASC.

ALLOW NEW AND SMALL BUSINESSES TO TAKE THE R&D CREDIT AGAINST THE EMPLOYER PAYROLL TAX

While the AMT exclusion for the R&D tax credit would greatly benefit a large number of small and medium businesses, many startups would still be ineligible for the credit because they are not making a profit. Several states, and particularly Louisiana, Minnesota, New York and Arizona have had great success with an R&D tax credit that is provided even if a company doesn't owe tax.

alliantgroup, working with companies in these states, has witnessed that an expanded, refundable R&D credit has meant companies starting up, keeping their doors open or expanding and creating new jobs.

The committee needs to bear in mind that while the engines for job growth are small and medium businesses, it is particularly new businesses that are key to an increase in jobs. The importance of encouraging entrepreneurism and startups for job growth was underscored by an August 2010 NBER Working Paper, *Who Creates Jobs? Small v. Large v. Young*. In addition,

studies have shown that a great deal of innovation is concentrated in new businesses. Therefore, an R&D credit that is also available to new businesses will bolster both innovation and jobs.

As the Committee read in the written testimony from the OECD it is not only the states that have looked at a refundable R&D tax credit. The OECD testimony notes that a recent trend is for countries to target R&D tax incentives to offset employer Social Security contributions and other taxes on labor income. The OECD testimony highlights that "Increasing cash flow is important for small, research intensive firms with little revenue but high investment in intellectual and human capital." Further, we note that Prof. Nellen and Mr. Rashkin in their testimony to the committee also call for a refundable/transferable credit for small and startup businesses.

An R&D tax credit – refundable against payroll taxes paid by companies – and capped at $250,000 could provide much-needed cash for credit-starved innovative startups. Such a proposal would ensure that some of our most cutting edge new companies would actually receive the benefit of the R&D tax credit – as opposed to being on the outside looking in.

A MORE GENEROUS TAX CREDIT IF MANUFACTURED IN THE US

A policy goal of the R&D tax credit is to also support domestic manufacturing. The committee should encourage R&D that translates into US manufacturing jobs by providing a greater credit to those companies that conduct a significant percentage of their manufacturing domestically.

An enhanced R&D credit for domestic manufacturers would particularly benefit small and medium businesses that rarely have manufacturing facilities outside the US. We encourage the Committee to consider a 25% bonus in the R&D tax credit for US companies that conduct a significant percentage of their manufacturing in the US. Such a credit would potentially create tens thousands of manufacturing jobs domestically and discourage companies from moving offshore.

Thank you for giving alliantgroup the opportunity to submit this statement. We appreciate the Committee's leadership in the R&D tax credit and look forward to working with you to ensure that the credit provides good benefit to all businesses.

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[i] Tax Policy: The Research Tax Credit's Design and Administration Can Be Improved. GAO-10-136, p. 13 (November 2009).

[ii] General Explanation of Tax Legislation Enacted in the 109th Congress, Joint Committee on Taxation, p. 669 (JCS-1-07), January 17, 2007.

Comments for the Record

United States Senate Committee on Finance

Tax Reform Options: Incentives for Innovation
Tuesday, September 20, 2011, 10:00 AM
215 Dirksen Senate Office Building

By Michael Bindner
Center for Fiscal Equity
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Chairman Baucus and Ranking Member Hatch, thank you for the opportunity to address this topic. As you know, the Center for Fiscal Equity suggests a four part tax reform, which form the basis of our analysis. The key elements are:

- a Value Added Tax (VAT) that everyone pays, except exporters,
- a VAT-like Net Business Receipts Tax (NBRT) that is paid by employers but, because it has offsets for providing health care, education benefits and family support, does not show up on the receipt and is not avoidable at the border,
- a payroll tax to for Old Age and Survivors Insurance (OASI) (unless, of course, we move from an income based contribution to an equal contribution for all seniors), and
- an income and inheritance surtax on high income individuals so that in the short term they are not paying less of a tax burden because they are more likely to save than spend – and thus avoid the VAT and indirect payment of the NBRT.

The incentives to innovation in the current tax code are only relevant to the extent that wages and profit are taxed separately through income and payroll taxes. Such incentives are difficult, though not impossible to preserve in tax reform to the extent that tax reform eliminates the Corporate Income Tax on profit and replaces it with reforms such as a Value Added Tax and a VAT-like Net Business Receipts Tax (which tax both labor and profit). As Value Added Taxes never contain offsetting tax benefits, we will confine our remarks to offsets to Net Business Receipts Taxes.

One of the virtues of an NBRT is that offsets are possible, which is not the case with a VAT or the FairTax. The challenge arises, however, when the existence of such subsidies carry with them the very justified impression that less well connected industries must pay higher taxes in order to preserve these tax subsidies. Worse is the perception, which would arise with their use in a business receipts tax, that such subsidies effectively result in lower wages across the economy. Such a perception, which has some basis in reality, would be certain death for any subsidy.

One must look deeper into the nature of these activities to determine whether a subsidy is justified, or even possible. If subsidized activities are purchased from another firm, the nature of both a VAT and an NBRT alleviate the need for any subsidy at all, because the VAT paid implicit in the fees for research and exploration would simply be passed through to the next level on the supply chain and would be considered outside expenditures for NBRT calculation and therefore not taxable. If research and exploration is conducted in house, then the labor component of these activities would be taxed under both the VAT and the NBRT, as they are currently taxed under personal income and payroll taxes now.

The only real issue is whether the profits or losses from these activities receive special tax treatment. Because profit and loss are not separately calculated under such taxes, which are essentially consumption taxes, the answer must be no. The ability to socialize losses and privatize profits through the NBRT would cease to exist with the tax it is replacing.

The last question concerns repatriation of overseas profits now taxable under the corporate income tax. The answer to this question depends on the tax impacted. Clearly such repatriations would have not impact on VAT collection, as VAT would have been collected where the item is sold. If the item were made in the USA and exported, the returning funds would be tax free. Indeed, collecting such funds would be tantamount to a constitutionally prohibited export tax.

The NBRT would not be border adjustable because it is designed to pay for entitlement costs which benefit employees and their families directly, so that it is appropriate for the foreign beneficiaries of their labor to fund these costs. Additionally, the ultimate goal of enacting the NBRT is to include tax expenditures to encourage employers to fund activities now provided by the government – from subsidies for children to retiree health care to education to support for adult literacy. Allowing this tax to be zero-rated at the border removes the incentive to use these subsidies, keeping government services in business and requiring higher taxation to support the governmental infrastructure to arrange these services – like the Committee on Finance.

The NBRT is collected based on where costs are incurred and dividends paid. Therefore, if foreign profits are repatriated and used to finance American research and development activities and distribution of dividends to American shareholders (or foreign shareholders based in the United States), NBRT would be due on researcher salaries and dividends paid out. Finally, dividends paid out to individuals responsible for paying the income and inheritance surtax would be fully taxable under that levy as if they were paid out from American operations.

Thank you again for the opportunity to present our comments. We are always available to discuss them further with members, staff and the general public.

R&D Credit Coalition
Invest in America's Future

STATEMENT OF THE R&D CREDIT COALITION

ON

RESEARCH AND DEVELOPMENT INCENTIVES IN THE U.S. AND ABROAD

SUBMITTED FOR THE RECORD OF THE HEARING

ON

"TAX REFORM OPTIONS: INCENTIVES FOR INNOVATION"

BEFORE

UNITED STATES SENATE COMMITTEE ON FINANCE

ON

SEPTEMBER 20, 2011

Introduction

The R&D Credit Coalition welcomes the opportunity to provide comments for the record of the September 20, 2011, Senate Committee on Finance ("Committee") hearing to examine tax reform options: incentives for innovation.

The R&D Credit Coalition would like to thank Chairman Baucus and Ranking Member Hatch for their leadership in sponsoring legislation that would provide for a strengthened and permanent R&D tax credit. We look forward to working with them this year to advance their proposal to ensure that U.S. businesses have the certainty and incentives they need to maintain and increase their R&D jobs here in the U.S.

The R&D Credit Coalition is a group of more than 100 trade and professional associations along with hundreds of small, medium and large companies that collectively represent millions of American workers engaged in U.S.-based research throughout major sectors of the U.S.

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The R&D Credit Coalition is a group of more than 100 trade and professional associations along with small, medium and large companies that collectively represent millions of American workers engaged in U.S.-based research throughout major sectors of the U.S. economy, including aerospace, agriculture, biotechnology, chemicals, electronics, energy, information technology, manufacturing, medical technology, pharmaceuticals, software and telecommunications.

economy, including aerospace, agriculture, biotechnology, chemicals, electronics, energy, information technology, manufacturing, medical technology, pharmaceuticals, software and telecommunications.

Although the make-up of the R&D Credit Coalition is diverse, the member companies share a major characteristic— they collectively spend billions of dollars annually on research and development ("R&D"), which provides for high-wage and highly-skilled, domestic jobs. Companies must decide where they are going to invest their research dollars— here in the U.S. or abroad. The high U.S. corporate tax rate and the temporary nature of the U.S. R&D tax credit, compared to the lower corporate tax rates and more attractive, often permanent, research incentives in most industrialized countries, are key factors that companies consider in determining where they are going to create R&D jobs. Today, a company claiming the U.S. R&D credit on average only realizes an effective credit rate of six percent. In addition, the U.S. requires that any deduction for R&D expenses may not also be claimed for the R&D credit.

Thus, corporate tax reform proposals limiting or eliminating research and development tax incentives could have a dramatic impact on both the number and location of R&D jobs in the U.S., as well as the ability of our companies to compete effectively in the global marketplace. Given the Committee's focus on how the tax code can encourage job creation in the United States, the R&D Credit Coalition would like to share our preliminary views regarding tax reform options and incentives for innovation. It is important for Congress to recognize that even in the context of tax reform, maintaining a permanent, strengthened R&D tax credit is critically important to ensure that U.S. companies keep jobs here in America.

Discussion

The R&D tax credit was originally enacted in 1981 and has provided an important incentive to spur private sector investment in innovative research by companies of all sizes and in a variety of industries. The enactment of this incentive helped establish the U.S. as a leader in cutting-edge research. In fact, during the 1980s, the U.S. was the leader among OECD countries in providing the best R&D incentives for companies. However, many of our foreign competitors have since instituted more generous R&D incentives in the decades following, causing the U.S. to drop below the top 10, and today ranks 24th in research incentives among industrialized countries. The temporary nature of U.S. R&D incentives is a strain on U.S. companies, causing uncertainty that negatively influences future company R&D budgets. Providing the certainty of a permanent credit, especially in a tax reform environment, is critical to maintaining U.S. leadership in global advanced research and ensuring that U.S. companies will continue to do their R&D here in the U.S.

Many other countries offer *both* lower tax rates and more attractive R&D incentives, proving that the U.S. should not engage in an "either/or" debate with respect to lower marginal rates and boosting U.S. job creation through R&D incentives when looking at options to reform the corporate tax code.

The R&D credit is a *jobs* credit—with seventy percent of credit dollars used for salaries of high skilled R&D workers in the United States. A study by the Information Technology and

Innovation Foundation (ITIF), "estimates that expanding the Alternative Simplified Credit (ASC) from 14 percent to 20 percent would spur the creation of 162,000 jobs in the short term and an additional, but unspecified, number of jobs in the longer run."[1] The U.S. must ensure that our tax system supports high-skilled, high-paying jobs, here in the U.S. We cannot let our tax system put these jobs at risk of moving abroad.

A newly-published study by Ernst & Young[2] finds that the R&D credit has a significant effect on R&D spending:

- The existing credit is estimated to have increased annual private research spending $10 billion in the short-term and by $22 billion in the long-term (beyond the first several years), substantially higher than the credit's roughly $6 billion to $8 billion revenue cost.
- Strengthening the credit by increasing the simplified credit from 14% to 20% is estimated to increase annual private research spending by an additional $5 billion in the short-term and an additional $11 billion in the long-term.
- In total, the overall policy – the existing credit plus strengthening the alternative simplified credit – is estimated to increase annual private research spending by $15 billion in the short-term and $33 billion in the long-term.

The study also finds that the R&D credit has significant effects on U.S. wages and employment.

Higher wages:

- In the short-term, wages are estimated to rise by $10 billion from the overall policy, with an additional $7 billion due to the existing credit and $3 billion due to strengthening.
- In the long-term, wages are estimated to rise by $23 billion from the overall policy, with an additional $15 billion due to the existing credit and $8 billion due to its strengthening.

Higher employment:

- Research-orientated employment in the U.S. would be 130,000 higher in the short-term and 300,000 higher in the long-term because of the combination of the existing credit and the strengthening of the alternative simplified credit.

These and other study results demonstrate the effectiveness of the R&D credit in terms of encouraging additional research spending, employment and higher wages. A permanent enhanced R&D credit will help to ensure that our tax system supports high-skilled, high-paying jobs, here in the U.S. We cannot let our tax system put these jobs at risk of moving abroad.

International R&D Tax Incentives

The number of OECD countries offering some sort of incentive for research has grown dramatically in recent years as countries attempt to become leaders in research. The U.S. share of

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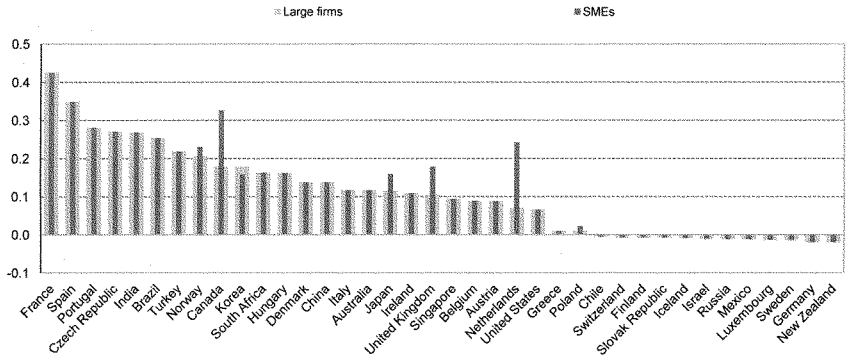
[1] Information and Technology Innovation Foundation, "*Create Jobs by Expanding the R&D Tax Credit,*" by Robert D. Atkinson. January 26, 2010 (page 1)

[2] Ernst & Young, LLP, *"The R&D Credit: An effective policy for promoting research spending,"* by Drs. Robert Carroll, Gerald Prante and Robin Quek, September 16, 2011.

global R&D fell from 39 percent in 1999 to 33 percent in 2007.[3] In addition, the following OECD chart shows that in 2009, the United States ranked 24 among 38 industrialized countries offering R&D tax incentives.[4]

OECD Science, Technology and Industry Scoreboard 2009 - OECD © 2009 - ISBN 9789264063716
Tax subsidy rate for USD 1 of R&D, large firms and SMEs, 2008



Bipartisan Support for a Strengthened, Permanent Research & Development Incentive

Every Administration has supported the R&D tax credit since its enactment. More recently, a March 25, 2011, Treasury Department study stated, "Two years ago, the President set an ambitious goal of achieving a level of research and development that is the highest share of the economy since the space race of the 1960's – 3 percent of GDP – a commitment he re-emphasized in his State of the Union address in 2011. The R&D tax credit is a vital component of achieving this goal and helping us out-innovate our competition. This is why, in addition to making it permanent, the President proposed on September 8, 2010, to expand and simplify the credit, making it easier and more attractive for businesses to claim this credit for their research

[3] OECD, Ministerial Report on the OECD Innovation Strategy, May 2010, p. 8.
[4] OECD, "Science, Technology and Industry Scorecard," December 2009, p 79.

investments. This proposal was subsequently included in the President's FY 2012 Budget and should be part of the reform of our corporate tax system currently under consideration."[5]

Moreover, Congress has extended the credit 14 times since it was first adopted in 1981. Finance Committee Chairman Baucus and Ranking Member Hatch and a bipartisan group of senators have introduced S. 1577, the Greater Research Opportunities with Tax Help Act of 2011, to simplify and make permanent the R&D tax credit. In addition, earlier this year, Ways and Means Committee members Kevin Brady (R-TX), John Larson (D-CT) and many others introduced H.R. 942, The American Research and Competitiveness Act of 2011. This legislation would provide important certainty for U.S.-based research spending by making the R&D tax credit permanent as well as simplifying and strengthening it, thereby increasing its effectiveness. We urge Congress to pass this legislation before the credit expires on December 31, 2011.

Conclusion

It is vitally important that U.S. policy makers support a strengthened and permanent research and development incentive as part of any tax reform measure. A robust and permanent research and development tax credit is critical to competitiveness, innovation and U.S. jobs. Congress must recognize, that in the global economy, many companies have a choice as to where they are going to do their research—and with many other countries offering *both* lower corporate income tax rates and more robust R&D incentives, the U.S. must ensure that R&D incentives are included as part of any tax reform package. The R&D Credit Coalition looks forward to assisting members of the Committee and their staffs to gain a more detailed understanding of the research and development tax credit and its impact on U.S. jobs.

[5] *"Investing in U.S. Competitiveness: The benefits of Enhancing the Research and Experimentation (R&E) Tax Credit,"* U.S. Department of the Treasury, March 25, 2011, page 1.