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MAKING IT IN AMERICA

JUNE 2017

RESEARCH PREVIEW

A SPECIAL INITIATIVE FOR THE
2017 ASPEN IDEAS FESTIVAL



MCKINSEY GLOBAL INSTITUTE

Since its founding in 1990, the McKinsey Global Institute (MGI) has sought to develop a deeper understanding of the evolving global economy. As the business and economics research arm of McKinsey & Company, MGI aims to provide leaders in the commercial, public, and social sectors with the facts and insights on which to base management and policy decisions. For the second year running, the Lauder Institute at the University of Pennsylvania ranked MGI the world's number-one private-sector think tank in its 2016 Global Think Tank Index.

MGI research combines the disciplines of economics and management, employing the analytical tools of economics with the insights of business leaders. Our “micro-to-macro” methodology examines microeconomic industry trends to better understand the broad macroeconomic forces affecting business strategy and public policy. MGI's in-depth reports have covered more than 20 countries and 30 industries. Current research focuses on six themes: productivity and growth, natural resources, labor markets, the evolution of global financial markets, the economic impact of technology and innovation, and urbanization.

Recent reports have assessed the economic benefits of tackling gender inequality, a new era of global competition, Chinese innovation, and digital globalization. MGI is led by four McKinsey & Company senior partners: Jacques Bughin, James Manyika, Jonathan Woetzel, and Frank Mattern, MGI's chairman. Michael Chui, Susan Lund, Anu Madgavkar, Sree Ramaswamy, and Jaana Remes serve as MGI partners. Project teams are led by the MGI partners and a group of senior fellows, and include consultants from McKinsey offices around the world. These teams draw on McKinsey's global network of partners and industry and management experts. Input is provided by the MGI Council, which coleads projects and provides guidance; members are Andres Cadena, Sandrine Devillard, Richard Dobbs, Katy George, Rajat Gupta, Eric Hazan, Eric Labaye, Acha Leke, Scott Nyquist, Gary Pinkus, Sven Smit, Oliver Tonby, and Eckart Windhagen. In addition, leading economists, including Nobel laureates, act as research advisers.

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PREFACE

Can America still make things? And can workers still “make it” in America?

The link between those questions is more than just a play on words. The decline of US manufacturing has left a hole in the US economy, removing an important source of upward mobility. The erosion of a sector that embodies American ingenuity and know-how has resonated deeply. Yet manufacturing is far from the only sector that has experienced wrenching shifts; it is simply the most prominent. Unhealthy dynamics in multiple industries have combined with deeper structural shifts in the economy to depress wages. For the 60 percent of US households in the middle quintiles, wages and benefits are no higher than they were in the late 1990s. A country founded on the notion that everyone should have a shot at being better off than their parents has become a two-tiered economy—with fewer ladders available for people to pull themselves up.

It’s worth remembering, however, that the United States remains the world’s number-two manufacturing nation. It can draw on a formidable set of advantages to engineer a comeback. Rising global consumption, technology advances, and a reshuffling of global value chains are creating an opportunity to recapture market share and restore the dwindling base of small domestic suppliers. Manufacturing plays such a central role in exports, innovation, investment, and productivity growth that the United States has to ensure it can thrive and compete in the 21st century. Revitalizing the sector would boost employment, but it is important to be clear-eyed about the fact that this will be only a small part of solving America’s jobs challenge, which extends far beyond manufacturing into multiple sectors. The first step is confronting the fact that the US labor market has not been working for the majority of workers in quite some time and digging into what has been happening across sectors and at the firm level.

Turning this around will not be easy. Weak income growth can begin feeding on itself in a vicious cycle that reduces demand and productivity as well. It forces companies, households and governments into tough trade-offs to protect their share of a slower-growing pie. It will take bold moves and a wave of long-term investment from both the private and public sectors to disrupt patterns that have been forming for decades. But getting this right starts with the recognition that lifting up millions of low- and middle-wage workers would shift the economy into higher gear, benefiting everyone.

This report, a special initiative prepared for the 2017 Aspen Ideas Festival, offers a preview of ongoing research by the McKinsey Global Institute. It draws on years of research on the US economy and is part of a wider body of work exploring the interrelated global economic challenges of our time: digitization, the evolution of work, the future of manufacturing, productivity, and inclusive growth. It is our hope that the Aspen Ideas Festival will be only the start of a dialogue about finding solutions and getting them implemented—and we intend to advance both our research and this critical conversation in the months ahead.

This research was led by James Manyika, an MGI director based in San Francisco; Gary Pinkus, the managing partner for McKinsey & Company in North America; Sree Ramaswamy, an MGI partner based in Washington, DC; Katy George, a McKinsey senior partner based in New Jersey; and John Warner, a McKinsey senior partner based in Cleveland. The project team, led by Andrea Serafino, included Luis Campos, Mike Child, Nikhil George, Sarah Gitlin, and Ankit Mishra. Lisa Renaud served as senior editor. We acknowledge our colleagues Tim Beacom, Marisa Carder, Deadra Henderson, Richard Johnson, Rik Kirkland, Simon London, Julie Philpot, Peter Reid, Rebeca Robboy, and Margo Shimasaki for their invaluable

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This work benefited from the guidance of our academic advisor, Martin N. Baily, the Bernard L. Schwartz Chair in Economic Policy Development and a Senior Fellow in Economic Studies at the Brookings Institution, and from the insights of Jessica Nicholson of the US Department of Commerce. Our McKinsey colleague Jonathan Law provided input and expertise. And finally, this work drew on a rich body of MGI research led by MGI partners Michael Chui, Susan Lund, Anu Madgavkar, and Jaana Remes.

This report contributes to MGI's mission to help business and policy leaders understand the forces transforming the global economy and prepare for the next wave of growth. As with all MGI research, this work is independent, reflects our own views, and has not been commissioned by any business, government, or other institution. We welcome your comments on the research at MGI@mckinsey.com.

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WHAT'S INSIDE

Executive summary

Page 1

Part 1: Can America still manufacture?

Page 5

Part 2: Can workers still make it in America?

Page 27

Part 3: Creating new pathways to prosperity

Page 47



EXECUTIVE SUMMARY

The United States always assumed that its forward momentum would carry the next generation toward greater prosperity, just as it took for granted that its technical prowess in manufacturing would guarantee its global market share. But now those assumptions have been upended. Although unemployment is down and wages are finally ticking up again, these indicators can distract from the bigger picture. Tens of millions of workers are struggling to make it in America, and even a full-time job does not guarantee a decent standard of living.

Manufacturing is not the only sector with poor wage growth, nor is it the largest. But it was once the backbone of the middle class, and its erosion is symptomatic of broader shifts in the economy. Part 1 of this research preview looks at how this unfolded—and outlines how the sector could exploit changes in technology and value chains to compete for new market opportunities. Part 2 traces what has happened to wages across the economy more broadly and considers what caused these pressures. Finally, Part 3 opens what we hope will be an ongoing conversation about solutions that can lead to more inclusive growth.

US MANUFACTURING NEEDS TO REGAIN ITS COMPETITIVE EDGE AND RETOOL FOR THE 21ST CENTURY

- Manufacturing remains a pillar of the US economy and the primary industry in some 500 counties from coast to coast. The sector drives 30 percent of US productivity growth, 60 percent of exports, and 70 percent of private-sector R&D spending—all factors that keep the nation's innovation machine humming. But it now accounts for just 9 percent of US employment, a much smaller share than two decades ago. Excluding computers and pharmaceuticals, value added in most other manufacturing industries is no higher today than it was in 1997. The United States has lost market share not only to low-cost countries in labor-intensive industries but also to other advanced economies in knowledge-intensive industries. Today there are 30 percent fewer US manufacturing firms than in 1997, and the sector has lost roughly one-third of its jobs. Not only have plants closed, but fewer are opening. The United States remains the world's second-largest manufacturing nation, and the diversity of its industrial base presents multiple opportunities for growth. But the nation cannot afford to let its manufacturing muscle continue to atrophy.
- Today demand, global value chains, and technology are evolving in ways that play to US strengths. The United States can capitalize on these shifts to boost output and narrow its trade deficit, particularly in advanced manufacturing industries. The first promising factor is rising consumption in emerging economies, combined with the fact that the United States itself remains one of the world's largest and most lucrative markets. Factor costs are changing, too, to the benefit of many US-based producers. Wages are rising in emerging economies, automation weakens the case for labor arbitrage, and the shale boom has made energy cheap and abundant in the United States. More of the world's production is up for grabs; global value chains are shifting as firms emphasize service-based business models and proximity to markets, suppliers, and innovation partners. The new world of digital manufacturing represents a profound shift toward higher productivity and the agility needed to meet fragmenting demand. Technologies such as the Internet of Things, analytics, advanced robotics, and 3-D printing are transforming

factory floors into flexible, self-maintaining operations. Companies will soon be able to connect their entire value chain with a seamless flow of data, unlocking efficiencies and new service offerings.

- The growth opportunities for US manufacturing are real, but it would be naïve to minimize the challenges of turning around two decades of negative trends. This effort has to start with stimulating a wave of investment from both domestic and foreign sources—not just with tax incentives but through targeted strategies to bring the industries of the future to communities that have been left behind. The second critical priority is revitalizing the domestic supplier base, which has been hollowed out in the past two decades. Most US manufacturing firms are small companies that need financial, technology, and advisory support; large firms can take a step toward building their own collaborative supplier networks by helping smaller firms modernize and become more innovative. Third, the jobs at stake in 21st-century manufacturing may be service roles or positions requiring digital skills, which means that workforce training will be an important piece of the puzzle. Larger companies will have to do more to develop the capabilities they need by offering their own training, partnering with education providers and industry groups, or establishing workforce platforms. Finally, the United States needs a comprehensive strategy to boost net exports and regain global market share—one that encourages more small firms to participate, bringing the benefits of globalization to more workers.
- US manufacturing can achieve a turnaround if the public and private sectors treat it as a national priority. But it is important to recognize that a successful revitalization will not produce a return to 1960s-style manufacturing employment. For decades the sector provided economic mobility to workers with less education, and nothing else has emerged to take its place. Part 2 of this report looks at the broader trend of narrowing opportunities.

THE UNITED STATES IS INCREASINGLY A TWO-TIERED ECONOMY, WITH MILLIONS OF WORKERS STRUGGLING TO GET BY

- Previously published MGI research found that 81 percent of US households were in segments that experienced flat or declining market incomes from 2005 to 2014. During the previous decade, real incomes rose for all segments, with most of the gains coming during the growth surge of the late 1990s. This stunning reversal reflects what a powerful shock the Great Recession delivered. But the picture brightens when we look at disposable income, taking taxes and government transfers into account. By this measure, less than 2 percent of US households were in segments with flat or falling incomes over the 2005–2014 period. In other words, the government managed to cushion the blow of the recession, although this support came at a significant fiscal cost.
- A longer view shows that household incomes have been under pressure for more than three decades. This is ultimately a wage story—and only workers at the top of the distribution have been bringing home bigger paychecks. The top quintile almost doubled its wages and benefits in real terms since 1983, but everyone else remains stuck at roughly the levels of the 1990s. There is now a yawning pay gap between workers with post-secondary education and those without it. While a small number of high-growth metros have bounced back strongly in the recovery, real median household incomes remain below their pre-2000 peaks in almost two-thirds of US counties. Meanwhile, the costs of maintaining a middle-class life have continued to climb.
- Multiple economic, technological, and societal forces have simultaneously contributed to pressures on incomes and wages. Some are structural shifts, such as the changing sector mix of the economy and the declining share of national income going to labor. Productivity and wages have historically risen hand in hand, but now that relationship has been weakened. In the past two decades, the ongoing digitization of the economy

has also made it possible to get more output from knowledge-intensive capital using less labor. There is a new premium on highly skilled workers who can make the most of technology. These long-term forces were exacerbated when the Great Recession struck. It caused a massive loss of economic output and was followed by a weak and highly uneven recovery.

- All of the forces described above have played a role in depressing wages. In addition to exploring these aspects, this research focuses on another potential contributing factor that is often overlooked in discussions of US income inequality: the changing environment facing companies and industries. There has been an extraordinary escalation of competitive pressures, including foreign competition in tradable sectors as well as price competition and declining returns in many asset-heavy sectors. Furthermore, profits are shifting to asset-light sectors and a small number of superstar firms that employ relatively few people. Some struggling firms have responded with cost-cutting measures such as squeezing suppliers or opting for automation, offshoring, or contract work. In real terms, wages remain below their 1983 levels in some large, asset-heavy sectors such as retail, transportation, and construction. The trends in these sectors alone mean that at least one-fifth of the US workforce has not advanced in more than three decades.
- Workers now have fewer options when their pay stagnates. Rapidly falling costs of automation and the availability of lower-cost global labor have created more options for companies. As the nature of work has changed, the relationship between companies and workers has weakened. Temporary work arrangements and outsourcing are becoming more commonplace, and firms are better able to predict demand and schedule labor in smaller and more erratic increments. Workers now have decreased mobility, and the decline of union membership has weakened their bargaining power. Large segments of the labor force lack the skills that the marketplace values.
- Many of the trends we see today—including weak recoveries from recessions, a reweighting of the economy toward service sectors, and foreign competition—will persist into the future. Some appear to be accelerating, such as digital technologies reducing the need for low- and medium-skill workers. In the United States, some of the large and labor-intensive sectors that have already come under wage pressure (food service, manufacturing, and retail) appear to be most susceptible to automation in the future. The convergence of deepening income inequality and accelerating technological change increases the urgency to act.

WHERE DO WE GO FROM HERE?

- No single solution will be a silver bullet. These complex issues raise bigger questions than the usual economic debate, starting with how to address the deteriorating quality of jobs and where the 45 million workers without post-secondary education fit into the economy. Areas that could be explored include how to apply technology to improve the labor market for workers and whether incentives could boost private-sector investment in human capital. It's also important to consider what kind of safety net will be needed in the future, and if automation causes large-scale dislocation, we may have to debate measures such as a universal basic income or other types of redistribution. Disrupting current patterns in the labor market will require bolder interventions than what has worked in the past—and inaction itself would be a choice to accept the status quo of a two-tiered economy.
- Shifting the economy into higher gear is a critical first step. The United States has to jumpstart growth and move forward on long-recognized priorities such as restoring business dynamism, investing in infrastructure, improving productivity, and revamping education and training. And the nation will have to do a better job of executing on these

goals. More businesses need to start up, and more of them need to become fast-growing firms that create jobs. To accelerate productivity growth, more companies need to be encouraged to adopt the technologies and best practices of frontier firms. Small enterprises need assistance to seek out global market opportunities and foreign capital. US companies and investors need to recognize the long-term value of creating training pathways and better-quality jobs—not just out of social responsibility but to protect their own long-term interests.

- But economic growth alone may not be enough; growth also has to be more inclusive. We see four priority areas: reinvesting, retraining, removing barriers, and reimagining work. First, communities in distress need targeted investment from public, private, and foreign sources to bounce back. Second, continuous technological change means that mid-career workers need systems of lifelong learning to adapt—and currently the United States spends far less than other countries on helping displaced workers transition into new roles. Third, we can remove barriers that keep workers from seeking out better opportunities, such as non-compete agreements, excessive occupational licensing requirements, inadequate child and family support, and affordable housing shortages in booming job markets. Finally, we need to reimagine work with more flexible models, a more sustainable version of the gig economy, and more creative options for older workers.



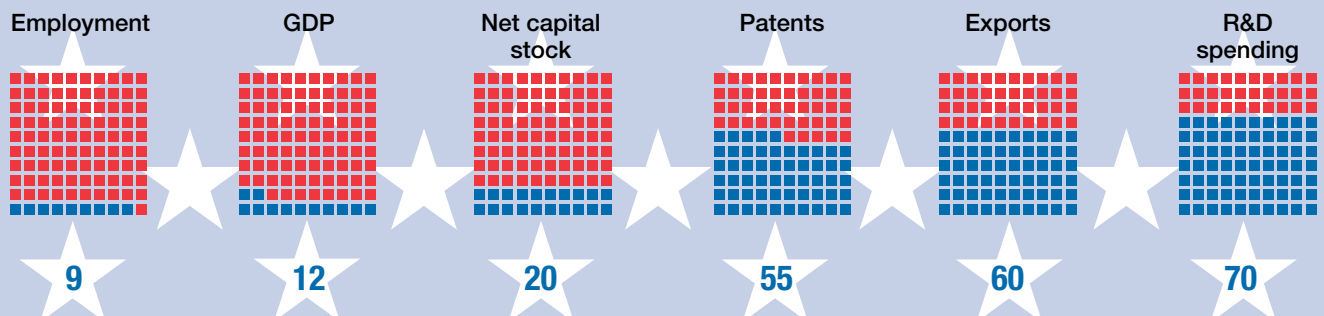
The United States can do better, and there are many levers it has yet to pull. Workers are not just a pool of labor; they are citizens and potential consumers. Raising incomes would juice a latent source of demand—and doing so could set off a virtuous cycle of growth. Lifting up the millions who have been left behind can elevate the broader economy in the process.



PART 1: CAN AMERICA STILL MANUFACTURE?

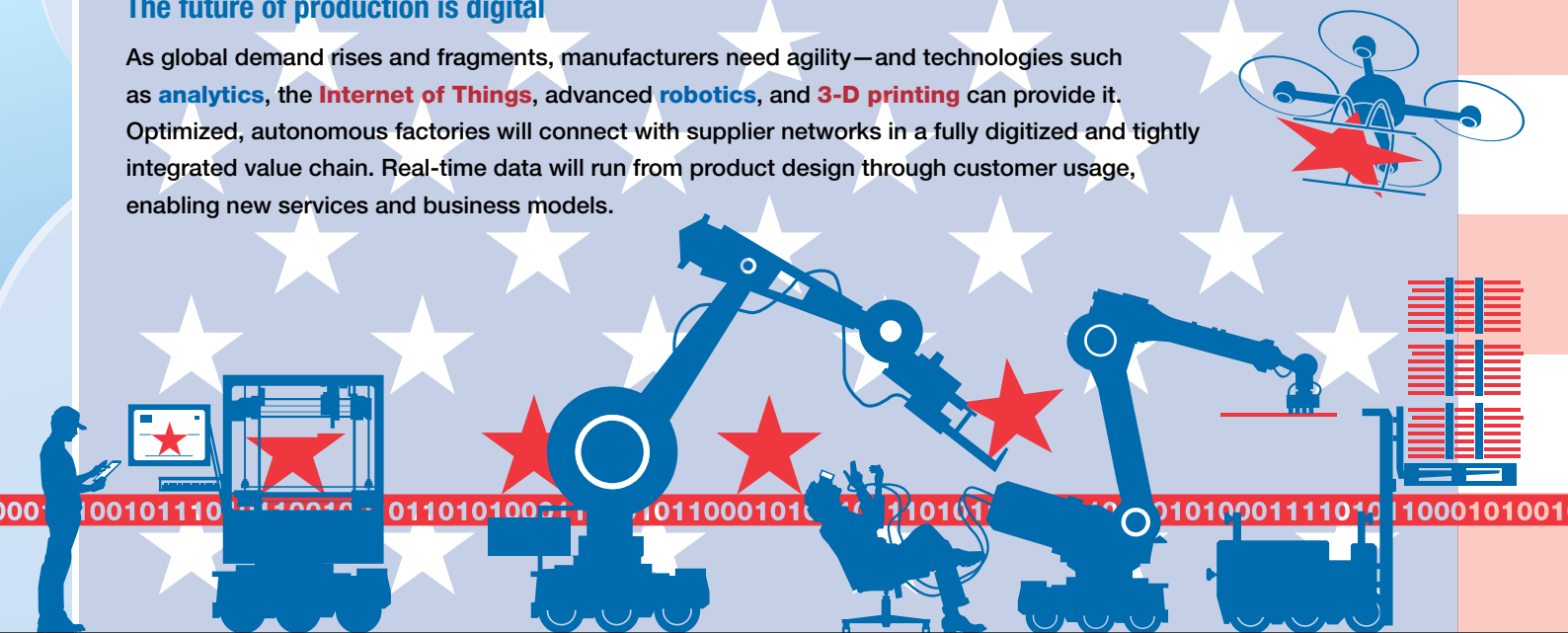
Revitalizing manufacturing in America

Manufacturing plays an outsized role in national competitiveness Manufacturing as % of US total, 2016 or latest



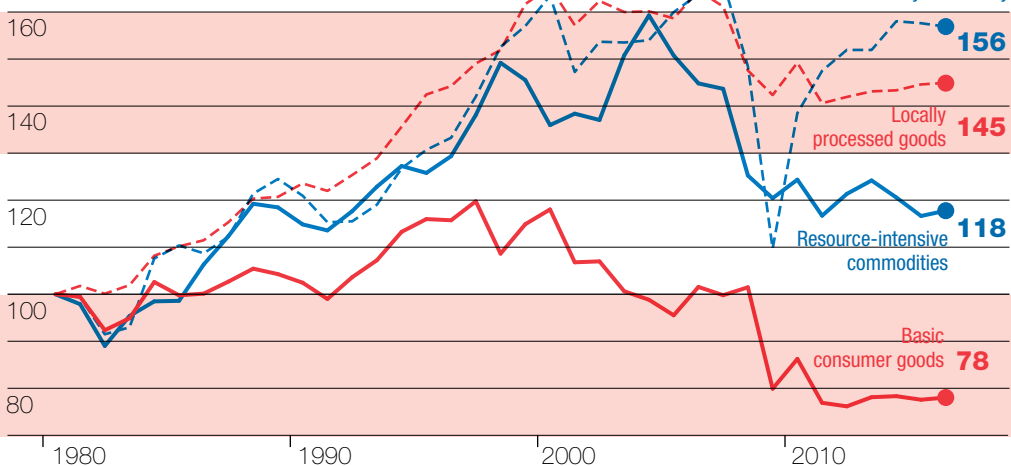
The future of production is digital

As global demand rises and fragments, manufacturers need agility—and technologies such as **analytics**, the **Internet of Things**, advanced **robotics**, and **3-D printing** can provide it. Optimized, autonomous factories will connect with supplier networks in a fully digitized and tightly integrated value chain. Real-time data will run from product design through customer usage, enabling new services and business models.



Real value added is at 10- to 20-year lows for a range of US manufacturing industries¹

Index: 100 = 1980



Compound annual growth rate

Category	1980–2016	1990–2016	2000–2016
Vehicles and heavy machinery	1.3	1.0	-0.3
Locally processed goods	1.0	0.6	-0.8
Resource-intensive commodities	0.5	0.1	-0.9
Basic consumer goods	-0.7	-1.0	-2.6

¹ Chart does not include technology-driven products (e.g., pharma and computers), where value added has increased by 7.7x since 1980.

Key priorities to help US manufacturing regain its competitive edge

- Stimulate** long-term investment
- Revitalize** domestic supply base
- Increase** workforce training
- Encourage** more firms to export

PART 1: CAN AMERICA STILL MANUFACTURE?

Policy makers, economists, and average citizens alike recognize that manufacturing is a bellwether for the broader economy. Its impact extends beyond the dollar value of the output rolling off the assembly lines or even the jobs it creates. The sector directly and indirectly generates new products, processes, materials, and business models. It reflects a nation's technical prowess and its ability to execute on great ideas, taking them from the drawing board to the showroom floor.

Revitalizing US manufacturing is a national priority. But this is not about re-creating the past; it is about looking toward a more digital future. The next era of manufacturing will challenge firms to respond quickly and cost-effectively to changes in demand—wherever demand may be. With the ranks of middle-class consumers growing rapidly in dozens of countries around the world, there is a new premium on the ability to adapt products for multiple markets.

A new kind of digital manufacturing—utilizing technologies such as advanced robotics, artificial intelligence, the Internet of Things, and 3-D printing—is making this kind of agility possible. Factory floors can now become autonomous and self-maintaining operations with higher productivity. A new emphasis on design, analytics, and customer satisfaction is opening possibilities for service offerings and other types of new business models.

The United States can take advantage of these shifts in technology and global demand. There is a tangible and promising opportunity to boost output and narrow the trade deficit in the advanced manufacturing industries where it should have a natural advantage—and it can shore up the domestic supplier base of small and medium-sized firms in the process.

None of this will be easy, and it is important to be clear-eyed about what success would look like. Boosting output would benefit the broader economy and increase employment, although not with significant numbers of traditional factory-floor assembly jobs. In an age of automation and digitization, it is unrealistic to expect to restore 1960s-style employment in manufacturing. The jobs at stake may be service roles or positions requiring digital skills—all of which means that workforce training will be an important piece of the puzzle.

Starting in 2010, a cyclical recovery in demand led to a modest rebound in manufacturing, raising hopes that a wave of “re-shoring” would fix the sector's problems. But this recovery has largely played out, and turning things around will be harder in the absence of the momentum it provided. It will take a wave of investment and a coordinated public-private effort to reverse two decades of negative trend lines and adapt to the technologies that are reshaping the sector worldwide. Now that global value chains are in flux, this is an important moment to address the long-standing problem of US competitiveness before any more erosion occurs. The payoff would be a manufacturing sector that can remain a pillar of the broader US economy for decades to come.

MANUFACTURING STILL MATTERS TO THE US ECONOMY

It's often said that America doesn't make things anymore—a striking misperception for a country that ranks second in the world for manufacturing output. Similarly, many people assume that US factories are now powered by robots. But in fact, more than 12 million US workers still directly earn their paychecks in the manufacturing sector.

The myth of deindustrialization took root in part because many consumer goods, such as apparel, electronics, and household products, are now made overseas. China has surpassed the United States as the world's largest manufacturer and is now a leading producer in key categories such as steel and automobiles. To some extent, this role reversal is to be expected: manufacturing value added and employment grow quickly as a nation industrializes, but the sector's share of output and employment tends to fall as economies grow wealthier and consume more services. Nevertheless, the United States still accounts for nearly 20 percent of global manufacturing activity.

The United States remains one of the world's leading manufacturing nations

While China claimed the mantle of the world's top manufacturing country in 2010, the United States still ranks second as measured by the dollar value of its annual output and by its global market share (Exhibit 1). In 2015, US value added in manufacturing reached \$2.2 trillion. This is more than two and a half times the output produced by Japan and three times higher than that of Germany.¹

The United States continues to lead the world in some manufacturing product categories, including aircraft and refined petroleum products. It is the world's second-ranked producer in other categories, including computers, plastics, and cars (a category in which it ranks behind China but ahead of Japan and Germany). In fact, US production of cars, aircraft, semiconductors, and food and beverage products is at all-time highs. US exports of manufactured goods grew by 20 percent from 2010 to 2015, reaching some \$1.3 trillion. The United States is the number-one exporter of aircraft, plastics, and refined petroleum products.

The US manufacturing sector has a smaller footprint than it did a generation ago, but the United States is not unique in this regard. This pattern is evident in most advanced economies, although the contraction has accelerated in the past two decades in the United States. Manufacturing's share of total US employment has fallen from 21 percent in 1980 to 13 percent in 2000 and then to less than 9 percent in 2016. Its share of GDP has declined as well.

But the sector still punches far above its weight in many key indicators. It accounts for 60 percent of the nation's exports and 70 percent of private-sector R&D. It is one of the biggest drivers of trade, innovation, and productivity growth—all factors that define a nation's competitiveness in the global economy.

¹ *US manufacturing in international perspective*, Congressional Research Service, January 2017.

Exhibit 1

The United States ranks second in the world in manufacturing value added

Top 15 manufacturers by share of global manufacturing gross value added (nominal)

Rank	1985	1995	2005	2015	2015 value added \$ billion
1	United States	United States	United States	China	3,166
2	Japan	Japan	Japan	United States	2,207
3	Germany	Germany	China	Japan	768
4	Italy	France	Germany	Germany	668
5	France	Italy	Italy	South Korea	349
6	United Kingdom	United Kingdom	United Kingdom	India	309
7	Canada	China	France	Brazil	285
8	China	Brazil	South Korea	United Kingdom	258
9	Mexico	South Korea	Brazil	Italy	241
10	Brazil	Spain	Spain	France	207
11	India	Canada	Canada	Mexico	204
12	Spain	Taiwan	Mexico	Indonesia	180
13	Australia	India	India	Canada	160
14	Argentina	Switzerland	Russia	Taiwan	157
15	South Korea	Mexico	Taiwan	Russia	155

NOTE: Based on IHS Global Insight's database of 75 economies (28 developed and 47 developing). We perform a top-down calculation based on the IHS Global Insight aggregate, which may produce discrepancies with bottom-up calculations in other sources.

SOURCE: IHS Global Insight; McKinsey Global Institute analysis

Manufacturing provides a foundation for American workers and communities

Manufacturing has historically offered a pathway for American workers without college degrees to gain technical skills and make it into the middle class. It has been an important force for reducing income inequality and supporting jobs and investment in urban and rural counties stretching across the entire nation.²

² See, for instance, Albert Chevan and Randall Stokes, "Growth in family income inequality, 1970–1990: Industrial restructuring and demographic change," *Demography*, volume 37, issue 3, August 2000; and Linda Lobao, Jamie Rulli, and Lawrence A. Brown, "Macro-level theory and local-level inequality: Industrial structure, institutional arrangements, and the political economy of redistribution, 1970 and 1990," *Annals of the Association of American Geographers*, volume 89, number 4, December 1999.

In an era of declining mobility for workers and households, manufacturing employment continues to provide the foundation of many regional and local economies. Today manufacturing is still the primary sector in more than 500 counties nationwide, including many rural and suburban counties concentrated in the Midwest and South (Exhibit 2). While job opportunities in many higher-skill service industries are disproportionately concentrated in urban areas, manufacturing has had a much broader geographic footprint across the entire country. The economic prospects of many of these regions continue to live or die with the health of the manufacturing sector.

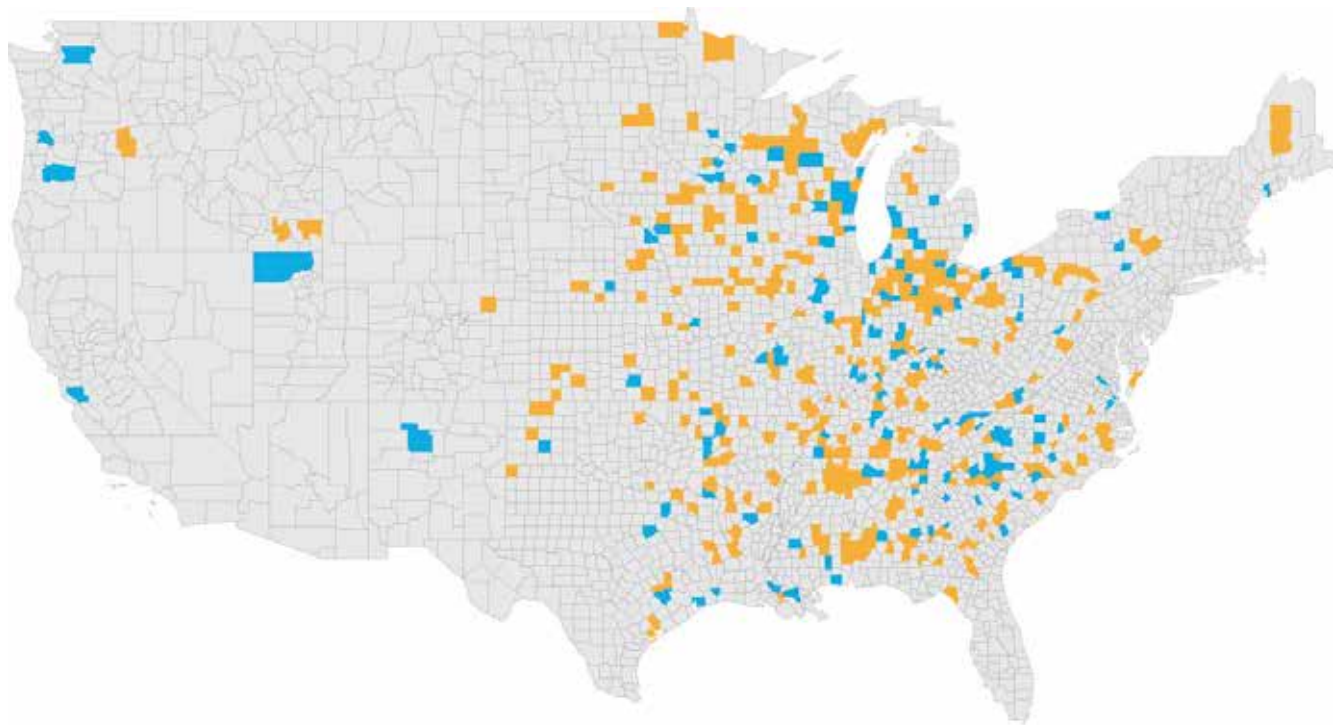
Exhibit 2

Manufacturing remains the primary economic driver in more than 500 US counties, and it is a bellwether of global competitiveness

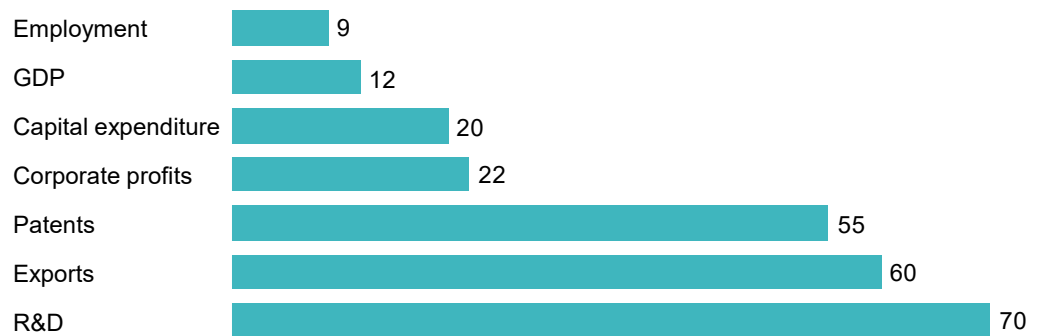
Manufacturing counties, 2015

Counties that derive 23% or more of their average annual labor and proprietors' earnings from manufacturing, or where 16% or more of jobs were in manufacturing

■ Metro ■ Non-metro



Manufacturing's share of key US economic indicators, 2016 or latest available
%



SOURCE: 2015 ERS County Typology Codes, US Department of Agriculture; US Bureau of Labor Statistics; US Bureau of Economic Analysis; US Patent and Trademark Office; McKinsey Global Institute analysis

Manufacturing creates strong local spillover effects in these local economies. Manufacturing industries account for 20 percent of the net capital stock (excluding real estate) in the US economy, and the stickiness of this investment is high. The sector attracted nearly 70 percent of the greenfield foreign direct investment that flowed into the United States in 2015.

The diversity of the manufacturing sector creates a wide set of economic opportunities

US manufacturing is not monolithic. It encompasses a wide range of industries, from high-tech aerospace to regional food processing. It is helpful to view the sector through the lens of five broad industry groups that vary widely in technological sophistication, inputs, costs, and markets (Exhibit 3). The firms within each of these categories take different factors into account when they decide where to base production. Basic consumer goods, for instance, are highly traded, labor intensive, and sold primarily through retail supply chains. These industries have eroded in the United States as retailers began sourcing cheaper goods made in locations with lower wages. Outside of that category, manufacturing is more balanced and diversified in the United States than in some other advanced economies, where the sector tends to be dominated by a smaller number of signature industries. This reflects the considerable advantages present in the United States, including a large and open market, plentiful capital, natural resource endowments, logistics infrastructure, and vibrant innovation and talent clusters. Diversity is part of why the United States has managed to remain the world's second-leading manufacturing nation despite weathering two decades of adversity.

The presence of manufacturing industries has encouraged dense supplier ecosystems and logistics networks to take root, creating new pathways for skill development and income growth in local economies. Capabilities associated with producing one type of product can be translated with relative ease into other areas, making manufacturing operations uniquely adaptable and flexible.³ Having networks of designers, suppliers, distributors, and financiers in place in an existing industrial ecosystem makes it easier to bring the next innovation to market quickly and at scale.⁴ Simply put, manufacturing can help local economies adapt, innovate, and grow.

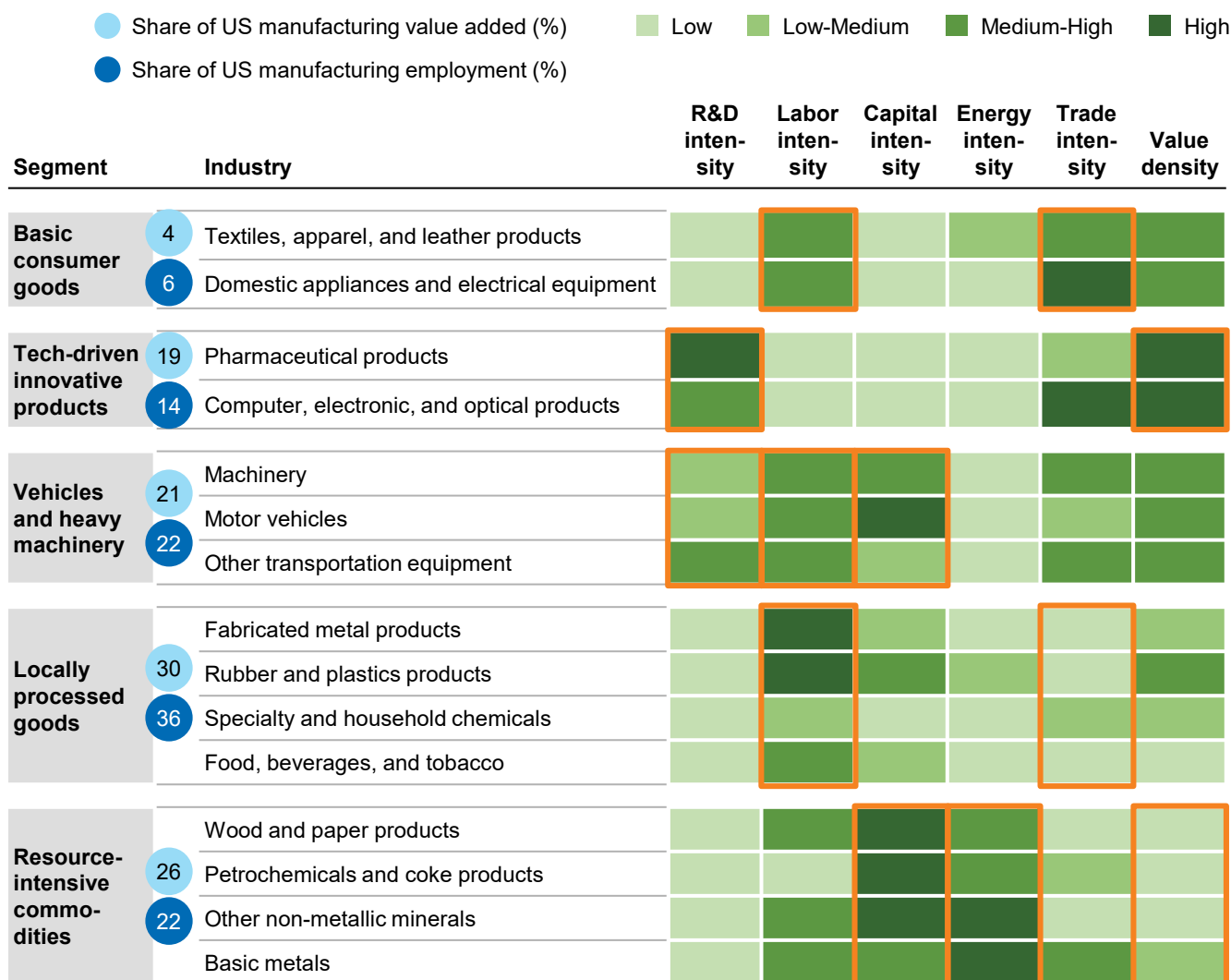
The diversity of US manufacturing also extends to companies. The sector includes large multinationals such as Ford, GM, Boeing, and Dow Chemical. It also include foreign companies with significant production operations in the United States, such as BMW, Honda, BASF, and Lenovo. But the vast majority of the roughly quarter-million US-based manufacturing firms are small businesses with fewer than 100 employees. Survival has been tough for these smaller firms, but there are opportunities—and good reasons—to invest in revitalizing the US domestic supplier base. As we will discuss below, networks of smaller suppliers could play a pivotal role in making the entire US manufacturing sector more agile and productive.

³ Cesar A. Hidalgo, Bailey Klinger, Ricardo Hausmann, and Albert-László Barabási, "The product space conditions the development of nations," *Science*, volume 317, issue 5837, July 2007.

⁴ Suzanne Berger, *Making it in America*, MIT Press, 2013.

Exhibit 3

The five major segments of the manufacturing sector respond to different factors



NOTE: The following metrics are used to calculate the intensity of each indicator relative to its value add: R&D spend for R&D intensity; payroll costs for Labor intensity; capital expenditure for Capital intensity; fuel and electricity costs for Energy intensity; exports and imports for Trade intensity; and dollar value per pound of shipment for Value density.

SOURCE: OECD; World Trade Organization; US Bureau of Economic Analysis; US Bureau of Labor Statistics; US Census Bureau; McKinsey Global Institute analysis

NEW SOURCES OF DEMAND AND NEW TECHNOLOGIES CAN HELP US MANUFACTURERS BOOST OUTPUT, PRODUCTIVITY, AND COMPETITIVENESS

Two forces are transforming the nature of global manufacturing. First is the fact that emerging economies can no longer be regarded simply as sources of low-cost labor; they are now the world’s fastest-growing sources of consumer demand.

The second force is technology. Digital manufacturing could rev up productivity growth and enable the flexibility manufacturers will need to tailor products for different markets. Large manufacturers are already using digital technologies to make workers, machinery, and processes more efficient, and their capabilities will eventually extend beyond the factory floor. Digital platforms have the potential to link networks of innovators, designers, suppliers, and customers into more dynamic ecosystems that could change the entire sector’s performance.⁵

⁵ For more on these industry trends, see “Next-shoring: A CEO’s guide,” *McKinsey Quarterly*, January 2014.

Responding to shifts and fragmentation in demand

In the decade ahead, another one billion people in emerging markets will enter the “consuming class,” with enough income to become significant consumers of goods and services. McKinsey has estimated that emerging-market consumers will collectively create a \$30 trillion market opportunity for companies by 2030.⁶

The rise of purchasing power in these countries is both fueling demand and fragmenting it. Markets such as India, China, Brazil, and Africa represent an enormous prize, but they are distinguished by tremendous regional, ethnic, and income diversity. This is challenging manufacturers to produce a wider range of product models with differing features, price points, and marketing approaches. At the same time, consumers in more established markets are demanding more variety and faster product cycles, adding another layer of fragmentation. Advances in design tools and digital platforms open up possibilities for crowdsourced design, accelerated product development, more distributed production, and even radical customization to meet unique pockets of demand.

Firms in many manufacturing industries find it advantageous to locate close to demand. US firms are establishing operations in fast-growing emerging markets, but they have a range of sourcing choices for inputs. In advanced industries, for instance, one option is to locate final assembly near the end market, but to source components from home-country suppliers—an approach often taken by German and South Korean manufacturers.

Customers (particularly in B2B markets) increasingly look to manufacturers for after-sales services, creating potential sources of revenue growth for firms. Intelligent products embedded with sensors can deliver data about their condition and performance from the customer site back to the manufacturer, signaling automatically when to offer the customer maintenance services. This type of connectivity can enable makers of industrial equipment to shift from selling capital goods to selling use of their products as services. Sensor data can tell the manufacturer how much the machinery is used, enabling the manufacturer to charge by usage. This “product-as-a-service” approach can give the supplier a more intimate tie with customers that competitors would find difficult to disrupt.

Another new type of business model would involve offering production capacity itself as an on-demand service. Just as digital platforms have created efficient e-commerce marketplaces, they could enable manufacturers to begin monetizing even small windows of capacity that would have previously been idle.

Digitizing the factory floor and creating new digital supplier ecosystems

Responding to the opportunities described above requires agility—and digital technologies can provide exactly that. The future of production will involve a fully digitized and more tightly integrated value chain. From optimized and autonomous factories, a continuous thread of data can connect customers and suppliers while enabling more service offerings and new business models (Exhibit 4).

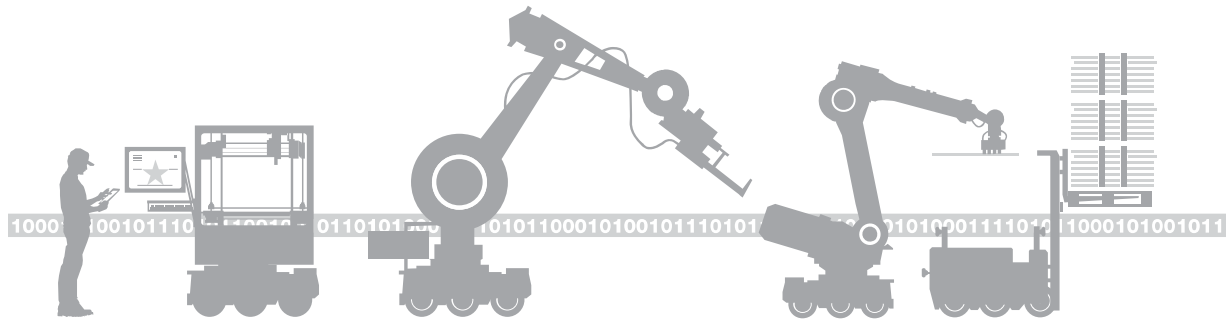
Some large manufacturers are already turning their factory floors into information networks. In this new world of autonomous manufacturing, intelligent devices outfitted with sensors feed continuous streams of real-time data into analytics systems that can remotely adjust complex systems, processes, and machinery. This web of connected devices, commonly referred to as the Internet of Things (IoT), represents the convergence of connectivity, the cloud, big data, and advanced analytics. Its purpose is to help companies get far more out of their physical assets. These systems can maximize equipment utilization; minimize defects, downtime, and waste; avoid bottlenecks; flag the need for preventive maintenance; and lower resource consumption. After installing robotics and a sophisticated performance

⁶ *Winning the \$30 trillion decathlon: Going for gold in emerging markets*, McKinsey & Company, August 2012.

management system, one electronics manufacturer has reduced manual rework by 90 percent. A large automaker has connected tens of thousands of devices and robots to cloud analytics, enabling a single production line to adapt to build multiple models—maximizing 24 hours of production every day and producing a car body every 77 seconds. (See illustration, “IoT: Sample applications in a manufacturing plant.”)

Exhibit 4

Digital manufacturing will change the future of production



Autonomous manufacturing

Digital technologies will transform factory floors into self-organizing, fully optimized, and agile operations

Integrated end-to-end value chain

A stream of real-time data linking every stage from product design through customer usage enables companies to improve speed to market and user satisfaction

Supplier ecosystem

Digital networks link suppliers into integrated, agile ecosystems, making collaboration more seamless

New service offerings and business models

A growing emphasis on design, analytics, and customer insights will enable new after-sales services. Manufacturers may offer “production on demand” and develop other types of new business models

SOURCE: McKinsey Global Institute analysis

Companies in advanced industries can use the IoT and advanced analytics to orchestrate a multitude of vendors stretching around the globe. Information from RFID tags, GPS tracking, and other sources can be synthesized in a “control tower.” Having a clear view of the raw materials and manufactured parts flowing through the system enables managers to tighten inventory control, choreograph deliveries, and minimize downtime.⁷ Some analytics-based supply chain monitoring systems can cut line stoppages by up to 60 percent. One pharmaceutical company installed a real-time supply chain data system to manage inventory and monitor routes, saving \$80 million in the process.

Next-generation technologies—including machine learning and artificial intelligence, advanced robotics, additive manufacturing (3-D printing), and new types of human-machine interfaces—have even more far-ranging capabilities. Companies will soon be able to connect their entire value chain with a seamless flow of data through every phase of the product life cycle. Soon robots and advanced machines inside one factory will be able to talk to those in another. Smart, connected final products will be sending customer experience data back to product managers. This capability paves the way for new types of service offerings and feeds back into improved product design.⁸

⁷ For more on these technologies and their economic potential, see *The Internet of Things: Mapping the value beyond the hype*, McKinsey Global Institute, June 2015.

⁸ For more on this new era of technology, see *The great re-make: Manufacturing for modern times*, McKinsey & Company, June 2017; “Digitizing the value chain,” *McKinsey Quarterly*, March 2015; “Manufacturing’s next act,” McKinsey.com, June 2015; and “Digital manufacturing: The revolution will be virtualized,” McKinsey.com, August 2015.

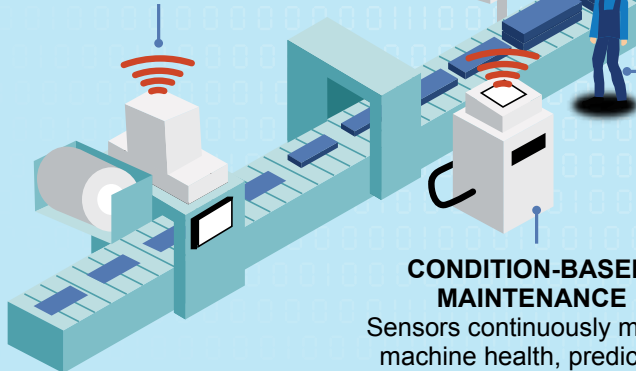
IoT: Sample applications in a manufacturing plant



REAL-TIME PRODUCTION DASHBOARDS

Remotely monitor, optimize, and control production

AUTO-SENSING EQUIPMENT
Equipment settings are self-adjusted based on ambient conditions and product being made



HEALTH AND SAFETY
Sensors preemptively alert and react to hazards (worker too close to machinery, for example)

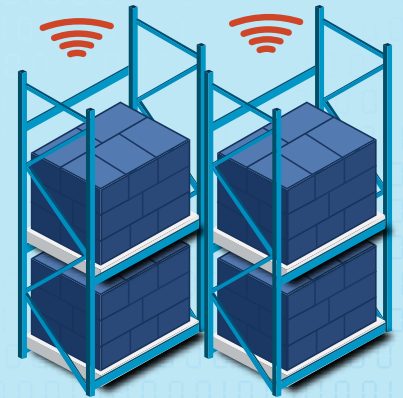
CONDITION-BASED MAINTENANCE
Sensors continuously monitor machine health, predictively scheduling maintenance and reducing unscheduled downtime



AUTOMATIC QUALITY CONTROL
Based on sample specification



SELF-DIRECTED VEHICLES
Intrafactory transportation path and priority optimization



PRODUCTION AND SUPPLY-CHAIN OPTIMIZATION
Continuous remote monitoring of warehouse machinery, tool status, and machine utilization. Optimize product flow and production setup

Continuous digital connectivity among designers, managers, workers, consumers, and physical assets will unlock enormous value. Using one device or control tower to manage an entire factory was a major advance, but technology is now making the leap to one device or control tower coordinating an entire distributed network of factories and suppliers. These capabilities can enable faster and more efficient collaboration, with instant sharing of information about design specs, price, delivery, and quality. One aircraft manufacturer has implemented a rapid simulation platform to test and optimize physical product designs—and the result has been not only reduced design time but a 20 percent decrease in design rework and a more than 20 percent increase in engineering productivity.

The United States has an opportunity to regain global market share in advanced manufacturing industries

Over the years, the United States has developed a large and growing goods trade deficit, which hit \$800 billion in 2015. The relative strength of the US dollar over the past two decades has clearly exacerbated this trend.⁹ But there are also real competitive concerns. The trade deficit has grown even in sectors that match up well with traditional US strengths in R&D and innovation, such as automobiles and other transportation, equipment and machinery, pharmaceuticals and chemicals, and high-tech devices. These advanced manufacturing industries account for nearly half of the US trade deficit (\$380 billion).¹⁰

Other advanced economies, including Germany, Japan, and Korea, have maintained trade surpluses in these industries. Despite the cyclical recovery and a National Export Initiative that nearly doubled US exports of manufactured goods, the US trade deficit specifically within advanced industries has expanded to record levels (Exhibit 5). Much of this stems from companies substituting more competitive imported content for domestically produced content, which has contributed to eroding the US base of small suppliers.

The United States has an opportunity to capture greater market share and close this gap. Today the trade deficit in advanced industries is equivalent to 1.9 percent of GDP. Managing to cut that in half by 2025 would translate to an additional \$200 billion to \$225 billion of output across the sector. This scenario is ambitious but not out of the realm of possibility. In fact, advanced economies such as Germany, Sweden, and South Korea have achieved even larger increases in recent decades.

To narrow this gap, firms will have to embrace automation and cutting-edge technology in order to boost productivity. They will also have to continue fighting global competitors for market share. But these are not insurmountable obstacles. Compared with the US sector, Korean manufacturing is more automated, and German manufacturing is more trade-intensive, yet both countries have managed to maintain strong manufacturing bases.

Favorable dynamics in a few key industries provide an opening to make gains. The burgeoning middle class in emerging economies supports increased demand for commercial air travel, creating opportunities to grow the existing US trade surplus in aerospace. These countries are also building out more extensive health-care systems

⁹ Recent research suggests a strong appreciation in the US dollar in the late 1990s may have contributed to the trade deficit and the weakening of domestic output. The manufacturing sector is especially sensitive to movements in the exchange rate, given its dominant role in trade. These effects are not confined to highly traded manufacturing industries, and they can have a persistent effect on global supply chains. Over time, exchange rate pressures may have contributed to the declining competitiveness of US-based manufacturers. However, the causes of the current account deficit and its linkages to global savings and country-specific factors are outside the scope of this paper.

¹⁰ The size of the US trade deficit figure may be overstated due to measurement issues. Firms in advanced industries often design products and manage operations in the United States but outsource production abroad. In these cases, the value added from design and management frequently does not show up as value added in the US manufacturing sector. One study estimated that this may undervalue US exports and overvalue imports by a combined \$280 billion. See *Offshore profit shifting and domestic productivity measurement*, US Bureau of Economic Analysis, March 2017.

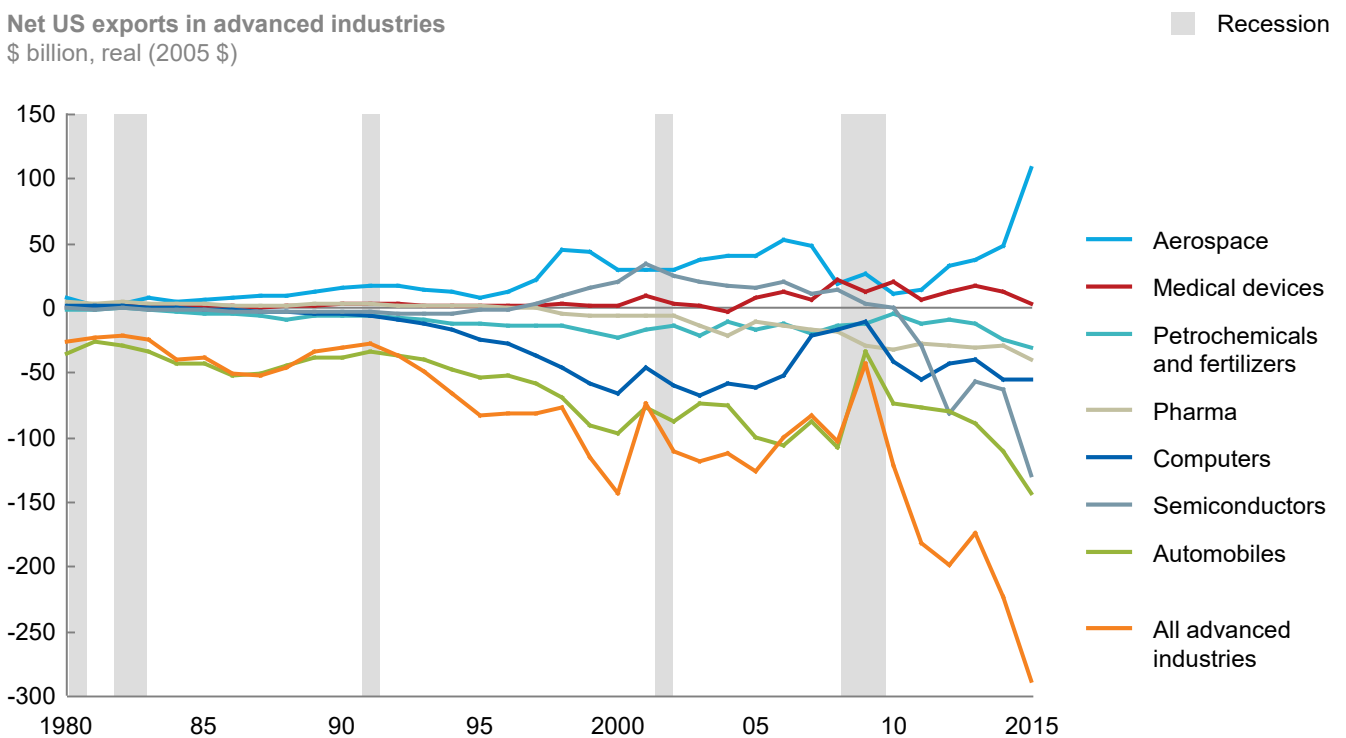
that will fuel demand for medical devices. The cheap and abundant energy unlocked by the US shale boom continues to support greater domestic petrochemical production. US automakers can continue to innovate and improve quality to recapture domestic and global market share. The United States has long-standing strengths in the auto industry, including a skilled workforce and a large and lucrative consumer market. It is attracting more assembly by foreign companies of cars meant for sale in the US market and even for global export.

The opportunities are there, but there are no guarantees. Boosting output and global market share is not the kind of result that will happen by itself. In fact, current trend lines in US manufacturing are pointing in the opposite direction. It will take a concerted industry effort, a wave of investment, and policy support to reverse the long decline and begin growing again.

Exhibit 5

As the domestic supplier base has been hollowed out, the trade deficit in advanced industries has widened

Net US exports in advanced industries
\$ billion, real (2005 \$)



Overall trade balance as a share of GDP

-0.4 -0.6 -0.4 -0.9 -1.3 -1.0 -0.9 -1.9

SOURCE: IHS Global Insight; McKinsey Global Institute analysis

CAPTURING THESE OPPORTUNITIES WILL INVOLVE REVERSING A TWO-DECADE TREND OF STAGNATION

Re-engineering US manufacturing to compete in this new and more digital era is not an easy proposition. The challenge is even steeper given that the sector has been struggling through decades of erosion. Manufacturing now accounts for 11.5 percent of US GDP, down from 15 percent in 2000.

There is an ongoing debate about the extent to which trade or automation caused the sector's decline and job losses, but the more important underlying fact is that US manufacturing has a long-term and persistent competitiveness problem. This is not just about losing out to low-wage countries; it is also about losing market share to innovative companies from other advanced economies. A tougher operating environment has caused

firms to respond by cutting costs, whether through offshoring, automating, closing plants, squeezing suppliers and workers—or going out of business altogether.

Output and value added have declined in most manufacturing industries

Looking at the manufacturing industries that make up 90 percent of the sector's jobs today, US output has stagnated. Its value added has fallen by 11 percent in real terms since the late 1990s. A handful of industries (including petrochemicals, aerospace, pharmaceuticals, and electronics) have managed to buck these trends. But the US manufacturing sector as a whole has posted real declines in gross output and even steeper drops in value added. Overall US output today is no higher than it was in 2000, and value added today is back to the level of the mid-1990s.

The broad loss of competitiveness is apparent across four of the five industry categories described earlier in this chapter (Exhibit 6). One exception is the group of industries that produce what we refer to as technology-driven innovative products, where value added has grown rapidly since the 1990s. These are highly R&D-intensive goods such as computers, electronics, and pharmaceuticals, where most economic value is captured in research and design, not the actual production activity. But all other industry clusters experienced a decline in value added. The hardest-hit area has been basic consumer goods such as apparel and household appliances; these highly tradable and labor-intensive industries have been eroding since the mid-1990s. Resource-intensive commodities have declined overall, although major petrochemical investment could mitigate this trend as plants come online in the next few years. Value added in the two remaining groups—vehicles and heavy machinery, and locally processed manufactures—has settled at considerably lower levels than a decade ago.

Factors driving the decline in value added vary across these five groups. No single factor explains the majority of the decline, but together they represent a confluence of headwinds over the past two to three decades. For instance, rapid consolidation in the retail industry gave distributors and retailers stronger bargaining power over the supply chain. This contributed to US manufacturers of consumer goods losing ground to low-cost contract manufacturers in locations such as Mexico, China, Vietnam, and Bangladesh. In the domestic car market, the combined market share of five major US-based producers (both US companies and foreign companies with significant US-based production) has fallen from 85 percent in 1990 to 67 percent today as other Japanese, Korean, European, and luxury brands have gained share.¹¹ As US makers of vehicles and heavy machinery have lost ground to European and Asian manufacturers, their US-based suppliers in the locally produced manufactures group also suffered declines. Many European and Asian competitors have better margins and returns on invested capital, higher productivity, and favorable exchange rates.

Manufacturers have faced financial pressures—and the squeeze has been hardest on the domestic supplier base

Profit margins are lower in most manufacturing industries than in other sectors, and margin spreads between top-quartile and median firms are also tighter. The gap in margin growth between top performers and the average firm is 11 percent for auto manufacturers; this compares to 53 percent for extraction companies, 39 percent for retailers, and 83 percent in transportation. This speaks to the fact that all manufacturers—even those at the front of the pack—are being squeezed. Consumers have benefited, as prices of durable goods such as cars, appliances and machinery have declined in real terms since the 1980s. Meanwhile profit growth is increasingly concentrated in a handful of asset-light industries. These include high tech and pharmaceuticals, both industries in which US firms capture more value from design and innovation activity than from production.

¹¹ WardsAuto data.

Exhibit 6

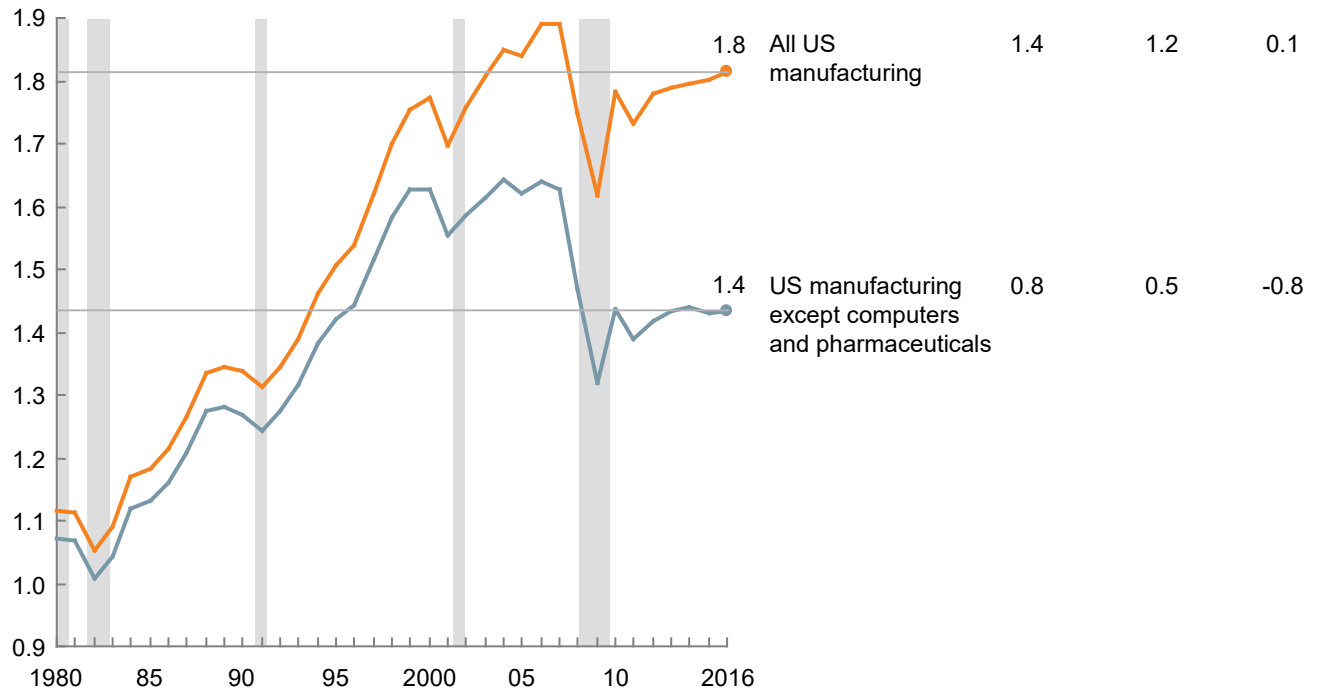
Real manufacturing value added, overall and by industry

\$ trillion, 2010 \$

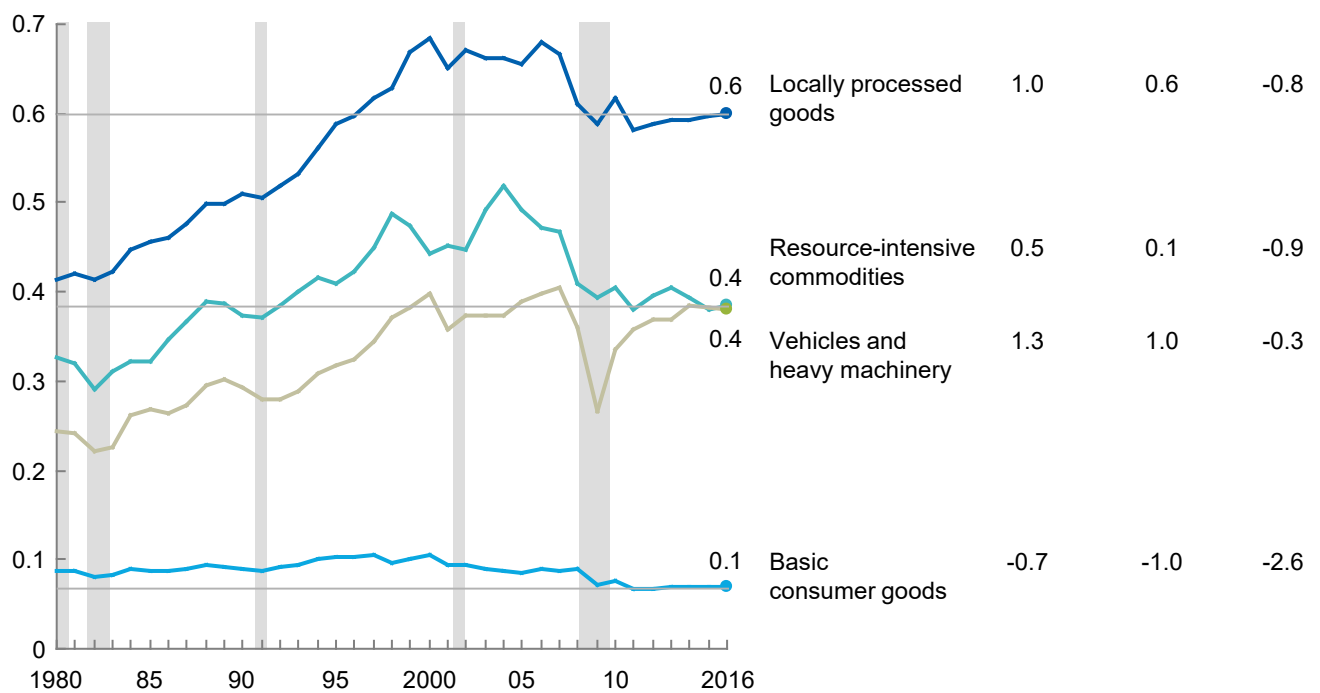
■ Recession

Compound annual growth rate		
%		
1980–2016	1990–2016	2000–16

Real value added in US manufacturing is no higher today than it was in the mid-1990s



Real value added is at 10- to 20-year lows across a range of US manufacturing industries



NOTE: Not to scale.

SOURCE: IHS; US Bureau of Economic Analysis; McKinsey Global Institute analysis

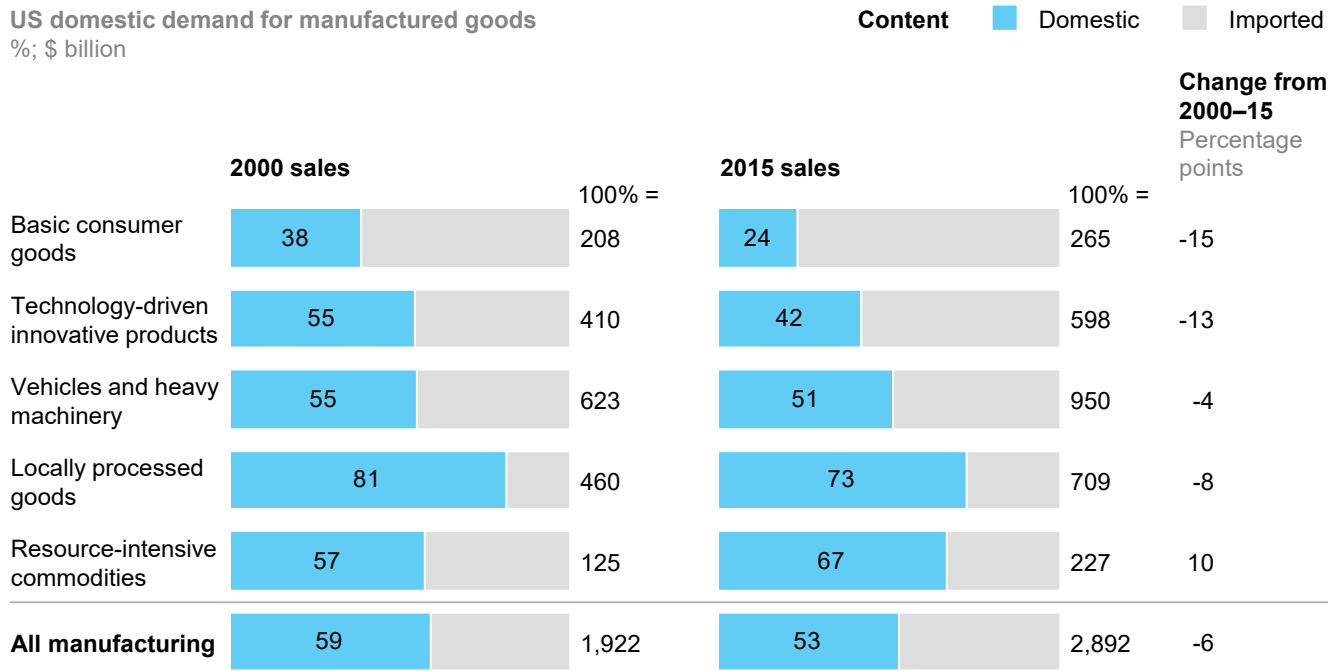
With declining prices, margin pressures, and loss of market share, many US-based manufacturing firms face stagnating or declining returns on capital. In this environment, investor and market pressure has led large manufacturers to focus on cutting costs to preserve financial health. US multinationals are still able to compete, but small producers have borne the brunt of these trends. Smaller suppliers are increasingly squeezed by pricing pressures and changes in working capital arrangements. As bank lending has also fallen, the effect is a cycle of weaker cash flows and less funding for investment and operations.

US manufacturers in a range of industries now rely on more imported content and components. In advanced industries such as vehicles and heavy machinery production, the domestic content of domestically sold goods dropped by four percentage points from 2000 to 2015 (Exhibit 7). An SUV may be assembled in Michigan but with a transmission that was produced in Mexico. The shift to imported content has been even stronger for basic consumer goods such as textiles, apparel, and leather products (15 percentage points). Even export growth has not helped as the US has among the lowest export intensities of large manufacturing nations. US multinationals prefer to produce and sell in overseas markets through their foreign affiliates, and less than 10 percent of this output is accounted for by inputs purchased in the United States.

It is no surprise that US manufacturers report a hollowing out of the domestic supply base, jeopardizing their ability to scale up production at home to meet future demand growth or bring innovations to market. Smaller, more rural counties have experienced a greater hollowing out than larger, urban counties.

Exhibit 7

Most manufacturing segments use less domestic and more imported content today than they did in 2000



NOTE: Numbers may not sum due to rounding.

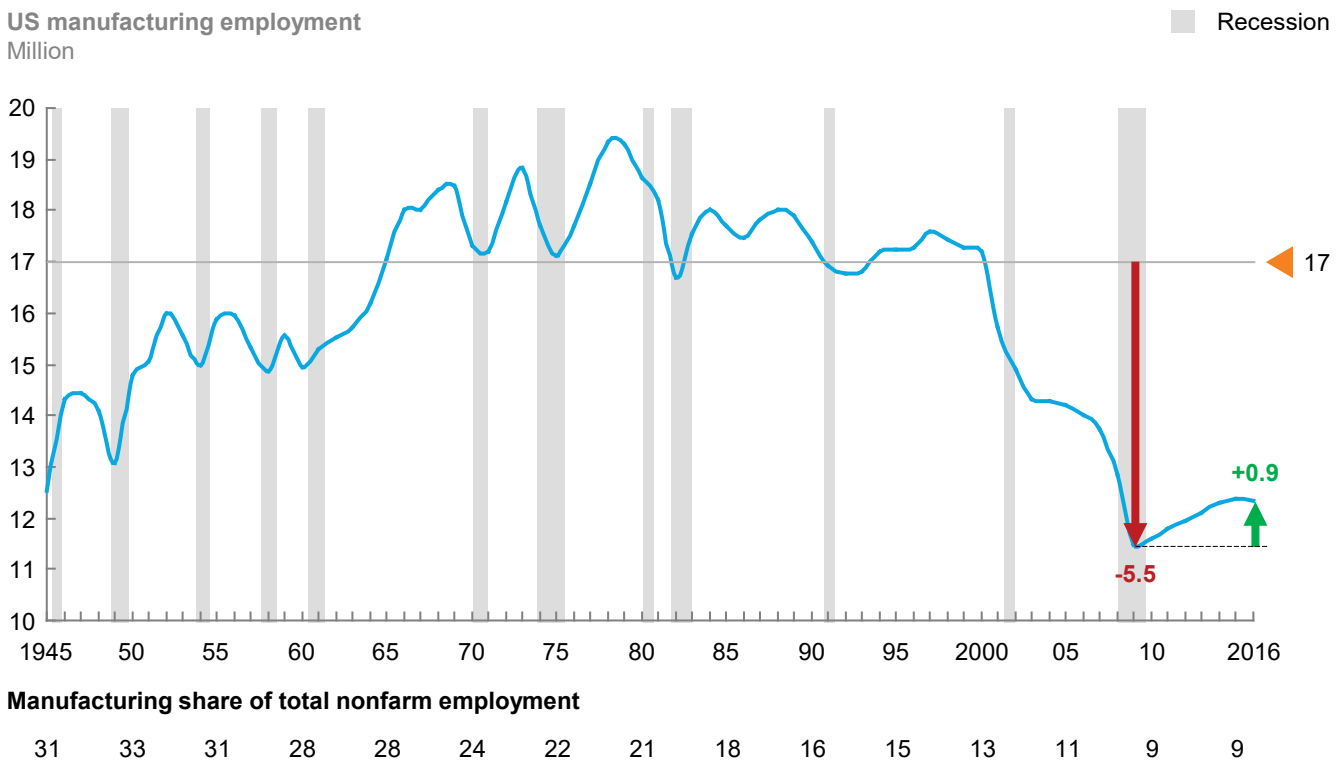
SOURCE: US Department of Commerce, US Bureau of Economic Analysis; McKinsey Global Institute analysis

Contraction in the manufacturing sector has taken a toll on jobs and wages

The overall result of the pressures described above is a well-known story of plant closures, job losses, and eroding wages. Since 1997, the number of manufacturing firms and production plants has fallen by 30 percent. This reflects not only factories closing but also fewer manufacturing firms and factories opening. Younger firms are seeing lower survival rates as well. One-third of manufacturing jobs were lost between 2000 and 2010 (Exhibit 8). Firms that survive today employ 15–20 percent fewer workers per plant vs. 1997.

Exhibit 8

After shedding one-third of its jobs, US manufacturing experienced a modest rebound



SOURCE: US Bureau of Labor Statistics; McKinsey Global Institute analysis

Debates about the role of offshoring vs. automation in killing jobs miss the central issue, which is the loss of competitiveness. With their market share shrinking both at home and abroad, many US manufacturers have resorted to some combination of imported components, offshored labor, and automation to survive. Others have opted for changes in inventory management, plant closures, or cuts to wages and benefits. Some rely on temporary workers rather than employees. One government report estimates that there are about 1.2 million temporary workers in manufacturing, although they do not show up as direct employment in the sector. If they were accounted for, they would add another 10 percent to the manufacturing workforce.¹² Half of these temporary workers, and one-third of all manufacturing workers, now rely on food stamps or other federal assistance programs to make ends meet.¹³

¹² *Manufacturers' outsourcing to temporary help services: A research update*, US Bureau of Labor Statistics, working paper 493, January 2017.

¹³ Ken Jacobs, Zohar Perla, Ian Perry, and Dave Graham-Squire, *Producing poverty: The public cost of low-wage production jobs in manufacturing*, UC Berkeley Labor Center, May 2016.

Hiring did pick up after 2010 as the recovery gained momentum. Nearly one million jobs have been restored since then. But now the recovery in demand has largely played out, and job growth turned negative again in 2016. Worker incomes have continued to decline, and average profit margins remain in the low single digits for most US-based manufacturers.

The stagnation in output has weakened the health of local economies that depend on manufacturing. As the number of firms has declined, manufacturing activity has become concentrated in fewer, older companies, leaving manufacturing workers with fewer options to change jobs and raise their incomes. Eighty percent of manufacturing counties have posted weaker income growth or higher unemployment than the national average even during the recent manufacturing recovery.

ENGINEERING A COMEBACK REQUIRES CONCERTED ACTION—AND IT SHOULD BE A NATIONAL PRIORITY

All of this adds up to a difficult starting point from which to imagine a more robust and competitive future. But the good news is that the long-term decline of manufacturing can be turned around—if the United States plans for new opportunities rather than fighting yesterday's battles.

The opportunities in advanced industries draw on natural US strengths but they are not the only avenues for growth. The world's value chains are in flux, which creates an opening for the United States to capture more production. The major trend for manufacturers over the past two decades has been shifting operations to locations with lower-cost labor, both foreign and domestic. But this strategy is becoming outmoded as the need for market and supplier proximity takes precedence. Automation further weakens the business case for labor arbitrage, and in some industries, the supply of cheaper primary energy in the United States also changes the equation. Many manufacturers are reassessing the costs and risks involved in managing complex, lengthy supply chains. In short, more of the world's production is up for grabs, and this is the time to act.

Capturing a greater share of global production will not be a panacea for jobs—at least not the traditional factory-floor assembly jobs that employed millions of workers in the past. The jobs created would more likely be concentrated in other aspects of the manufacturing process, including design and service roles that support technology-driven industries.

But revitalizing the manufacturing sector is still an important priority for shoring up US competitiveness, supporting more broad-based income growth, and keeping the nation's innovation machine humming. This won't happen by itself. The current cycle of declining output, lower investment, poor productivity, and weakening supplier ecosystems needs to be actively disrupted.

Doubling down on digital to kickstart productivity

Digital technologies change traditional life cycles and economies of scale in manufacturing. Innovation in manufacturing has traditionally been a highly capital-intensive undertaking, requiring long cycle times and patient capital. Now easily accessible technology is lowering capital requirements and speeding up innovation. Firms can access modeling software, 3-D print small batches more cost-effectively, sell direct to customers anywhere in the world, and still have viable business models. It is suddenly much easier to design and get a product out quickly, test it in the market, and do it cost-effectively.

US manufacturing has posted lackluster productivity growth since the Great Recession. While there are multiple causes behind this slowdown, the sector's relatively slow pace of digital adoption has been a drag on performance. While sectors such as finance, media, and

professional services are surging ahead in digital usage and capabilities, US manufacturing is a relative laggard.¹⁴

Even within the sector, there are enormous variations in digitization at the industry and firm level. The small manufacturers that make up the majority of the firms in the sector tend to be light-years behind the sophisticated digital capabilities of industry leaders. Even before companies begin to adopt next-generation technologies, they have a great deal of work to do in deepening their digital usage and capabilities in areas such as customer interactions. Only some are capturing the reams of potentially valuable data generated by their operations, and even fewer are extracting real insights from that data to become more productive. A recent McKinsey survey of 400 manufacturers found that roughly half had no road map in place for rolling out digital manufacturing solutions in a systematic way.

Emerging technologies could be transformative, but it will take a wave of investment—which could include foreign investment—to set these changes in motion. Some machinery will need to be upgraded or replaced to accommodate IoT sensors and actuators, and sophisticated analytics systems are needed to process all the data that is captured. Many factories will need to improve connectivity and interoperability, both for machine-to-machine communications and for relaying large streams of data from the production floor. Policy incentives may be needed to unlock investment, and employers and industry groups will need to work closely with education providers to build the necessary workforce skills.

Rebuilding the US supplier ecosystem

The vast majority of the roughly quarter-million US-based manufacturing firms are small businesses with fewer than 100 employees. Most of them struggle to invest in innovation—and because many compete on price, they are the source of many of the sector’s low-paying jobs.

Today large US manufacturers tend to have an arm’s length relationship with suppliers; their default is going with the lowest-cost provider for any given component. But more agile digital ecosystems call for a different approach. Instead of regarding suppliers as a cost to be squeezed, larger firms can realize long-term value from helping these networks of smaller firms modernize and become more innovative and robust.¹⁵ This will require establishing closer and more collaborative relationships with suppliers and playing an active role in helping them acquire and integrate new technologies. Those who act decisively may be able to establish a first mover’s advantage in amassing talent, spotting the small firms with the most potential, and building new platforms and marketplaces.

Policy can play a role in modernizing small manufacturers that can’t make the leap to digital manufacturing on their own. Smaller firms will need support to invest in productivity-enhancing technologies and implement these systems. Models from other countries could provide helpful templates. Singapore’s Productivity and Innovation Credit scheme, for instance, provides 400 percent tax allowances for investments in automation, workforce development, or intellectual property—and additional benefits when firms demonstrate their use of these investments. Canada funds “technology access centers” at colleges and universities so that small firms have access to applied research and innovation, specialized technical assistance, and even worker training. In the United States, the Department of Commerce is taking similar steps through an initiative called Manufacturing USA, which is establishing public-private innovation institutes across the country. These types of initiatives can be scaled up and expanded.

¹⁴ This assessment is based on an analysis of every sector in the US economy, looking at indicators measuring digital assets, digital usage, and digital labor. See *Digital America: A tale of the haves and have-mores*, McKinsey Global Institute, December 2015.

¹⁵ For a comprehensive discussion of this topic, see Susan Helper, *Supply chains and equitable growth*, Washington Center for Equitable Growth, October 2016.

Investing for the future—and investing in workers

As margins have grown tighter for manufacturers and market share has shrunk, a cost-cutting mentality has set in to preserve financial health and improve short-term results. But to capitalize on the technology and growth opportunity, large firms need to invest in new systems, skills, and industry initiatives. Investors need to give companies enough breathing room to undertake deeper changes and make big bets that could pay off over the longer term.

Purchasing technology systems and upgrading equipment is only part of what is required. An equally important priority will be developing new types of digital skills in the manufacturing workforce. Many manufacturers, particularly in advanced industries, report difficulties filling open positions. Some of these issues reflect location mismatches, since plants may not be located in the same regions where a particular type of talent can be easily found. The industry will have to look for solutions, perhaps through some type of digital platform that could make more efficient matches and track the demand for skills.

Tomorrow's manufacturing jobs will not be pure assembly work. They may not materialize in the same location where plants used to be, and they may have very different skill requirements. Already more than a third of jobs in US manufacturing are service jobs in areas such as software programming, engineering design, logistics and inventory management.¹⁶ Larger companies will have to do more to prepare for this shift, whether it involves offering their own in-house instruction or setting up apprenticeships. They can also partner directly with local community colleges to design tailored courses or create initiatives by partnering with multiple companies in the same industry.

Creating the right policy framework

National and local policy makers will need to get behind manufacturing. At the local level, however, the existing approach too often involves throwing poorly designed tax incentives and other public subsidies at the problem. This approach can pit region against region in a race to the bottom that does not produce good jobs or protect taxpayers. Such incentives have tripled as a share of GDP since 1990, even though they show little correlation to economic gains.¹⁷ A more effective approach might involve establishing incentives for large firms to invest in supplier networks and productivity-enhancing technologies. Most tax incentives are exclusively designed to attract greenfield investment for new plants, but it is equally important to encourage investment in modernizing existing plants to improve their productivity.

Small and medium-size manufacturers are in the greatest need of assistance, particularly with regard to exporting. Small businesses need more mentorship and strategic guidance to understand the market opportunities at stake. Forty-one percent of firms surveyed by the National Small Business Association cited a lack of knowledge about international markets as their reason for not exporting. Policy makers can enable US companies of all sizes to participate in global trade by helping them find new export markets and investment partners. This can start with building basic awareness, since many of the biggest overseas opportunities are in mid-tier cities around the world that are unfamiliar to many US firms. Customs procedures and requirements, originally established for big corporations to export vast quantities of goods, also need to be retooled so the multitude of small businesses handling small purchases from overseas customers can thrive. The US customs system will need to balance speed and dexterity against the imperative to secure borders.

¹⁶ *Manufacturing the future: The next era of global growth and innovation*, McKinsey Global Institute, November 2012.

¹⁷ Timothy J. Bartik, *A new panel database on business incentives for economic development offered by state and local governments in the United States*, W. E. Upjohn Institute for Employment Research, prepared for the Pew Charitable Trusts, 2017.

There is plenty of room to grow; the US has among the lowest export intensities of major manufacturing nations.

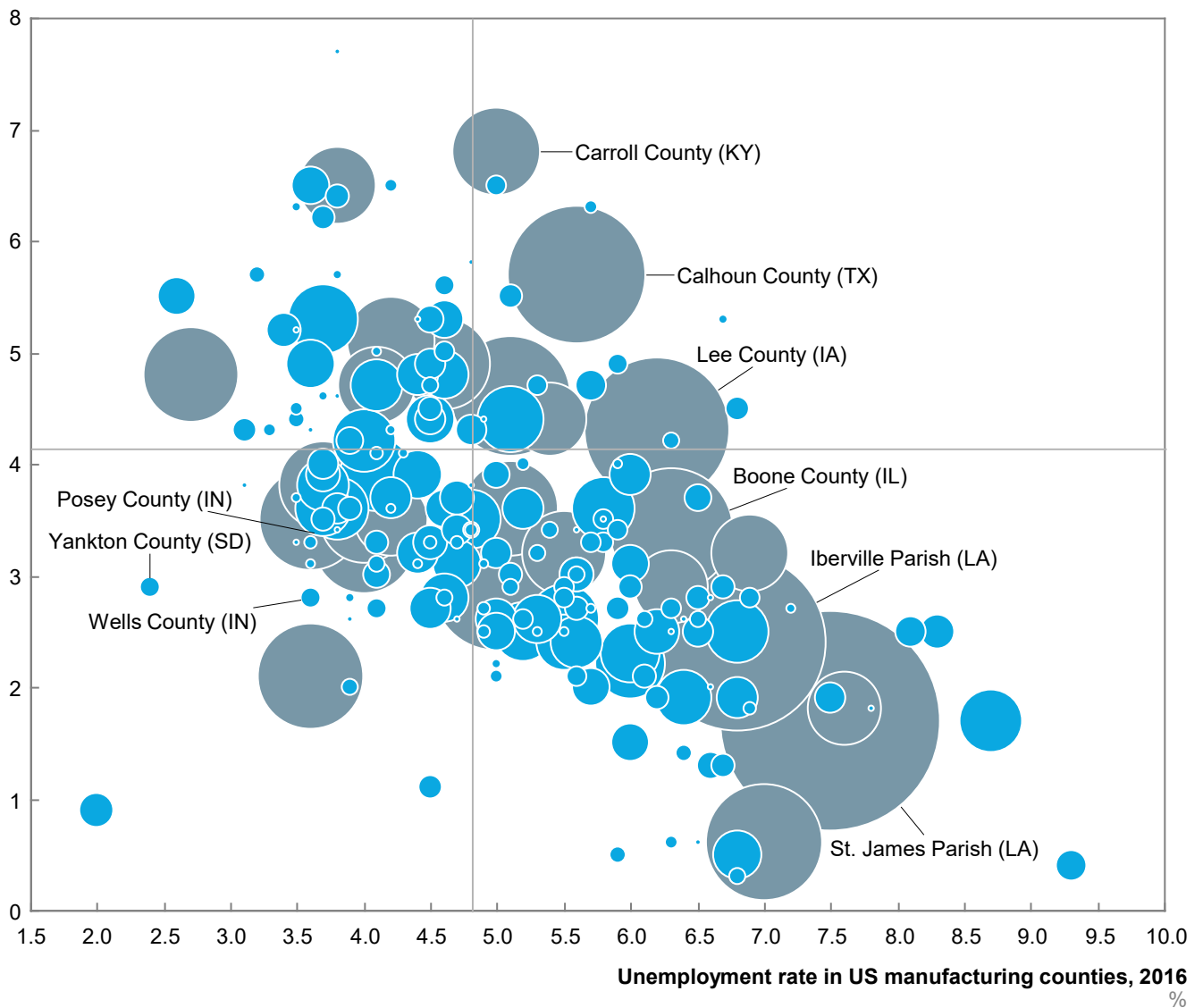
Government at all levels can direct public investment to the regions that are most in need of revitalization. They can also do more to attract foreign direct investment (FDI) in a coordinated way. Growth-generating greenfield FDI tends to be concentrated in a few counties. Many manufacturing regions have missed out altogether—and even some that did manage to attract greenfield FDI have not seen job and income growth follow (Exhibit 9). In the absence of a coordinated strategy, state and local governments have raised the stakes with tax incentives, exacerbating an already-large economic gap among counties.

Exhibit 9

Many manufacturing counties have missed out on foreign investment; even those that did receive it have not seen strong job and income growth

- Bubble size = ratio of foreign capital investment (2010–16) to county GDP
- 87% of counties receive less than US average
- 13% of counties outperform US average

Personal income growth in US manufacturing counties, 2010–16
Compound annual growth rate, %



SOURCE: FDI Markets; US Bureau of Labor Statistics; McKinsey Global Institute analysis

A coordinated investment promotion strategy can help address these issues. Regions that have lost manufacturing anchor firms still have pools of highly experienced workers and industrial and research facilities. They are attractive destinations, particularly for emerging-market firms looking for assistance in technological development. The federal government can play a bigger role in facilitating these matches and directing investment where it is most needed—as most investment promotion agencies do in other countries around the world. A program that helps route new foreign investors to small and medium-sized US firms, perhaps building on the International Trade Administration’s SelectUSA initiative, could provide much-needed capital and exposure to global markets for companies and communities across the country.

Even as the United States looks for new market opportunities abroad, it will need to do more at home for the workers and communities that have been hit hard by foreign competition. Currently the United States spends far less than other countries on helping displaced workers transition into new roles. In 2014, OECD member countries spent an average of 0.6 percent of GDP on training programs and job-search assistance, while the United States devoted only 0.1 percent of GDP to similar initiatives—a share that has fallen by more than half over the past three decades.¹⁸ The United States may need to consider expanding safety net programs and adding new forms such as relocation assistance.

Although the Trade Adjustment Assistance program was designed to address these issues, it has had mixed success in providing displaced workers with retraining and reemployment at commensurate wages.¹⁹ Some community colleges are effective vehicles for retraining, but their graduation outcomes vary widely; many are underfunded and out of step with current industry needs. Increased funding to modernize and improve the outcomes of community colleges across the country could be a solid start toward making retraining more effective.



Harnessing global demand growth and advances in technology to reverse two decades of decline in manufacturing should be a national priority. Manufacturing remains important to the overall health of the US economy, even if it is unlikely to restore millions of high-paying assembly jobs for low-skilled workers. But a new approach is necessary, since the sector as it is currently constituted is not producing wage growth. In some industries, secure union jobs with benefits have given way to more precarious, low-paying work. Manufacturing is a microcosm of what has been unfolding in the broader economy—and nothing has emerged to replace it as a ladder of mobility. Part 2 will look at the broader story of how the health of sectors and individual firms is affecting the ability of workers to make it in America.

¹⁸ *Artificial intelligence, automation, and the economy*, Executive Office of the President, December 2016.

¹⁹ See the US Government Accountability Office reports on trade adjustment assistance in 2001 (number GAO-01-998) and 2006 (number GAO-06-43). Also see Kara M. Reynolds and John S. Palatucci, “Does trade adjustment assistance make a difference?” *Contemporary Economic Policy*, volume 30, issue 1, January 2016.

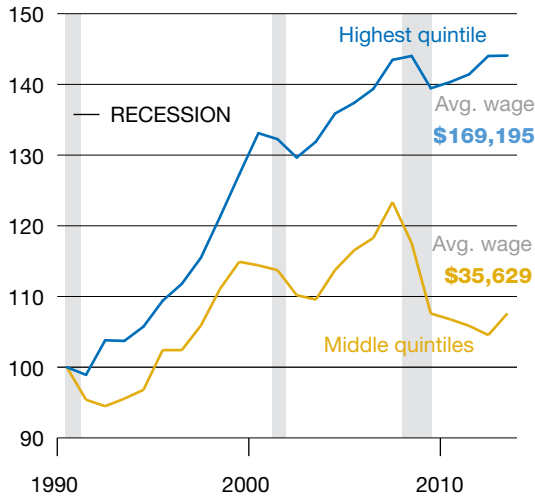


**PART 2: CAN
WORKERS
STILL MAKE IT
IN AMERICA?**

Many workers are not making it in America

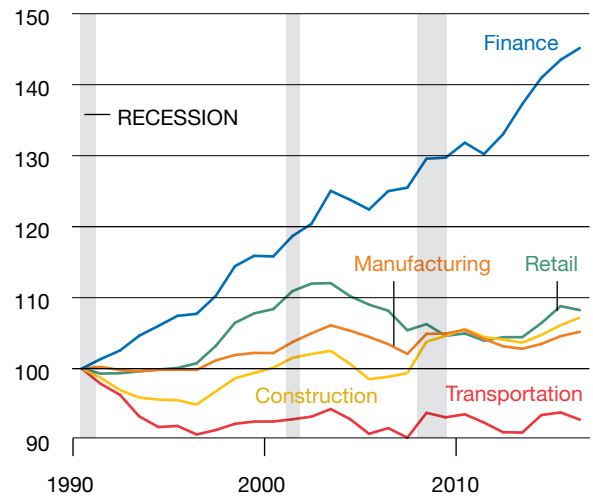
The middle class has slipped back to labor income levels of the 1990s

Evolution of real labor income (Index 1990=100)



Some industries have felt more pain than others in terms of wage growth

Average real hourly wages by industry (Index 1990=100)



2015 distribution of US working population

Millions of working people by annual wages¹

98% of workers, or 158 million people, earn less than \$200,000

85% of workers, or 136 million people, earn less than \$75,000

67% of workers, or 107 million people, earn less than \$45,000

37% of workers, or 59 million people, earn less than \$20,000

by total annual wages

Select occupations in each wage bracket

- Lawyers
- Software developers, managers
- Engineers

- Registered nurses; accountants and auditors
- Elementary school teachers; first-line supervisors
- Electricians

- Truck drivers
- Office clerks
- Retail salespersons
- Home health aides; childcare workers

- Cashiers; food prep workers; wait staff

The US doesn't just need growth. It needs more inclusive growth.



Reinvest in hard-hit communities



Reimagine work



Retrain workers



Remove barriers to mobility and participation

¹ Wage statistics based on 2015 compensation data reported by the employer on W-2 forms. Occupational information from US Bureau of Labor Statistics Occupational Employment Survey.

² All brackets, but especially those at the bottom, may include part-time workers and people who did not work the full year.

PART 2: CAN WORKERS STILL MAKE IT IN AMERICA?

The United States has always prided itself on being the land of opportunity. But in recent years, a large segment of the population has felt that promise slipping away. The loss of manufacturing jobs is emblematic of this shift, but the reality is that wages have declined in real terms across multiple sectors of the economy. Millions of Americans are stuck in low-wage work, in patterns that have been building in plain sight for decades. Many at the top end of the income curve have wanted to look away, but that is no longer possible.

A fundamental change has occurred in how the rewards of growth are distributed in the United States. Labor's share of national income held steady for most of the post-war period, with some cyclical variation. But all that changed after the 1981–83 recession, as the share of national income going to wages continued to decline during the recovery. The trend briefly reversed during the growth surge of the late 1990s, but labor's share fell further after 2000. Today that share is 4.4 percentage points lower than it was in 1980. The growing share going to capital and profits has increased inequality in the distribution of income growth. For many years, productivity growth and wage growth rose hand in hand, but that relationship is much weaker today.

Building on previous MGI research on income inequality across advanced economies, this work offers a preliminary perspective on how this issue is playing out in the United States. There are multiple causes behind poor wage growth, including the impact of the Great Recession and long-term structural changes in the economy. In addition to exploring these factors, this chapter highlights an aspect that is often overlooked in discussions of income inequality: the changing landscape for companies and industries. Large sectors of the US economy have developed unhealthy dynamics that cause them to generate poor-quality jobs. Many workers now feel they have limited options for negotiating better pay, changing jobs, or moving to regions with better opportunities.

The United States now appears to be a two-tiered, two-speed economy. Workers in some firms and sectors are doing remarkably well, while those in larger and more capital- and labor-intensive industries are struggling. In real terms, wages remain below their 1983 levels in some large, asset-heavy sectors such as retail, transportation, and construction. The trends in these sectors alone mean that at least one-fifth of the US workforce has not advanced in more than three decades.

Today the US unemployment rate is back down to just 4.4 percent, and the tighter labor market is finally causing wages to tick up again. The even better news is that this wage growth appears to be broad-based. It is too early to say whether this will be a lasting trend. But even if the momentum continues, America needs to take a hard look at whether the vast majority of workers—and low-wage workers in particular—have real prospects for advancing in the current labor market. Paychecks have been shrinking in real terms for tens of millions of workers for many years, and it will take much more sustained and inclusive growth to help them make up the ground they have lost. The scope of the problem, combined with the unknowns of technological change, mean that the solutions that have worked in the past may not be sufficient this time. The United States will have to grapple with some difficult big-picture questions about the future of work.

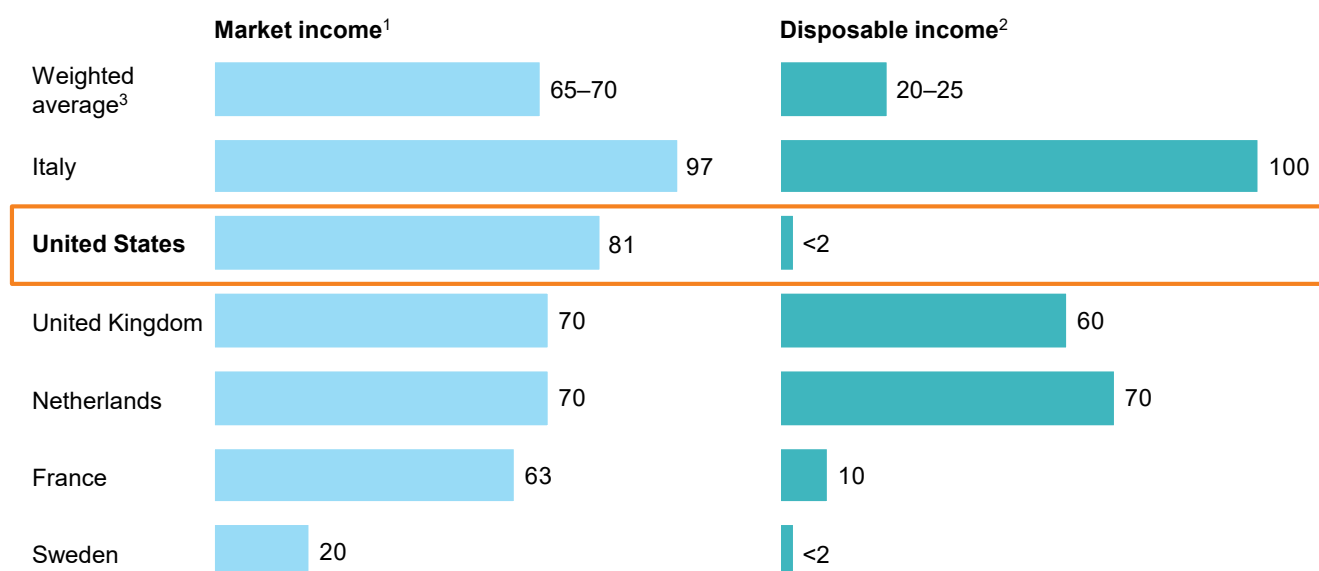
INCOMES HAVE BEEN FLAT OR FALLING FOR MOST US HOUSEHOLDS

Our more digital and global economy has also become a more unequal economy. Last year, MGI published new findings on income inequality. It found that in 2014, 81 percent of US households were in segments of the income distribution that had experienced flat or declining market incomes since 2005 (Exhibit 10).²⁰

Exhibit 10

More than 80 percent of US households were in segments with flat or falling market incomes from 2005 to 2014

% of households in segments with flat or falling incomes, 2005–14



1 Market income includes labor income, business income, capital income, and retirement income.

2 Disposable income includes market income adjusted for government transfers and federal taxes.

3 Population-weighted average of 25 countries, extrapolated from results for the six countries profiled here.

NOTE: For each country, we use the latest year of available data: Sweden (2013), Netherlands (2014), United Kingdom (2013–14), France (2012), United States (2013), Italy (2014 disposable incomes, 2012 market incomes).

SOURCE: Institut national de la statistique et des études économiques; Bank of Italy; Centraal Bureau voor de Statistiek; Statistics Sweden; UK Office for National Statistics; US Congressional Budget Office; McKinsey Global Institute analysis

This is a stunning reversal from the previous decade, which encompasses the growth surge of the late 1990s. From 1994 to 2004, real incomes rose for all segments in the United States (in fact, only 2 percent of households experienced flat or declining incomes across all developed economies). Most of these gains were achieved during a broad-based growth surge that occurred in the late 1990s. But the United States was not able to sustain this momentum—and after the deep shock of the Great Recession, recovery has been slow and highly uneven.

The statistics above refer to trends in market incomes (that is, income from labor and capital). The picture brightens considerably when the focus shifts to disposable income, a metric that factors in taxes and government transfers. When they are taken into account, less than 2 percent of US households were in segments with flat or falling income over the 2005–2014 period. This compares to 10 percent in France, 60 percent in the United Kingdom, and 70 percent in the Netherlands. In short, the US government managed to cushion the blow of the recession more successfully than governments in other countries, and the pain would have been felt more acutely in the absence of these moves. But this support came at a significant fiscal cost.

²⁰ *Poorer than their parents? Flat or falling incomes in advanced economies*, McKinsey Global Institute, July 2016.

Who has been hit the hardest?

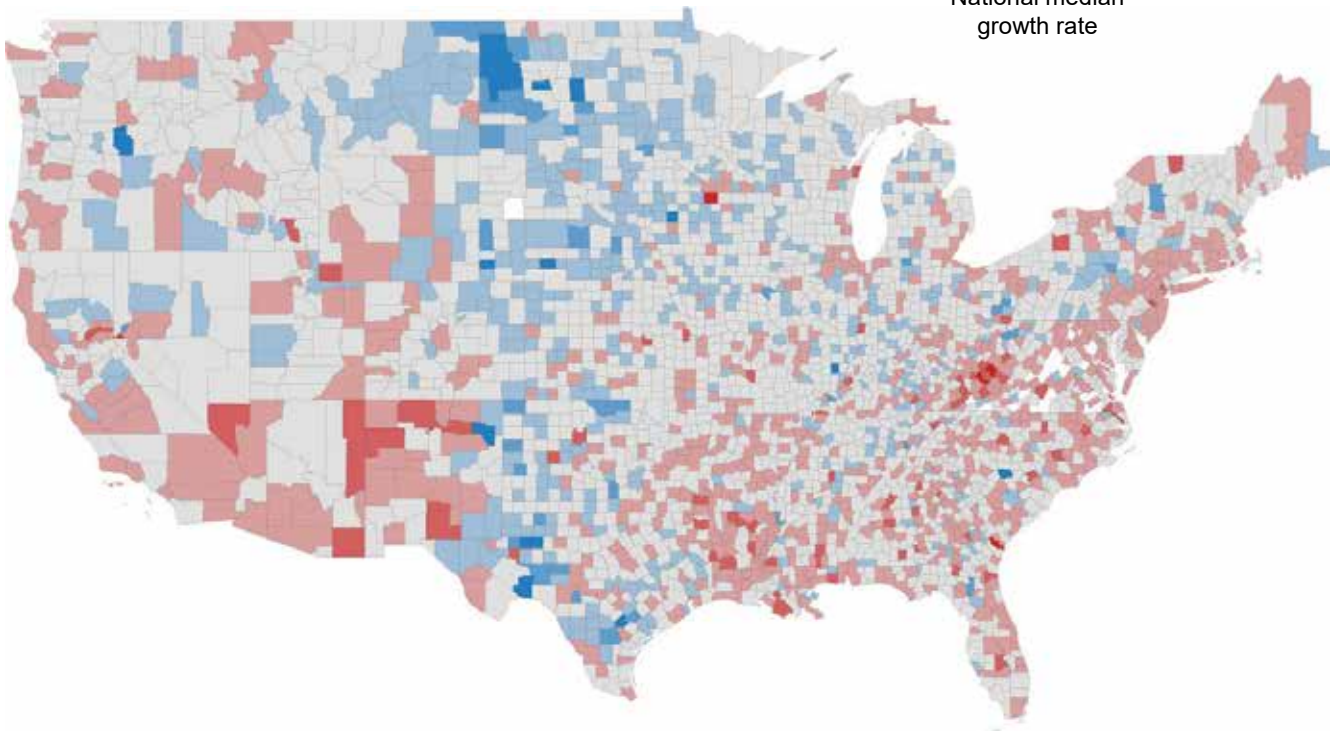
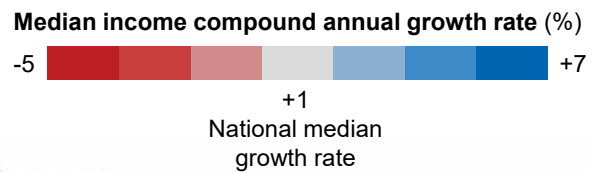
The national median hides tremendous variations in income trends.²¹ One of the major policy challenges facing the United States will be addressing these gaps by making economic growth and income gains more broad-based. While the economy has been showing steady growth at a national level, many Americans have been unable to get ahead (see Box 1, “Are households able to get by?”).

Taking a regional view, some parts of the United States are hotspots of growth, while others have stagnant or distressed local economies—and the gap grew even bigger during the recent recovery.²² From 2010 to 2015, 55 percent of US counties (home to three-quarters of the US population) saw their median household income grow at a slower rate than the national median (Exhibit 11). That is a sobering statistic, considering that the national median growth rate itself was only a modest 1 percent during this period. In fact, real median household incomes remain below their pre-2000 peaks in almost two-thirds of US counties. Many of these struggling areas are in the Midwest and Southeast.

Exhibit 11

Household income growth has lagged in 55 percent of US counties during the recovery

Real median household income growth rate by county, 2010–15



SOURCE: US Census Bureau; McKinsey Global Institute analysis

²¹ A large body of literature exists on this topic. For instance, see Emmanuel Saez, “Striking it richer: The evaluation of top incomes in the United States,” University of California, June 2016; “The distribution of household incomes and federal taxes, 2013,” Congressional Budget Office, June 2016; and “The US income distribution: Trends and issues,” Congressional Research Service, December 2016.

²² *The new map of economic growth and recovery*, Economic Innovation Group, May 2016.

Box 1. Are households able to get by?

Growth rates provide one perspective on whether people feel they are advancing. But it is important to put trends into the context of what it actually takes to make ends meet.

For some items in the household budget, low inflation has taken the sting out of stagnant incomes. Global trade has brought down the price of many imported goods such as shoes, vehicles, toys, food, phones, and other electronics. Clothing, in particular, has become commoditized, bringing down prices dramatically. One study estimates that international trade has provided middle-class US consumers with more than a quarter of their purchasing power.¹ Digital innovation has given consumers valuable free services such as Google Maps, social media for instant international communication, and access to many sources of news and entertainment.

Yet costs have been rising for many of the fundamentals of a middle-class life. One of these is higher education, which has always been one of the main pathways to upward mobility. The average cost of college almost doubled as share of median household income between 1984 and 2014.² Student loan debt has ballooned from just under \$400 billion in 2005 to \$1.34 trillion in 2017, dampening consumption and household formation by young people.³

The biggest item in any household budget is usually housing. Homeownership has always been the linchpin of the American Dream. But housing prices have soared out of reach in many markets. Rents, too, have been climbing nationally. One study found that 71 percent of extremely low-income renter households (8.1 million households in total) spend more than half of their income on rent and utilities.⁴ The affordable housing shortage has reached epic proportions in places like California's most expensive metro areas, where 60 percent of households cannot afford the cost of housing.⁵

Household health-care spending has steadily risen as well. According to BLS data, from 2005 to 2014, the national average for out-of-pocket spending climbed by 35 percent, to \$4,290. One factor driving expenditures higher is that workers are being asked to contribute more toward the premiums on employer-sponsored insurance plans.

Child-care costs are a critical concern for working parents. One recent study found that the average national cost of full-time care for a child under age 4 is \$9,589 a year, higher than the average cost of in-state college tuition. This would consume almost one-fifth of the median household's income.⁶ Many low-wage workers are forced to improvise or rely on other family members. In some cases, it does not pay to accept a low-wage job if it means incurring high child-care costs.

Looking more broadly at households' ability to make ends meet, 2015 numbers show that the average household was able to save 7 percent of disposable income after accounting for spending on all categories. But the national average conceals the extent of the problem for those at the low end. High-income households have double-digit savings rates, but those in the bottom two quintiles did not have enough disposable income to cover their expenditures. For them, getting by meant either dipping into savings or going into debt. One government study found that 29 percent of households age 55 and over have no defined benefit pension plan or personal retirement savings account.⁷

¹ *The economic benefits of US trade*, Executive Office of the President, May 2015.

² Based on analysis of US Department of Education data for average charges among all institutions (public, private nonprofit, and private for-profit) for full-time students for the entire academic year of a four-year program.

³ *Quarterly report on household debt and credit*, Federal Reserve Bank of New York, May 2017; and "Household debt and credit: Student debt," Federal Reserve Bank of New York presentation, 2013.

⁴ *The gap: A shortage of affordable homes*, National Low Income Housing Coalition, March 2017.

⁵ The affordability threshold is 30 percent of pretax household income, as defined by the US Department of Housing and Urban Development. See *A toolkit to close California's housing gap: 3.5 million homes by 2025*, McKinsey Global Institute, October 2016.

⁶ *The care report*, New America Foundation, September 2016.

⁷ *Retirement security: Most households approaching retirement have low savings*, US Government Accountability Office, May 2015.

On top of regional differences are demographic disparities.²³ MGI's earlier research singled out one group in particular whose incomes fell faster than others: single mothers. Twenty times as many single mothers are in the lowest income decile as in the highest—and in the decade from 2003 to 2013, their real household incomes fell nearly one percentage point faster than those of all other households.²⁴ Declining wages mean that budgets are strained even in dual-earning households, but the pressure is even greater for single-income households with dependents.

AN INCREASINGLY TWO-SPEED ECONOMY HAS LEFT MANY WORKERS RUNNING IN PLACE OR FALLING BEHIND FOR MORE THAN THREE DECADES

MGI's earlier research, which focused on what happened from 2005 to 2014, lays bare what a blow the Great Recession delivered. But a longer view shows that this period intensified pressures that had already been building for more than three decades. Household incomes have been growing much more slowly since the 1970s. Since the 1980s, incomes have taken progressively steeper falls during recessions, and recoveries have been shallower. The surge of growth in the late 1990s briefly reversed these trends, but it proved to be only a temporary respite.

The wage gap has widened between workers at the top and everyone else

Declining household incomes are ultimately a wage story—and only workers at the top of the distribution have been bringing home bigger paychecks. The trend of flat or falling household incomes described in MGI's previous research looks at market incomes, which are the total of wages, employer-provided benefits, and investment income. For all segments, the wage-benefit portion makes up at least two-thirds of market income. Households in the highest quintile of market income experienced strong gains. The bottom two quintiles saw their wages decline by 5 percent on average and their benefits erode by 2 percent over the 2005–2013 period (Exhibit 12). Capital income from investment also declined over this period but to a much lesser degree.

Narrowing the focus exclusively to wages and taking a longer historical view is illuminating. Since 1983, the top quintile has almost doubled its wages and benefits in real terms. But all other segments have been failing to advance on a persistent basis (Exhibit 13). They were hit harder by the Great Recession, and their wages remain mired at roughly the same levels they reached in the late 1990s. Workers in the lowest quintile have faced extreme volatility, leading many to choose wage stability over higher-wage opportunities.²⁵

Beyond the view by quintiles, many types of demographic disparities exist. One of the biggest is the yawning pay gap between workers with post-secondary education and those without it. Workers with bachelor's degrees or higher make up 39 percent of the US workforce, and their real wages rose by 13 percent from 1983 to 2016. But low-skill workers fared much worse. Just over a quarter of the US workforce in 2016 consisted of workers with high school diplomas and no college. This group's wages fell by 7 percent in real terms from 1983 to 2016. Workers who did not finish high school suffered an even steeper drop of 18 percent over this period.

²³ Mark Mather and Beth Jarosz, *The demography of inequality in the United States*, Population Reference Bureau, November 2014.

²⁴ *Poorer than their parents? Flat or falling incomes in advanced economies*, McKinsey Global Institute, July 2016.

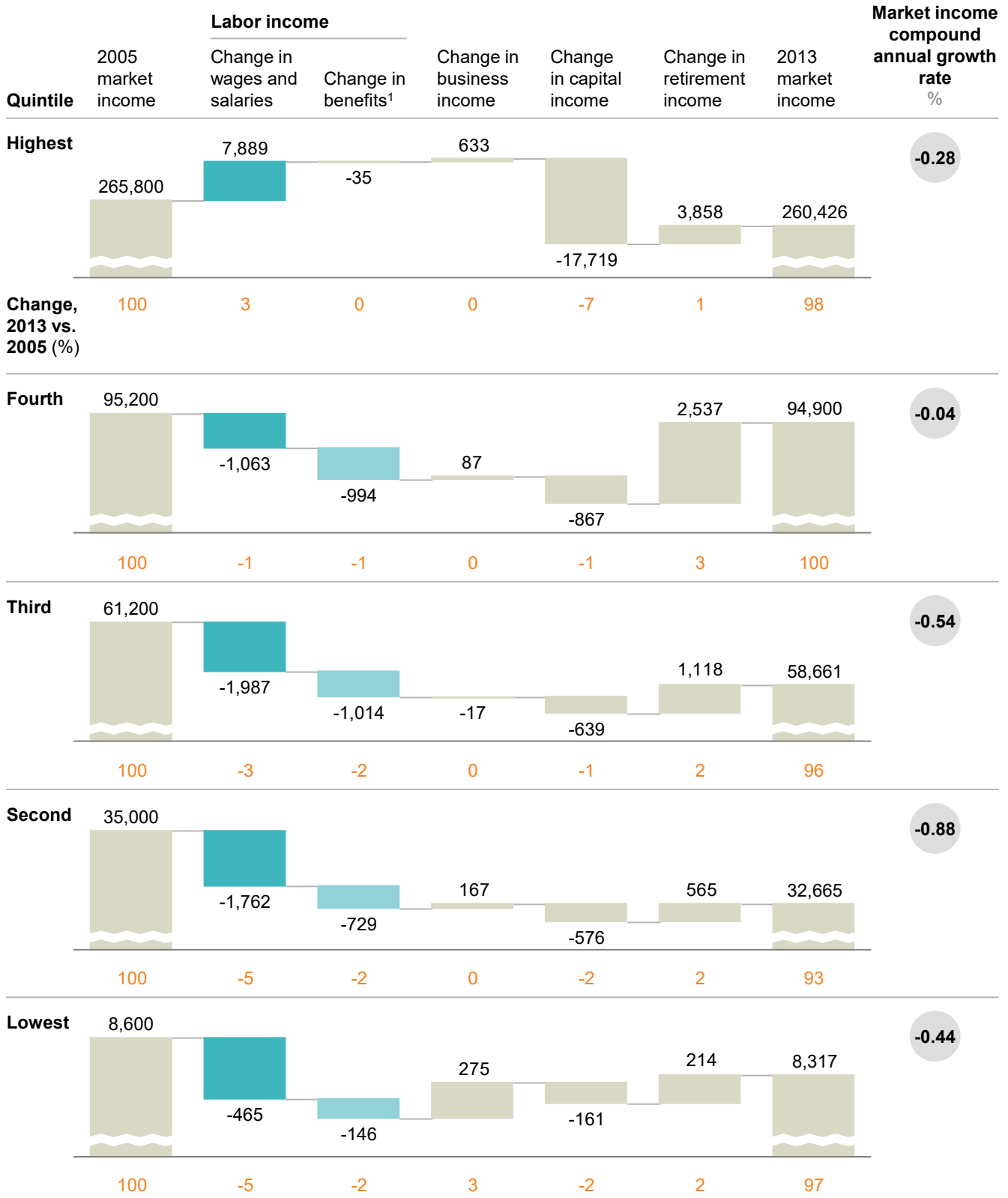
²⁵ Jonathan Morduch and Rachel Schneider, *The financial diaries: How American families cope in a world of uncertainty*, Princeton University Press, April 2017.

Exhibit 12

The bottom two quintiles experienced a 5 percent decline in wages and a 2 percent drop in benefits

Real income (2011 dollars)

■ Wages and salaries ■ Other labor income



¹ Includes employee's contributions to deferred compensation plans, employer's contributions to health insurance, employer's share of payroll taxes, corporate tax borne by labor.

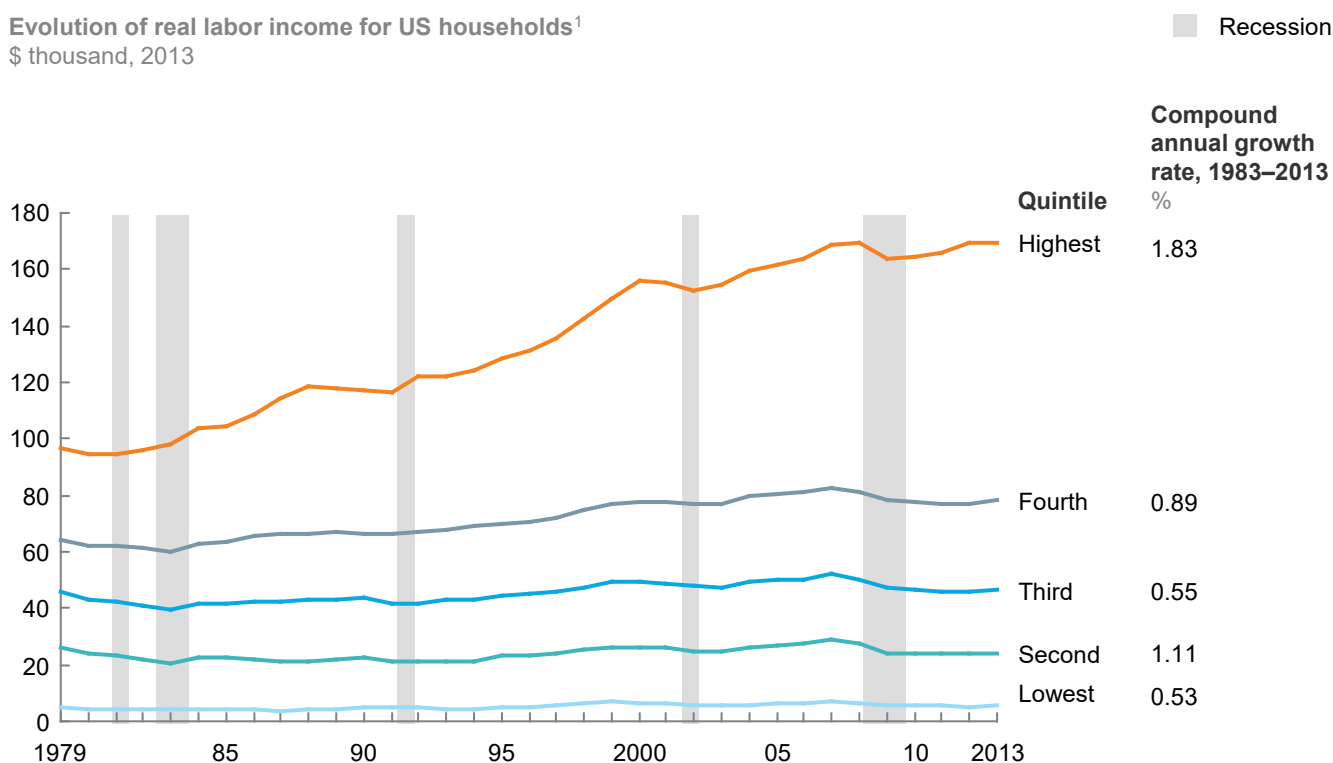
NOTE: Not to scale. Numbers may not sum due to rounding.

SOURCE: Distribution of household income and federal taxes 2013, Congressional Budget Office; McKinsey Global Institute analysis

Exhibit 13

Labor incomes for everyone except the highest quintile are no higher in real terms than they were in the late 1990s

Evolution of real labor income for US households¹
 \$ thousand, 2013



¹ Labor income includes cash, wages, and salaries; employer contributions to deferred compensation plans; employer contributions to health insurance; employer share of payroll taxes; and corporate tax borne by labor. Income groups are created by ranking households using before-tax income, adjusted for household size. Quintiles (fifths) contain equal numbers of people.

SOURCE: US Congressional Budget Office; McKinsey Global Institute analysis

The gap between college-educated workers and non-college-educated workers is not only about pay. It is also about the ability to land a “good” job in the first place. One study found that the recovery in jobs since 2010 has been skewed toward lower-wage industries.²⁶ Paradoxically, another study found that 99 percent of the 11.6 million jobs added from the bottom of the recession through 2016 went to workers with at least some college education. Furthermore, 77 percent of the 7.2 million job losses in the recession affected workers with high school diplomas or less.²⁷ This raises a question about the prevalence of overqualification and “mal-employment” in the US labor market.

Young people now find it much harder to gain a foothold on careers and start moving up the wage ladder; entry-level jobs are no longer reliable launching pads. Workers under age 35 are the only group that experienced a decline in real wages from 1983 to 2016.

Wage trends have diverged sharply by sector, and certain occupations have borne the brunt

The two-speed nature of the US economy becomes clear when we look at wage trends by sector, focusing specifically on production (non-supervisory) workers. The finance and real estate sector has far outpaced every other part of the economy in relative wage growth. The

²⁶ “Tracking the low-wage recovery: Industry employment and wages,” National Employment Law Project data brief, April 2014.

²⁷ Anthony P. Carnevale, Tamara Jayasundera, and Artem Gulish, *America’s divided recovery: College haves and have-nots*, Georgetown Center on Education and the Workforce, 2016.

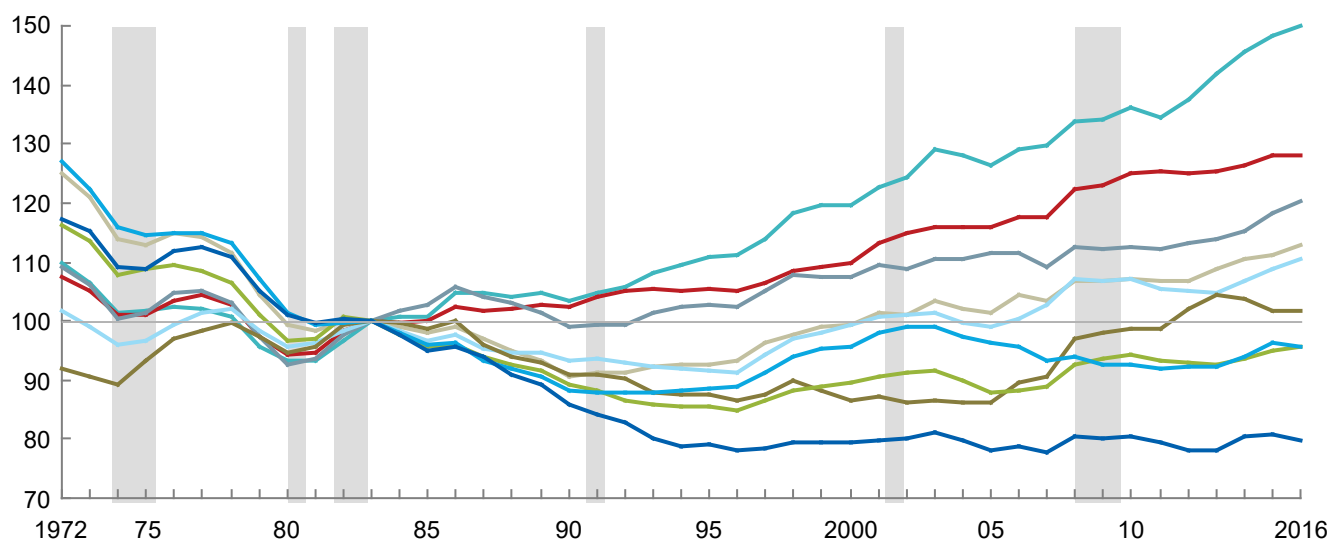
information and telecom sector also performed well.²⁸ In other words, some parts of the economy that were high-wage to begin with have been pulling away from the rest. However, these two sectors collectively employ only 7 percent of all US production workers. The trends have gone the opposite way in many sectors that are capital-intensive and employ large numbers of low-skill workers (Exhibit 14).

Exhibit 14

Wages have taken a hit in many capital-intensive industries such as transportation, retail, and construction

Average real hourly wages for production workers, by industry, 1972–2016¹

Index: 100 = 1983



Industry ²	Total number of production workers (seasonally adjusted), May 2017	Average hourly wage of production workers, 2016 \$	Share of total nonfarm private-sector workers %
Financial activities (including real estate)	6,544,000	26	5.3
Health care and education ³	20,258,000	23	16.5
Utilities	445,100	35	0.4
Information/telecom	2,194,000	30	1.8
Leisure and hospitality	13,974,000	13	11.4
Mining and logging	447,100	27	0.4
Construction	5,165,000	26	4.2
Retail trade	13,448,200	15	10.9
Transportation	4,385,100	21	3.6

1 Production (non-supervisory) workers constitute 70–88% of the total workforce. Examples include retail salespeople, construction laborers, and truck drivers.

2 Financial activities, NAICS 52–54; leisure and hospitality, NAICS 71–72; mining and logging, NAICS 1133, 21; retail trade, NAICS 44–45. Computer, electronic product, and electrical equipment and supplies manufacturing have seen increases of 65% since 1990. Over the same period, average wages for pharmaceutical, medicine, and medical equipment and supplies manufacturing workers increased by 51%. Average wages for other chemical manufacturing, machinery manufacturing, and transportation equipment manufacturing workers increased by 16% over the same period.

3 Refers to private-sector workers only.

SOURCE: US Bureau of Labor Statistics; McKinsey Global Institute analysis

²⁸ In Exhibit 14, the information and telecom industry is much broader than simply high-tech and software firms. The economy's biggest tech giants post outsized profits and strong wage growth, but they do not all fit neatly into one BLS category, so their wage trends appear muted here.

Within these industries, some occupations have been hit particularly hard. In transportation, for instance, 1.7 million people are employed as truck drivers. The average real wages associated with this job declined by more than 6 percent from 1999 to 2016—even in the face of labor shortages, which seem to be caused by the difficult working conditions associated with trucking and challenges in attracting and retaining younger workers. The decline in wages may be related to an erosion of union membership and the rise of independent contracting. In retail, the difficulties experienced by traditional brick-and-mortar players translated into a 4 percent decline in average real wages for customer service representatives, stock clerks, and order fillers over this period; salespeople also experienced a 1 percent decline. Overall, more than 9 million people are in these occupations. In construction, electricians and carpenters (which together account for 1.3 million workers) experienced wage losses of 8 percent and 5 percent, respectively. In manufacturing, the sharpest declines were felt by around 3 million people in lower-skill occupations such as laborers; freight, stock and material movers; and helpers. Some medium-skill occupations such as machinists (400,000 workers) also experienced a 2 percent decline.

DECLINING WAGES REFLECT STRUCTURAL SHIFTS IN THE ECONOMY, THE EFFECTS OF TECHNOLOGY, AND A CHANGING CORPORATE LANDSCAPE

The Great Recession dealt a tremendous blow in the form of both lost jobs and lost income. The depth of this once-in-a-generation downturn and the slow, uneven nature of the recovery worsened the situation for workers—and a return to more robust growth will provide a measure of real relief. But it is important to recognize that wages had already been declining in real terms for millions of workers for decades before the recession struck. The forces causing these trends will not disappear even if economic growth accelerates.

Multiple economic, technological, and societal forces have simultaneously contributed to pressures on incomes and wages. Some are structural shifts, such as the changing sector mix of the economy and the declining share of national income going to labor. Productivity and wages have historically risen hand in hand, but now that relationship has been weakened. In the past two decades, the ongoing digitization of the economy has also made it possible to get more output from knowledge-intensive capital using less labor. There is a new premium on highly skilled workers who can make the most of technology.

In addition to exploring all of these aspects, this research focuses on another potential contributing factor that is often overlooked in discussions of US income inequality: the changing environment facing companies and industries. There has been an extraordinary escalation of competitive pressures, including foreign competition in tradable sectors as well as price competition and declining returns in many asset-heavy sectors. Furthermore, profits are shifting to asset-light sectors and a small number of superstar firms that employ relatively few people. Between 1990 and 2013, for instance, the profit share of finance, pharma, and tech companies in the S&P 500 rose from 17 percent to 44 percent.²⁹ The vast majority of the labor force, however, works in more capital-intensive industries and in average or underperforming firms that are struggling to maintain returns on capital. Some of these firms have responded to this tougher operating environment with cost-cutting measures such as squeezing suppliers or opting for automation, offshoring, or contract work. In real terms, wages remain below their 1983 levels in some large, asset-heavy sectors such as retail, transportation, and construction. The trends in these sectors alone mean that at least one-fifth of the US workforce has not advanced in more than three decades.

²⁹ “What’s behind this year’s buoyant market,” *McKinsey on Finance*, number 52, autumn 2014.

For their part, workers now have fewer options when their pay stagnates. As the nature of work has changed, the relationship between companies and workers has weakened. Workers now have decreased bargaining power and mobility, and large segments of the labor force lack the skills that the marketplace values.

US firms in multiple sectors face intensifying competition and margin pressures

In all industries, the competitive landscape has become much tougher. New challengers can arrive with surprising speed from any corner of the globe and, increasingly, from the technology sector.

The manufacturing sector is not the only part of the US economy exposed to foreign competition, but it is here that the wage effects (and job losses) are most starkly visible. In some labor-intensive manufacturing industries most exposed to trade, that competition comes from low-wage countries. But even US firms in advanced manufacturing industries must go head-to-head with formidable competitors based in other advanced economies as well as with firms in emerging economies that are rapidly becoming more innovative. US producers began losing global and domestic market share in industries such as apparel, electronics, appliances, and automobiles in the 1970s, a trend that accelerated after 2000.

Intense competition and productivity growth combined to create substantial consumer surplus. In 2000, the typical base model of a midsize passenger car had a retail price of \$25,000 (in today's dollars). In 2015 that same car had \$3,000 worth of additional components, yet its retail price was only \$23,000.³⁰ The price of apparel plummeted as US retailers began sourcing from low-wage countries, a trend that has intensified with the advent of so-called "fast fashion."

But while consumers emerged as big winners, US manufacturing firms struggled to stay above water, especially as they lost market share to foreign competitors. As discussed in Part 1, they responded to these pressures with a range of actions to reduce costs and survive: squeezing suppliers, cutting wages and benefits, resorting to more temporary hiring, automating their plants, and offshoring jobs. Real wages in manufacturing are now 1 percent lower than their level in 1983, and temporary workers make up 8 to 10 percent of all production work in manufacturing.³¹

Digital disruption is another source of intensifying competition and pricing pressure in the past two decades. In consumer-facing markets, the Internet enables users to compare prices, features, and product reviews with a few clicks of a mouse, and there is little inconvenience involved in switching from one seller to another. Consumers can hold out for bargains and get exactly what they want when they want it. As markets become digitally disrupted, incumbents are seeing more pressure on revenue and profit growth.³²

These effects are on full display in the retail sector. Even before the Internet, the sector had experienced turbulence as independent stores found it difficult to compete with big-box retailers that could benefit from economies of scale. Today, although e-commerce accounts for only 8 percent of total retail sales, it is having broad ripple effects as digital marketplaces and search engines force companies to compete on price. The disruptive effects of Amazon are being felt throughout the sector. This is creating intense margin pressures for brick-and-mortar retailers who had built out more square feet per capita in the United States than in other advanced economies.

³⁰ *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015.

³¹ Jessica Nicholson, *An update on temporary help in manufacturing*, US Department of Commerce, April 2015.

³² "The case for digital reinvention," *McKinsey Quarterly*, February 2017.

On average, real wages within retail—which employs 13.4 million production workers, or 9 percent of the total US private workforce—have dropped 4 percent below their 1983 level. Retail is a case in which wages started out low, and the floor actually fell. In recent months, a number of long-established major retail chains have begun closing stores and eliminating tens of thousands of jobs. This development could worsen wage pressures going forward.

Profits are increasingly concentrated in a few sectors and superstar firms, and short-term cost-cutting has taken precedence over long-term investment

Today profits are shifting away from capital-intensive industries. A greater share is now being captured by asset-light industries such as finance, technology, and health-care products—and while these industries have posted strong wage growth, they employ relatively few people. This dynamic has accelerated a trend that has been unfolding for decades: the gradual reweighting of the US economy toward service sectors, which now account for approximately 70 percent of US GDP. Some service industries (such as business and professional services) are highly profitable—and their wages reflect that. But other service industries, such as such as hospitality, retail, and office services, employ large low-wage workforces.

Furthermore, multiple sectors have developed a winner-take-most dynamic, with a handful of “superstar” firms generating outsized returns on capital. Workers at those firms are paid exceedingly well, while those employed by average or underperforming firms fall further behind.³³ Recent research suggests that the superstar effect is playing a significant role in labor’s declining share of national income (Exhibit 15).³⁴ It is likely that capital’s share has declined even faster, driven by lower cost of capital and weak investment growth. The growth in corporate profits, which is concentrated in a limited number of sectors, accounts for declines in the shares of both labor and capital. While the research points to superstar firms and rising industry concentration as potential factors, this result is also consistent with the shift in profits to relatively asset-light industries and firms. Growing concentration of market share and firm ownership may be exacerbating these trends.³⁵

Some economists have also begun to examine the impact of “financialization” on wages and on income equality.³⁶ This term refers to the disproportionate growth of the financial sector, which can cause asset bubbles and crowd out real economic activity. It can sometimes distort corporate behavior in the broader economy, creating disincentives for long-term investment while encouraging higher dividend payments, escalating salaries for top management, rent-seeking, and hostile takeovers. US corporations have record cash holdings, but they are increasingly directed into dividends and share repurchases. From April 2015 to March 2016, companies in the S&P 500 spent almost \$590 billion on share buybacks.³⁷ McKinsey research finds that share repurchases seldom have any lasting effect on total returns to shareholders.³⁸ But the trend appears to be growing: Goldman Sachs

³³ Jae Song et al., *Firming up inequality*, Centre for Economic Performance, London School of Economics, CEP discussion paper number 1354, May 2015; and David Card et al., *Firms and labor market inequality: Evidence and some theory*, March 2016.

³⁴ David Autor et al., “The fall of the labor share and the rise of superstar firms,” NBER working paper number 23396, May 2017; and David Autor et al., “Concentrating on the fall of the labor share,” NBER working paper number 23108, January 2017.

³⁵ See Jason Furman and Peter Orszag, *A firm-level perspective on the role of rents in the rise in inequality*, 2015; Robert E. Litan and Ian Hathaway, “Is America encouraging the wrong kind of entrepreneurship?” *Harvard Business Review*, June 2017; and Simcha Barkai, “Declining labor and capital shares,” University of Chicago, 2017.

³⁶ See, for example, Stephen G. Cecchetti and Enisse Kharroubi, *Reassessing the impact of finance on growth*, Bank for International Settlements, working paper number 281, July 2012.

³⁷ Anora Mahmudova, “U.S. companies spent record amount on buybacks over past 12 months,” Marketwatch, June 22, 2016.

³⁸ “How share repurchases boost earnings without improving returns,” McKinsey.com, April 2016.

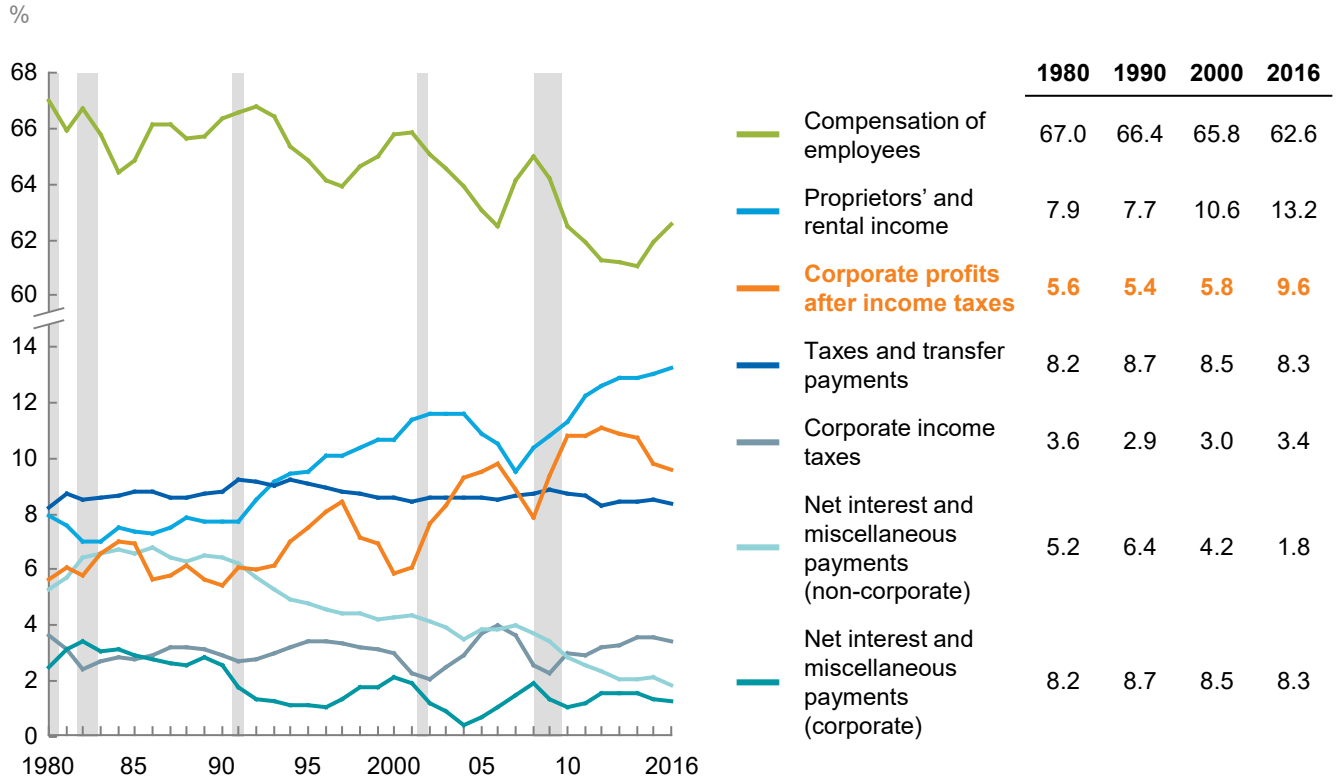
estimates that buybacks will climb even further in 2017, to approximately \$780 billion—a figure equivalent to more than 4 percent of GDP.³⁹

Construction is a sector that has been hard-hit by the effects of financialization. Its fortunes are tied to the finance sector, since demand for homes and properties reflects interest rates, the availability of mortgages, and broader macroeconomic conditions. Construction is highly volatile and has suffered steep downturns during periods such as the S&L crisis of the 1980s and the mortgage market meltdown of 2007. Companies have responded in many ways, including increasing their use of informal labor and forgoing investment in new technologies. The construction sector stands out as one of the worst-performing parts of the US economy in terms of wages—and productivity. Since 1945, productivity has grown by as much as 1,500 percent in manufacturing, retail, and agriculture but has barely budged in construction.⁴⁰

Exhibit 15

Labor share of national income has declined over the past three decades

Components of US national income, 1980–2016



SOURCE: US Bureau of Economic Analysis; McKinsey Global Institute analysis

³⁹ Ben Eisen, "Stock buybacks forecast to surge 30% in 2017," *Wall Street Journal*, November 21, 2016.

⁴⁰ For more on the issues facing the sector, see *Reinventing construction: A route to higher productivity*, McKinsey Global Institute, February 2017.

Workers have fewer options when their pay stagnates

The cumulative impact of these and other forces has been a decline in labor's share of national income since the 1980s (see Exhibit 15, above).⁴¹ This trend has accelerated in the past two decades as it has grown harder for workers to find better opportunities.

Technology has altered the nature of work and the value placed on different types of work. It is now possible to produce more output with less labor. Digital technologies reduce the demand for low- and medium-skill workers while increasing the value of a small group of high-skill workers engaged in cognitive and creative work. This phenomenon, known as "skill-biased technological change," has created a growing divergence in earnings between the most and least educated segments of the workforce, hollowing out the middle. In addition, a huge pool of lower-cost labor is available globally—at all skill levels. Technology also enables remote work and the disaggregation of tasks, making it feasible to outsource a greater range of work.

Full-time payroll jobs with benefits are no longer a given as outsourcing, contract labor, and temporary work have become more prevalent. Larger companies often hire subcontractors for functions such as technical support, janitorial services, and security; these are often smaller enterprises that compete fiercely on price. This "fissured workforce" generally receives lower pay and fewer benefits than the purchasing organization offers its staff employees.⁴²

The decline of unions has made it harder for US workers to fight not only for wage increases but for better working conditions. According to the BLS, union membership fell from 20.1 percent of the US workforce in 1983 to 10.7 percent in 2016. This is a far lower share than in many other advanced economies. OECD statistics show that in 2013, unionization rates were 18 percent in Germany, 26 percent in the United Kingdom, and 27 percent in Canada.

The ability to switch jobs is limited by the fact that the US economy has lost some of its dynamism. Today there are roughly 5 million active firms in the United States; this is about as many as existed in 1997, although the economy is now 45 percent larger in real terms. The rate of firm closures has not accelerated significantly (except during recessions). But openings are down by half since the 1980s, a trend that worsened in the past decade. In addition, early-stage firms are disappearing at a higher rate today than in the 1990s.

Within the national numbers are regional and sector disparities. Economic activity and income growth are becoming concentrated among a smaller number of urban counties. Metropolitan counties have 10 percent more firms today than in 1997; non-metropolitan counties have 10 percent fewer firms. Looking by sector, finance and services have 15–30 percent more firms and establishments than in 1997. Manufacturing, construction, and trades have 15–35 percent fewer. The individuals caught in stagnant regions and sectors face difficult transitions.

⁴¹ Several factors play a role in the decline of the labor share of income such as changes in the sector mix, substitution of capital for labor, and even measurement issues. For an analysis of these factors, see Michael W. L. Elsby, Bart Hobijn, and Aysegül Sahin, "The decline of the US labor share," *Brookings Papers on Economic Activity*, fall 2013. Also see Roc Armenter, "A bit of a miracle no more: The decline of the labor share," Federal Reserve Bank of Philadelphia, third quarter 2015, and Loukas Karabarbounis and Brent Neiman, *The global decline of the labor share*, National Bureau of Economic Research working paper number 19136, June 2013.

⁴² David Weil, *The fissured workplace: Why work became so bad for so many and what can be done to improve it*, Harvard University Press, 2014.

Americans no longer change jobs as easily as they once did. Non-compete agreements have spread to blue-collar and medium-skill jobs, binding people to their current positions even when they would like to seek out higher wages elsewhere.⁴³ Similarly, states have added occupational licensing requirements in many fields, creating hurdles for workers who want to start new careers or move across state lines. Moving itself has become harder. The overall US mover rate, which tracks the number of individuals relocating in a given year, is near 12 percent, down from 20 percent in the mid-1960s. Differentials in home prices and rents can make it impossible for someone to move from a depressed region to a booming urban job market. The options are especially limited for the 45 million US adults with no post-secondary education, many of whom lack the skills that would enable them to climb up the ladder.

WHAT DOES THE FUTURE HOLD FOR AMERICAN WORKERS?

Many of the trends described above—including jobless recoveries from recessions, a reweighting of the economy toward service sectors, and foreign competition—will persist into the future. Some appear to be accelerating, such as digital disruption and skill-biased technological change. Even bigger changes could be in store in the decades ahead if companies introduce more intelligent machines into the workplace.

The shift away from traditional full-time payroll jobs could continue

Previous MGI research estimates that 32 million Americans earn their primary income from independent work, and another 36 million do independent work on a supplemental basis.⁴⁴ This trend could continue to grow. Large-scale digital platforms are creating marketplaces that make it easier for potential customers and available workers to connect. MGI's survey responses indicate that many people who hold traditional jobs or are currently not working would like to try independent work, and there is growing demand from organizations and consumers.

While many highly skilled people actually raise their incomes by working independently, there are risks at the low-skill end of the spectrum. It is harder for people living close to the edge to manage volatile incomes or cope without employer-provided benefits and paid time off. The United States could make the gig economy more sustainable by reexamining the social safety net and updating it with these new working models in mind.

An aging population will reshape the workplace and demand

The first of the baby boomers began celebrating their 65th birthdays in 2011. This is the first generation that has been primarily responsible for its own retirement savings, and many people will fall short. We expect to see wider variations in purchasing power and more income inequality among the elderly. Some seniors will continue working by choice to remain engaged, while others will have to do so just to make ends meet. Employers can continue to benefit from a cohort of workers with valuable skills and experience, particularly if they design flexible, part-time roles for them to mentor younger workers.

⁴³ See, for example, Alan B. Krueger, "The rigged labor market," *Milken Institute Review*, April 2017; and Conor Dougherty, "How noncompete clauses keep workers locked in," *New York Times*, May 13, 2017.

⁴⁴ *Independent work: Choice, necessity, and the gig economy*, McKinsey Global Institute, October 2016.

The graying baby boom generation will also reshape demand in ways that can generate jobs. Health care is only part of the story. Between 2015 and 2030, the 60-plus age group is set to contribute 40 percent or more of US consumption growth in categories ranging from personal care and housing to transportation, entertainment, and food and alcoholic beverages. Additionally, many seniors prefer to age in place, but their existing homes (and much of the available housing stock) are not well suited for this. This trend is already driving a wave of spending on home renovations.⁴⁵

Automation could introduce more churn and disruption

The march of technology has often displaced workers, from switchboard operators to stenographers. Now that process is accelerating as technologies such as machine learning, robotics, and self-driving cars begin to match—and even exceed—human capabilities.

Previously published research from MGI found that currently demonstrated technologies can handle roughly a third of the tasks that go into 60 percent of all occupations.⁴⁶ Many jobs will change rather than being outright eliminated, requiring more people to work alongside machines. This trend will affect workers of all skill levels, from fast-food workers and truck drivers to CEOs. Labor costs are a key consideration, but so is productivity; intelligent machines may be able to deliver higher output and more consistent quality with fewer errors.

In the United States, many of the industries and occupations that appear most susceptible to automation are the very ones that have already experienced wage pressure. Routine physical activities are ripe for automation, and they are common in food service, manufacturing, and retail—sectors that employ millions of lower-skill workers. MGI finds that existing technologies could handle almost three-quarters of the tasks in the accommodation and food services sector, making it the area of the US economy with the highest automation potential. Next are manufacturing and transportation/warehousing, both sectors in which 60 percent of work activities lend themselves to automation (Exhibit 16). However, the overall potential in a given industry masks considerable variance by occupation.

Robots are not poised to cause mass unemployment overnight. Just because machine learning can perform a task does not mean that individual companies will adopt these systems. A logistics company, for example, may find that the capital investment needed for a new fleet of self-driving trucks is prohibitive. Organizations will consider costs, regulations, what their competitors are doing, the customer experience, and whether they have the technical know-how.

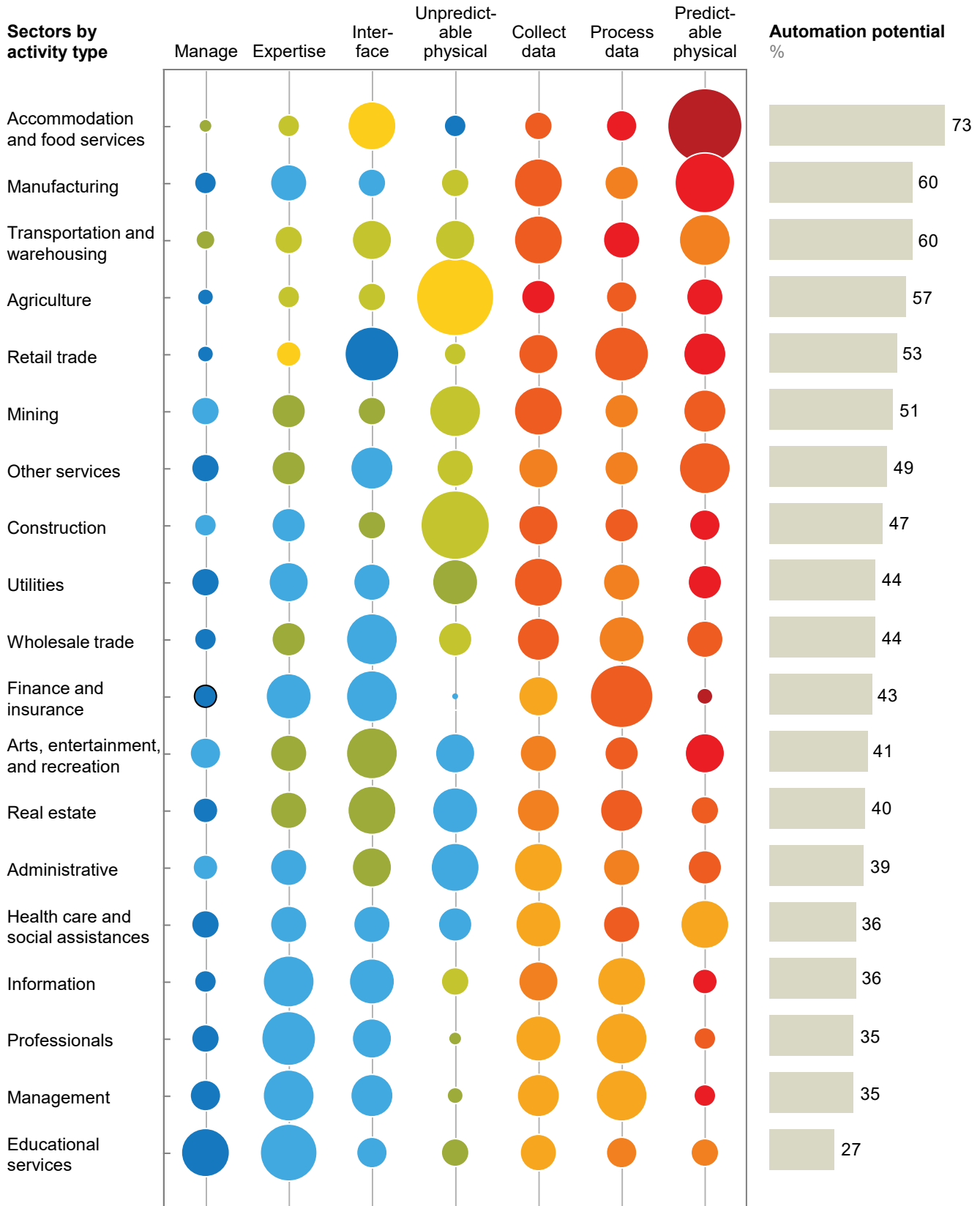
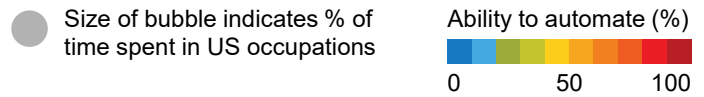
There may not be a current business case for automation in the near term, but cost and ease of use are factors that could change. In the past, technological advances have created new types of jobs even as others disappeared—but history does not provide assurances that enough new, quality jobs will be created at the right pace. It is not too early to start fleshing out more detailed proposals for responding to this scenario. Today the United States spends far less than other countries on helping displaced workers transition into new roles. If automation causes major disruption, policy makers may need to design new forms of assistance or even debate the idea of a universal basic income.

⁴⁵ For more discussion of these market opportunities, see *Urban world: The global consumers to watch*, McKinsey Global Institute, April 2016.

⁴⁶ For a more comprehensive discussion of this issue, see *A future that works: Automation, employment, and productivity*, McKinsey Global Institute, January 2017.

Exhibit 16

Sectors that have already come under wage pressure are among those most susceptible to automation



SOURCE: US Bureau of Labor Statistics; McKinsey Global Institute analysis

The future also holds opportunities for jobs and growth if the United States takes action to capture them

The prospect of automation is generating anxiety and talk of a jobless future. But there are reasons for optimism. First and foremost, growth in emerging economies will propel another one billion people around the world into the “consuming class” over the next decade, meaning that they will begin earning enough income to make significant purchases of goods and services. The United States has an opportunity to capture significant market share as this trend unfolds.

Companies based in emerging markets are competitors, but more of them could become investors and job creators in the United States. This would follow a pattern set by Japanese car makers, who first sold exports to the United States but eventually decided it made sense to base final assembly closer to end customers. Today companies from many emerging economies are just beginning to expand globally, and there will be opportunities to attract more foreign direct investment.

The United States also has a great deal of work that needs doing. After a long period of underinvestment, there is a pent-up need to upgrade or replace aging infrastructure systems, renovate schools, and add millions of new units of affordable housing. The nation needs to invest in education, push science forward, and scale up green technologies. These are all areas in which the United States can create solid, productive jobs for years to come.

THE UNITED STATES FACES BIG QUESTIONS FOR THE FUTURE

Growth in economic output, productivity improvements, innovation, and dynamism have always paved the way to prosperity and will continue to do so. Conversely, slower growth in output and productivity eventually begins feeding on itself in a vicious cycle. It has forced the public and private sectors and even citizens into tough trade-offs and bitter disputes over how to protect their slice of a slower-growing pie. A return to investment and growth may not be sufficient to overcome all of the structural challenges facing the United States, but it can create space for new solutions to take root.

The US labor market has undergone some wrenching shifts, most of which have made life harder for workers. Some of these are caused by forces that would be difficult to address. Others could be mitigated through policy—and conversely, inaction is itself a policy choice. The status quo will continue until it is interrupted by a major intervention.

Some of the looming questions include:

- Tens of millions of Americans are working full-time but are unable to get by. How do we address the sheer prevalence of low-wage work and spur stronger income growth for both workers and firms?
- How can the United States form and better coordinate a response to large transitions in the economy, whether driven by technological change, competition, or other forces? Who should take the lead, if anyone?
- How do we restore dynamism in the economy? What will it take to have more new firms start up and become fast-growing job creators?
- What will be the future for the approximately 45 million US workers without any post-secondary education? What exactly should retraining focus on if there is weak demand? Are there ways to harness technology to improve the labor market for workers?
- How can the United States modernize the safety net to address the fact that more people are working outside of traditional payroll jobs and transitioning between jobs more frequently?

- Is it possible to create new incentives for private-sector investment in human capital or other channels to improve the productive capacity of the economy?
- How will the United States respond if automation eliminates large numbers of jobs in the future? Will measures such as a universal basic income, conditional transfers, or other types of redistribution eventually come up for debate?
- As technology continuously changes which skills are in demand, how can we create systems of lifelong learning to help people adapt? What role will the private sector play in training?

•••

The widening income gap among US households is the product of growing disparities across the economy. All of this has combined to erode average Americans' belief in their own economic mobility and their trust in business. There are major social and political risks when large numbers of people no longer see how they fit into the economy and do not believe they have a chance to advance. Part 3 will offer a starting point for an urgently needed conversation about where we go from here and what the public and private sectors can do to change this picture.



**PART 3:
CREATING NEW
PATHWAYS TO
PROSPERITY**



PART 3: CREATING NEW PATHWAYS TO PROSPERITY

Policy makers and business leaders are finally beginning to have a conversation about the convergence of widening income inequality and accelerating technological change. These discussions typically offer up workforce retraining as a pat answer while filling in few details. Others insist that if the United States simply focuses on jumpstarting faster overall economic growth, wages will rise and the gaps will take care of themselves.

Shifting the economy into higher gear is, in fact, a critical first step.⁴⁷ The problem of stagnating and declining wages will only get worse in the absence of more robust growth. The United States has to act on long-recognized priorities such as restoring business dynamism, investing in infrastructure, and revamping education and training. And it will have to do a better job of executing on these priorities than it has in the past.

But economic growth alone may not be enough to fix the deep-seated structural forces that have left the United States with a two-tiered economy. The scale of the problem is huge today, and there is a real possibility that technological change will leave even more workers behind in the future. Yes, a reinvented system of skills development will surely be part of the puzzle, but that will not be enough. If the situation deteriorates, it may force a debate on measures such as some form of universal basic income, targeted funding for communities in distress, and other mechanisms for redistribution.

These issues can't be solved through policy alone. The private sector will have to recognize the value of creating training pathways and better-quality jobs—not just out of social responsibility but to protect its own long-term interests. A more inclusive society is a more stable, healthy environment for doing business. Companies grow when they have engaged employees, a skilled talent pool from which to draw, a prosperous customer base, thriving domestic supply chains, and innovation partners. They also have a very real stake in preventing the consequences that could come from a failure to act.

The United States can do better, and there are many levers it has yet to pull. Workers are not just a pool of labor; they are citizens and potential consumers. Raising incomes would juice a latent source of demand—and doing so could set off a virtuous cycle of growth. Lifting up the millions who have been left behind can elevate the broader economy in the process.

⁴⁷ For a more comprehensive discussion, see *The US economy: An agenda for inclusive growth*, McKinsey Global Institute, November 2016; *The productivity puzzle: A closer look at the United States*, McKinsey Global Institute discussion paper, March 2017; and *Game changers: Five opportunities for US growth and renewal*, McKinsey Global Institute, July 2013.

THE UNITED STATES NEEDS TO CONFRONT THE QUALITY OF AVAILABLE JOBS

After hitting a peak of 10 percent during the Great Recession, the US unemployment rate is back to its lowest level in a decade, falling to just 4.4 percent as of this writing. But that number reveals only part of the story. By contrast, the labor force participation rate has been steadily trending downward for years. It now stands at 62.9 percent, 4.4 percentage points below its level in January 2000.

Not working is a personal choice for some of the individuals on the sidelines, but others have dropped out because they have grown discouraged. Their odds of rejoining the labor force are steep, since skills atrophy and become outdated over time. One of the most striking trends within this figure is the degree to which men without college degrees have been vanishing from the workforce. Their participation rate dropped from 97 percent in 1964 to just 83 percent in 2015.⁴⁸

What is keeping so many people out of the workforce? One clear answer is not only an oversupply of low-skill workers but the payscale and conditions of available work. For people who once held better-paying jobs and enjoyed a middle-class life, settling for less is a bitter pill to swallow. Some of them hold out in the hopes of commanding their former earnings again—and when their hoped-for “reservation wages” are too far out of whack with the jobs that are actually available, they may drop out of the labor force altogether.⁴⁹

While statistics track the number of jobs being created, it is equally important to note the quality of those jobs. Many involve poor conditions or erratic schedules, and they may not pay enough to cover the high costs of child care. In 2014, 9.5 million individuals were classified as the “working poor”—that is, they spent at least half the year working or looking for work but their incomes still fell below the official poverty level.⁵⁰ One study showed that one-third of all production workers relied on public subsidies such as food stamps to make ends meet, despite working full-time jobs.⁵¹ And it is no longer a given that low-wage jobs will be steady full-time positions. The rate of involuntary part-time work is 30 to 40 percent higher than its level in earlier recoveries.⁵²

There is also a growing trend toward temporary work and people taking on piecemeal “gigs” to get by. One study found that over the decade from 2005 to 2015, the share of the workforce made up of independent contractors, on-call workers, temporary help agency workers, and workers provided by contract firms rose from 10 to 15 percent.⁵³ Another found that even controlling for the type of occupation as well as for demographics and English proficiency, workers on temporary contracts made about 18 percent less per hour than non-temporary workers in California and were twice as likely to live in poverty, receive food assistance, and rely on Medicaid.⁵⁴

⁴⁸ Perhaps surprisingly, less than a quarter of prime-age men who are not in the workforce have a working spouse, and this figure has declined over the decades. *The long-term decline in prime-age male labor force participation*, Council of Economic Advisers, Office of the US President, June 2016.

⁴⁹ Eleanor Krause and Isabel Sawhill, *What we know and don't know about declining labor force participation: A review*, Brookings Institution, May 2017.

⁵⁰ The 2015 federal poverty threshold was \$12,331 for a single individual under age 65; \$16,337 for a household of two people including one child; \$19,078 for a household of three people including one child; and \$24,036 for a household of four people including one child. See “A profile of the working poor,” Report 1060, US Bureau of Labor Statistics, April 2016.

⁵¹ Ken Jacobs, Zohar Perla, Ian Perry, and Dave Graham-Squire, *Producing poverty: The public cost of low-wage production jobs in manufacturing*, UC Berkeley Labor Center, May 2016.

⁵² Rob Valletta and Catherin van der List, “Involuntary part-time work: Here to stay?” Federal Reserve Bank of San Francisco Economic Letter, June 2015.

⁵³ Lawrence Katz and Alan Krueger, *The rise and nature of alternative work arrangements in the United States, 1995–2015*, March 2016.

⁵⁴ Miranda Dietz, *Temporary workers in California are twice as likely as non-temps to live in poverty: Problems with temporary and subcontracted work in California*, UC Berkeley Labor Center, August 2012.

Addressing these issues would remove a major drag from the economy. Low and stagnant wages have dampened demand by leaving households with little to no disposable income to spend. Improving wages and working conditions for marginalized workers would raise consumption and shift the economy into higher gear, benefiting everyone. It is also critical to stem the mounting costs of inaction. This is easier said than done, of course, but below we outline some of the questions that could lead to solutions.

THERE ARE FOUR CRITICAL AREAS FOR POLICY DEBATE: REINVESTING, RETRAINING, REMOVING BARRIERS, AND REIMAGINING WORK

The United States will need to focus on not only accelerating growth but making it more inclusive. These complex issues will require a deep toolbox. The interventions that could give the 25-year-old urban retail worker a leg up may not be the same ideas that could give the 55-year-old manufacturing worker in a small town another shot at putting his skills to work.

Currently the United States spends far less than other countries on helping displaced workers transition into new roles. In 2014, OECD member countries spent an average of 0.6 percent on training programs and job-search assistance, while the United States devoted only 0.1 percent of GDP to similar initiatives—a share that has fallen by more than half over the past three decades.⁵⁵ There is ample room to increase national investment in developing human capital and helping people prepare for new opportunities as the economy evolves.

While we do not advocate for specific policies, we hope to move the conversation from a basic recognition of income inequality to a debate about the practical steps that could help distressed parts of the economy and create better jobs.

Reinvestment

Communities that have been hard hit by industry losses or trapped in a long cycle of stagnant income growth need to craft a second act. To do this, they will need to map out a strategic vision for the future and then attract some combination of public and private investment to put it into action.

Too many regions have thrown subsidies and other public funds into ill-defined revitalization efforts without solid economic development plans in place. Mapping out a detailed strategy that is grounded in reality but dares to dream big can make all the difference between success and failure. New possibilities might open up if cities define themselves as part of a broader region. It is important to take a realistic inventory of existing assets (say, logistics, available industrial space, potential tourist attractions, educational institutions, and the level of local workforce skills). Once a given community decides to build a future around certain industries, the next step is considering what kind of investment it will take—and the answer will vary by industry. Going after tourism may entail rebranding, hotel construction, and revitalization of key neighborhoods and attractions. Going after certain manufacturing industries may require developing new types of workforce skills, forming R&D and training partnerships with local educational institutions, and expanding logistics infrastructure. Subsidies are often part of the toolbox, but it is critical to insist on a rigorous business case for them and to use them in a targeted way that supports a broader industry development strategy.

⁵⁵ *Artificial intelligence, automation, and the economy*, Executive Office of the President, December 2016.

The investment necessary to develop anchor industries and generate jobs does not have to come from within the United States. Many of the regions that have lost manufacturing jobs still have pools of highly experienced workers, long-lived small and medium-sized firms, advanced technical know-how, and industrial and research facilities. This could make them attractive destinations for emerging-market firms looking for assistance in technological development. While the United States received \$2 trillion of FDI in the past decade—more than any other country—less than 1 percent came from China and India cumulatively. Firms from these and other emerging markets are starting to invest overseas. While cities and regions themselves can do more to attract their investment, the federal government can play a bigger role in facilitating these matches. A program that helps route new foreign investors to small and medium-sized US firms, perhaps building on the International Trade Administration's SelectUSA initiative, could provide much-needed capital and exposure to global markets for companies and communities across the country.

Retraining

The United States needs a more cohesive system of education and skills development. This obviously needs to start by giving students a better foundation, including a baseline level of digital fluency, at the K-12 level. Given the wage premium enjoyed by college graduates, one of the clearest ways to improve economic mobility is ensuring that more students are genuinely college-ready and that they can pursue higher education without taking on burdensome debt loads.

But focusing on the next generation is not enough. The accelerating pace of technological change means that we need systems of lifelong learning to help mid-career workers adapt when disruption hits. Many people on the sidelines or stuck in low-wage jobs need retraining courses today, and the demand will be even greater as more jobs are automated in the future.

Short-term training can take many forms. Larger companies can offer their own in-house instruction or set up apprenticeships. They can also partner directly with local schools or create initiatives with multiple companies in the same industry. Every community college across the country could be mobilized in this effort, working hand in hand with local employers to keep curricula up to date and relevant to the local job market. There is a bigger role for the private sector to play in educating and training the workforce, both in and out of the classroom, and governments can play a role in convening more of these initiatives.

If applied in the right way, technology might prove to be part of the solution in the labor market. Digital platforms can match supply and demand more transparently and efficiently—exactly the kind of disruption that labor markets need. So far, massive platforms such as LinkedIn have primarily benefited educated and skilled professionals, but this type of model can expand to more blue-collar occupations. By aggregating data on candidates and job openings across broader regions, online talent platforms can offer options to people who have felt trapped in stagnant local economies. More broadly, these platforms can track the demand for specific skills and occupations.⁵⁶

⁵⁶ For more on this topic, see *A labor market that works: Connecting talent and opportunity in the digital age*, McKinsey Global Institute, June 2015.

Removing barriers

Lifting the impediments that curtail the mobility of American workers would empower many of them to find better jobs and build a better life. There are a number of issues to tackle:

- Making college more affordable would help many young people from low-income households take a huge step toward higher earning potential over their entire lifetimes. Arming them with more transparent information about how the graduates of specific educational and training programs fare in the labor market could also prevent many of them from taking on student loans that do not ultimately pay off as expected.
- Requiring workers to sign non-compete agreements has become a more common practice—one that has now spread to many blue-collar and medium-skill jobs.⁵⁷ These agreements limit competitive dynamics in the market for talent. Reducing their usage would give workers greater ability to move from firm to firm and command higher wages in the process.
- Workers in many occupations are now required to obtain licenses, and the requirements often vary from state to state. BLS data shows that approximately one-quarter of US workers now hold an occupational license or certificate, up from about 5 percent in the 1950s. While some of these credentials provide important assurances of consumer safety, imposing licensing requirements on too many occupations, with standards that vary across states, erects unnecessary hurdles for workers who aspire to enter a new profession or to move. Dismantling excessive requirements and making other licenses portable would be a simple step toward improving worker mobility.
- Creating and funding more comprehensive child-care options would enable more parents of young children to work. Child care is currently one of the biggest items in many household budgets. Funding it in a comprehensive way is an investment in early learning, and it would have the double benefit of potentially raising wages for caregivers. Although child care is a vital service, it is one of the biggest low-wage occupations in the economy.
- The economy is currently held back by mismatches of skills and geographies. The overall US mover rate, which tracks the number of individuals relocating in a given year, is near 12 percent, down from 20 percent in the mid-1960s and as recently as the early 1990s. Many people cannot move without losing money they cannot afford when selling their homes. Conversely, soaring home prices and rents can make it impossible for someone to move from a depressed region to one of the country's hottest job markets. Addressing the affordable housing shortage across the country would enable people to move for higher-productivity jobs and create demand in the construction sector at the same time. Companies, too, should consider whether there is a business case for establishing operations in more affordable parts of the country that need the investment.
- The United States has the highest incarceration rates in the world—and once people have served their time, their past often locks them out of the labor force. The “ban the box” movement seeks to prevent routine inquiries about past convictions on job applications. One recent study estimated that in 2014, the hurdles faced by former prisoners and people with felony convictions kept 1.7 million to 1.9 million people out of the labor market. This lowered GDP by \$78 billion to \$87 billion.⁵⁸ The public, private, and social sectors could create more rehabilitative work options to help former prisoners build work records and rebuild productive lives.

⁵⁷ See, for example, Alan B. Krueger, “The rigged labor market,” *Milken Institute Review*, April 2017; and Conor Dougherty, “How noncompete clauses keep workers locked in,” *New York Times*, May 13, 2017.

⁵⁸ Cherrie Bucknor and Alan Barber, *The price we pay: Economic costs of barriers to employment for former prisoners and people convicted of felonies*, Center for Economic and Policy Research, June 2016.

Reimagining work

The flexible opportunities afforded by independent work are especially well-suited to seniors, stay-at-home caregivers, and young people—all large and growing demographic groups with an interest in increasing work engagement but with significant time commitments or reluctance to take a 9-to-5 job. But can we come up with models that work for both employers and workers? In short, can we make the gig economy work?⁵⁹

Many of the labor market policies currently in place—such as the minimum wage, benefits, family leave, worker’s compensation for on-the-job injuries, and adequate retirement plans—are not set up to accommodate independent work. A growing number of policy makers, academics, and other stakeholders are actively considering ways to fill those gaps, although there is more work to do.

Modernizing the social safety net for traditional workers who now change jobs more often than in the past as well as for independent workers who do not have a single employer may be warranted.⁶⁰ In the United States, support is growing for a more portable system of benefits—that is, benefits that are tied to workers themselves, not to a single employer. One option is allow independent workers to form pools to create their own marketplaces and delivery systems for benefits.⁶¹ This model is already working in industries ranging from Hollywood to construction: workers shift from project to project, with their unions delivering a range of benefits such as health insurance. Another proposal involves a so-called “hours bank.” But any approach will have to tackle difficult questions, starting with who would pay for such benefits and how the benefits would be earned and tracked for workers who have multiple clients and employers.

It is also time to reimagine new ways to keep workers engaged and contributing well after the traditional retirement age. Many older workers are not ready to hang it up. Some need to continue working out of financial necessity, while others have a desire to contribute and feel engaged. Aging blue-collar workers, in particular, need better career options when they can no longer perform strenuous physical labor but are not ready to retire. We need to think more creatively about reengaging these people in new types of roles, perhaps in mentoring or public service.

Companies will also need to find ways to retain valuable skills and experience by reengineering the workplace to accommodate the needs of aging workers. This could include increasing automation to reduce physically demanding activities; implementing flexible hours, part-time arrangements, and work-from-home policies; and redesigning the physical environment with a greater focus on ergonomic issues. Older workers could also be reassigned into training roles.

⁵⁹ For more on this topic, see *Independent work: Choice, necessity, and the gig economy*, McKinsey Global Institute, October 2016.

⁶⁰ Libby Reder, Natalie Foster, and Greg Nelson, *Portable benefits resource guide*, Aspen Institute Future of Work Initiative, July 2016.

⁶¹ See, for example, Seth Harris and Alan Krueger, *A proposal for modernizing labor laws for twenty-first-century work: The “independent worker,”* The Hamilton Project at the Brookings Institution, December 2015.

THERE ARE ACTIONS TO TAKE ON THE COMPANY SIDE AS WELL

The “4 Rs” above focus on ways to help workers, or the supply side of the labor market. But it is equally important to look at the demand half of the equation—that is, companies’ need for more hiring and the likelihood of creating more jobs that pay a living wage.

Restore business dynamism

An economy with more industry concentration and less business dynamism can suffer from lower competitive intensity. As a result, underperforming firms can plod along, limiting productivity growth and worker incomes in the process. Indicators such as startup creation, gross job creation and destruction, and the pace of job and worker reallocation have been declining since the 1980s.⁶² Local governments can help to restore more dynamism to their regional economies by taking a fresh look at the regulatory hurdles involved in starting new businesses and streamlining them wherever possible.

Policy makers and investors also need to support the real job creators: young and fast-growing companies.⁶³ Inventors and idea generators often need guidance to learn how to run and grow a business, particularly past the startup stage and through scale-up. Policy support can also help small firms get more exposure to next-generation technologies. Canada, for instance, funds “technology access centers” at colleges and universities so that small firms have access to applied research and innovation, specialized technical assistance, and even worker training.

Close the productivity gap between frontier firms and the average firm

Closing the enormous productivity gap between the handful of top-performing firms and the majority of companies is a priority. The slowdown in US productivity growth affecting much of the economy is part of the trend that has dampened prospects for income growth. Higher output makes it easier for employers to raise wages, but most of the labor force is employed by firms with stagnant productivity. Analysis by the OECD finds that the productivity gap is growing; while frontier firms continuously improve and innovate, the average company is slower to adopt best practices.⁶⁴

Create more productive digital ecosystems of small suppliers

Large firms depend heavily on their supply base, but many view purchasing decisions solely as a cost-cutting exercise. Companies can increase their own resilience and innovation by building closer and more supportive relationships with networks of small firms. If suppliers are encouraged to collaborate and up their digital game rather than simply competing on price, this could have a ripple effect on wages.⁶⁵

Building supplier ecosystems is a key step for manufacturing firms to unlock value in the next era of manufacturing. (See Part 1.) Information flows among partners have the potential to change the way products are designed, made, and serviced, improving everything from logistics to payment systems. But competing in this new era is highly dependent on building partnerships and capabilities among smaller supplier firms.⁶⁶

⁶² Ryan A. Decker, John Haltiwanger, Ron S. Jarmin, and Javier Miranda, *Declining business dynamism: Implications for productivity*, Brookings Institution, September 2016; John Haltiwanger, “Job creation and firm dynamics in the United States,” *Innovation Policy and the Economy*, volume 12, number 1, January 2012.

⁶³ See, for example, *High-growth firms and the future of the American economy*, Ewing Marion Kauffman Foundation, March 2010.

⁶⁴ Dan Andrews, Chiara Criscuolo, and Peter N. Gal, *Frontier firms, technology diffusion and public policy: Micro evidence from OECD countries*, OECD, 2015.

⁶⁵ Susan Helper, *Supply chains and equitable growth*, Washington Center for Equitable Growth, October 2016.

⁶⁶ For more on this new era of technology, see “Digitizing the value chain,” *McKinsey Quarterly*, March 2015; “Manufacturing’s next act,” McKinsey.com, June 2015; and “Digital manufacturing: The revolution will be virtualized,” McKinsey.com, August 2015.

Encourage more small and medium-sized firms to go after growth opportunities in foreign markets

Compared to other OECD countries, the United States has a relatively low ratio of trade to GDP as well as a relatively small share of companies that export or receive foreign investment. Lowering the barriers to globalization for small and medium-sized companies represents an opportunity to broaden the gains from this new world of digital globalization.

Helping more US companies of all sizes find new export markets and foreign investment partners can broaden the benefits of globalization. The recent Trade Facilitation and Trade Enforcement Act contains a key provision for microbusinesses, raising the customs and duties exemption from \$200 to \$800 for US goods sold overseas. But there is more to do, starting with building basic awareness and export capabilities among small businesses. Many of the biggest overseas opportunities are in mid-tier cities around the world that are unfamiliar to many US firms, and small businesses need more mentorship and strategic guidance to understand the market opportunities at stake. Customs procedures and requirements, originally established for big corporations to export vast quantities of goods, also need to be retooled for smaller shipments. The US customs system will need to balance speed and dexterity against the imperative to secure borders.

Another opportunity is in ensuring open access for cross-border digital platforms. E-commerce marketplaces such as Alibaba, Amazon, and eBay are providing millions of small and medium-sized enterprises around the world with the exposure and logistical tools they need to become exporters. Digital platforms are also creating new global flows of communication, capital, and services. But these developments will reach their full potential only if the right multilateral agreements are in place.

Emphasize long-term value creation over short-term thinking

Since the 1980s, maximizing shareholder value has been a core goal for US companies. But it has often been invoked to justify a cost-cutting mentality as well as moves that bolster financial results and stock prices in the short term. This kind of mindset leads companies to think of their employees as items on the cost side of the ledger rather than regarding them as their most valuable asset. It can ultimately be self-defeating. For individual companies, it can lead to employee churn, disengagement, and poor customer service. At the macro level, when too many companies keep wages low, it dampens demand across the entire economy, hindering growth.

Recent MGI research has shown that companies pursuing long-term strategies outperform their peers with regard to revenue and earnings, investment, market capitalization, and job creation.⁶⁷ Treating employees well, cultivating their loyalty, and developing their skills can generate real returns; so can stepping up to play a role in skills development in the broader community. Companies have to boost productivity, but not always by digging for the deepest possible cuts. The kind of productivity that pays in the long run involves creating innovative products and services and expanding into new markets.

⁶⁷ *Measuring the economic impact of short-termism*, McKinsey Global Institute, February 2017.

INCLUSIVE GROWTH IS FUNDAMENTAL TO THE HEALTH OF OUR SOCIETY AND DEMOCRACY

The US economy has developed some deep imbalances. It has grown more financialized and more tech-heavy. Growing industry concentration stifles healthy competition, and a winner-take-most pattern is visible at every level. Correcting this will require a different set of priorities.

The hollowing out of the US middle class has had ripple effects throughout society. A two-tiered labor market leads to a two-tiered society that feels disconnected. Researchers have documented a shocking rise in mortality rates among white middle-aged Americans without college degrees and concluded it has been driven by an epidemic of suicides and substance abuse.⁶⁸ Another study found that after narrowing in the 1990s, the wage gap between white and African-American workers has once again been widening since 2000.⁶⁹ Polarization in the labor market has bled over into civic life and political discourse. In an MGI survey, low-income respondents expressed pessimism about the future and were more likely to hold particularly negative views about immigrants.⁷⁰ The United States is built on free enterprise and individualism, but its growing disparities are antithetical to a healthy democracy.

The United States stands a much better chance of bridging its divides against a backdrop of dynamic growth. This requires an environment that fosters new business creation, worker mobility, and healthy competition. There are many ways to go about creating that environment: encouraging more workers to participate in the labor force, enabling them to move to more productive jobs and locations, creating a level playing field for new businesses to challenge incumbents, and helping once-declining cities reinvent themselves.

Major investment in infrastructure, skills, and productivity-enhancing technologies could break the cycle of sluggish growth in the short term while ensuring the economy's future potential does not erode over the longer term. It can be channeled into areas such as transit infrastructure and affordable housing that would simultaneously create jobs and relieve some of the pressures facing households. Investing for the future should eventually generate opportunities for all segments of the workforce. When the economy is firing on all cylinders, income gains tend to be more broad-based and less easily concentrated. But the scope and the entrenched nature of the problem, combined with the prospect of jobs being automated in the future, suggest that the traditional toolbox may not be sufficient. Tackling stagnant wages and declining mobility will require the United States to look for a wider and more creative set of solutions.

⁶⁸ Anne Case and Angus Deaton, *Mortality and morbidity in the 21st century*, Brookings Papers on Economic Activity, March 2017. See also the authors' earlier work, "Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century," *Proceedings of the National Academy of Sciences of the United States of America*, volume 112, number 49, September 2015.

⁶⁹ Valerie Wilson and William M. Rodgers III, *Black-white wage gaps expand with rising wage inequality*, Economic Policy Institute, September 2016.

⁷⁰ *Poorer than their parents? Flat or falling incomes in advanced economies*, McKinsey Global Institute, July 2016.



Creating more inclusive growth that can lift wages for the US workforce does not have to be a top-down federal effort. It can be mobilized at the local level by governments and businesses working together. But it does require a major shift in thinking. Public officials face term limits, businesses make cuts in order to meet quarterly earnings expectations, and change is accelerating on all fronts. But if every stakeholder across the economy focuses on the short-term picture, long-term priorities can fall by the wayside. Some investments take many years to pay off, but they are still important to undertake. Both public institutions and private companies can benefit from imagining the kind of economy we want to build and the kind of society we want to become—and then making the strategic investment necessary to realize it.

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