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“Driving Innovation Through Federal Investments”

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Chairperson Mikulski and members of the Committee, I appreciate the opportunity to submit testimony regarding the importance of federal investment in driving American innovation and competitiveness. I am President of the Information Technology and Innovation Foundation (ITIF). ITIF is a nonpartisan think tank whose mission is to formulate and promote public policies to advance technological innovation and productivity.

America's Three Deficits

While most attention these days is on America's budget deficit, in fact America faces three deficits and debts: budget, trade and investment. For each we are increasing our indebtedness each year, the costs of which will be borne by future generations of Americans.

The budget deficit is over \$680 billion.ⁱ The cumulative national debt, the combination of all previous deficits, is \$12.5 trillion.ⁱⁱ The budget deficit burdens future generations who will be required to repay it in the form of higher taxes and/or reduced government spending.

The trade deficit is the annual difference between U.S. exports and imports, and in 2013 was \$471 billion.ⁱⁱⁱ Since 1975, America has accumulated a total trade deficit of \$8 trillion, which could grow to \$18 trillion in ten years.^{iv} The trade deficit represents a hidden tax on the next generation for at some point the U.S. will have to run trade surpluses in order to pay off our trade debt.

The investment deficit refers to the shortfall of public investments in research, education, and infrastructure that boost innovation and productivity, yielding positive returns on investment for the entire economy. For example, a 1 percent increase in R&D capital stock increases GDP by 0.13 percent.^v Low levels of investment mean lower future growth, again imposing a hidden tax on future generations. In other words, we can increase consumption now by reducing investment for tomorrow and the result will be relatively lower standards of living for future Americans.

During the "golden age" of American innovation leadership, federal R&D spending as a share of GDP averaged 1.52 percent per year, from 1960-1980, as the United States led the world in the development of game-changing innovations in aerospace, semiconductors, computing and other twentieth-century drivers of American economic prosperity.^{vi} Unfortunately, federal R&D investments fell to an average of less than 1 percent per year from 1981-2011, leading to a cumulative \$1.5 trillion R&D investment deficit.^{vii} Similarly, from 1980-2011 federal investment in education declined as a share of GDP, creating an estimated deficit of \$618 billion.^{viii} And, the National Surface Transportation Infrastructure Financing Commission calculated in 2008 that the federal government must invest on average \$96 billion more per year to maintain and improve U.S. infrastructure.^{ix} If current spending priorities remain the same, the cumulative investment deficit in these three areas could reach \$5 trillion by 2021.^x

The Critical Role of Federal Investment in Innovation

Spending on scientific research and engineering has been and continues to be a key growth-enhancing investment. Historically, the U.S. government has been a key driver of R&D. From the development of the railroads in the 19th century to the transistor, integrated circuit and laser in the 20th and the Internet economy in the 21st, the federal government has provided critical investments that have spurred the creation of the rapidly growing, high-paying, innovation-based industries that are keys to economic and societal health.

A major period of growth in federal innovation policy came in the aftermath of World War II, when America's leaders saw research as a key economic and national security imperative that needed to be incubated domestically. The government developed a host of institutions, from NASA to the National Science Foundation to the National Institutes of Health and the National Laboratory System, which formed the basis of a federal innovation ecosystem that worked with academia and the private sector to promote and fund scientific research while also spurring the transfer of those technologies into commercial applications. In fact, in the three decades after World War II, the federal government accounted for two-thirds of all R&D spending.^{xi} This investment was not only successful in driving direct

research but also had significant spillover effects by driving private sector R&D. For example, every dollar of public funding for medical research increases U.S. private investment by 32 cents.^{xii}

However, since the late 1990s, the United States has increasingly fallen behind in the race for global innovation advantage. In fact, America currently ranks 43rd out of 44 nations in the rate of progress in improving its innovation-based competitiveness.^{xiii} This decline is due in large part to the growing investment deficit which has weakened our traditionally strong, federally supported innovation ecosystem. The United States ranks just 24th in the world in government investment in university research and 27th in the generosity of our R&D tax credit, while total federal R&D spending declined 16 percent from 2010 to 2013, the largest three-year decline in 40 years.^{xiv}

This loss of innovation capacity is occurring at the same time that many of our international competitors are recognizing the central importance of innovation and government investment and putting in place policies to bolster their innovation ecosystems. Numerous nations, including China, Great Britain, and Sweden, have launched comprehensive national innovation strategies focused on promoting new industry development and enhancing global competitiveness. In addition, Germany invests \$2.5 billion annually in its network of almost 70 Fraunhofer Centers that conduct applied research in industrial sectors key to Germany's economy, while Japan announced in 2013 a \$2 billion investment to promote university-industry collaboration in applied research.

Balancing the Three Deficits

The fact that America faces three deficits makes the budget debate more complicated than the simple math of revenues and expenditures would suggest. The budget, trade and investment deficits are all interrelated, and decisions aimed at closing any particular deficit often will have an impact on the other two. For example, the 2013 budget sequestration, which sought to cut federal discretionary spending to achieve \$1.2 trillion in savings from 2013 to 2021, would have cut federally funded R&D by 8.8 percent, or \$12.5 billion, greatly enhancing the investment deficit.^{xv} And because of the key role of innovation in spurring U.S. competitiveness, this cut in federal R&D would likely lead to an increase in the trade deficit. And because federal R&D spending helps spur productivity a decrease in federal R&D will slow growth, making the federal debt to GDP ratio larger.

Policy makers should take an approach to the budget that seeks to simultaneously close all three deficits. This means as ITIF has written in "An Innovation and Competitiveness-Centered Approach to Deficit Reduction" that Congress should increase, not cut growth enhancing investments, including R&D, infrastructure investment, STEM education and training. These investments will have long term positive outcomes for the economy in terms of their direct impact on innovation, the spillover effects they generate in other sectors of the economy and the boost these investments provide to private sector and university investments. At the same time, Congress should cut the budget deficit by cutting non-productive spending (especially on entitlements) and increasing taxes on individuals.^{xvi}

In addition to implementing this budgeting framework, Congress can also help close the investment deficit by strengthening the overall innovation ecosystem. This would include passage of the Revitalize American Manufacturing and Innovation Act of 2013, sponsored by Senators Sherrod Brown (D-OH) and Roy Blunt (R-MO), which would allocate \$600 million for the creation of up to 15 public-private, manufacturing innovation hubs, designed to accelerate the development of technologies and innovations in key industry sectors. Similarly, the America INNOVATES Act, sponsored by U.S. Senators Chris Coons (D-DE.) and Marco Rubio (R-FL.) would modernize the United States' national lab system by providing much needed flexibility in how the labs collaborate with industry, which will enhance innovation, technology transfer, and job creation.

Finally, ITIF has advocated for a comprehensive innovation and competitiveness agenda designed to enhance the overall federal innovation ecosystem and better target research funding to improve technology development and commercialization. Recommendations include restoring federal R&D funding to the doubling plan set in the America COMPETES Act, and creating a university-industry collaborative R&D tax credit.^{xvii}

Conclusion

The economic and competitiveness challenges the United States faces have been caused in part by the weakening of our federal innovation ecosystem and a reduction in productive public investments. To simultaneously reduce America's three deficits—budget, investment, and trade—Congress should expand, not cut public investments, such as in research and development, while cutting consumptive spending and raising taxes on individuals. By doing this, we can eliminate our three deficits and ensure that we pass on limited debts to future generations.

Endnotes

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