



Compete.

Council on
Competitiveness

2017 Clarion Call

Call to Action

President Harry Truman once famously asked for a one-handed economist, someone who would not explain issues by saying, “on one hand...”. Truman’s frustration was understandable given the many, sometimes conflicting ways to gauge national prosperity, and the debates over the “right” steps necessary to drive growth. Today, those issues are just as complex, but the *2017 Clarion Call* from the Council on Competitiveness (Council) seeks to offer a degree of clarity. This publication aims to help decision-makers grasp where America stands, what is changing and what can be done to encourage widely-shared prosperity.

The Council believes that certain fundamentals remain valid. Innovation-driven productivity is the foundation of a competitive, growing economy and well-paying jobs. The drivers of such productivity, however, evolve continually in the form of new technologies, new skills, strategic investments and critical infrastructure—including physical, digital and policy infrastructure.

Recent growth in productivity and GDP coupled with ongoing low unemployment are encouraging trends that could be harbingers of stronger workforce participation and wage increases for all Americans. A focus by policymakers on tax reform, regulations and manufacturing is an encouraging sign that should lead to additional investment in the United States. To sustain long-term growth, however, decision makers must also invest in critical skills, infrastructure and research—and do so within a larger framework that addresses the federal deficit and debt. Finally, in an increasingly integrated world economy, free and fair trade is essential for a strong U.S. economy.

The Council calls on the administration and Congress to take constructive action in seven major areas that will impact American productivity, growth and jobs:

- Talent
- Tax
- Trade
- Technology
- Research
- Regulation
- Infrastructure

The Council also recognizes that the federal government is not the sole entity that will determine how well America prospers. State and local governments have important roles to play, as does the private sector represented in the Council by our 130 CEOs, university presidents, labor leaders and national laboratory directors.

Where America Stands

Looking to the future, it is important to first take America's economic temperature by examining some of the major competitiveness indicators.

The story of where America stands is a hopeful one, but not without a few stumbling blocks along the path. There are tentative signs of resurgence. Recent quarterly indicators in 2017 point to higher productivity and economic growth, continued low unemployment and modest wage gains. These are all positive signs, but like Truman's one-handed economist, they are often tempered by other trend lines that caution against irrational exuberance.

Productivity

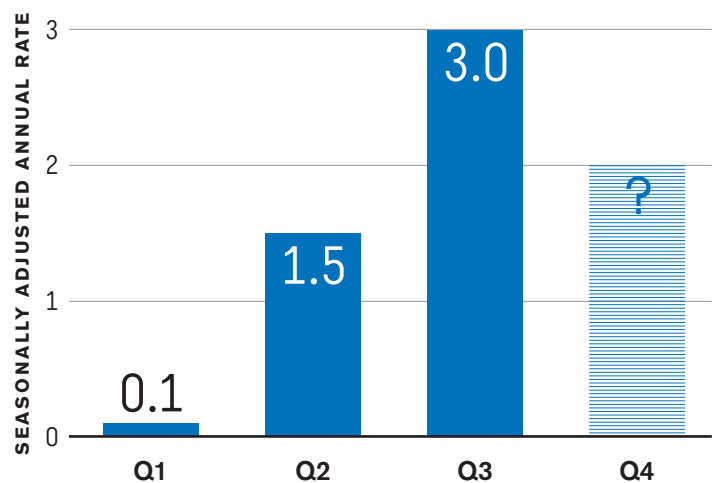
Labor productivity measures how much economic output (gross domestic product) is generated per hour worked. Historically, growing productivity correlates to higher wages as employees generate greater value for each hour of work. Productivity also can cause job churn through factors like automation. Despite these disruptions, in the long run workers should move into more productive positions and earn higher wages. This was the case when America moved from an agrarian to an industrial economy and then from an industrial to a digital economy.

Productivity growth was sluggish from 2011–2016, averaging less than 1 percent each year. By comparison, labor productivity grew 2 percent in the 1990s and 2.5 percent in the 2000s.¹ In 2017, productivity was slow in the first quarter, but grew 3 percent in the 3rd quarter, the highest quarter in three years (Figure 1). Compared to other nations, the United States remains among the highest in labor productivity. That lead is deteriorating, however.

Since 2011, when U.S. productivity began to slow, four of the Group of Seven nations—France, Germany, Canada and Japan—outpaced America in productivity growth.²

Figure 1. U.S. Labor Productivity Growth, 2017

Source: U.S. Bureau of Labor Statistics.



Economic Growth

The Council maintains that annual gross domestic product (real GDP) growth of at least 3.75 percent is necessary to maintain a healthy economy. The last year the U.S. economy grew at that rate was 2004, and growth has only topped 3 percent three times since 2000.³ Since 2010, real annual GDP growth has oscillated between roughly 1.5 and 2.5 percent.⁴ In the second and third quarters of 2017, however, the economy grew at 3.1 and 3.3 percent, respectively. Growth above 3 percent for two quarters has not occurred since 2014 (Figure 2).

1. U.S. Bureau of Labor Statistics, Nonfarm Business Labor Productivity (output per hour), Dec 2017.

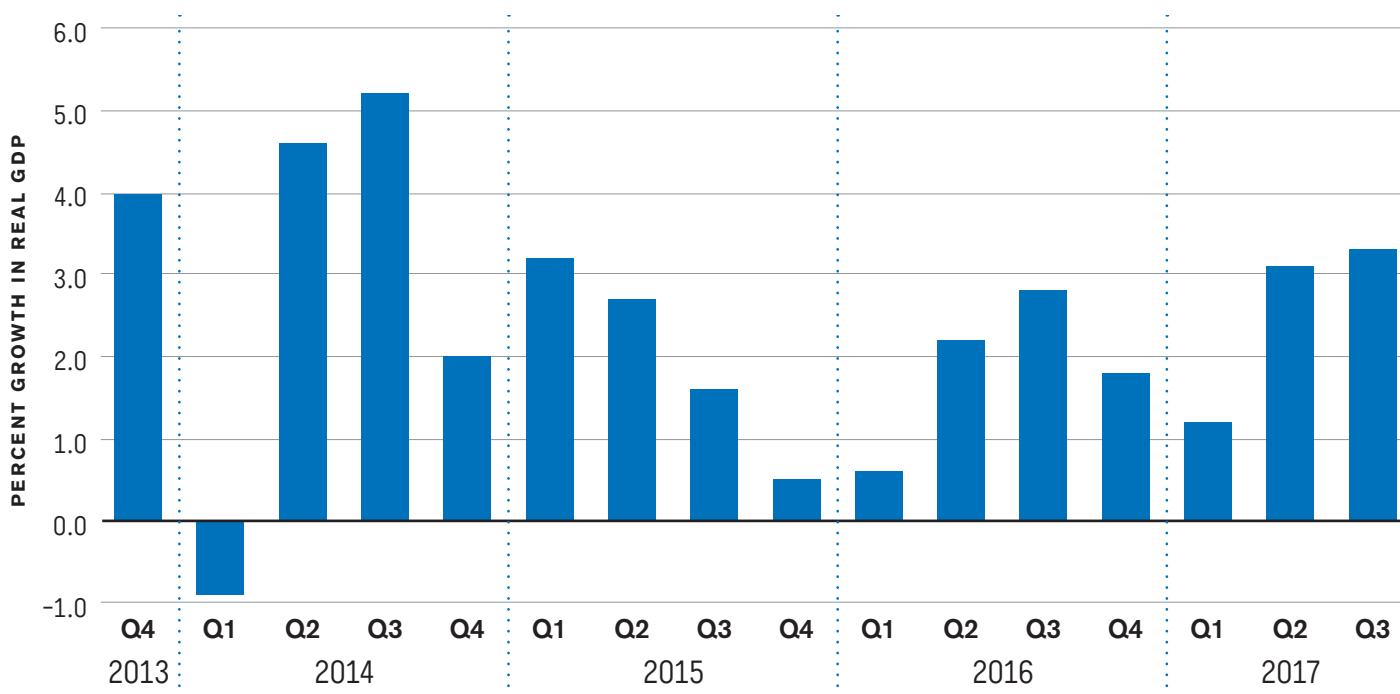
2. Organization for Economic Cooperation and Development, GDP per Hour Worked, Dec 2017.

3. U.S. Bureau of Economic Analysis, National Economic Accounts, Gross Domestic Product, Dec 2017.

4. Ibid.

Figure 2. Real GDP: Percent Change from Preceding Quarter

Source: U.S. Bureau of Economic Analysis.



Employment and Wages

Unemployment has declined steadily since its recession peak of 10 percent in 2009. In November 2017, the rate was 4.1 percent, the lowest since 2000.⁵ Due to the recession and a larger retiring population, labor force participation dropped between 2008 and 2014, but has steadied since then at about 63 percent.⁶ Comparing prime working age populations (people aged 15-64), the United States labor participation rate stands above the OECD average, but below the UK, Canada, Germany and Japan (Figure 3).

Civilian compensation continues to grow slowly, not exceeding 3 percent growth since 2008. The 12-month compensation growth rate in the 3rd quarter of 2017 was 2.5 percent.⁷ A recent study by the San Francisco Fed suggests that significant reasons for slower growth relate to (1) the work force getting younger as higher-paid boomers retire and younger workers take their place, and (2) increasing numbers of lower-wage jobs being created/refilled by persons displaced during the recession.⁸

5. U.S. Bureau of Labor Statistics, Seasonally Adjusted Unemployment Rate, Dec 2017.

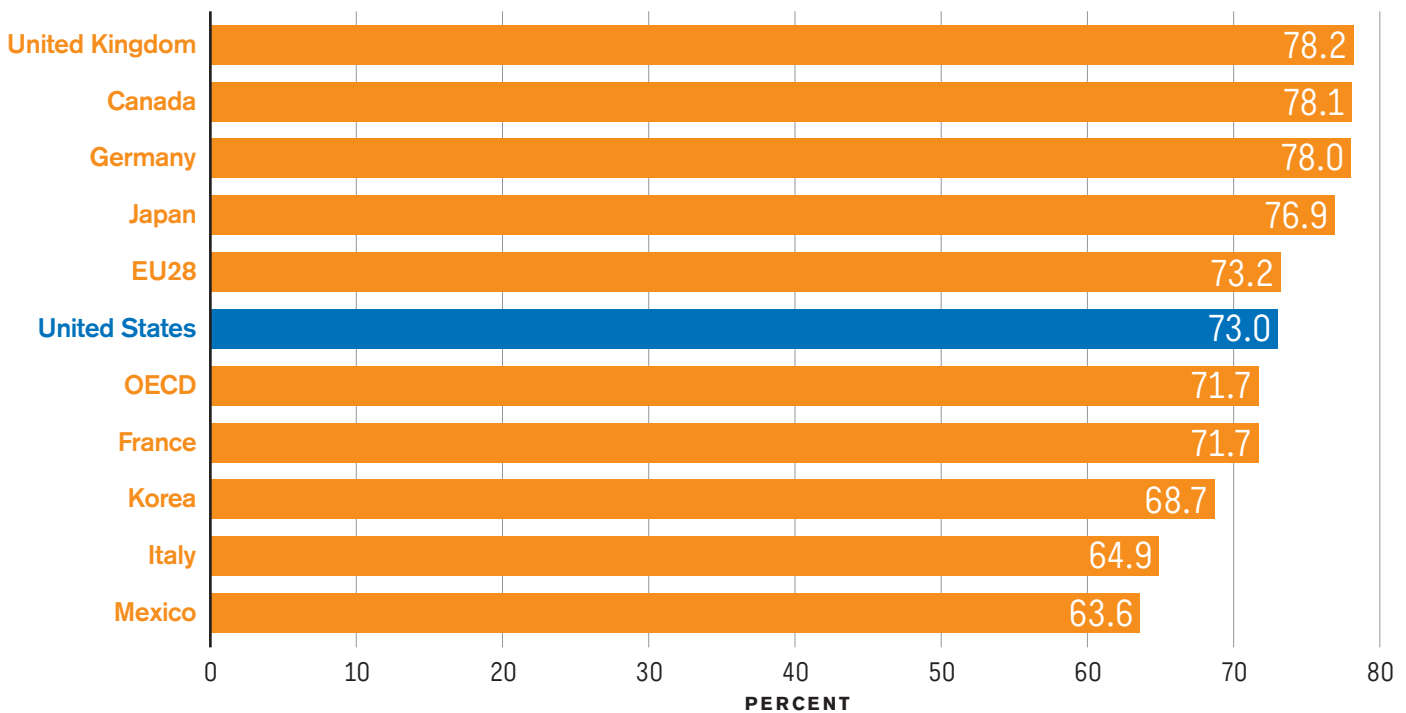
6. U.S. Bureau of Labor Statistics, Labor Force Participation Rate, Dec 2017.

7. U.S. Bureau of Labor Statistics, Total Compensation for All Civilian Workers in All Industries and Occupations, 12-Month Percent Change, Dec 2017.

8. Federal Reserve Bank of San Francisco, SF Fed Blog, *The Good News on Wage Growth*, Aug 14, 2017.

Figure 3. Labor Force Participation Rate, Ages 15-64, 2016

Source: OECD.



Education

In its 2016 report, *Work*, the Council noted that knowledge- and technology-intensive industries account for 29 percent of U.S. non-farm employment and 40 percent of U.S. GDP, one of the highest concentrations among major economies. The report also detailed how employment growth over the past two decades has been strong for individuals with education or training beyond a high school diploma, but flat or declining for high school graduates or those with less than a high school diploma.⁹ Education levels also correlate to unemployment levels and earnings (Figure 4).

To compete in a knowledge-intensive global economy and to raise the standard of living, more Americans must earn post-secondary credentials, either from a university, a community college or in a skilled trade. In a later section, this report will review several skill gaps where U.S. employers are struggling to fill open positions. Across every Council initiative, CEOs and senior industry leaders cite education and skill issues among their greatest concerns.

There is good news. The U.S. high school graduation rate is 83 percent and climbing.¹⁰ By age 25, 89.1 percent of Americans have completed

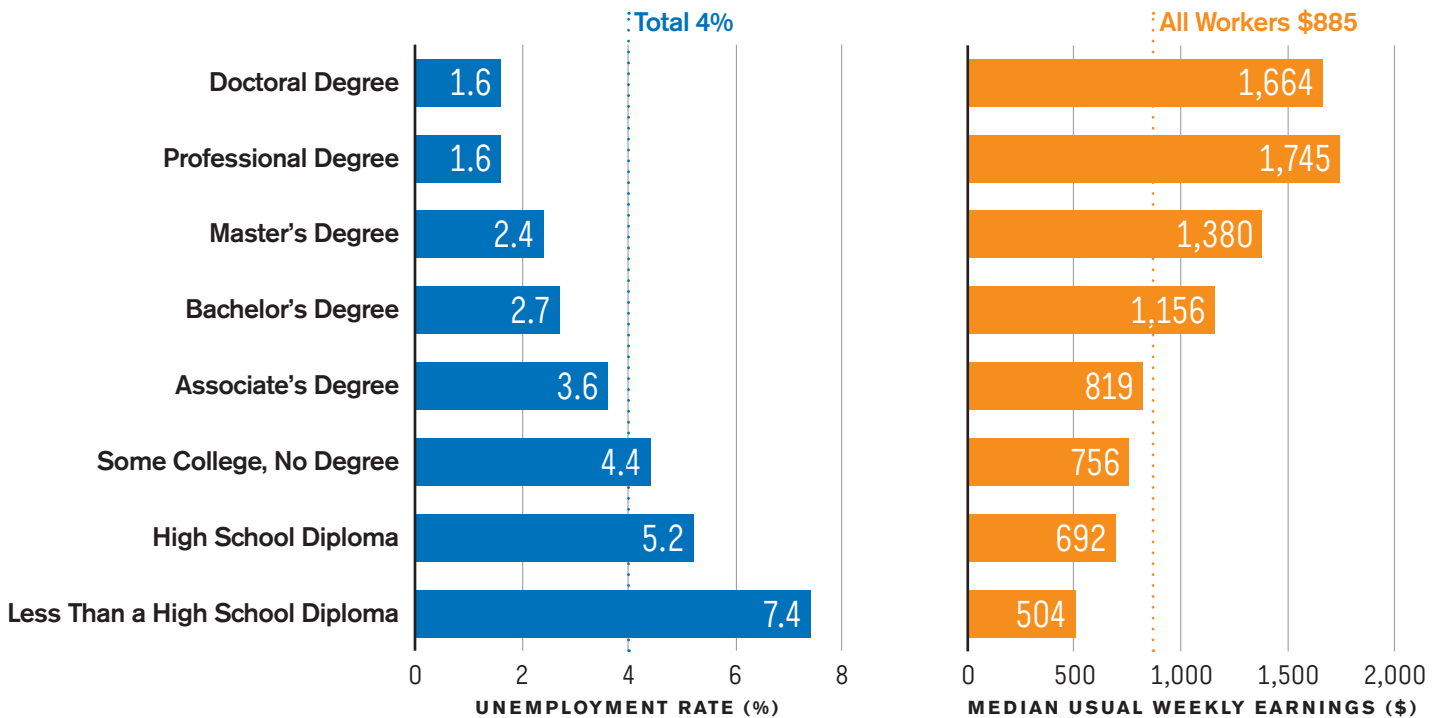
9. Council on Competitiveness, *Work, Thriving in a Turbulent, Technological and Transformed Global Economy*, 2016.

10. National Center for Education Statistics, Adjusted Cohort Graduation Rate, April 2017.

Figure 4. Unemployment Rates and Earnings by Educational Attainment, 2016

Source: U.S. Bureau of Labor Statistics, Current Population Survey.

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers.



four years of high school or more.¹¹ The share of Americans in 2016 holding bachelor's degrees or higher (33.4 percent) is also growing. That figure was 28 percent in 2006, 23.6 percent in 1996 and 19.4 percent in 1986.¹²

The quality of learning, however, remains a concern—particularly in K-12 education. The United States tends to underperform on most international comparisons of learning, and significant gaps persist among different groups of Americans based on region, race and income levels. In the most recent international comparison, the *Progress in International Reading*

Literacy Study, American 4th graders demonstrated mixed results in reading achievement. They continued to score in the “high” benchmark of nations, but their scores were statistically the same as prior assessments, and other nations that improved passed them in the rankings, dropping the United States to 15th out of 50 nations.¹³ Among large industrialized nations, Russia and the United Kingdom scored above the United States in reading. American 4th graders scored above their peers in Canada, Germany, France and Italy.¹⁴ Other updated international assessments will be released in 2018 and 2019.

11. U.S. Census Bureau, Educational Attainment in the United States, 2016.

12. Ibid.

13. Progress in International Reading Literacy Study, 2016 Reading Achievement, Dec 2017.

14. Ibid.

Entrepreneurship

By several measures, entrepreneurship in the United States continues to rebound from the recession. The number of U.S. firms less than one year old has grown each year since 2010 and is approaching pre-recession levels.¹⁵ Business births continue to outpace business deaths.¹⁶

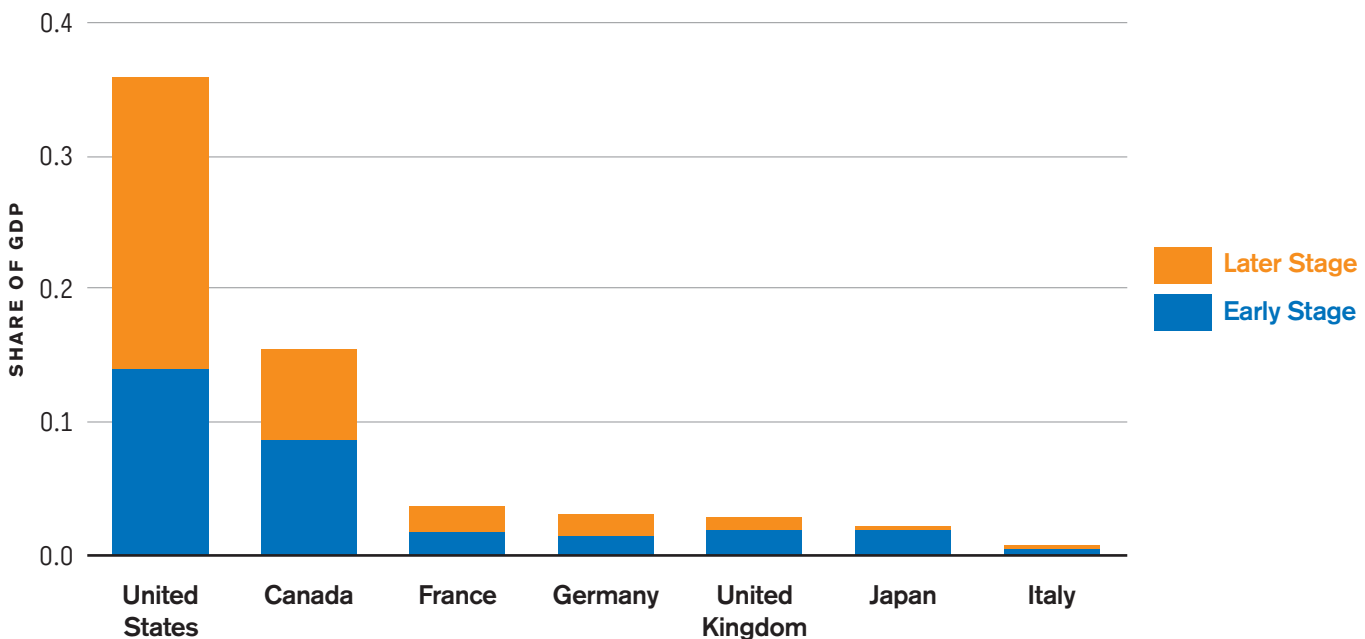
The Kauffman Startup Activity Index measures three components: (1) the rate of new entrepreneurs in the economy, (2) the percentage of new entrepreneurs driven primarily by opportunity versus necessity and (3) startup density, measured as the number of new employer businesses normalized by total business population. The index declined steadily from 2008

to 2013, but rebounded substantially in 2014 and 2015 to the levels preceding the recession, then grew modestly in 2016.¹⁷

The United States continues to maintain a decisive global edge in venture capital investment. In 2016, venture capital investments in the United States amounted to \$66.6 billion and accounted for 86 percent of total venture capital investments in the OECD. Venture capital investments in Europe amounted to \$4.7 billion.¹⁸ The U.S. venture market stands out not only for its volume, but also as a share of the economy. The only nation to come close to the United States in terms of venture capital investments as a share of GDP is Israel—the U.S. outpaces other major economies by a wide margin in both early and late stage investment (Figure 5).

Figure 5. Venture Capital Investments as a Share of GDP, 2016

Source: OECD.



15. U.S. Bureau of Labor Statistics, Business Employment Dynamics, December 2017.

16. *ibid.*

17. Kauffmann Foundation, Startup Activity Index, May 2017.

18. Organization for Economic Cooperation and Development, Entrepreneurship at a Glance, Sep 2017.

Manufacturing

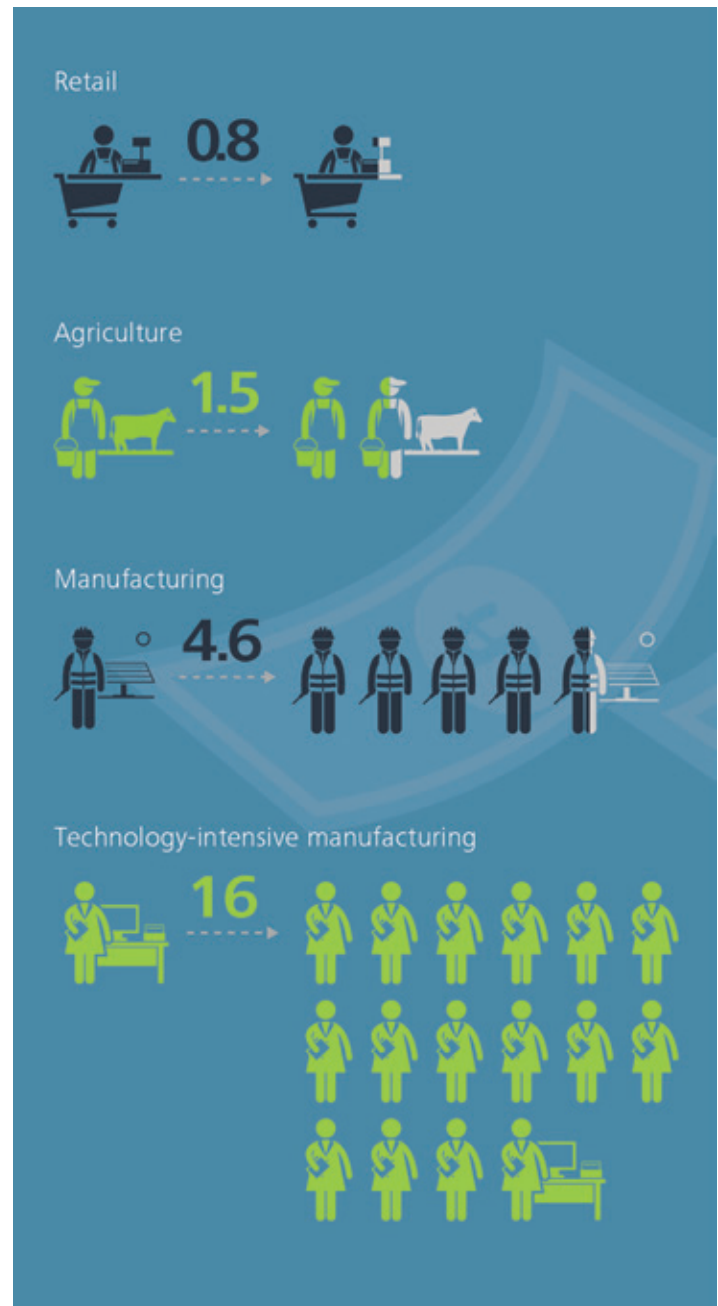
U.S. manufacturing employment (12.5 million workers) has grown modestly and steadily since early 2010, but it remains lower than the manufacturing workforce at the start of the recession in December 2007 (13.7 million workers).¹⁹ While manufacturing output dipped 1.25 percent between 2015 and 2016, the long-term trend is sustained growth. U.S. manufacturing GDP in 2016 was \$5.71 trillion, compared to \$5.05 trillion in 2006, \$3.62 trillion in 1996, \$2.21 trillion in 1986, and \$1.16 trillion in 1976.²⁰

Manufacturing remains essential to the U.S. economy, having a higher multiplier effect than any other sector. Every direct manufacturing job creates 4.6 additional jobs (Figure 6). Manufacturing in technology-intensive industries has an even more dramatic effect, creating 16 additional jobs for every direct one in those industries.²¹

Several strategic technology areas will impact the future competitiveness of the manufacturing sector. Leadership in materials science, artificial intelligence, robotics, the Internet of Things, 3D printing and large scale data analytics will play a crucial role. These and other strategic technologies will be reviewed later in this report.

Figure 6. Every 1 Direct Job Creates Additional Jobs

Source: U.S. Bureau of Economic Analysis and Bloomberg.



19. U.S. Bureau of Labor Statistics, All employees—manufacturing, seasonally adjusted, Oct 2017.

20. U.S. Bureau of Economic Analysis, Gross Output by Industry, Nov 2017.

21. Deloitte and the Council on Competitiveness, *Advanced Technologies Initiative: Manufacturing & Innovation*, 2015.

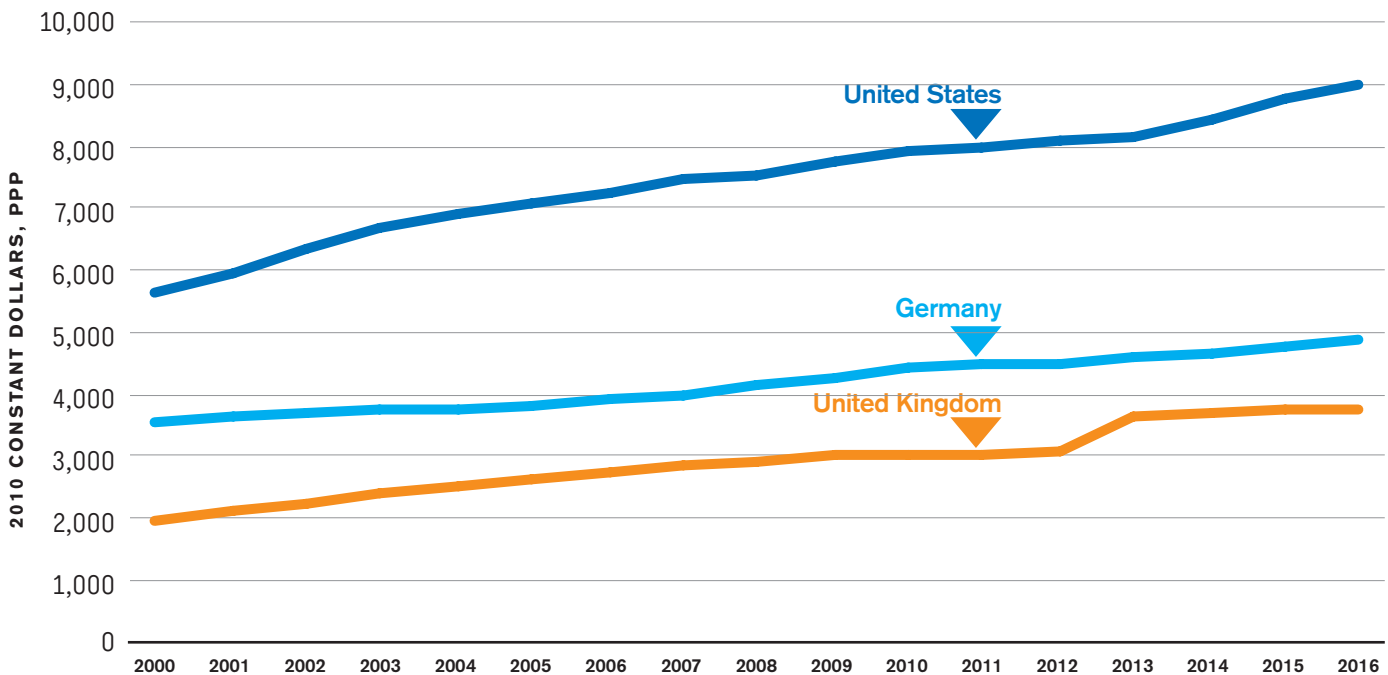
Health Care

Health care expenditures in 2016 accounted for 17.2 percent of U.S. GDP, the largest by far of any industrialized nation.²² On a per capita basis, the United States spent \$8,985 per person in 2016 on health care (2010 constant dollars), the highest in the OECD. Among large economies, Germany spent the second highest per capita at \$4,852—85 percent less than the United States. The United Kingdom spent \$3,759 per person—139 percent less than the United States (Figure 7).

There is no evidence to suggest that higher U.S. spending correlates to better health outcomes in any way proportionate to the difference in spending. Providing Americans quality care more efficiently would significantly boost the competitiveness of the economy and spur economic growth.²³

Figure 7. Health Expenditure Per Capita

Source: OECD.



22. Organization for Economic Cooperation and Development, Health Expenditure as a Share of GDP, Dec 2017.

23. Rothwell, Jonathan. *No Recovery: An Analysis of Long-Term U.S. Productivity Decline*, Gallup and the Council on Competitiveness, 2016.

Setting the Competitiveness Agenda

As a non-partisan alliance of CEOs, university presidents, labor leaders and directors of the national laboratories, the Council brings together a cross section of American leaders to identify existing and emerging competitiveness challenges and to suggest solutions. In several areas, the new administration and Congress can take constructive action that would advance the nation's competitiveness.

Talent

From technology to trade skills, there is no issue on which Council members are more united than in their desire for progress on building a talented, diverse workforce. As technology and a retiring baby boomer generation reshape the jobs landscape, leaders must work at all levels, in the private and public sectors, to prepare Americans for the changes to come.

Several surveys and research papers point to shortfalls in skills and workers:

- By 2025, there could be 2 million U.S. manufacturing jobs unfilled due to lack of skills.²⁴
- 84 percent of U.S. manufacturing executives say they face talent shortages.²⁵
- 75 percent of contractors say that it is difficult to find qualified construction workers.²⁶
- 51 percent of small businesses report finding few or no qualified applicants to fill positions.²⁷
- By 2024, the United States could be short by up to 1.1 million science, technology, engineering and math (STEM-educated) workers.²⁸

- Each year since 2014, applications for non-immigrant H-1B work visas reached statutory caps within 5 days.²⁹
- By 2030, more than 20 percent of U.S. residents are projected to be aged 65 and over, compared with 13 percent in 2010.³⁰

The Council recommends several steps to address talent shortfalls, urging both government policy action and partnerships between government, industry, academia and labor. America needs to grow the number and diversity of its STEM-educated workforce, establish greater opportunities for experiential learning (e.g. co-ops and apprenticeships) and reform rules to retain more skilled immigrants. Other steps include encouraging greater lifelong learning opportunities, re-establishing hands-on training classes in K–12 that build a base for skilled trades, and ensuring that the new rules governing Workforce Investment Act programs are administered and evaluated well.

Looking to the future, technologies like artificial intelligence and robotics could displace 38 percent of U.S. jobs over the next 15 years.³¹ This will require a renewed focus on worker training to prepare people for new positions, but U.S. public spending on worker training as a share of GDP trails many of its competitors (Figure 8). For America to compete, the public and private sectors will need to pursue new strategies.

24. Deloitte and the Manufacturing Institute, *The Skills Gap in US Manufacturing*, 2015.

25. *ibid.*

26. Associated General Contractors of America, *Construction Outlook Survey*, 2017.

27. Dunkelberg, William and Wade, Holly. *Small Business Economic Trends*, National Federation of Independent Business, May 2017.

28. Varas, Jacqueline, *The Native-Born STEM Shortage*, American Action Forum, April 2016.

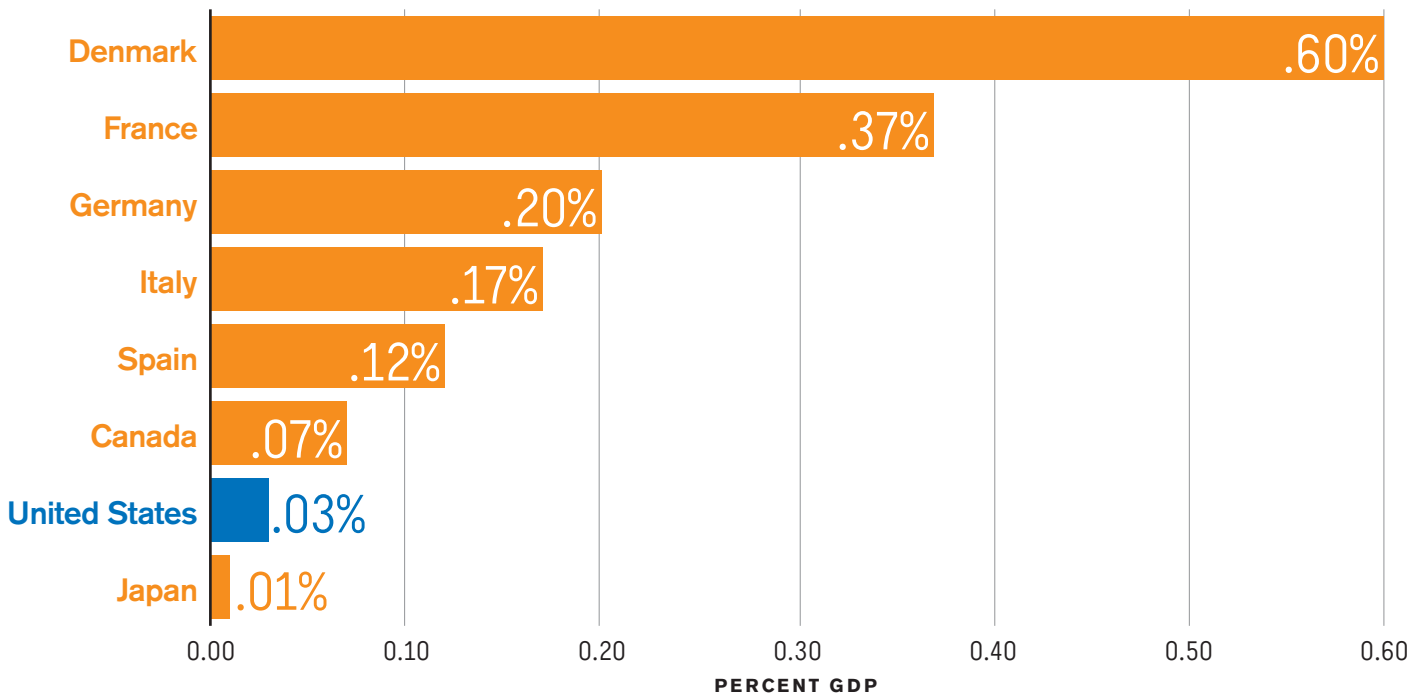
29. U.S. Citizenship and Immigration Service, *Employment Based Immigration and Citizenship Data*, 2017.

30. Ortman, Jennifer, Velkoff, Victoria and Hogan, Howard. *An Aging Nation: The Older Population in the United States*, U.S. Census Bureau, May 2014.

31. Petroff, Alanna. *U.S. workers face higher risk of being replaced by robots. Here's why*, CNNtech, March 2017.

Figure 8. Total Public Spending on Worker Training, 2015

Source: McKinsey Global Institute.



Tax

As the *2017 Clarion Call* goes to print, the House and Senate are working to reconcile tax reform legislation passed in both bodies. The legislation in current form includes positive changes that the Council has long encouraged, but also raises significant concerns.

While other nations have steadily lowered their corporate tax rates since 2001, the United States has remained static (Figure 9). The U.S. corporate tax rate is the highest among all major economies and 4th highest in the world (of 202 tax jurisdictions).³² The U.S. tax rate is higher than the average tax rate in Europe, Asia, South America and

Africa, whether calculated by the average tax rate of the countries in the region or weighting the regional rate proportional to the GDP of each nation.³³ America's high tax rate and a worldwide tax system have encouraged firms to hold an estimated \$2.6 trillion overseas.³⁴

The proposals pending in Congress would drop the corporate tax rate to 20 percent, close several tax breaks and move the United States to a territorial tax system for future earnings. The House bill would lower the rate in 2018; the Senate would lower the rate in 2019. The Council believes that these elements of the bill will strengthen U.S. competitiveness, boost growth and encourage investment.

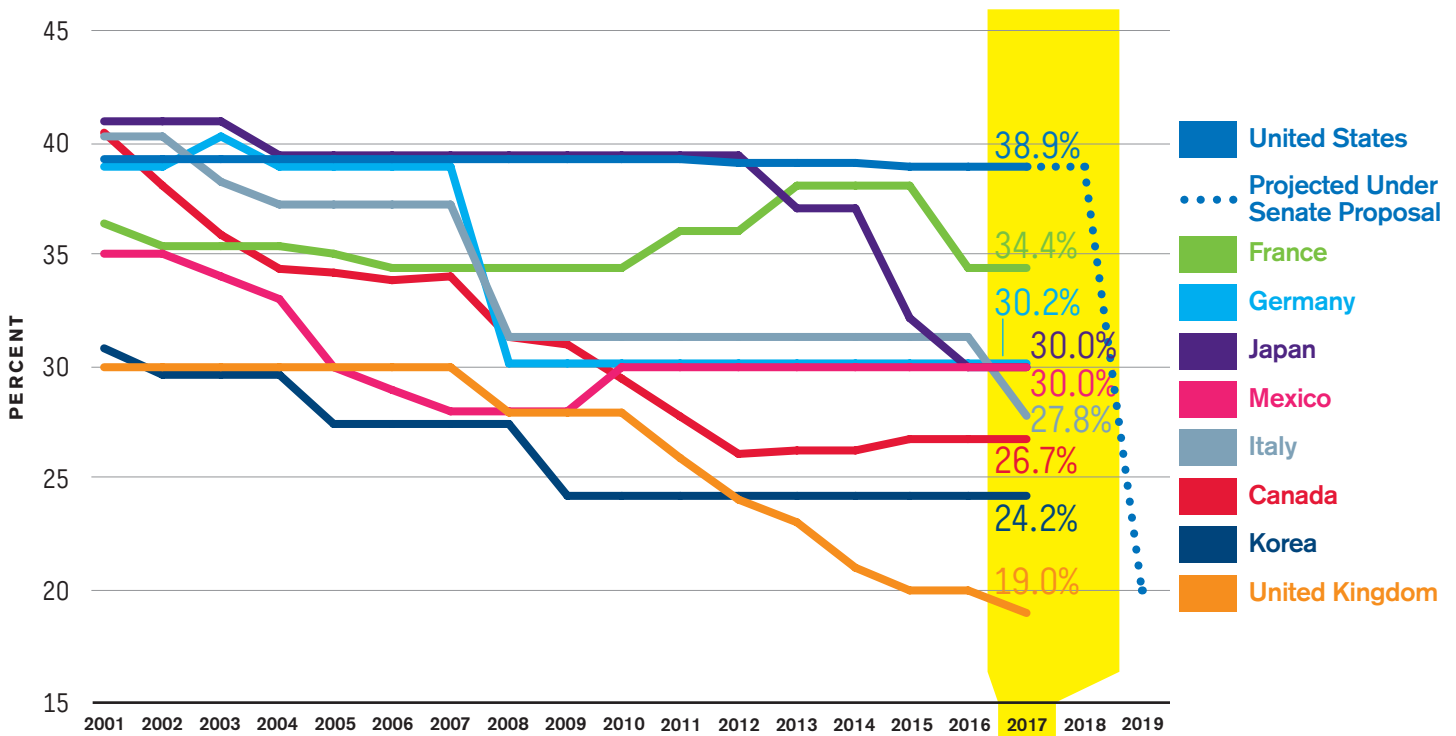
32. The Tax Foundation, *Corporate Income Tax Rates Around the World*, 2017.

33. *ibid.*

34. Wells, Nick. *Companies are holding a \$2.6 trillion pile of cash overseas that's still growing*, CNBC, April 2017.

Figure 9. Statutory Corporate Income Tax Rates for Select Countries, 2001–2017

Source: OECD.



The Joint Committee on Taxation, however, estimates that even though the Senate tax bill could generate enough growth to create nearly \$408 billion in net new revenue over a decade, the bill would add an estimated \$1 trillion to U.S. deficits.³⁵ Federal debt held by the public exceeds \$20 trillion and equals 77 percent of GDP, the highest level since shortly after World War II. If current laws remain unchanged, this debt could reach 150 percent of GDP by 2047.³⁶ For these reasons, the Council recommends that tax reforms and strategic investments be done within a larger fiscal framework that works to lower debt to historic norms.

Council members also are concerned that several provisions in the bills would make college education less affordable. The House plan includes an excise tax on college endowments at private universities valued at \$100,000 or more per full-time student, impacting more than 150 institutions.³⁷ The House bill also would repeal a student loan interest deduction used by over 12 million borrowers in 2015.³⁸ Tuition waivers given to graduate students in exchange for working at universities would be taxed as income under the House bill, raising significant concerns about the cost of earning a Ph.D. for roughly 145,000 students who receive

35. Sahadi, Jeane. *Even with growth, the Senate tax bill still adds \$1 trillion to deficits*, CNN Money, November 2017.

36. Congressional Budget Office, 2017 Long-Term Budget Outlook, March 2017.

37. Hess, Abigail. *Here's how the House GOP tax plan could affect students, parents and universities*, CNBC, Nov 2017

38. *ibid.*

such waivers.³⁹ Other provisions in the tax bills would raise costs for institutions, such as changing the deductibility of state and local taxes and removing tax exemptions for certain bonds and income.⁴⁰

Trade

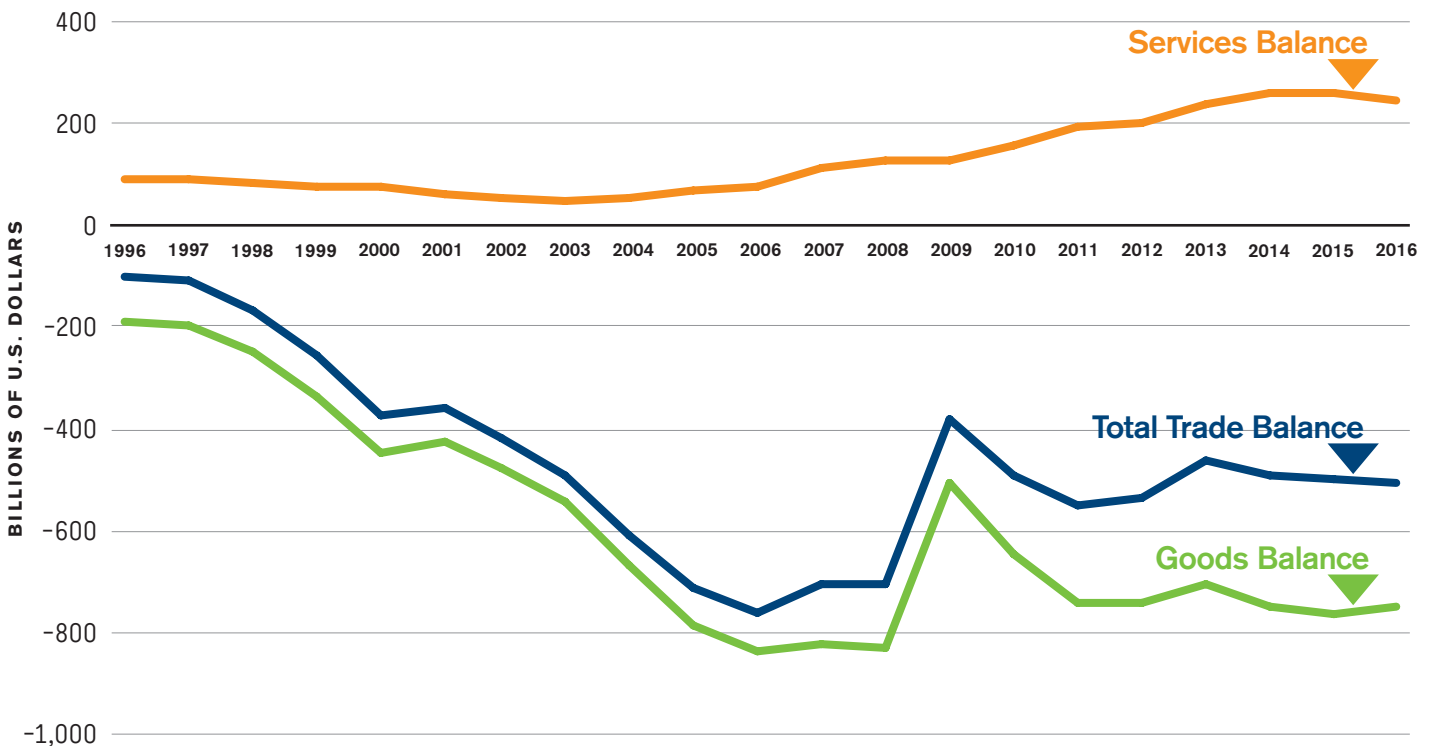
American consumers and companies are increasingly reliant on a globally engaged economy for their jobs and standard of living. Since 1960, total U.S. trade (exports and imports) as a share of the U.S. economy has grown 204 percent—from 9.2 percent of the

economy in 1960 to 28 percent in 2015.⁴¹ Free and fair trade is essential. More than 95 percent of the world’s consumers live outside the United States and half of all U.S. manufacturing jobs depend on exports.⁴²

The U.S. trade deficit in 2016 grew 0.9 percent to \$504.8 billion as exports decreased slightly more than imports.⁴³ America continues to run a trade surplus in services and a larger deficit in goods, as it has for at least the past two decades (Figure 10).

Figure 10. United States Trade Balance, 1996-2016

Source: U.S. Bureau of Economic Analysis.



39. Hess, Abigail. *Here's how the House GOP tax plan could affect students, parents and universities*, CNBC, Nov 2017 .

40. Kreighbaum, Andrew. *How the Tax Bills Would Hit Higher Ed*, Inside Higher Ed, Nov 2017.

41. World Bank, National Accounts Data—Trade as a Percentage of GDP, Dec 2017.

42. U.S. Chamber of Commerce, Trade Works for Us.

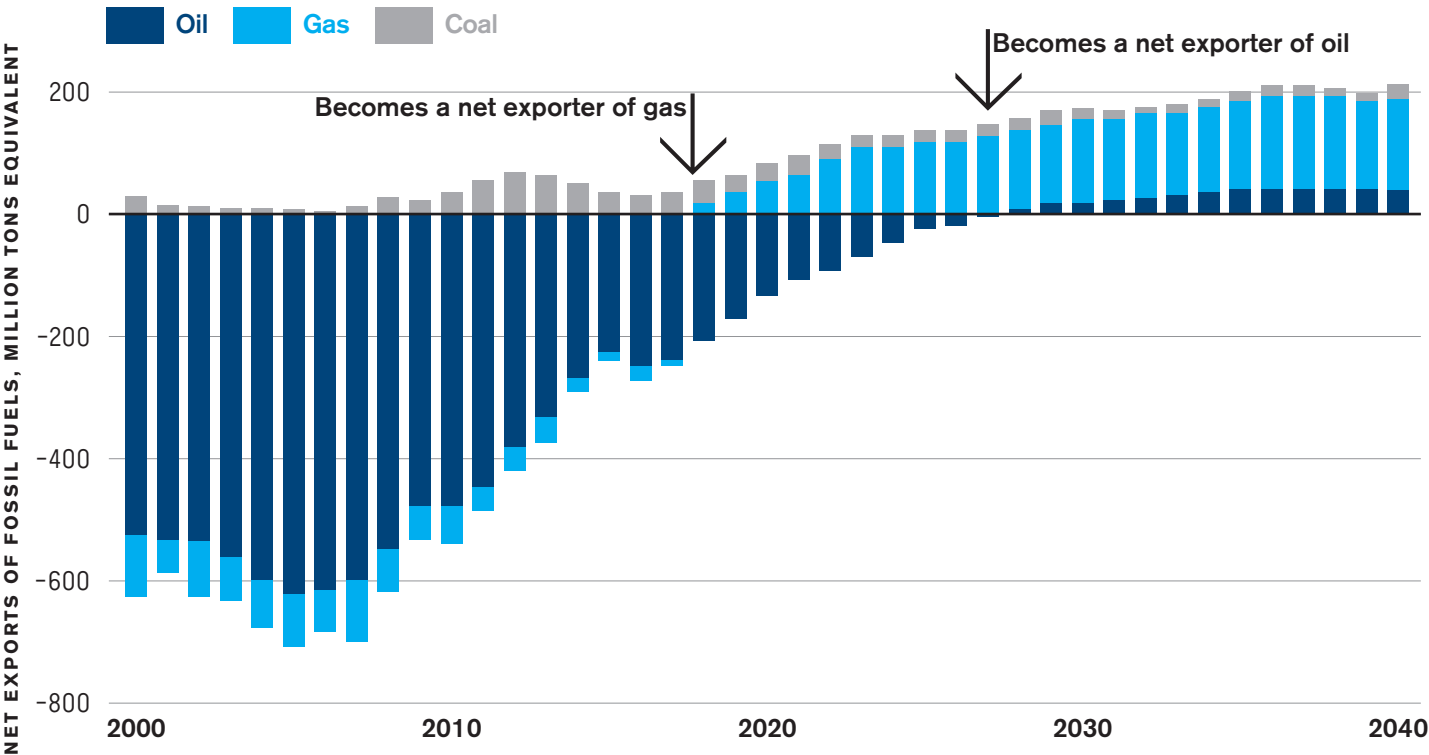
43. U.S. Bureau of Economic Analysis, U.S. International Trade in Goods and Services, Dec 2017.

The Council supports expanded trade agreements that offer greater access to markets, procedures to resolve disputes and protections for displaced workers. In September 2017, the Council honored FedEx Chairman and CEO, Frederick W. Smith, with the America Competes Award. In his talk, Smith asserted, "Today in the United States, about 25 percent of U.S. jobs are trade related. And those jobs pay an average of about 18 percent more than non-trade-related jobs. Furthermore, trade has added about \$13,000 a year in purchasing power for the average American household."

The next decade could see a significant structural shift in U.S. trade. One of the biggest components of U.S. imports is oil—crude and refined petroleum products. Based on energy production trends, the International Energy Agency predicts that the United States will become a net oil exporter by 2027 (Figure 11). The report projects that an 8 million barrel a day increase in U.S. tight oil output from 2010 to 2025 will match the highest sustained period of oil output growth by a single country in the history of oil markets. This would fuel major investments in petrochemicals and other energy-intensive industries, and reorder international trade flows by challenging incumbent suppliers and business models.⁴⁴

Figure 11. The United States is on Target to Become a Net Exporter of Oil in 2027

Source: International Energy Agency and The Guardian.



44. International Energy Agency, *World Energy Outlook*, Nov 2017.

The Trump administration plans to open trade through bilateral rather than multilateral negotiations and intends to pursue more aggressive action within the World Trade Organization and under U.S. law to combat market access restrictions and unfair trade practices.⁴⁵ The Council supports greater liberalization and combatting unfair practices, but cautions against actions on existing trade agreements that would reintroduce higher tariffs.

Technology

Today, the United States is seen as the world technology leader. A recent survey asked researchers across the world which country they considered to be the global leader in 12 advanced industries. The United States was named most often in 11 of the 12 industries, all by wide margins. This included industries as diverse as aerospace, agriculture, computing, energy, healthcare and pharmaceuticals. In automotive technologies, the United States was perceived as second only to Japan.⁴⁶

Innovation in science and technology is on track to alter the competitiveness playing field. In last year's *Clarion Call*, the Council highlighted several technology issues that are having or are poised to have major impact, including: (1) extending Moore's law; (2) digital revolutions such as artificial intelligence, the Internet of Things and big data; (3) cybersecurity; (4) robotics and smart manufacturing; (5) nanotechnology (including materials); and (6) biotechnology. In computing, the race is on to develop not only next-generation chips, but

exascale supercomputing systems with greater energy efficiencies, robust software environments, and the memory, input/output and storage capacity to process massive volumes of data for future applications.

Today's success, however, does not ensure tomorrow's. The effort to lead in strategic technologies and apply them in the marketplace is an ever-evolving challenge—one that will determine America's future productivity, growth and standard of living.

Many technologies, for example, are reshaping the manufacturing sector (Figure 12). Nations in Asia and Europe are moving aggressively to claim leadership in these new growth areas. Chinese researchers, for example, produced almost twice as many academic papers on artificial intelligence between 2011 and 2015 than the United States. China also has made rapid strides in advanced computing, holding the top two spots on the list of the world's fastest 500 supercomputers and having the most systems on the list.⁴⁷

The Council urges several steps to preserve U.S. technology leadership. The administration and Congress should sustain and extend the network of advanced manufacturing hubs; support the establishment of a next-generation advanced computing ecosystem; and explore new ways to support technology commercialization and entrepreneurship. American leaders also must secure critical infrastructure from cyberattacks and invest in the future by funding basic research.

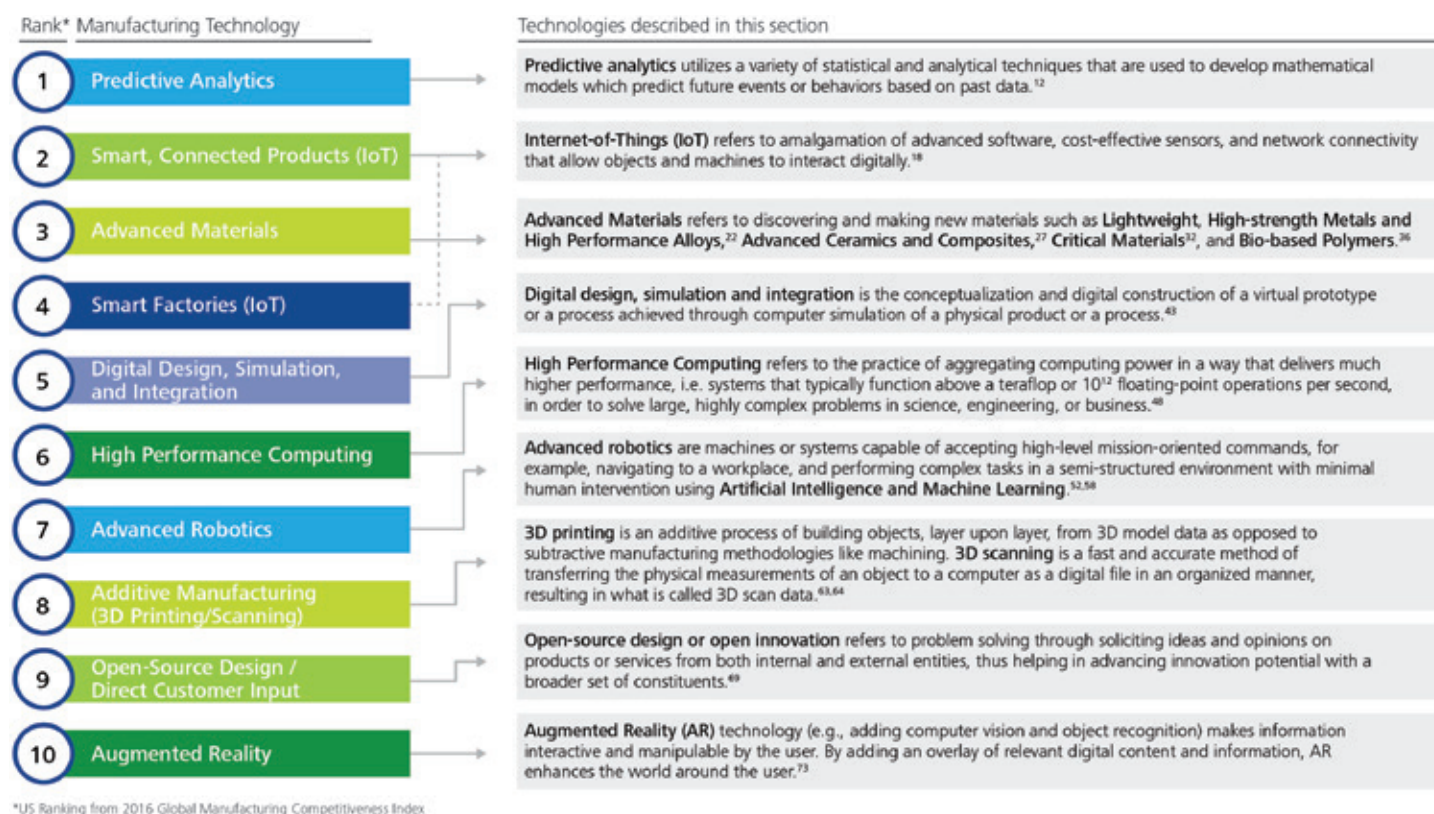
45. United States Trade Representative, *The President's Trade Policy Agenda*, March 2017.

46. R&D Magazine and the Industrial Research Institute, *Global R&D Funding Forecast*, Winter 2017.

47. Top500.org, Top 500 list, Nov 2017.

Figure 12. Perceived Ranking of Future Importance of Advanced Manufacturing Technologies

Source: Deloitte and the Council on Competitiveness, *Advanced Technologies Initiative: Manufacturing and Innovation*, 2015.



Research

Long-term technology leadership relies on strategic investments in research that push the frontiers of knowledge. Federal investment in research and development (R&D), however, continues to decline as a share of GDP. The United States reached a milestone in 1980, when industry R&D investment surpassed federal investment as a share of GDP. Industry investment has continued to grow relative to the economy, standing at 1.9 percent in 2015.⁴⁸ Federal investment in R&D as a share of GDP has declined steadily. After a rise in the 2000s, this

investment hit a 62-year low in 2015 of 0.62 percent⁴⁹ and is not expected to rise when more recent data becomes available.

The decline is especially troublesome because the federal government is the primary funder of basic research, mainly carried out by universities. This type of research pursues new knowledge and underpins modern life and the U.S. economy. The results of federal research are well-documented, including everything from the Internet to lasers, MRIs, microwaves, DNA testing, horizontal drilling for gas and oil, global positioning systems and countless

48. American Association for the Advancement of Science, Federal R&D Budget Dashboard, Sep 2017.

49. *ibid.*

other innovations that have improved human health, made the United States more secure and grown the economy. Industry also invests in basic research, but at significantly lower levels and primarily in applied research, seeking to translate existing knowledge into commercial products and services.

The global dynamics of U.S. research leadership have remained the same for several years. The United States invests more in R&D than any single nation, but its lead is eroding. The economies of Korea, Japan, Germany, Israel, Finland and Sweden are more R&D-intensive.⁵⁰ Furthermore, China

is on pace to overtake the United States in R&D investment by 2020 and is closing the gap rapidly on R&D as a share of GDP (Figure 13).

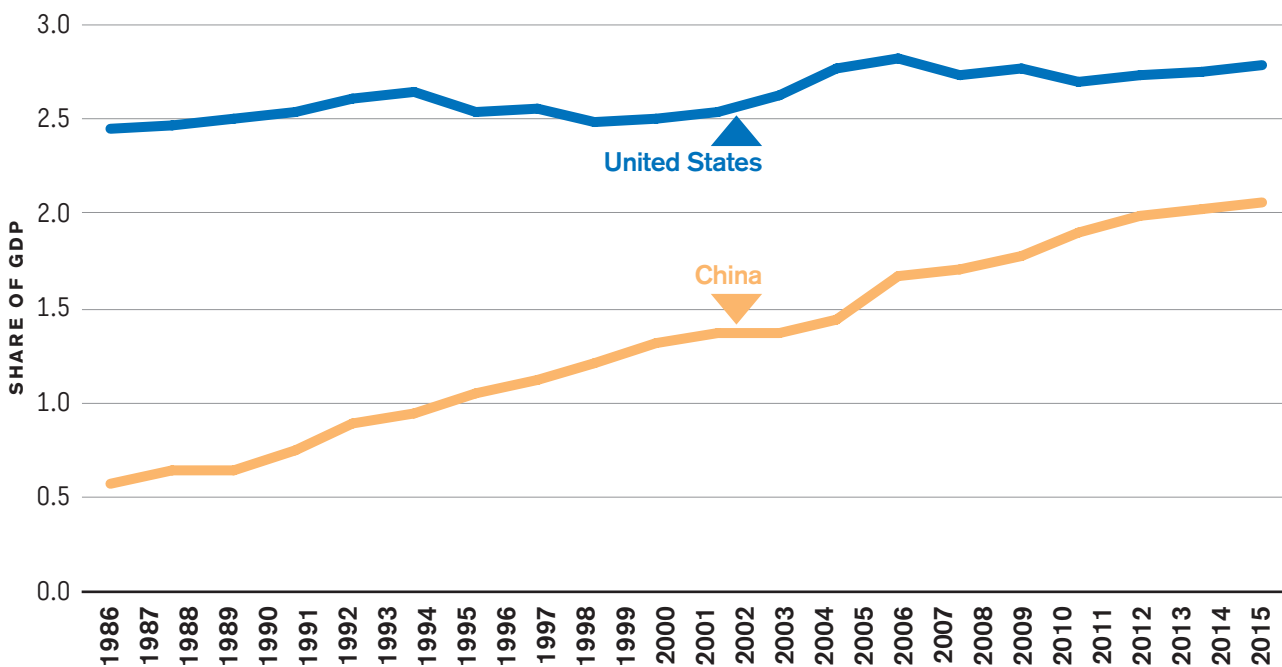
The Council has long maintained that R&D investment is a foundational element of U.S. competitiveness and supports a multi-year strategy to double federal investment in R&D.

Regulation

Although the United States remains highly ranked by the World Bank for overall ease of doing business (#6 in the world),⁵¹ the U.S. position has

Figure 13. Total Country R&D Expenditure as a Share of GDP

Source: World Bank.



50. Organization for Economic Cooperation and Development, Gross Domestic Spending on R&D as a Share of GDP, 2016.

51. World Bank, *Doing Business*, 2017.

declined over the past decade and still has several problem areas. Rules on starting a business, getting electricity, registering property and obtaining construction permits impose significant costs and delays. The U.S. rankings on those topics are 49, 49, 37 and 36, respectively (Figure 14).

In addition, the federal government is finalizing a growing number of economically significant regulations (those that impose costs over \$100 million) per year since the 1980s (Figure 15). The Council urges continued attention to reducing and streamlining regulations that impose significant cost

and delays without a clear benefit to consumers. In particular, federal, state and local officials should review regulations that deter or inhibit needed infrastructure investment and make appropriate reforms.

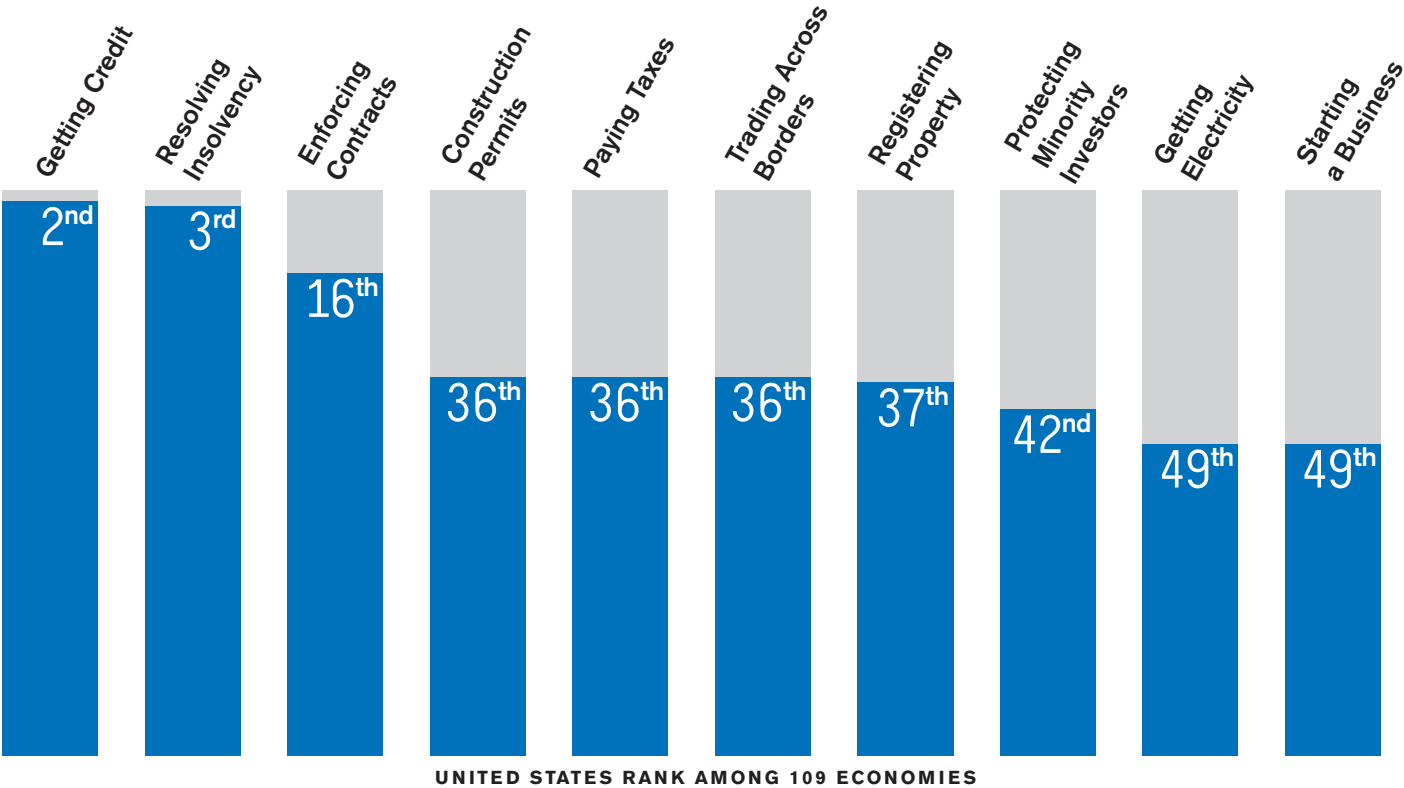
Infrastructure

Every four years, the American Society of Civil Engineers releases a report card on American infrastructure. The 2017 report card gives the United States an aggregate grade of D+ across sixteen categories and estimates that \$4.59 trillion will be necessary to improve critical infrastructure.⁵²

Figure 14. U.S. World Rank (109 Economies) in Ease of Doing Business

Source: World Bank, *Doing Business 2018*.

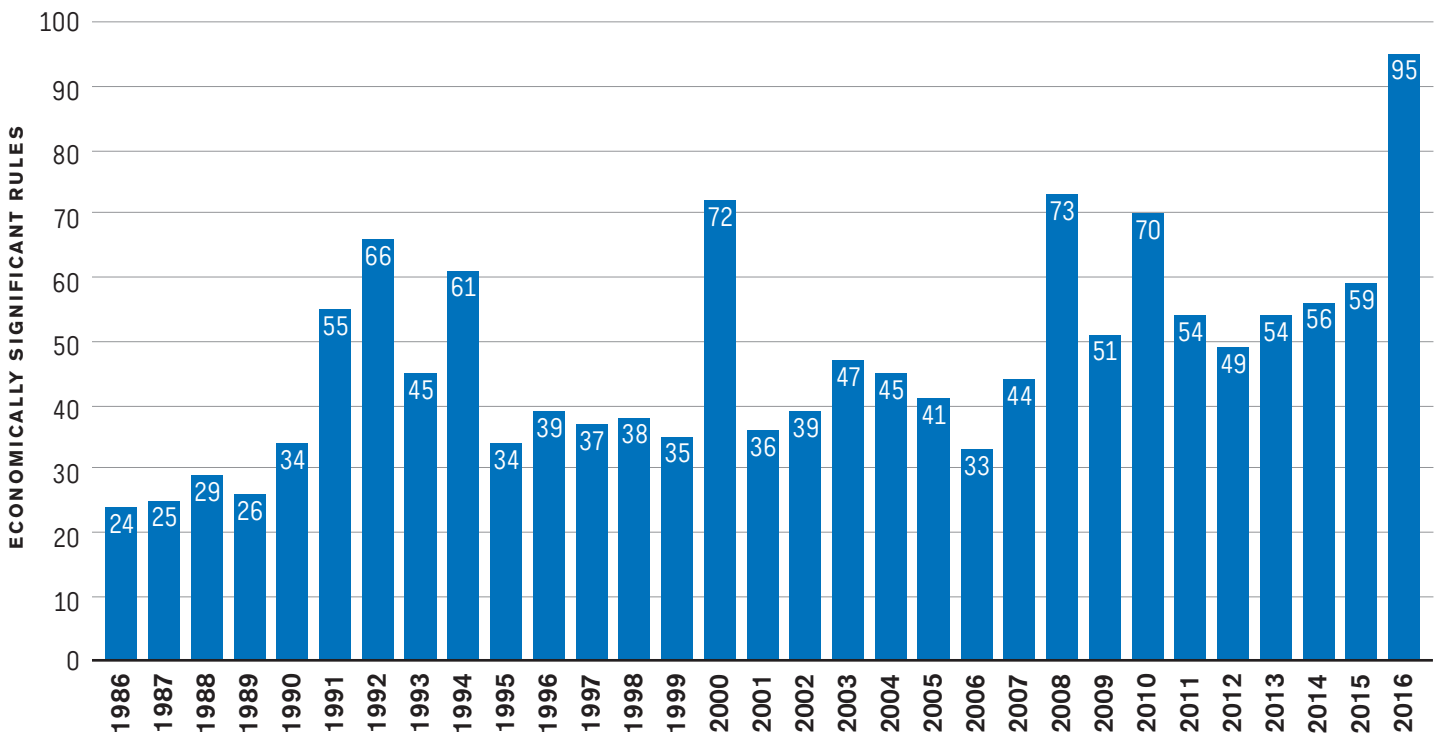
Indicators of business regulation and protection of property rights, June 2016–June 2017.



52. American Society of Civil Engineers, *Infrastructure Report Card*, 2017.

Figure 15. Growth of Economically Significant U.S. Final Rules Published

Source: George Washington University Regulatory Studies Center.



Seven infrastructure categories improved from 2013 to 2017, including railways and ports, which are among the more highly rated systems. Transit received the lowest grade of D-, and declined from the previous report. Several areas received the next lowest grade of D, including aviation, dams, drinking water, waterways, levees and roads.⁵³

American infrastructure is largely funded at the state and local level, but 2016 public spending on construction projects was lower in 34 states than it was in 2007, adjusting for inflation.⁵⁴ As a share of

the national economy, public works spending in the second quarter of 2017 dipped to 1.4 percent, its lowest level on record.⁵⁵

The Council urges policymakers at all levels to commit to long-term investments to upgrade and modernize critical infrastructure. These commitments should be undertaken while interest rates remain low.

53. American Society of Civil Engineers, *Infrastructure Report Card*, 2017.

54. Applebaum, Binyamin. *Public Works Funding Falls as Infrastructure Crumbles*, New York Times, Aug 2017.

55. *ibid.*

Recommendations and Report Card

AREA	GRADE	RECOMMENDATION
Talent	D	America faces persistent and growing skill gaps. Manufacturers, construction firms, small businesses, technology firms and government all struggle to find qualified workers. Several of these gaps will become more acute over the next decade as baby boomers retire. A commitment to training, lifelong learning and expanded high-skilled immigration is needed.
Tax	B	The United States has the highest corporate tax rate of any industrialized nation—16 percent higher than the worldwide average and higher than any region. The Council applauds current efforts to adopt a rate closer to 20 percent consistent with other OECD countries and move to a territorial tax system.
Trade	C	Over 41 million U.S. jobs depend on trade, and total U.S. trade as a share of the economy has grown to almost 30 percent. America needs free and fair trade to access 95 percent of the world's consumers, who reside outside the United States.
Technology	C	Despite gains by competitors, the United States is considered the world technology leader in 11 of 12 advanced industries, with widely perceived leadership in agriculture, aerospace, defense and pharmaceutical technologies. The rapid growth of disruptive technologies—from artificial intelligence to genetics to autonomy—is creating new challenges to U.S. leadership in the face of major global investments. America should expand manufacturing hubs, lead in advanced computing, secure against cyberattacks, and strengthen technology commercialization and entrepreneurship.
Research	D	Korea, Japan and Germany already invest more in R&D as a share of their economy than the United States, and China could exceed the United States by 2020. The U.S. must restart its commitment to doubling the federal investment in research that began with the America COMPETES Act almost a decade ago.
Regulation	B	During its first year, reducing regulations has been a major focus of the Trump administration. The United States remains among the top 10 nations in the world on measures of ease of doing business, but that rank is declining. A better balance is needed to enable the development and commercialization of new technologies and services in the United States and to upgrade infrastructure.
Infrastructure	D	Infrastructure investment should be prioritized to target areas that provide the greatest economic benefit. Trillions of dollars of investment in U.S. infrastructure is needed to repair and modernize the roads, airports, rails and water systems that the economy relies on. For example, American water pipes are 47 years old on average, and manufacturers rely on them, accounting for 46 percent of U.S. water consumption.

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While the players may have changed since its founding in 1986, the mission remains as vital as ever—to enhance U.S. productivity and raise the standard of living for all Americans.

The members of the Council—CEOs, university presidents, labor leaders and national lab directors—represent a powerful, nonpartisan voice that sets aside politics and seeks results. By providing real-world perspective to Washington policymakers, the Council's private sector network makes an impact on decision-making across a broad spectrum of issues from the cutting-edge of science and technology,

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The Council's leadership group firmly believes that with the right policies, the strengths and potential of the U.S. economy far outweigh the current challenges the nation faces on the path to higher growth and greater opportunity for all Americans.

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