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Hearing on Tax Reform Options:

Incentives for Capital Investment and Manufacturing

Before the Senate Finance Committee

United States Senate

March 6, 2012

Chairman Baucus, Senator Hatch, and members of the Committee, I appreciate the opportunity to appear before you to discuss the role of tax incentives in capital investment and manufacturing.

I am the president and founder of the Information Technology and Innovation Foundation (ITIF). ITIF is a nonpartisan research and educational institute whose mission is to formulate and promote public policies to advance technological innovation, productivity and competitiveness.

This is a timely and important hearing, for American global economic competitiveness is declining, especially in manufacturing but also in high technology, costing jobs and impeding economic growth. Corporate tax reform can play an important role in reversing this decline. Yet for many tax policy experts, effective corporate tax reform means simplifying the code by cutting critical incentives, such as the domestic production deduction, the R&E tax credit and accelerated depreciation, and using the savings to reduce statutory rates. For these experts the ideal tax code should be neutral among activities and industries. But this view mistakenly views all activities and industries as having the same economic impact on the U.S. economy.

Any tax reform that reduces or eliminates key incentives for investing in capital equipment and traded sectors like manufacturing will reduce growth and competitiveness, not boost them. In fact, three of the most “costly” tax incentives (section 199 deduction for domestic production, R&E tax credit and accelerated depreciation) are the most useful provisions of the tax code in terms of spurring investment and ensuring that traded-sector establishments do not further lose their competitive edge. Any reform that broadens the base and eliminates these incentives would likely raise effective tax rate on traded sectors (e.g., industries that sell a not insignificant share of their output in global markets—often in key growth sectors such as biotech, aerospace and IT), while lowering the effective tax rate. This is the opposite of what tax policy should do because it would make these traded sector engines of growth less cost competitive than their overseas competitors, resulting in fewer U.S. jobs. In contrast, lower taxes on non-traded sectors would not result in additional jobs in these sectors. Finally, by definition revenue-neutral corporate tax base broadening would do nothing to lower the overall effective corporate rate, which is high relative to other nations, and would thereby fail to address a key U.S. competitiveness challenge.

Congress has an opportunity to reform the corporate tax code to explicitly promote the competitiveness of business establishments in America by expanding, not cutting, incentives for investing in America, including the domestic production deduction, the R&E tax credit, and accelerated depreciation. Ideally, Congress would also establish new incentives, such as an investment tax credit for new machinery, equipment and software investment (replacing accelerated

depreciation) and a “patent box” incentive, as a number of European nations have recently put in place that taxes corporate income from innovation-based products at a lower rate.¹

This is not to say that corporate tax reform should not reduce or eliminate special deductions, exemptions and credits that cannot be justified on a productivity, innovation or competitiveness basis. Indeed, a reconstituted corporate tax code which eliminates incentives that do not spur growth could have some positive, albeit likely modest, impacts on growth. But if a dogged faith in simplicity ends up reducing and even eliminating incentives that spur productivity, innovation and competitiveness, reform will lead to less economic growth, not more. So the choice should not be between a corporate tax code riddled with particular exemptions and credits and a completely neutral code. Rather the code should reduce ineffective exemptions and incentives while expanding effective ones focused on innovation and growth-enhancing activities characterized by significant spillovers or other market failures, all the while lowering the effective, and statutory, corporate rates.

The Nature of the U.S. Manufacturing and Technology Production Challenge

America is facing a competitiveness crisis, especially in manufacturing. We see this most evidently in the unprecedented rate of manufacturing job loss over the last decade. U.S. non-farm employment expanded by 19 percent in the 1980s and 20 percent in 1990s. During the same periods, manufacturing employment fell only slightly, by seven percent and one percent respectively. But between mid-2000 and November 2011, total employment was unchanged while manufacturing jobs fell by one-third (a loss of 5.5 million manufacturing jobs).² (see figures 1 and 2) And according to the OECD, from 1997 to 2010 the United States had the second largest share of manufacturing job loss (controlling for adult population growth) of any of the ten nations examined. (see figure 3) This is all the more troubling since a manufacturing job has the highest employment multiplier of any sector, meaning that the loss of these manufacturing jobs led to significant job loss in the rest of the economy.³

Yet remarkably few if any economists have made the connection between the anemic overall job performance in the last decade (and the current poor job recovery) and largest drop in manufacturing employment in American history (a rate higher than during the Great Depression). ITIF believes that this steep loss of international competitiveness, resulting in the loss of millions of manufacturing jobs and weaker growth in technology-based services than otherwise would be the case, is the principal cause of the nation’s economic woes. Without a robust and healthy traded sector, which includes

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1. Robert D. Atkinson and Scott Andes, “Patent Boxes: Innovation in Tax Policy and Tax Policy for Innovation”, (technical report, Information Technology and Innovation Foundation (ITIF), Washington, D.C., October 2009), <http://www.itif.org/files/2011-patent-box.pdf>.
 2. U.S. Bureau of Labor Statistics.
 3. Stephen J. Ezell and Robert D. Atkinson, *The Case for a National Manufacturing Strategy* (Washington, D.C.: ITIF, 2011), p. 29, <http://www.itif.org/files/2011-national-manufacturing-strategy.pdf>.

most of manufacturing and some services, it will be impossible for the U.S. economy to grow at a robust rate and be fully healthy.

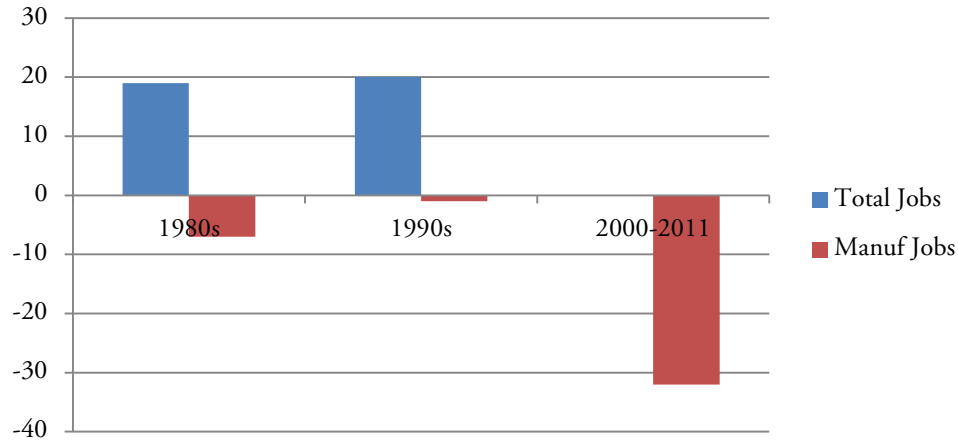


Figure 1: Percent U.S. Employment Change (Source: U.S. Bureau of Labor Statistics)

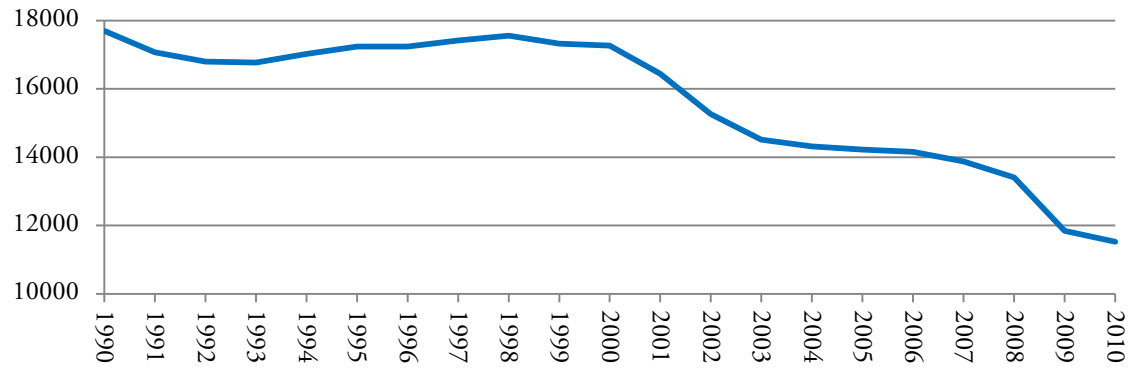


Figure 2: U.S. Manufacturing Employment Change (millions) (Source: Bureau of Labor and Statistics)

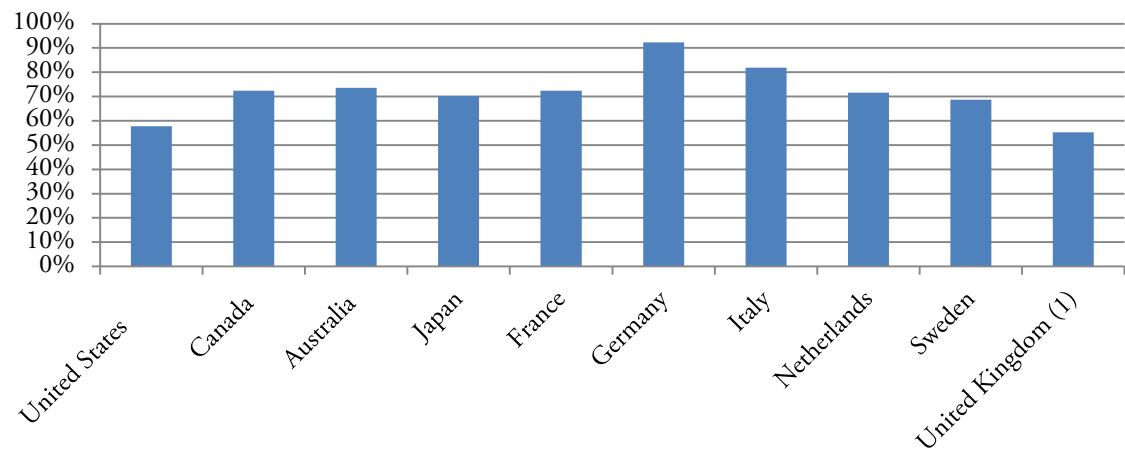


Figure 3: Manufacturing Job Change as a Share of Adult Population Growth, 1997 to 2010 (Source: Bureau of Labor and Statistics)

The widely held view is that the United States is still a manufacturing powerhouse but simply needs fewer workers to produce the same or more output. But that is not the complete story. In fact, when measured properly, manufacturing output has actually declined in the last decade, the first time this has happened since the National Income Accounts were established after WWII. According to the U.S. Bureau of Economic Analysis from 2000 to 2010, 13 of the 19 aggregate-level U.S. manufacturing sectors, employing 55 percent of manufacturing workers, shrank in real value-added output.⁴ And while official government data show that manufacturing output increased 15.5 percent in the 2000s, this number is significantly overstated as it rests on a misreading of national output data that overstates output of NAICS 324, the petroleum and coal products industry, and NAICS 334, the computers and electronics industry.⁵ This over-estimation of the output growth of these two sectors masks decline across the whole of U.S. manufacturing. If the output had been measured correctly, the United States would have experienced an absolute decline in manufacturing output over the past decade of approximately 11 percent.⁶

This suggests that the conventional wisdom that U.S. manufacturing job loss is simply a result of productivity-driven restructuring (akin to how U.S. agriculture lost jobs but is still healthy) is wrong, or at least not the whole story. Rather, the loss of U.S. manufacturing jobs is in part a function of actual loss of output, caused in turn by the declining international competitiveness position of manufacturing establishments in America.⁷ In fact, ITIF postulates that only one other nation in history—the United Kingdom in the 1960s and 1970s—has experienced as precipitous a loss of manufacturing output.⁸ However, to date alarm bells have been largely silent, with few economists making the connection between “The Great Recession,” the anemic jobs recovery and the decline in manufacturing.⁹ Yet this loss of manufacturing has been steady and robust headwind into which the U.S. economy has had to tack, so robust that the economy has made little progress in over a decade.

One reason for this is the decline in investment by manufacturers in the United States. While manufacturers’ capital stock grew in every decade from 1950 to 2000 (increasing by 25.9 percent in the 1990s), it actually fell by 1.2 percent from 2000 to 2010.¹⁰ (see figure 4) In other words, manufacturers in the United States have less capital stock today than a decade ago. One key reason is that companies began to invest faster overseas. In 2000, U.S. multinational manufacturers invested

4. Bureau of Economic Analysis, Gross Domestic Product by Industry Accounts (real value-added by industry, value-added by industry)

5. See Susan Houseman et al., “Offshoring and the State of American Manufacturing,” (working paper, Upjohn Institute, 2010), <http://www.upjohninst.org/publications/wp/10-166.pdf>. Houseman et al. argues that the acceleration of imports from developing countries has imparted a significant bias to the official statistics. They contend that price declines associated with the shift to low-cost foreign suppliers generally are not captured in input cost and import price indexes.

6. See Robert D. Atkinson, “American Manufacturing: What’s the Real Story?” (technical report, ITIF, forthcoming March 2012).

7. I use the term “establishments in America” because some of these are foreign owned and also because some U.S. manufacturers may be thriving even if they are shutting establishments (e.g., factories) in the United States while opening them overseas.

8. See Robert D. Atkinson and Stephen Ezell, *Innovation Economics: The Race for Global Advantage*. (Yale University Press, forthcoming, September 2012).

9. Some have indeed pointed this out. In 2009 several economists wrote an article for National Bureau of Economic Research article which stated, “We argue that this pattern (the increase in the current account deficit by the United States matched by increase in current account surpluses in other nations, especially China) precipitated the housing bubble in the United States;” Ravi Jagannathan, Mudit Kapoor and Ernst Schaumburg, “Why Are We in a Recession? The Financial Crisis Is a Symptom Not the Disease!” (working paper 15404, National Bureau of Economic Research (NBER), Cambridge, MA: October 2009), <http://www.eclac.cl/noticias/paginas/3/35143/w15404.pdf>.

10. U.S. Bureau of Economic Analysis, Fixed Assets Accounts Tables (chain-type quantity indexes for net stock of private fixed assets by industry; accessed October 6, 2011), http://www.bea.gov/iTable/index_FA.cfm.

33 cents overseas for every dollar invested domestically. By 2009, this ratio had increased to 71 cents overseas for every dollar invested here. Even more striking, when looked at as a share of GNP, U.S. multinational’s overseas capital expenditure increased by 9 percent between 2000 and 2009, while their domestic expenditure decreased by nearly 50 percent.¹¹ This means that when a U.S. manufacturer is decided where to invest in plants and equipment, it is more likely than ever to choose to invest in a foreign country. One important reason for this, as described below, is that other nations are providing more generous tax incentives for investment and lower effective corporate rates.

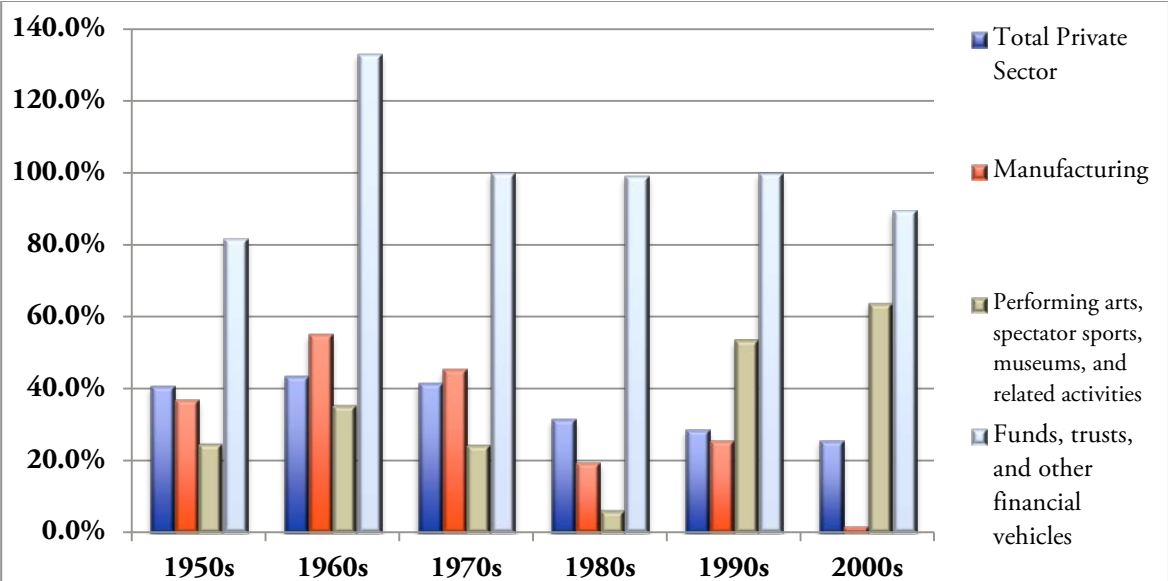


Figure 4: Comparison of Percentage Change in Net Stock of Fixed Assets by Decade (Source: Bureau of Economic Analysis, Fixed Assets Accounts)

Some will argue that while we may be losing manufacturing that the United States is still strong in innovation and that this will power our future competitiveness. But this ignores two key issues. First, much of manufacturing is high-tech and powered by innovation – think computers, semiconductors, pharmaceuticals, medical devices, aviation, and instruments. Losing production in these industries means losing the upstream R&D and design jobs. In fact, the United States has recorded a deficit in advanced technology products trade every year since 2002.¹² And the United States ran an \$81 billion advanced technology products trade deficit in 2010, the largest in its history, and from January 2002 to December 2010, it totaled a \$427 billion deficit in advanced technology products.¹³

Second, it’s not as if the United States continues to lead in innovation. As ITIF found in its report *The Atlantic Century II*, the United States ranks 43rd of 44 nations or regions in the rate of progress on 16 innovation-based competitiveness indicators (such as the growth of corporate and government

11. Author’s analysis. Bureau of Economic Analysis, Direct Investment and Multinational Companies (http://www.bea.gov/iTable/index_MNC.cfm; Bureau of Economic Analysis, National Income and Product Accounts.
 12. U.S. Census Bureau, “Trade in Goods with Advanced Technology Products,” (Imports, Exports, and Trade Balance, accessed February 20, 2011), <http://www.census.gov/foreign-trade/balance/c0007.html>.
 13. Ibid.

R&D, venture capital, new businesses, productivity, etc.).¹⁴ Other nations are not standing still when it comes to the race for global innovation advantage.

Other Nations Are Expanding Their Tax Incentives in Response to Heightened Global Competition

Today, virtually all nations face intense global competition for economic advantage. In response, most nations have established robust competitiveness policies, including putting in place more competitive corporate tax codes. In some cases, this has involved reducing statutory rates. Deveraux, Lockwood, and Redoano find that corporate tax rates for OECD nations have declined from nearly 50 percent in the early 1980s to less than 35 percent in 2001, and that international tax competition was the principle driver of those reductions.¹⁵ By 2011, the non-U.S. OECD rate had declined even more, to just 25.1 percent.¹⁶

We hear much about how while the U.S. statutory corporate rate may be second highest in the world that effective rate is more competitive. But out of 37 nations examined in the ITIF report “The Atlantic Century” and using World Bank data we found that the United States was 35th highest in terms of overall effective corporate tax rate.¹⁷ Likewise, a recent National Bureau of Economic Research working paper found that of 20 nations and regions, the United States had the second highest effective corporate tax rate (with Japan the highest).¹⁸ Moreover, of ten nations with data going back to 1989, only the United States saw an *increase* in its effective corporate tax rate. The other nine, including nations like Canada, France, Switzerland, and the United Kingdom, all saw reductions.

Much of this reduction in statutory and effective rates was in response to competition from other nations. Deveraux, Lockwood, and Redoano find that a one percentage point decline in the weighted average statutory corporate tax rate in other nations tends to reduce the corporate tax rate in the home country by about 0.7 percentage points.¹⁹ Some decry this trend as a “race to the bottom” and want to respond by essentially refusing to race. But the reality is that it is a race and failure of the United States to lower its effective corporate tax rate will mean continuing to lose the race.

Many nations have also put in place or expanded tax incentives designed to spur investment, including in plant and equipment. For example, Taiwan’s Statute for Upgrading Industries,

14. Robert D. Atkinson and Scott Andes, *The Atlantic Century II: Benchmarking EU & U.S. Innovation and Competitiveness* (Washington, D.C.: ITIF, 2011), p. 19, <http://www.itif.org/files/2011-atlantic-century.pdf>.

15. Michael Devereux, Ben Lockwood and Michela Redoano, “Horizontal and Vertical Indirect Tax Competition: Theory and Some Evidence from the USA,” *Journal of Public Economics* 91 (2007): 451-479.

16. Peter R. Merrill, “Corporate Tax Policy for the 21st Century,” *National Tax Journal*, December 2010, 63 (4, part 1).

17. Robert Atkinson and Scott Andes, *The Atlantic Century: Benchmarking U.S. and EU Innovation and Competitiveness*, (Washington, D.C.: ITIF, 2011), <http://www.itif.org/files/2011-atlantic-century.pdf>

18. Kevin S. Markle and Douglas A. Shackelford, “Cross-Country Comparisons of Corporate Income Taxes,” (working paper, NBER, Cambridge, MA: February 2011).

19. Devereux, Lockwood and Redoano, “Horizontal and Vertical Indirect Tax Competition: Theory and Some Evidence from the USA.”

established in 1991, provides a package of corporate tax incentives including accelerated depreciation and tax credits for investments in R&D, automation, worker training, pollution controls, and investments in newly emerging important and strategic industries. Companies can also take a credit of up to 20 percent of funds invested in hardware, software, and/or technology that can promote an enterprise's "digital information efficiency." While the tax credit for investing in automation cost the government NT\$7.8 billion (\$268 million U.S.) it spurred growth which led to an increase in overall tax revenues of NT\$13.3 billion (\$458 million U.S.).²⁰

Many other nations also have corporate tax incentives for investment. These include:

- Austria: firms can receive a tax credit of 6 percent on the costs of education and training their workforce.²¹
- Malaysia: companies can depreciate general plant and equipment over six years, with heavy machinery over 4 years, and computer and IT equipment even faster.²²
- UK: firms can expense investment for plant and machinery up to £100,000 in the first year. And other investments can be depreciated relatively quickly (equal to 20 percent per year).
- Singapore: firms can expense in the first year all computers and prescribed automation equipment, robots and energy efficiency equipment.²³ In addition, companies in manufacturing and engineering services industries may receive investment allowances for projects in addition to depreciation allowances.
- Japan: companies can benefit from a modestly accelerated depreciation scheme (consisting of "increased initial depreciation" and "accelerated depreciation").²⁴
- France: allows 50 percent of the capital investments for research buildings to be written off in the first year.
- Canada: purchases of computers are eligible for a 55-per-cent declining-balance capital cost allocation rate in the first year. Manufacturing equipment is also eligible for accelerated depreciation.²⁵

In addition to these kinds of capital investment incentives, a growing number of nations have put in place tax incentives to spur the commercialization of R&D, not just the conduct of R&D. These "patent box" or "innovation box" incentives allow corporate income from the sale of patented

20. Wen-Jung Lien et al., "The Economic Impact of Taiwan's Investment Tax Credits and its direction of Adjustment," *International Journal of Technology Management* 49, no. 1-3 (2010): 140-154.

21. "Tax Aspects of Industrial Investment in Austria," (study, Austrian Business Agency, March 2011), http://www.investinaustria.at/uploads/ABA_Tax_Aspects_Austria_2011_10699_EN.pdf.

22. "International Tax and Business Guide: Malaysia," (Deloitte, 2010).

23. Deloitte (taxation and investment guides and country highlights, accessed October 3, 2011), <http://www.deloitte.com/taxguides>.

24. Thomas Dalsgaard, Japan's Corporate Income Tax—Overview and Challenges", (working paper, International Monetary Fund, March 2008), p. 5, <http://www.imf.org/external/pubs/ft/wp/2008/wp0870.pdf>.

25. Canadian Department of Finance, (description of corporate income tax provisions, accessed October 3, 2011), <http://fin.gc.ca/taxexp-depfisc/2010/taxexp1004-eng.asp#tocnotes-05>.

products (or in some countries from innovation-based products) to be taxed at a significantly lower rate than other income. Eight nations—Belgium, China, France, Ireland, Luxembourg, the Netherlands, Spain, and Switzerland—have established patent boxes, and the UK is set to implement its patent box policy in 2013 with a tax rate of 10 percent on income generated from patented products, compared to the standard rate of 28 percent. France’s patent box reduces corporate income tax from 34 percent to 15 percent on qualifying income.²⁶ In China, income from innovation-based products is taxed at between 0 and 12.5 percent. Ireland developed the first patent box in 1973, but other nations have adopted patent boxes quite recently, since 2005.

Also, while the focus of this hearing is on incentives related to production, it’s important to note that compared to other nations, the U.S. research and experimentation credit is less linked to production. For example, many nations allow buildings and equipment to be used in R&D to qualify for the incentive, while the United States does not. Likewise, more nations explicitly allow process R&D (R&D to develop better ways of making things) to qualify for the tax incentives. U.S. tax policy is at best vague about whether process R&D qualifies, with the IRS reportedly regularly denying firms’ claims for process R&D.²⁷

Finally, it is worth mentioning that in addition to lower rates and greater incentives, many nations also provide tax holidays to particular firms making investments in their nation.²⁸ In India, semiconductor firms can deduct all their profits for the first ten years. In Vietnam select foreign investments located in the Ho Chi Minh City high-tech economic zone pay no corporate taxes for the first four years of operation and enjoy a 50 percent tax break the following nine years, after which the corporate rate is only 10 percent, compared with the normal 28 percent corporate rate.²⁹ It is ironic that a country with a city named after the iconic communist leader Ho Chi Minh is more aggressive at attracting global capital investments than the United States. Likewise, Korea offers its major high-tech companies virtually tax free status- and interest-free loans to keep their investments in country.

One reason for these statutory rate declines and expansions of investment incentives is that countries are increasingly using their corporate tax code to create more attractive locations for internationally mobile investment. Lower *effective* rates spur greater inward foreign direct investment (and reduced outflows) and this effect has grown over time. Altshuler finds that the elasticity of foreign direct investment to corporate tax rates has increased from 1.5 to 3 from 1984 to 1992, indicating that a

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26. Robert D. Atkinson and Scott M. Andes, “Patent Boxes: Innovation in Tax Policy and Tax Policy for Innovation,” (technical report, ITIF, Washington, D.C., 2011), <http://www.itif.org/files/2011-patent-box-final.pdf>.
 27. Robert D. Atkinson, “Expanding the R&E Tax Credit to Drive Innovation, Competitiveness and Prosperity,” (technical report, ITIF, Washington, D.C., July 2007), <http://www.itif.org/publications/expanding-re-tax-credit-drive-innovation-competitiveness-and-prosperity>.
 28. Alexander Klemm, “Causes, Benefits, and Risks of Business Tax Incentives”, (working paper, International Monetary Fund, January 2009), <http://www.imf.org/external/pubs/ft/wp/2009/wp0921.pdf>.
 29. Margie Manson, “Intel to invest \$1 billion in Vietnam as country strives to raise high-tech profile,” *USA Today*, November 18, 2006, http://www.usatoday.com/tech/news/2006-11-18-vietnam_x.htm.

one percentage point reduction in the host country tax rate raises foreign direct investment by three percentage points.³⁰ A decade later, the effect was even larger at 3.7.³¹

Why Do Many Economists Oppose Production Incentives in the Tax Code?

For most economists from the “neo-classical school” the ideal tax code is one that raises the necessary amount of revenue in the least distorting way. For them, the incentives described above, even though they lead to higher rates of economic growth, are “distortions” that should be eliminated. These views are often framed as if they were some kind of iron law of economics on the order of the second law of thermodynamics:

- The Brookings Institution’s William Gale: “The *sine qua non* of meaningful tax reform is to clean out and rationalize the exclusions, exemptions, deductions, and credits in the tax system.”³²
- The Congressional Research Service’s Jane Gravelle: “Economic analysis suggests that capital is allocated efficiently and the economy is more productive, absent some market failure or other existing distortion, if all capital income is taxed at the same rate.”³³
- The United States Treasury Department: “These [tax incentives] distortions waste economic resources and lower the standard of living produced by the U.S. economy.”³⁴
- The International Monetary Fund: “The classic argument against the use of incentives is that they distort economic activity, by causing the after-tax pattern of returns to diverge from the before-tax pattern and thereby leading to an allocation of resources that differs from the efficient equilibrium the market is assumed to generate.”³⁵

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30. Rosanna Altshuler, Harry Grubert, and T. Scott Newlon, “Has U.S. Investment Abroad Become More Sensitive to Tax Rates?,” *International Taxation and Multinational Activity*, ed. James Hines (Chicago, IL: University of Chicago Press, 2004).
31. Ruud de Mooij and Sjef Ederveen, “Taxation and Foreign Direct Investment: A Synthesis of Empirical Research,” *International Tax and Public Finance* 10, no. 6 (2003): 673-93. Likewise, Hufbauer and Grieco estimate that a 5 percentage point increase in corporate taxation depresses inward FDI by about 15 percent; Gary Clyde Hufbauer and Ariel Assa, *U.S. Taxation of Foreign Income*, (Washington, D.C.: Peterson Institute for International Economics, 2007), <http://www.iie.com/publications/briefs/hufbauer4051.pdf>.
32. “National Journal Expert Blogs: Economy, William Gale’s response to “Tax Reform Handcuffs,” *NationalJournal.com*, May 4, 2009, <http://economy.nationaljournal.com/2009/05/tax-reform-handcuffs.php>.
33. Jane Gravelle, “What Can Private Investment Incentives Accomplish? The Case,” *National Tax Journal* 46, no. 3 (1993): 277.
34. Approaches to Improve the Competitiveness of the U.S. Business Tax System for the 21st Century (Office of Tax Policy, U.S. Department of the Treasury, December 20, 2007).
35. David Holland and Richard J. Vann, “Income Tax Incentives for Investment,” *Tax Law Design and Drafting* 2 (1998), <http://www.imf.org/external/pubs/nft/1998/tlaw/eng/ch23.pdf>.

- The President’s Recovery Commission: “Because certain assets and investments are tax favored, tax considerations drive overinvestment in those assets at the expense of more economically productive investments.”³⁶

Why do so many neo-classical economists hold the view that incentives are bad and that a neutral tax code that taxes all firms, industries and activities alike maximizes economic welfare? To be clear, it is not the result of empirical evidence, which is mixed at best and contrary to this view at worst. Rather, they hold this view because one overarching principle guides their thinking and shapes their advice: maximize “allocative efficiency.” Allocative efficiency is the market condition whereby resources are allocated in a way that maximizes the net benefit attained through their use; and the quantity of goods produced is that which is most beneficial to society. A market that allocates efficiently is one in which scarce goods and services are consumed on the basis of the prices consumers are willing to pay for them and scarce goods and services are produced on the basis of marginal costs equaling the prices charged for them.³⁷

From the standpoint of a neoclassical economist, therefore, it would be a cardinal sin to propose a policy that would alter the “natural” allocation of factors of production—that is, capital, labor, and goods and services—produced by market price signals determined by individuals and firms making free choices not influenced by regulations, taxes, market power, or other “distortions.” But as innovation economists Phillippe Aghion, Paul David, and Dominique Foray note, “The empirical foundations for such sweeping statements remain remarkably fragile.”³⁸ Nonetheless, for most neoclassical economists virtually all tax incentives are “distortions” that reduce allocation efficiency and so by definition must be opposed.

In fact, because of market failures, such as “externalities,” a pre-tax market that is allocatively efficient can be less productive and innovative than one that is “distorted” by the right kinds of tax incentives for investing in the drivers of productivity and innovation. But even when neoclassical economists find that a particular tax incentive is welfare enhancing, they will often oppose it because it violates the superior principle of allocation efficiency. A case in point is the seminal 1979 article authored by neoclassical economists Larry Summers and Alan Auerbach. They modeled the economic impact of an investment tax credit and found that it resulted in more equipment investment compared to a more simple tax code without the credit.³⁹ Moreover, compared to no credit, having a credit led to GDP being higher than it otherwise would have been. But notwithstanding their finding, Summers

36. President’s Economic Recovery Advisory Board, *Report on Tax Reform Options*, p. 65.

37. The standard view is expressed by Devereux when he states “production is allocated efficiently if it’s not possible to reallocate resources between activities in a way that would increase total output.” Alan Auerbach, Michael Devereux, and Helen Simpson, “Taxing Corporate Income,” (working paper series 14494, NBER, 2008).

38. Philippe Aghion, Paul A. David and Dominique Foray, “Linking Policy Research and Practice in ‘STIG Systems’: Many Obstacles, but Some Ways Forward” (working paper, College of Management Technology, École Polytechnique Fédérale De Lausanne, Switzerland, 2007), p. 13, <http://cdm-it.epfl.ch/repec/cmi-wpaper/cmi-workingpaper-2007-002.pdf>.

39. Alan J. Auerbach and Lawrence H. Summers, “The Investment Tax Credit: An Evaluation” (working paper, National Bureau of Economic Research, Cambridge, MA, 1979), <http://www.nber.org/papers/w0404>.

and Auerbach counseled Congress to eliminate the investment tax credit (which it did seven years later in the 1986 Tax Reform Act). Their reason? The ITC resulted in non-market-based allocation of capital and crowded out “non-favored investment.” In this case the non-favored investment was housing. As they wrote, “The credit will bid up interest rates... discouraging purchase of non-favored capital goods, principally structures.” So according to their model, eliminating the investment tax credit was good because doing so it meant more spending on housing and less investment on machinery and equipment, which for them represented the “right” amount of investment in each category.

For neoclassical economists a tax code that “distorts” decisions is to be avoided at all costs because presumably “distortions” lead to allocation inefficiency and a smaller economy.⁴⁰ However, as Aleb ab Iorwerth, an economist with the Canadian Department of Finance, writes, “there is no presumption that distortions are necessarily welfare-reducing. Distortions that favor the contributors to long-run growth will be welfare-enhancing.”⁴¹ So the real question for policymakers is not whether to get rid of all incentives in favor of a “neutral” tax code, but to identify the incentives that are welfare enhancing and expand those and the ones that are welfare reducing and eliminate those.

This kind of analysis and approach would be quite consistent with what could be termed “innovation economics.”⁴² According to this view the overarching goal of economic policy generally, and tax policy specifically, is not to facilitate the efficient allocation of scarce goods and services by reducing distortions, but rather to spur the effective creation of new goods and services and increased productivity.⁴³ In this sense, innovation economics holds that market forces alone often do not produce optimal outcomes and that public policies, including tax policy, to correct for these failures can enhance societal welfare. Followers of an innovation economics approach, including ITIF, believe that with respect to the inputs to technical change, externalities and other market failures are far more widespread than is conventionally viewed by neoclassical economists who normally do not study innovation processes in any level of depth. There are in fact considerable spillovers from business investments in research, new equipment and workforce training as well as other market failures that limit innovation and productivity. In this sense, the quest for tax code simplicity would lead to less productivity and innovation, and fewer jobs.

Finally, while many companies support investment incentives, many do not. There are a variety of reasons for this. Some companies prefer more simplicity in order to reduce tax compliance costs. Others oppose the idea of the government tying tax relief to any particular behavior on their part.

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40. Albeit, some neo-classical economists will acknowledge that a tax provision can be used to correct a market imperfection, most commonly an externality, but most view such market failures as occurring only rarely, and even then, most believe that acknowledging market failures opens up a Pandora’s box of all kinds of tax provisions, some useful, but most not.
41. Aleb ab Iorwerth, “Canada’s Low Business R&D Intensity: the Role of Industry Composition,” (Working Paper 2005-03, Department of Finance Canada, Canada, 2003), p. 11, www.fin.gc.ca/wp/2005-03-eng.asp.
42. See www.innovationeconomics.org.
43. Robert D. Atkinson and David B. Audretsch, “Economic Doctrines and Policy Differences: Has the Washington Policy Debate Been Asking the Wrong Questions,” (technical report, ITIF, Washington, D.C., September 2008), www.itif.org/files/EconomicDoctrine.pdf.

But it's important to understand that one of the reasons for investment incentives, as discussed next, is to address positive externalities that accrue to society beyond the benefits to the firm. Few firms care about externalities, since by definition externalities do not affect them. But Congress should care about externalities and should design a corporate tax code that addresses both direct firm benefit and societal externalities.

The Case for Incentives for Capital Investment and Manufacturing

There are two main economic rationales for designing a tax code that favors traded technology industries (like manufacturing and software) and capital investment in machinery, equipment and software. The first relates to market failures, including spillovers of the benefits to firms not making the investments. The second relates to the role of targeted tax incentives in supporting the international competitiveness of America's traded sectors, and by extension the health of the overall U.S. economy.

Spillovers and Risk: Notwithstanding their predilection for a "neutral" tax code, some neoclassical economists are willing to support tax incentives for corporate R&D. This is in large part because there is a well-developed body of economic theory and empirical research demonstrating that companies do not capture anywhere near all the benefits from the research they conduct.⁴⁴ These "spillovers" are defined as benefits that accrue to the economy in excess of the benefits to the firm making the investment receives.

But notwithstanding what some economists assert there also appear to be significant spillovers from investing in physical assets, especially capital equipment and software, and also from supporting traded sectors like manufacturing. Economic research suggests that companies only get about half of the total societal return from their investment in new capital equipment. One of the earliest studies finding this was performed by Lawrence Summers and Brad DeLong.⁴⁵ While this study has since been criticized by some, other studies have found similar results. Jonathan Temple finds externalities from capital investment.⁴⁶ Bart Van Ark finds that the spillovers from investment in new capital equipment are larger than the size of the benefits accrued by the investing firm.⁴⁷ Lauren Hitt finds that the spillovers from firms' investments in IT are "significant and almost as large in size as the effects of their own IT investment."⁴⁸ In other words, firms capture on average only about half the

44. Robert D. Atkinson, "The Research and Experimentation Tax Credit: A Critical Policy Tool for Boosting Research and Enhancing U.S. Economic Competitiveness", (technical report, ITIF, Washington, D.C., September 2006), <http://www.itif.org/publications/research-and-experimentation-tax-credit-critical-policy-tool-boosting-research-and-enha>.

45. Bradford DeLong and Lawrence Summers, "Equipment Investment and Economic Growth: How Strong is the Nexus?", *Brookings Papers on Economic Activity*, vol. 23 (Washington, D.C.: Brookings Institution, 1992).

46. Jonathan Temple and Hans-Joachim Voth, "Human capital, equipment investment, and industrialization," *European Economic Review* 42(7) (1998): 1343-62.

47. Bart Van Ark. "Measuring the New Economy, An International Comparative Perspective", *Review of Income and Wealth* 48 (2002): 1-14.

48. Lorin M. Hitt and Prasanna Tambe, "Measuring Spillovers from Information Technology Investments," Proceedings of the 27th International Conference on Information Systems, Milwaukee, WI, 2006: 1793.

total societal benefits from their investments in IT, suggesting that the current level of IT investment is significantly less than societally optimal. Xavier Sala-i Martin finds that both equipment and non-equipment investment are strongly and positively related to growth, but that equipment investment has about four times the effect on growth as non-equipment investment (*e.g.*, buildings).⁴⁹

There are a number of reasons why firms are not able to capture all the benefits from their investments in capital equipment. One is that investments in new machinery give workers knowledge about these new investments and they in turn transmit this information to their next employer, leading them to also invest in new machinery. Indeed, users of new equipment learn what modifications need to be made and then transfer this experience to other firms through a host of means, including inter-firm labor movement, trade shows and professional association meetings. In addition, some equipment, especially information technology, has network effects where the benefits to other firms from a firm adopting the technology are significant. As Hitt notes, “firm-level investments in communications technologies can create benefits for business partners. Alternatively, investments in information technologies can produce knowledge that can spill over between firms.”

This is not to say that all kinds of corporate capital investment have all of these characteristics. When a company buys office furniture or a car or builds a new building it is more likely to reap the full benefit from it. To the extent that this investment creates jobs it is in the suppliers (the makers of the furniture, car or the building) and these are not spillovers since the equivalent number of jobs would have been created elsewhere in the economy from other spending. But when a firm buys new equipment or software it is not likely to capture all the benefits since other firms are able to boost their own productivity because of it.

There are also spillovers to investments companies make to develop innovative products, including patented products, even though the theory of patents is that firms should have ample incentive to take advantage of such innovations in the marketplace and that profits made from patented technologies have little spillover associated with them. But even after patenting and successfully commercializing an innovation, firms are still unlikely to capture all the benefits in the form of profits in part because firms can learn from the patented innovations and commercialize related innovations. Apple’s recent iPad offers a good example. The iPad is protected by patents both in the United States and Europe, and Apple undertook an aggressive marketing and product design strategy to distinguish the iPad as a unique product. All of which are elements of commercialization that allow Apple to gain the maximum returns from the company’s innovation. However, there are dozens of other companies selling similar tablet computers (in fact, the 2011 Consumer Electronics

49. Xavier Sala-i-Martin, “15 Years of New Growth Economics: What Have We Learnt?” Keynote address to the fifth annual conference of the Central Bank of Chile The Challenges of Economic Growth, Santiago, Chile, November 29-30, 2001.

Show in Las Vegas saw eighty new tablet computers introduced by a variety of vendors), suggesting that Apple was not able to capture anywhere near all the returns from its innovation.⁵⁰

Increased Global Competitiveness

In a relatively closed economy with little mobile capital, a high effective corporate tax rate may have the effect of reducing overall investment but it will do little to affect the location of investment between nations. This situation essentially described the U.S. economy until the late 1970s. But since then, competition for internationally mobile investment has significantly increased, spurred by reduced trade and capital barriers and technological innovations enabling global supply chains (e.g. containers, software to manage logistics, etc.).

In response to this increased competition for globally mobile economic activity, not only have an increasing number of nations lowered their effective corporate tax rates, many have done so in ways that target incentives toward globally mobile sectors or activities (e.g., an R&D laboratory, a semiconductor plant, or software establishment). If taxes on firms in globally traded sectors are raised, firms will act rationally by moving or expanding production to nations that tax them less.⁵¹ From a tax competition perspective, there is little reason to reduce the corporate tax rate on firms in non-traded sectors like retail trade or construction because they are largely geographically tied to the areas where their customers are located. But firms in globally traded sectors have a large and increasing number of global options with respect to location. Lowering the effective tax rates these firms pay would help the United States become more globally competitive.

Such policies, despite what some neoclassical economists may say about their distortive effects, are in fact responding to a significant market failure and can be highly efficient. As the Mirrlees review from the London-based Institute for Fiscal Studies noted, in principle, it would be efficient to tax mobile activities at a lower rate than relatively immobile ones: “This would allow a higher rate of corporation tax to be supported on less mobile (location-specific) economic profits, while using a lower rate to reduce the deterrence to mobile income.”⁵²

As such, an effective corporate tax system treats globally-traded activity differently than less mobile activity. And to the extent that incentives, such as the domestic production deduction, have a larger impact on traded sectors, they are pro-growth. Moreover, in this sense, ensuring that the United States’ traded sector is competitive is a benefit that accrues to society as well as to the firms getting the tax benefits. This is because there are significant externalities from having a more competitive

50. Iyaz Akhtar, “8 Companies that Shouldn’t Make a Tablet,” *PC Magazine*, January 20, 2011, <http://www.pcmag.com/article2/0,2817,2375995,00.asp>.

51. Regional economists distinguish between two kinds of economic sectors: traded and non-traded. The output of the former is largely sold to people (or firms) who live outside the region where it is produced, while the latter is sold largely to people who live in the region. Few people travel outside their community to get a haircut. In contrast, few people buy a car that is produced in their community, unless they live in a place like Detroit. In this sense, barber services are not traded while automobile production is.

52. Rachel Griffith and Helen Miller, “Patent Boxes: An innovative way to race to the bottom?” *Vox*, 30, (June 2011), <http://www.voxeu.org/index.php?q=node/6706>.

traded sector. By definition, if there were no economic competition between nations, firms would not lose manufacturing jobs (or traded sector jobs generally) because of foreign competition. But in a highly globalized economy competition between nations can lead to some nations losing competitive advantage. And unless the currency falls to make up for this, (which does not happen in the United States since the dollar is the reserve currency and other nations manipulate their currency) the nation will lose economic activity that is most at risk. This loss of jobs and output in turn will have negative effects as the multiplier effect from these losses ripple through the overall economy.

This process of declining competitive advantage helps explain the recent financial crises and Great Recession. The unprecedented loss of U.S. manufacturing both facilitated the rapid inflows of capital looking for a home (by increasing the trade deficit) and reduced investment opportunities in real wealth-creating activities, which together contributed significantly to the housing bubble and subsequent financial crisis. As Jagannathan, Kapoor, and Schaumburg wrote in a 2009 *National Bureau of Economic Research* article, “this pattern (the increase in the current account deficit by the United States matched by increase in current account surpluses in other nations, especially China) precipitated the housing bubble in the United States.”⁵³ To the extent that investment incentives, such as an investment tax credit for new machinery and equipment and a more robust domestic production deduction were in place since the late 1990s, not only would have manufacturing job and output loss been less, but the severity of the recession would have likely been less and the current recovery stronger.

What Should Congress Do?

As you consider corporate tax reform, it is important to distinguish between tax incentives that are pro-growth and those that are not. Not all tax “distortions” are harmful to growth. In fact, some are solidly pro-growth and if efforts to reform the corporate tax code eliminate these incentives in the effort to achieve rate reduction, U.S. economic growth and competitiveness will suffer. Thus effective corporate tax reform means retaining and even expanding pro-growth incentives. As such, at minimum I urge the Committee to support retaining the two key existing production-oriented incentives: accelerated depreciation and the domestic production deduction (and the R&E credit), but also to create new incentives for producing in America.

1) Retain the Domestic Production Deduction and Accelerated Depreciation

The President’s Recovery Commission report on tax reform proposed as one option for finding revenues to offset the costs of rate reduction eliminating the Domestic Production Deduction (section 199) which was put in place to replace the Foreign Sales Corporation (FSC) law that was ruled illegal by the WTO in 2000. Among the advantages they listed of elimination was that it would allow the overall corporate rate to be lowered by 1 percentage point. But they estimated that repeal

53. Jagannathan, Kapoor and Schaumburg, “Why Are We in a Recession? The Financial Crisis Is a Symptom Not the Disease!”

would lead manufacturers to pay an effective tax rate 3 percentage points higher for a net increase of 2 percentage points.⁵⁴ Yet in the discussion of disadvantages of this option there was no discussion of the impact on the competitive position of this key traded sector. In fact, the report disparaged the deduction for applying to production of hamburgers in restaurants.

But this tax deduction, while not perfect, is in fact, largely targeted to traded sectors. This is why the Obama Administration proposed increasing the section 199 deduction. About 83 percent of the value of the deductions claimed under this provision are claimed by traded sectors (e.g., manufacturing, information, mining) while hamburgers (e.g., food service and accommodations) take just 0.2 percent of the total amount of the deduction. Eliminating this deduction would raise the effective tax rate on manufacturers and other exporting sectors, thereby at the margin leading to reduced exports, greater imports, fewer jobs in these sectors, and lower overall growth. Moreover, as least one study has found that 199 increases the incentive to invest domestically.⁵⁵

Some argue that section 199 is too complicated and unfairly “picks winners”. But it is important to recall why it was put in place in the first place: to respond to the forced repeal of FSC-ETI, which itself was put in place in part to respond to the fact that virtually all of America’s economic competitors have in place border-adjustable value-added taxes in part to offset reductions in their effective corporate tax rates. Absent some tax policy targeted at traded firm — either 199 or a border-adjustable VAT – U.S. traded sector establishments will be disadvantaged in global competition. Many neo-classical economists claim that this doesn’t matter because currency markets naturally adjust for these price differences. In textbook theory they do. In the real world they do not because not only is the U.S. dollar the global reserve currency, but U.S. policy makers defend a strong dollar while other nations, such as China and Japan, manipulate their currencies for competitive advantage.

Eliminating the accelerated depreciation of machinery and equipment and replacing it with straight line economic depreciation would also effectively raise taxes on businesses by \$109 billion over five years.⁵⁶ Even if this were offset by an equal reduction⁵⁷ in statutory rates (of 3 percentage points), it would reduce investment in capital equipment since it would raise the after tax cost of capital investment, in turn reducing productivity growth. Accelerated depreciation (as well as expensing and an investment tax credit) also has an advantage over statutory rate reduction in that its benefits accrue largely to new investment, whereas tax rate reduction provides a tax benefit to the return earned on both new and old capital.

2) Institute an Investment Tax Credit on Purchases of New Capital Equipment

54. President’s Economic Recovery Advisory Board, *Report on Tax Reform Options*, p. 65.

55. Jennifer Blouin, Linda Krull, Casey Schwab, “The Effect of the Domestic Manufacturing Deduction on Corporate Payout Behavior,” (working paper, SSRN, November 2007), http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1092222.

56. Analytical Perspectives (table 17, Office of Management and Budget, accessed October 6, 2011), http://www.whitehouse.gov/omb/budget/Analytical_Perspectives/.

57. President’s Economic Recovery Advisory Board, *Report on Tax Reform Options*, p. 78.

An effective growth and competitiveness policy needs to be based in part on lower prices for equipment, machinery and software since they drive productivity and competitiveness. Accelerated depreciation and expensing do this, but a more effective incentive would be a permanent tax credit on investment in new capital equipment (e.g., machinery, equipment and software). Some argue that because of the difference between book-tax earnings and accounting earnings that expensing and accelerated depreciation do not have as much of an incentive effect on companies as would an investment tax credit.⁵⁸ Given the decline in capital equipment investment by U.S. manufacturers in the last decade, the non-competitiveness of the U.S. corporate tax code, and the significant decline in U.S. manufacturing output and jobs (and corresponding chronic trade deficits), an investment tax credit can be an important tool in restoring American economic competitiveness.

While approximately twenty states have implemented an average 6 percent ITC to boost capital investment, a federal ITC has not been in place since the U.S. tax code was altered in 1986. In that year, Congress eliminated the investment tax credit and reformed depreciation tax write-offs to create the Modified Accelerated Cost Recovery System (MACRS).

An investment tax credit will reduce the after-tax price of investment, raising the level of domestic investment and the productivity of workers. This is why economic research has shown that an investment tax credit does spur more investment in new machinery, equipment and software. As noted above, Summers and Auerbach found that an investment tax “credit will spur investment in equipment.”⁵⁹ Likewise, in an article titled “The Determinants of Investment,” current Federal Reserve Bank Chair Ben Bernanke found that “a one percentage point increase in the investment tax credit raises net equipment investment 1.9 percent... in the first year.”⁶⁰

As such I encourage the Committee to consider establishing an investment tax credit modeled on the Alternative Simplified R&D Credit (ASC). The ASC provides a credit of 14 percent on R&D expenditures above 50 percent of the average firm expenditures of the last three years. An Investment Tax Credit could provide a credit (at a lower rate) on all capital expenditures made above 75 percent of the base (the base would be the average expenditures on qualifying capital equipment over the last three years).⁶¹

3) Transform the R&D Tax Credit into a Knowledge Tax Credit by Making Workforce Development Expenditures Eligible

The competitiveness of American industry depends in part on the skills of American workers. Given the rapid increase in skill levels abroad, it is clear that the skills of American workers must be strengthened both pre-market—through better high school curricula, more effective technical college

58. J. Edgerton, “Investment, Accounting, and the Saliency of the Corporate Income Tax” (working paper, Federal Reserve Board, 2011), <http://areas.kenan-flagler.unc.edu/Accounting/TaxCenter/taxsym2010/Documents/Edgerton-BookTax.pdf>.

59. Alan J. Auerbach and Lawrence H. Summers, “The Investment Tax Credit: An Evaluation” (working paper, NBER, Cambridge, MA, 1979), www.nber.org/papers/w0404.

60. Ben S. Bernanke, “The Determinants of Investment: Another Look,” *The American Economic Review* (1983), <http://www.jstor.org/pss/1816817>.

61. Using the 75 percent base level allows a robust incentive for purchases of new equipment to be in place while limiting its fiscal impact.

training, and higher college matriculation and completion rates—but also through on-the-job training. Training and on-going education are critical components of robust productivity growth and rising worker incomes. And a key way workers get skills is through training provided on the job by employers. In spite of the fact that training and on-going education of workers are critical components of robust productivity growth, U.S. companies are investing about half the amount in training today as a share of GDP compared to a decade ago, in part because the payoffs increasingly flow to other firms as workers switch jobs more frequently and because companies are under increasing pressures for short-term profits.⁶²

Therefore, to spur greater workforce training while at the same time lowering the effective corporate tax rate, I would encourage the Committee to consider expanding R&E credit to allow expenditures on employee training to be qualified expenditures. To ensure that companies use this credit to focus on the skills of the majority of their workers, and not just managers, firms taking advantage of the credit would need to abide by rules similar to those for pension program distribution, which limit focus on highly compensated employees.

4) Institute a “Patent Box” Policy

As discussed above, in the last few years, a number of nations have established “patent box” policies that tax income from the sale patented products or in some cases other IP-based sales at a lower rate than the normal corporate tax rate.⁶³ Not only do these patent box regimes increase the competitive advantage these nations have in growing, retaining and attracting knowledge-based economic activities, they put the U.S. innovation economy at an even greater competitive disadvantage than it already is. Congress should consider establishing a patent box incentive either tied to revenue from patented products or more broadly to innovation-based products.

Linking the patent box rate to production in the United States would likely have an important impact on supporting domestic manufacturing. The lower rate could be pro-rated based on the share of total R&D and production which is performed in the United States. For example, if 60 percent of the value of the R&D and production costs is located in the United States, 60 percent of the profits would be subject to the lower patent box rate. This would provide flexibility as well as a strong incentive to produce R&D and product in the United States.

Paying for Expanded Incentives and Rate Reductions

In an era of budget deficits and a massive federal debt, calling for increasing corporate tax incentives and lowering the effective (and statutory) corporate tax rate may seem fiscally irresponsible. But ultimately America has little choice. Unless the value of the dollar falls significantly, especially against

62. ITIF analysis based on data from Andrew Paradise, “2008 State of the Industry Report,” (report, American Society for Training and Development, Washington, D.C., 2008).

63. Robert D. Atkinson and Scott M. Andes, “Patent Boxes: Innovation in Tax Policy and Tax Policy for Innovation.”

Asian currencies, it will be difficult for the United States to maintain its global competitiveness and the good paying jobs that come with it. But because the dollar is the de facto global reserve currency and because so many countries manipulate their currency for competitive advantage, such a decline is not likely anytime soon. Therefore, it is critical to develop a more competitive tax code, especially with respect to globally traded sectors and activities. Corporate tax reform that is revenue neutral will mean that the United States will continue to lose competitive advantage in the global economy. This will mean slower economic growth.

Reducing taxes, particularly on more mobile capital does not necessarily have to lead to reduced government revenues and a higher deficit. In fact, studies find no relationship between declines in corporate tax rates and public spending.⁶⁴ There are two reasons for this. First, lower corporate taxes can generate more growth, making up at least some of the lost tax revenues. Clausing finds that the combined revenue-maximizing corporate income tax rate is 33 percent, lower than the combined U.S. federal-state rate of around 39 percent.⁶⁵ One reason is that higher tax rates lead to less investment (and thereby lower tax revenues) and also more income shifting.

The second reason is that many nations with lower corporate taxes raise more revenues from less mobile sources. They do this because as Beck and Chaves find, “increases in relative tax rates on capital income encourage net FDI outflow whereas increases in labor income tax rates (e.g., income taxes) have the opposite effect. Increases in relative consumption tax rates have insignificant impacts.”⁶⁶

As a result, most nations use sources of revenues such as value-added taxes and taxes on fossil fuel-based energy to replace lost corporate tax revenues from reduced effective corporate tax rates. Many nations use value-added taxes (VAT) to offset reductions in effective corporate tax rates. In 1989, there were 48 countries, primarily located in Western Europe and Latin America that had adopted a VAT. By 2007, there were 143 such countries.⁶⁷ One advantage of the United States adopting a VAT is that it is border adjustable, meaning that exports are not taxed whereas imports are, thus reducing the U.S. competitive advantage.

I would encourage the Committee to also consider instituting a modest tax on CO₂ emissions and to use the revenues to lower the effective corporate tax rate. A \$15/ton CO₂ tax levied economy-wide

64. Devereux, Lockwood, and Redoano find that there is no relation. Likewise, Slemrod finds the same result, that “across countries there is no association of the expenditure-GDP ratio with the corporate statutory rate. Joel B. Slemrod “Are Corporate Tax Rates, or Countries, Converging,” *Journal of Public Economics* 88, no. 6 (2004): 1169-1186.

65. K.A. Clausing, “Taxing Corporations in OECD Countries: A Cross-Country Analysis of Revenues,” (draft working paper, November 2004).

66. Stacie Beck and Alexis Chaves, “The Impacts of Various Taxes on Foreign Direct Investment,” (working paper, University of Delaware, Alfred Lerner College of Business & Economics, Newark, DE, 2011), <http://www.lerner.udel.edu/sites/default/files/imce/economics/WorkingPapers/2011/UDWP2011-18.pdf>.

67. John Norregaard and Tehmina S. Khan, “Tax Policy: Recent Trends and Coming Challenges,” (working paper, International Monetary Fund, December 2007), <http://www.imf.org/external/pubs/ft/wp/2007/wp07274.pdf>.

and on upstream combustible energy sources (e.g. coal, oil, natural gas, etc.)⁶⁸ would raise \$90 billion annually, which could fund not only the expanded incentives here (and an expanded R&D credit), but also from statutory rate reduction. We estimate that if the tax revenues were used to pay for expanded corporate tax incentives of the kind described above U.S. manufacturers as a group would actually pay lower taxes.⁶⁹

Conclusion

If America is to win the race for global economic advantage the debate over domestic tax policy needs to shift from one of revenue enhancement and tax simplification to one of global competitiveness. Most countries have already done that. However, over the last twenty years the U.S. tax code has become less, not more competitive with other nations. Retaining, expanding and adding new corporate tax incentives for production, training, capital equipment investment, and innovation would create a tax code that more effectively drives innovation, competitiveness, and good jobs. By expanding key incentives, while lowering the effective rate, the tax code would become a more powerful incentive for firms to produce within the United States.

68. Non-combustible energy sources, such as those sequestered in feedstock, would be exempt.

69. Matthew Stepp and Robert D. Atkinson, "An Innovation Carbon Price: Spurring Clean Energy Innovation while Advancing U.S. Competitiveness," (technical report, ITIF, Washington, D.C., March 2011), <http://www.itif.org/files/2011-innovation-carbon-price.pdf>.