



**The Private Sector as
the Engine of Innovation**

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Introduction

Increasing the competitiveness and the capacity of the United States to innovate goes beyond improving research, education, infrastructure, and the manufacturing sector. Many other factors can also lead to success, but perhaps chief among them is ensuring that both established firms and entrepreneurs in the private sector have the best possible environment in which to innovate. One of the major strengths of the American economy is that its decentralized, competitive markets provide the best method for determining the value of innovative opportunities and enabling their diffusion throughout the economy. This chapter explores the following areas that help provide a good environment for private sector innovation:¹

- Support regional clusters
- Accelerate high-growth entrepreneurship through Startup America’s public and private-sector initiatives
- Promote exports and access to foreign markets
- Restructure corporate taxes
- Provide an effective intellectual property system

Regional Clusters and Entrepreneurship

Despite more open markets, faster and cheaper transportation, and an increasingly robust digital infrastructure, location has continued to be central to competitiveness and innovation.² The prime example of how location still matters is regional clusters, which “are geographic concentrations of interconnected businesses, suppliers, service providers, coordinating intermediaries, and associated institutions like universities or community colleges in a particular field (e.g., information technology in Seattle, aircraft in Wichita, and advanced materials in Northeast Ohio).”³ Regional clusters can also be thought of as an “innovation ecosystem” that “is made up of communities of people with different types of expertise and skill sets. Scientists, administrators, business leaders, engineers, writers, educators, health-care professionals, and other individuals all play a role.”⁴

Once a critical mass of firms shares a common location they derive many types of advantages from this proximity. These firms develop close relationships, giving them better access to information and allowing them to interact more efficiently. Firms in clusters can more easily find workers with relevant experience, and suppliers may also cluster nearby, lowering input costs. These advantages are difficult, if not impossible, to take advantage of when firms are not close to each other.⁵ Evidence indicates that areas with strong clusters perform better economically than areas without these clusters; they have higher job growth, higher wage growth, more businesses and a higher rate of patenting.⁶

Multiple studies highlight the positive correlation between the existence of regional innovation clusters (RICs) and wages. Wheaton and Lewis (2002) examined the effects of industrial and occupational specialization on manufacturing wage levels across 220 metropolitan areas.⁷ They found that for the typical metropolitan area, a doubling in employment concentration in a particular industry (similar to what would occur when industry clusters are developed) is associated with a 2 percent increase in wages. Gibbs and Bernat (2001) found that wages for workers in industry clusters were about 6 percent higher than for workers in the same industry in a non-clustered location.⁸ A Kansas cluster focused on aviation manufacturing and development provides yet another example of the wage benefits of RICs. The Kansas aviation cluster boasts 17.8 percent of all Kansas manufacturing employment, with average annual wages of \$63,000, compared with \$40,000 in average annual wages for all U.S. industries in 2006.⁹

RICs can also improve the productivity of firms operating in the clusters. Greenstone and Moretti (2004) evaluated the impact of large plants clustering together.¹⁰ By comparing the productivity and employment growth of sites selected by large plants to those of “runner up” sites with similar characteristics, they found that firms clustering together increased productivity by 12 percent and employment by 9 percent.

New businesses are also generated by RICs; from the more than 150 clusters that exist around the country, RICs have resulted in increased spin-offs, creating new commercial activity. For example, the *CleanTECH San Diego* cluster initiative that was launched in 2007 and focused on energy efficiency, renewable energy, transportation, and water management has generated tremendous startup activity.

San Diego now boasts more than 800 clean technology companies, supported by world-class universities and a network of investors.

The clear economic benefits generated by RICs suggest the need to encourage the growth of these clusters. The Federal government is working in partnership with state and local efforts through agencies such as the Small Business Administration (SBA) and the U.S. Department of Commerce's Economic Development Administration (EDA). One example of EDA funding that helps clusters achieve superior results is a public-private partnership that led to the creation of a new proof-of-concept center at the University City Science Center in Philadelphia (see [box 7.1](#)). This example highlights innovation occurring at a regional, economic development level. Another example of an economic development agency working at the grass-roots level is NorTech based in Northern Ohio (see [box 7.2](#)).

Another Department of Commerce effort to promote entrepreneurship at the regional level is the establishment of the Office of Innovation and Entrepreneurship (OIE). The goal of the OIE is to promote innovation-based, high-growth entrepreneurship by increasing the efficiency and effectiveness of efforts to commercialize technology developed through university and federally funded research. The OIE manages the i6 Challenge, a multiagency competitive grant program that encourages innovative partnership models that accelerate technology commercialization, new venture formation, and job creation. It also manages the National Advisory Council on Innovation and Entrepreneurship, whose mission is to advise on the best methods to foster entrepreneurship and to develop innovation ecosystems such as RICs.

Other efforts include: the SBA's effort with the Department of Defense to develop clusters focusing on advanced technologies such as robotics, energy, and cyber-security; EDA's RIC efforts in areas such as best practices and 21st century infrastructure, as well as its work through the Taskforce for the Advancement of Regional Innovation Clusters; and the Department of Agriculture's initiatives to bring regional strategies to rural areas that involve regional food systems, renewable energy, broadband, and recreation. Finally, another recent significant development is the reauthorization, for another 6 years, of the SBA's Small Business Innovation Research and Small Business Technology Transfer programs, which are set-aside programs for small businesses to engage in Federal R&D and to

facilitate cooperative R&D between small businesses and research institutions, respectively. The programs were also expanded to allow firms that are

Box 7.1

Example of a Public-Private Partnership: QED

QED is a unique multi-institutional proof-of-concept mechanism that supports academic life science researchers as they transition their discoveries into products for end users. The University City Science Center in Philadelphia, Pennsylvania, (the oldest and largest urban research park in the United States) created the QED program in 2009 to bridge the gap between academic research grants and commercial seed funding. The goals of the program are to engage Greater Philadelphia's academic institutions, research scientists, entrepreneurs, investors, and industry in early-stage commercialization, and ultimately to increase the pace and value of technology transfer in the region by developing a pipeline of new technologies that could significantly improve human health.

QED provides key resources, including business guidance, bridge funding, and access to industry and investor representatives, to competitively selected projects. Currently, 19 research institutions participate in the program under a common set of terms and conditions that govern funding, indirect costs, intellectual property, and revenue sharing for program sustainability. Funding decisions are made by a regional selection team composed of representatives from pharmaceutical, medical device and medical diagnostics companies, private equity and venture capital firms, and economic development organizations. Each project selected for funding receives up to \$200,000 over 12 months, with half of the funding provided by the Science Center and the other half by the scientist's host institution.

To date, QED has received and evaluated more than 227 proposals. Proof-of-concept plans have been developed, with the assistance of business advisors, for 40 life science technologies at 15 institution, and 12 projects at eight institutions have been selected to receive funding. Of the nine projects that have been substantially completed, five have resulted in the licensing or optioning of technologies to the private sector, either through start-up or established companies. One of the licensed technologies represents the first example of technology from The Children's Hospital of Philadelphia, the Nation's first hospital for children, being commercialized via start-up company formation.

Currently in the fourth cycle of its pilot phase, QED has received funding from the Commonwealth of Pennsylvania's Ben Franklin Technology Development Authority, the William Penn Foundation, the U.S. Department of Commerce's Economic Development Administration and Wexford Science + Technology.

QED's early successes demonstrate the program's potential for meaningful impact on the region's innovation ecosystem through the collective engagement of academic, private sector, and entrepreneurial stakeholders. The program is both scalable and transferrable, and could serve as a template for similar efforts in other sectors and in other regions.

majority owned by venture capital and that have private capital support to participate.

Box 7.2

Regional Innovation Clusters: NorTech

One excellent example of how regional innovation clusters can work to improve the economic climate of an area through the support of emerging technology industries is NorTech.¹ A regional nonprofit technology-based economic development organization serving 21 counties in Northeast Ohio, NorTech is funded by public and private partners of regional businesses and philanthropic communities and supported by the U.S. Department of Commerce’s Economic and Development Administration. As a catalyst for developing regional innovation clusters, NorTech is currently focused on two industries: advanced energy and flexible electronics. The organization’s cluster development model serves all organizations in the value chain and those that support the value chain—companies of all sizes; research institutions; universities; public, private and philanthropic funding sources; all levels of government, industry associations; and other economic development organizations.

NorTech’s approach is to engage in activities at three levels: the cluster company and project level, the regional level, and the national level. Based on the Northeast Ohio’s unique strengths and assets, NorTech drives the development of regional innovation clusters by:

- Attracting new members to the cluster by promoting Northeast Ohio’s technology story;
- Building relationships among cluster members for funding, research, and revenue opportunities;
- Engaging with Federal and state governments and policy leaders to develop strategies to improve the likelihood clusters will continue to grow; and
- Collecting, reporting, and utilizing data that creates and influences cluster growth.

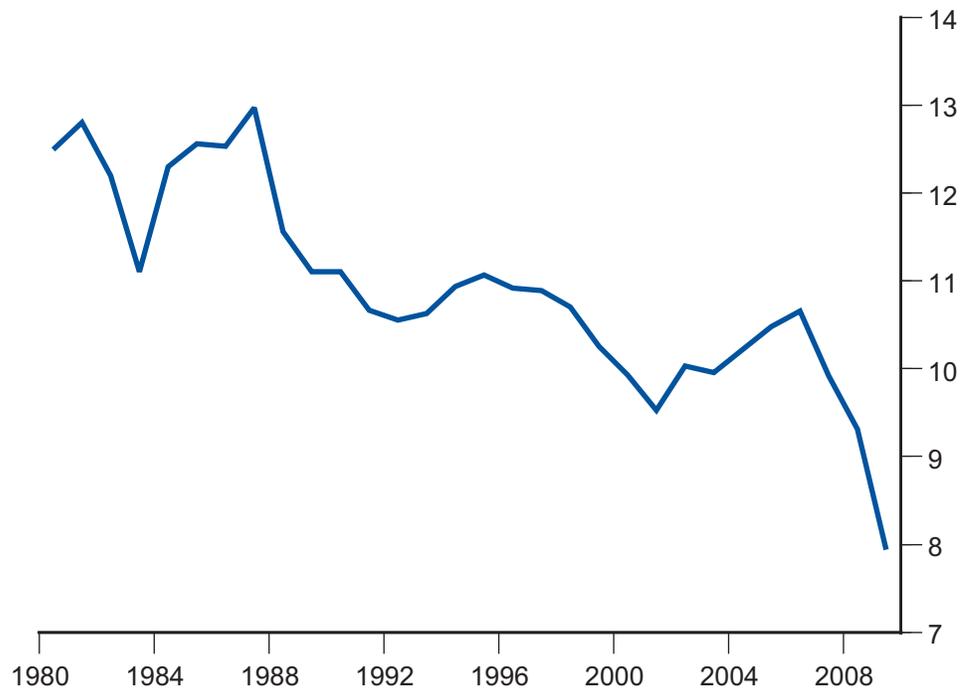
NorTech believes in the value of regional innovation clusters as a “bottoms up” approach to creating jobs and making the United States more globally competitive, specifically in Northeast Ohio. Clusters result in numerous benefits for a region such as creating new, higher wage jobs; providing regional business opportunities that are less susceptible to off-shoring; stabilizing diverse communities by repurposing idle assets and human capital; and increasing the export of regionally produced manufactured goods to other markets.

1. See www.nortech.org/clusters/regional-innovation-cluster and www.nortech.org/about-us/what-we-do for more information.

Startup America

In the United States, firms younger than 5 years create a significant fraction of new jobs.¹¹ However, many young firms struggle to survive beyond the startup period. The rate of new business startups has been declining over the past two-and-a-half decades, meaning fewer would-be entrepreneurs are rising to the challenge of turning new ideas into new businesses (see figure 7.1).

Figure 7.1
U.S. Private Business Startup Rate, 1980–2009



Source: U.S. Census Bureau, Center for Economic Studies, Business Dynamics Statistics.

Launched in January 2011, Startup America is a White House initiative to accelerate high-growth entrepreneurship throughout the Nation. President Obama has called on both the Federal government and the private sector to dramatically increase the prevalence and success of entrepreneurs across the country.

First, the Obama Administration's Startup America initiative is an ongoing series of policy actions to improve the environment for high-growth entrepreneurship in five key areas:

(1) **Increasing access to capital** for high-growth companies (including zero capital gains tax on qualified small business investments and streamlined rules for private funds that invest in lower income communities);

(2) **Creating mentorship and educational opportunities** for entrepreneurs (including new opportunities for clean energy entrepreneurs, military veterans, and undergraduate engineers);

(3) **Reducing barriers** that can limit the growth of entrepreneurs through the solicitation of recommendations regarding the modification or elimination of regulations;

(4) **Accelerating innovation** from lab to market for federally-funded R&D (including lower cost access to government-patented energy technology, and new funding for regional proof-of-concept centers and regionally interconnected networks of researchers, managers and capital across the business, education and government sectors); and

(5) **Driving a nationwide effort** by the Administration to engage potential new opportunities in industries like healthcare, clean energy, and learning technologies.

Second, the Startup America Partnership has been launched, which consists of alliances of entrepreneurs, corporations, universities, foundations, and other leaders whose goal is to encourage innovative, high-growth U.S. startups. The Startup America Partnership has created a national online network where high-growth entrepreneurs can establish free membership profiles and unlock resources from dozens of companies—from free software to free business filing to steeply discounted computer hardware. The total value of these resources is over \$730 million and climbing.

Promoting America's Exports and Improving Access to Foreign Markets

A vibrant and expanding export market is essential for economic growth and for creating new jobs. Many of the recommendations previously discussed to increase innovation in the United States may also lead to more exports, which in turn should stimulate further innovation in the United States. If the United States can produce higher quality goods and services more efficiently, it will be more competitive in foreign markets. However, U.S. exporters, particularly manufacturing firms, often are not only competing against private sector domestic firms but are also competing against foreign firms that may benefit from foreign government support for particular manufacturing sectors. For example, in some instances, countries do not allow the foreign exchange rates of their currencies to be fully flexible and market determined. This can make U.S. goods more expensive than they otherwise would be, limiting U.S. export growth.¹²

Ensuring that U.S. businesses have fair and open access to foreign markets is an important component of increasing U.S. exports. Enforcing the obligations of other countries with respect to market access cannot fall to businesses that export but must be done by the U.S. government. This is yet another area where there is a clear role for government to improve the competitiveness of the United States. Some progress already has been made on this front.

Therefore, in addition to pursuing policies to improve innovation, the Federal government can play a role in promoting U.S. exports. In March 2010, President Obama launched the National Export Initiative (NEI), which “brings a sustained, vigorous commitment to ensure fair and open export market for American businesses” and is “an ambitious effort to help American businesses that sell their goods and services abroad. By unlocking foreign markets for U.S. goods and services, improving access to credit for U.S. businesses, and undertaking other measures, the NEI seeks to double U.S. exports in five years and support millions of additional jobs.”¹³

Additionally, Congress approved three free trade agreements, with Panama, Colombia, and South Korea in quick succession in the fall of 2011, marking the biggest step forward in opening foreign markets to American goods and services since the North American Free Trade Agreement and the Uruguay Round of the

mid-1990s. Of these agreements, the most commercially significant was the Korea-United States free trade agreement (KORUS). A study by the International Trade Commission estimated that the renegotiated agreement with Korea could boost annual U.S. goods exports to Korea by as much as \$11 billion.¹⁴ The agreement also included Korean commitments expected to result in considerable expansion of U.S. services exports.

In November 2009, President Obama announced the United States' intention to participate in the Trans-Pacific Partnership (TPP) negotiations, with the goal of concluding a high-standard free trade agreement with countries in the huge and growing markets of the Asia-Pacific region. This next-generation agreement would address not only the core issues traditionally included in trade agreements, but also new issues such as making the regulatory systems of TPP countries more compatible so U.S. companies can operate more seamlessly in TPP markets, and helping innovative, job-creating small and medium-sized enterprises participate more actively in international trade and in investment in innovative products and services, including digital technologies, and mechanisms to ensure state-owned enterprises compete fairly with private companies. In addition to the United States, the other countries participating in the negotiations currently include Australia, Chile, Peru, Singapore, Brunei Darussalam, Malaysia, New Zealand, and Vietnam. Ten rounds of negotiations among these prospective partners have already taken place, with the most recent round having been held in Malaysia in December 2011. In November 2011, Japan, Canada, and Mexico announced their interest in joining the negotiations.

The costs of financing export operations pose an additional barrier for smaller firms. Financial institutions may erroneously regard a small firm that is highly dependent on exports as a riskier borrower than one that is entirely domestic in its focus. The mission of the Export-Import Bank (Ex-Im), along with other institutions, is to proactively support small and medium-sized firms. In fiscal year 2010, Ex-Im authorized \$5 billion—20 percent of authorizations—to support small businesses as primary exporters.¹⁵ The two Ex-Im products most used by U.S. small businesses are export-credit insurance and working-capital guarantees. Export-credit insurance protects exporters and lenders from the risk of buyer nonpayment for commercial or political reasons and enables exporters to extend credit to international customers. Working-capital guarantees cover 90 percent of the outstanding balance of working-capital loans to exporters supported by export-

related inventory and accounts receivable. In fiscal year 2010, the Bank issued 2,524 insurance policies to small-business exporters—90 percent of the total number of policies for the year. The Bank also authorized a record \$2.2 billion in working-capital guarantees, 70 percent of which supported small business.¹⁶

Corporate Taxes

The United States has the second-highest statutory corporate income tax rate in the Organisation for Economic Co-operation and Development (OECD). Japan has the highest. However, the United States does not rank as high in terms of the average effective tax rate paid by corporations.¹⁷ One reason is that the corporate tax code has numerous provisions for special deductions, credits, and other tax expenditures that benefit certain activities.

The combination of a high statutory rate and numerous deductions and exclusions results in an inefficient tax system. The high statutory rate discourages saving and investment, while the features that limit the tax base favor debt over equity, encourage investment in certain favored assets over other kinds of investment, and drive capital out of the corporate sector into noncorporate forms of business. There are also inefficiencies due to the way the United States taxes the foreign income of U.S. multinational corporations. The lower foreign corporate tax rates, along with the fact that other countries use a territorial system of corporate taxation, places U.S. multinational companies at a cost disadvantage.

Finally, according to the President's Economic Recovery Advisory Board, the complexity of the code and its incentives for tax avoidance result in costs to firms that are "estimated to exceed \$40 billion per year or more than 12 percent of the revenues collected. All of these factors act to reduce the productivity of American businesses and American workers, increase the likelihood and cost of financial distress, and drain resources away from more valuable uses."¹⁸

Given the inefficiencies described above, proposals to reform the corporate tax code would likely trade a lower statutory rate for a broader tax (that is, fewer provisions that favor one type of investment over another) while also, perhaps, dealing with the unequal treatment of U.S. multinationals relative to other countries. However, there are tradeoffs to moving to a more simplified corporate tax

code, and changes could dampen innovation.¹⁹ For example, R&D currently receives preferential treatment through a tax credit, and the Administration has argued for simplifying, enhancing, and expanding the R&D tax credit as a way of helping companies create jobs and increase productivity.²⁰

Ensuring a Well-Functioning Intellectual Property Rights System

A well-functioning intellectual property rights (IPR) system is crucial for encouraging innovation and creating jobs. “Absent effective legal protections for innovators, other businesses can immediately exploit an innovator’s idea, undermining the incentive to invent in the first place. Public policy solves this problem through intellectual property rights—allowing limited, short-run grants of exclusive rights to catalyze inventive activity.”²¹ And to safeguard those intellectual property rights, the Administration issued a White Paper in March 2011 with 20 recommendations for legislative changes based on its comprehensive review of existing law in order to ensure that American workers and businesses are protected, exemplifying the Administration’s commitment to grow jobs and exports as well as to protect the health and safety of the American people.²²

In the United States, intellectual property (IP) significantly influences innovation and economic growth. Industries that are the most intensive users of IP protections directly support millions of jobs across all sectors of the economy. Unfortunately, the U.S. patent system has not always functioned in a manner conducive to encouraging innovation.²³ In particular, it is crucial that the United States improve its IP system by reducing both review times as well as the cost of litigation related to patents. Fortunately, significant progress has been made in reforming the patent system in the United States. With the passage of the *America Invents Act* in September 2011, the United States Patent and Trademark Office (USPTO) will be able to offer, under a prioritized examination process, a new fast track for reviewing patents with a guaranteed 12-month approval timetable for certain patents.²⁴ Additional resources are provided in the Act, allowing USPTO to continue reducing the backlog of patent applications and the time it takes to review them. USPTO will offer entrepreneurs new ways to make litigation regarding patent validity less burdensome and at costs significantly less expensive than going to court.

IP protection abroad is also crucial for U.S. firms. Infringement of IPR in markets abroad causes significant financial losses for rights holders and legitimate businesses around the world and undermines key U.S. comparative advantages in innovation and creativity to the detriment of American businesses and workers. The Administration's *Joint Strategic Plan on Intellectual Property Enforcement*, issued in June 2010 by the White House Intellectual Property Enforcement Coordinator, lays out a comprehensive strategy for the U.S. Government to strengthen enforcement of intellectual property rights, both at home and abroad.²⁵ Initiatives on the international front include the U.S. government aggressively pursuing meaningful improvements in the protection and enforcement of U.S. intellectual property with our trading partners. This includes direct bilateral engagement to increase enforcement, participation in regional and multilateral fora, and the negotiation of new IPRs related instruments, such as the Anti-Counterfeiting Trade Agreement, and, where appropriate, enforcing our rights using the dispute settlement procedures of the World Trade Organization.

The U.S. government is also alert to emerging concerns regarding innovation and industrial policies in some of our trading partners that may disadvantage U.S. IP rights holders. Such policies include measures that condition government benefits on the local development or ownership of IPR, or that condition market access or other benefits on the transfer of technology, IPR or other proprietary information from foreign companies to domestic entities. They may also include measures to restrict the ability of U.S. rights holders to freely negotiate the terms and conditions of the use of their IPR or impediments to enforce contractual arrangements.

The Obama Administration is committed to an intellectual property rights system that recognizes that IP rights are fully consistent with—and indeed enable—other core values such as the norms of legitimate competition, free speech, fair process, and the privacy of users. The Administration is also committed to addressing international health and public safety challenges. For example, the USPTO has issued a request for information to develop strategies to incentivize humanitarian technologies through the intellectual property system.

Endnotes

1. The Obama Administration, through its *Strategy for American Innovation*, is committed to supporting these areas, as well as others. See *A Strategy for American Innovation: Securing Our Economic Growth and Prosperity*, www.whitehouse.gov/innovation/strategy.
2. Porter 1998.
3. Muro and Katz 2010.
4. Estrin 2009.
5. Porter 1998, 81–83.
6. Delgado, Porter, and Stern 2011.
7. Wheaton and Lewis 2002.
8. Gibbs and Bernat 2001.
9. Center for Economic Development and Business Research 2008.
10. Greenstone and Moretti 2004; Greenstone, Hornbeck and Moretti, 2010.
11. Haltiwanger, Jarmin, and Javier 2010.
12. Ezell and Atkinson 2011, 26.
13. National Economic Council 2011, *A Strategy for American Innovation*, 5 and 24.
14. United States International Trade Commission 2007.
15. Export Promotion Cabinet 2010, 4.
16. Export Promotion Cabinet 2010, 4.
17. The President’s Economic Recovery Advisory Board 2010, 65.
18. The President’s Economic Recovery Advisory Board 2010, 65.
19. Atkinson 2011.
20. National Economic Council 2011, *A Strategy for American Innovation*, 42.
21. National Economic Council 2011, *A Strategy for American Innovation*, 11.
22. White House 2011a.
23. National Academy of Sciences, National Academy of Engineering, and Institute of Medicine 2010, 57.
24. White House 2011b.
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