U.S. Department of Commerce
Economics and Statistics Administration

Manufacturing Since the Great Recession

Executive Summary

The U.S. manufacturing sector has turned a corner. For the first time in over 10 years, output and employment are growing steadily. Manufacturing output has grown 38 percent since the end of the recession, and the sector accounts for 19 percent of the rise in real gross domestic product (GDP) since then. Through May, the sector has added 646,000 jobs, and manufacturers are actively recruiting to fill another 243,000 positions.[1]

The steady growth across all three of these areas might have seemed like wishful thinking just a few years ago when manufacturing was hit especially hard. Yet, manufacturing output and exports have surpassed their pre-recession peaks, and employment has begun to grow again for the first time since 1998. Analysis by the President's Council of Economic Advisors indicates that this is more than a cyclical rebound; the US has gained about four times as many manufacturing jobs since 2009 as would be expected from cyclical factors alone. Nonetheless, while the manufacturing expansion is robust, some industries and U.S. states have fared better than others. This report provides an overview of these trends in manufacturing, examining production, international trade, and the labor market.

Our analysis shows that:

- Manufacturing has contributed decisively to GDP growth. Since the end of the recession in second quarter 2009, real manufacturing value added has climbed 18 percent, compared to an 11 percent rise in real U.S. GDP, increasing manufacturing's share of total GDP to 12.5 percent at the end of 2013.
- The manufacturing sector added 646,000 jobs from February 2010 to May 2014.
- Average annual weekly hours for production workers in the manufacturing sector have climbed to their highest level since the mid 1940s.
- Although growth has returned across manufacturing, just two industries have accounted for nearly half the rise in shipments: transportation equipment and petroleum and coal products.

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[1] Openings data from Job Openings and Labor Turnover Survey, Bureau of Labor Statistics.

- Export sales account for more than a quarter of the rebound in shipments since 2009. Exports of U.S. manufactured goods totaled $1.2 trillion in 2013. Transportation equipment and refined petroleum (and coal) products captured 43 percent of the export gains.
- Foreign investors also are helping build the U.S. manufacturing sector. As of 2012, total direct investment in the U.S. from abroad totaled $2.7 trillion, of which $899 billion (34 percent) was placed in the manufacturing sector.
- The number of manufacturing establishments is growing for the first time since 1999.
- 87 percent of the job gains in manufacturing have been in three durable goods industries: transportation equipment, fabricated metal products, and machinery.
- Job gains in manufacturing have been widespread throughout the country. More than half of the jobs added were in five states: Michigan, Texas, Indiana, Ohio, and Wisconsin.

Introduction

The U.S. manufacturing sector has turned a corner. For the first time in over 10 years, output and employment are growing steadily. Manufacturing output has grown 38 percent since the end of the recession, and the sector accounts for 19 percent of the rise in real gross domestic product (GDP) since then. Between February 2010 and May 2014, the sector has added 646,000 jobs, and manufacturers are actively recruiting to fill another 243,000 positions.[2]

For many years, as services have become an important source of economic activity, manufacturing's share of the overall economy has been shrinking. In the late 1940s, manufacturing accounted for around a third of total nonfarm employment in the United States and around a quarter of GDP.[3] Now it accounts for just 12 percent of GDP and about one in eleven nonfarm jobs. Still, there are many ways in which manufacturing is critical for innovation, trade, and the middle class. Our nation's manufacturers account for 75 percent of research and development spending and 52 percent of exports.[4] Over the last four years, 43 percent of foreign direct investment has gone to the manufacturing sector.[5] Workers earn 16 percent more (in combined wages and benefits) in a manufacturing job than they would elsewhere.[6] Not surprisingly quit rates are lower than any other non-government sector.[7]

This report provides an overview of the renewed expansion in manufacturing, examining output, international trade, and the labor market. The steady growth across all three of these areas might have seemed like wishful thinking just a few years ago when manufacturing was hit especially hard. Since the last recession, however, manufacturing output and exports have surpassed their pre-recession levels, and employment has begun to grow again for the first time since 1998. Nonetheless, while the manufacturing expansion is robust, it has not been even across manufacturing industries and the states.

Production, Trade, and Foreign Direct Investment

Manufacturing is recovering, particularly in petroleum refining and transportation

From December 2007 through February 2010, the manufacturing sector shed 2.3 million jobs, more than a quarter of jobs lost across all sectors during those 26 months (see Figure 1). During the recession, manufacturing alone accounted for half of the total drop in GDP. Since the end of the recession, real value added in the manufacturing sector has climbed back 18 percent, compared to an 11 percent rise in overall GDP. As a result, manufacturing's share of total GDP has risen from a low of 11.8 percent in second quarter 2009 to 12.5 percent

[2] Openings data from Job Openings and Labor Turnover Survey, Bureau of Labor Statistics.

[3] GDP is measured in nominal dollars for this calculation due to the unavailability of historical data. Manufacturing's share of GDP remained close to a quarter of GDP until almost 1970, at which point it began to steadily decline. Manufacturing's share of nonfarm employment fell to 25 percent by 1970, 16 percent by 1990, and continued to decline through 2009 when it landed at 9 percent, where it remains today.

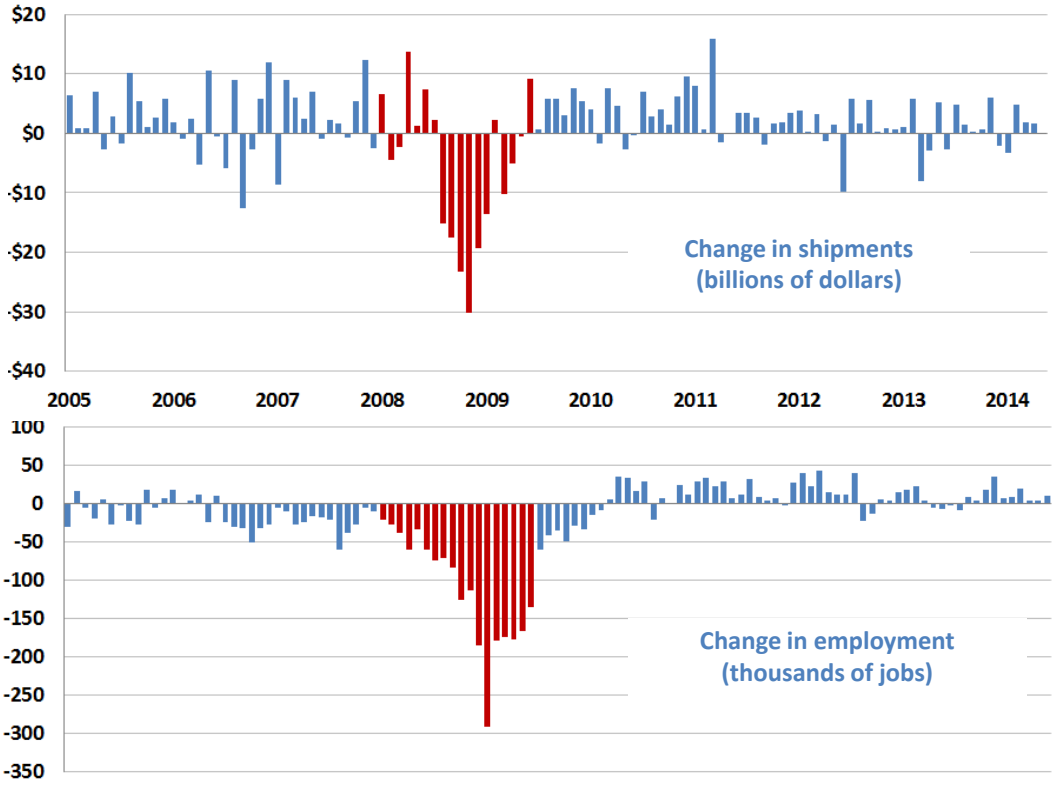
[4] R&D expenditures data from Bureau of Economic Analysis. Export data from Census Bureau.

[5] By comparison, about 18 percent of private domestic investment between 2009 and 2012 went to the manufacturing sector. Data for both FDI and domestic investment are from the Bureau of Economic Analysis.

[6] Update to the analysis performed in ESA's report, "The Benefits of Manufacturing Jobs." Accessed online: http://www.esa.doc.gov/sites/default/files/reports/documents/1thebenefitsofmanufacturingjobsfinal5912.pdf.

[7] Quit rates from Job Openings and Labor Turnover Survey, Bureau of Labor Statistics. Analysis on earnings of new hires available from ESA: http://www.esa.doc.gov/Blog/2014/02/10/earnings-new-hires-manufacturing-wage-benefits-continue.

Figure 1. Monthly Change in Manufacturing Shipments and Employment, January 2005-May 2014



Note: Red bars indicate recession. At the time of publication, May 2014 manufacturing shipments data were not available.
Source: Bureau of Economic Analysis and Bureau of Labor Statistics

at the end of 2013.

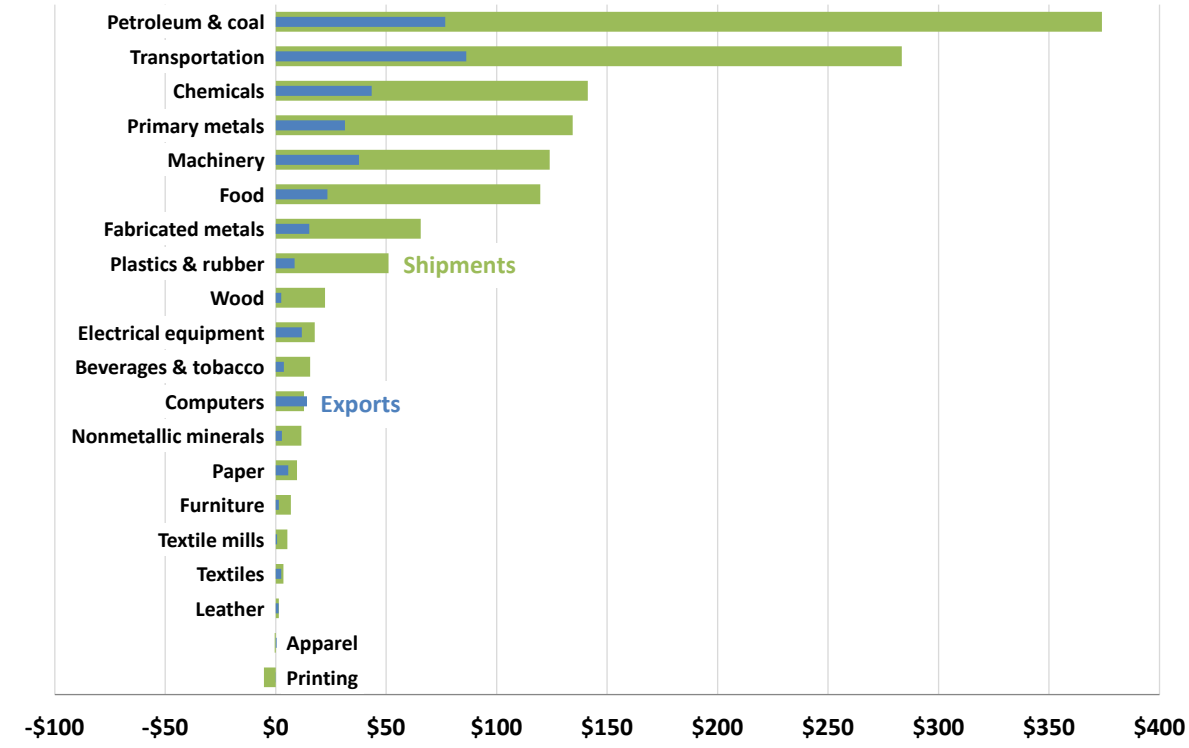
Total shipments (or sales) of manufactured goods, which the Census Bureau measures monthly in current dollars, closely track overall output as well. Between 2009 and 2013, shipments increased $1.4 trillion, a gain of more than 30 percent. The rebound in nominal sales, while steady, has not been as immediate as the plunge in output during the recession. In just 10 months between July 2008 and May 2009, monthly factory output was slashed by $133 billion (27 percent). It took 45 months to climb back.[8]

Within manufacturing, however, the expansion has not been uniform. Growth in output has been uneven across industries. While the increase in shipments of goods has been split almost evenly between durable and nondurable goods, nearly 50 percent of total growth is accounted for by just two industries: transportation equipment and petroleum and coal products (see Figure 2).[9] Over the first

[8] Other data indicate expansion as well. The Federal Reserve Board's industrial production index for manufacturing has reached its highest level since 2008, and is nearly at its pre-recession peak. In fact, the index for production of durable goods reached a record high in March 2014. The indices for machinery, motor vehicles, and aerospace manufacturing have also reached record highs in the first part of 2014. The index for computer manufacturing has similarly reached a record high, but the flat trend in manufacturers' shipments indicates that the apparent growth in production is due to rapidly declining prices for computing power, rather than to an increase in the output of computers and parts.

[9] The petroleum and coal products manufacturing industry transforms crude petroleum and coal into usable products. The dominant process is petroleum refining, which

Figure 2. Growth of Exports and Shipments, 2009-2013
billions of dollars



Source: Census Bureau

three months of 2014, overall shipments continued to trend up, reaching a record level in April. Most industries in the manufacturing sector have returned or nearly returned to their pre-recession peaks. Two notable exceptions are apparel and printing, where output continues to decline.

Exports spurred growth in transportation, chemicals, and machinery, but…

In 2013, $1.2 trillion of manufactured goods made in America were shipped to customers abroad, and more than a quarter of the rebound in manufacturing shipments since 2009 is due to export demand. Over the four year period from 2009 to 2013, every industry of the manufacturing sector has seen growth in overall export value. As with output, export growth since the recession has been largely concentrated in transportation and refined petroleum products (and coal). Together, these industries were responsible for 43 percent of manufacturing export growth.

In several industries, export growth has driven a large portion of overall growth in output. The transportation, chemical, and machinery manufacturing industries have seen more than 30 percent of their post-recession growth come from exports.

While manufactured goods exports have increased, imports of these goods have risen more, resulting in an increase in the manufacturing trade deficit of nearly 50 percent over the past four years. An alternative

involves the separation of crude petroleum into component products through such techniques as cracking and distillation. Establishments in this industry also further process refined petroleum and coal products to produce products such as asphalt coatings and petroleum lubricating oils. See: http://www.bls.gov/iag/tgs/iag324.htm.

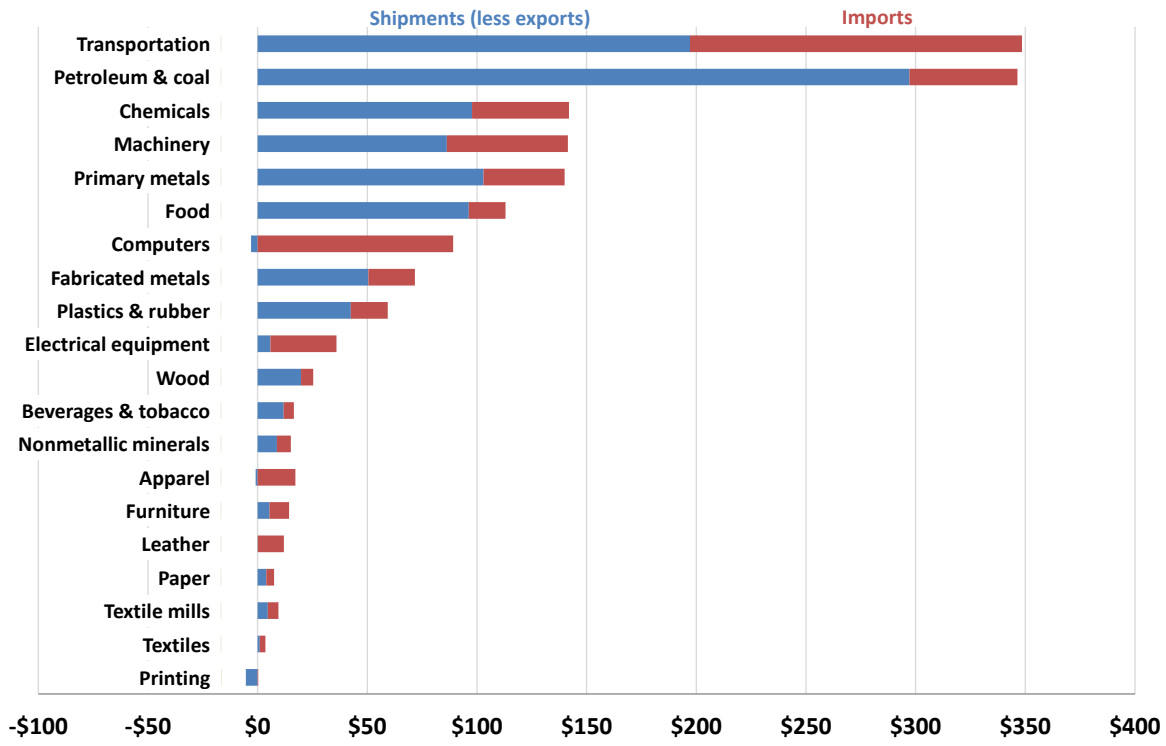
measure of the trade deficit paints a brighter picture, though. The trade deficit in manufacturing may be rising, but so is the volume of U.S. trade in manufactured goods, which is the sum of all exports and imports. The manufacturing trade deficit's share of the U.S. manufacturing trade volume has returned to a more modest level after reaching a high in 2005. Over the past 14 years, the manufacturing trade deficit accounted for 21 percent of the overall U.S. manufacturing trade volume in 1999, then rose to a high of 32 percent in 2005, before returning to around 22 percent in 2013.

Imports fulfilled the growing demand for computers and electronic products

Growth in U.S. demand for manufactured goods does not necessarily translate into greater U.S. production. Increasingly, consumers and businesses look to the global marketplace for goods. One way to determine how demand has changed is to separate domestic purchases of goods into shipments (less exports) and imports (see Figure 3). Since 2009, two industries that have seen large increases in domestic demand—transportation equipment and petroleum and coal products—highlight the contrast. U.S. demand for their products has increased by more than $400 billion in just four years. However, while imports accounted for nearly 35 percent of increased demand for transportation equipment, they accounted for only 12 percent of the total demand increase for petroleum and coal products. Growth in demand for computers and electronic products has been satisfied almost entirely by imports over this time period, with only 13 percent of new demand being met by domestic production.

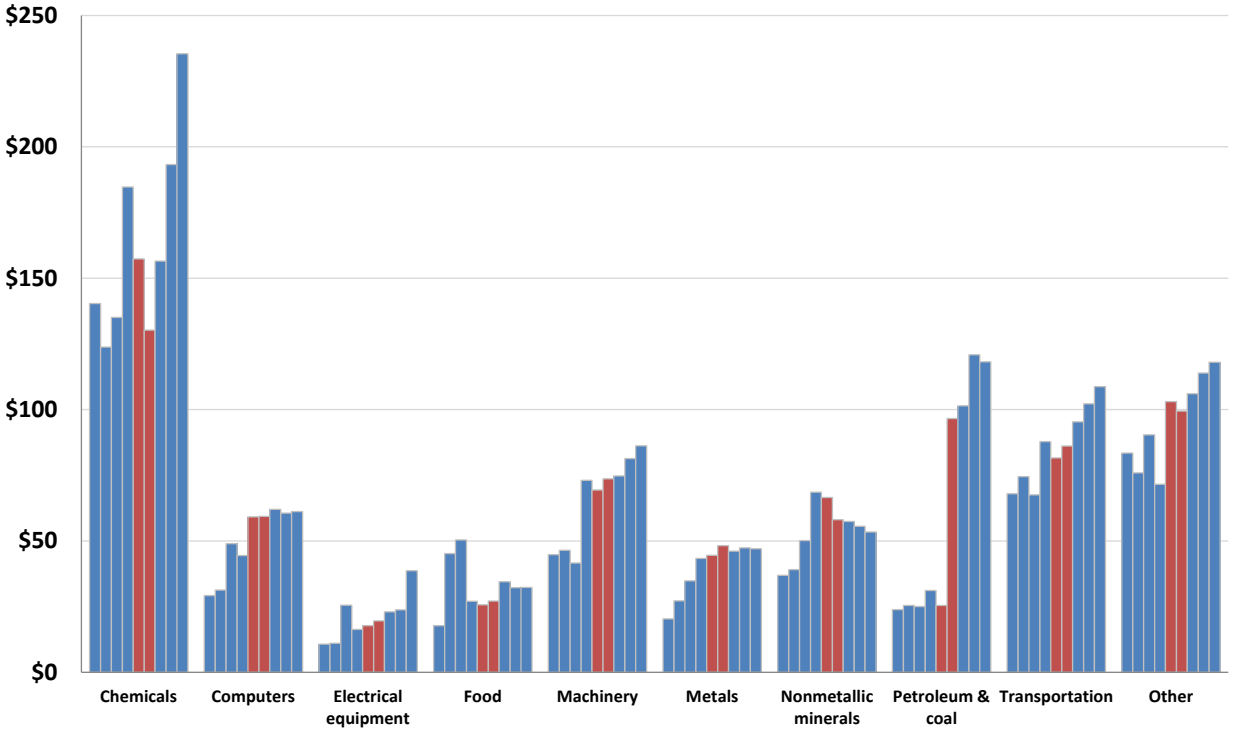
As noted earlier, demand for domestic consumer goods and business equipment has

Figure 3. Change in Domestic Demand, 2009 - 2013
shipments (less exports) and imports, billions of dollars



Source: Census Bureau

Figure 4. Manufacturing FDI in the U.S., 2004-2012
foreign investment position by industry, billions of dollars



Note: Each column represents one year. Red bars indicate recession years.
Source: Bureau of Economic Analysis

been a large contributor to recent GDP growth after the recession. In particular, real consumer spending on motor vehicles and parts in the first quarter of 2014 had almost returned to its pre-recession level. Business spending on transportation equipment is at a record high and spending on industrial equipment is nearing its pre-recession level as well.

Foreign direct investment plays an important role in the manufacturing sector

"Made in America" is a badge of honor that numerous foreign investors want to attain. Indeed, in AT Kearney's 2013 Foreign Direct Investment (FDI) Confidence Index, 302 companies representing 28 countries and multiple industry sectors rated the United States as the country with the best FDI prospects globally, the first time the U.S. took the #1 spot since 2001.[10]

Foreign direct investment (FDI) has been an important factor in U.S. manufacturing (see Figure 4).[11] As of 2012, total direct investment in the U.S. from abroad totaled $2.7 trillion, of which $899 billion (34 percent) was placed in the manufacturing sector. Within manufacturing, the largest recipients of FDI are chemicals (26 percent), petroleum and coal (13 percent), transportation (12 percent), and machinery (10 percent). Other manufacturing, which includes beverages and tobacco, textiles, apparel, leather, paper, printing, and plastics,

[10] AT Kearney, Foreign Direct Investment Confidence Index, 2013. http://www.atkearney.com/documents/10192/1464437/Back+to+Business+-+Optimism+Amid+Uncertainty+-+FDICI+2013.pdf/96039e18-5d34-49ca-9cec-5c1f27dc099d

[11] This report discusses FDI on a historical cost, or book value, basis.

represents 13 percent of all FDI invested in the United States. [12]

In addition to stocks of investment, it is also important to understand the movement of new investment in the economy. Between 2009 and 2013, inward flows of FDI totaled $770 billion, of which $330 billion (43 percent) was invested in the manufacturing sector. Within manufacturing, chemicals (predominately pharmaceuticals) attracted the most new investment: 43 percent of all FDI in the sector. Additionally, 9 percent of manufacturing FDI went to electrical equipment and 8 percent went to transportation equipment (mainly motor vehicles).

In a similar vein, foreign multinational companies (MNCs) have played a large role in the recent expansion. As of 2011, foreign MNCs employed 2.1 million manufacturing workers in the U.S., about 18 percent of total manufacturing employment. These firms contributed to the U.S. economic recovery by creating 120,000 manufacturing jobs between 2009 and 2011, the latest available year of data. Over this period, MNCs' job creation was concentrated in the transportation equipment, primary metals, and food manufacturing industries.

Back to Work

The number of manufacturing plants is increasing for the first time in over ten years

The steady rise in output has begun to reverse years of shrinking numbers of manufacturing establishments (that is, plants) and jobs. Since the end of the most recent recession, the number of manufacturing establishments began to increase, rising in four of the past five quarters (through Q3 2013). Even more importantly, the number of manufacturing establishments grew on a year-over-year basis in the second and third quarters of 2013, marking the first such growth since 1999 (see Figure 5).

The expansion is evident in other statistics, as well. Hours of production workers at manufacturing plants bounced back quickly after the recession. After bottoming out at 39.3 hours in May 2009, average weekly hours rebounded in just 11 months to their pre-recession level. Since then, hours have climbed (albeit at a slower pace) to their highest levels since the mid 1940s, reaching 42.1 hours in May of this year.[13]

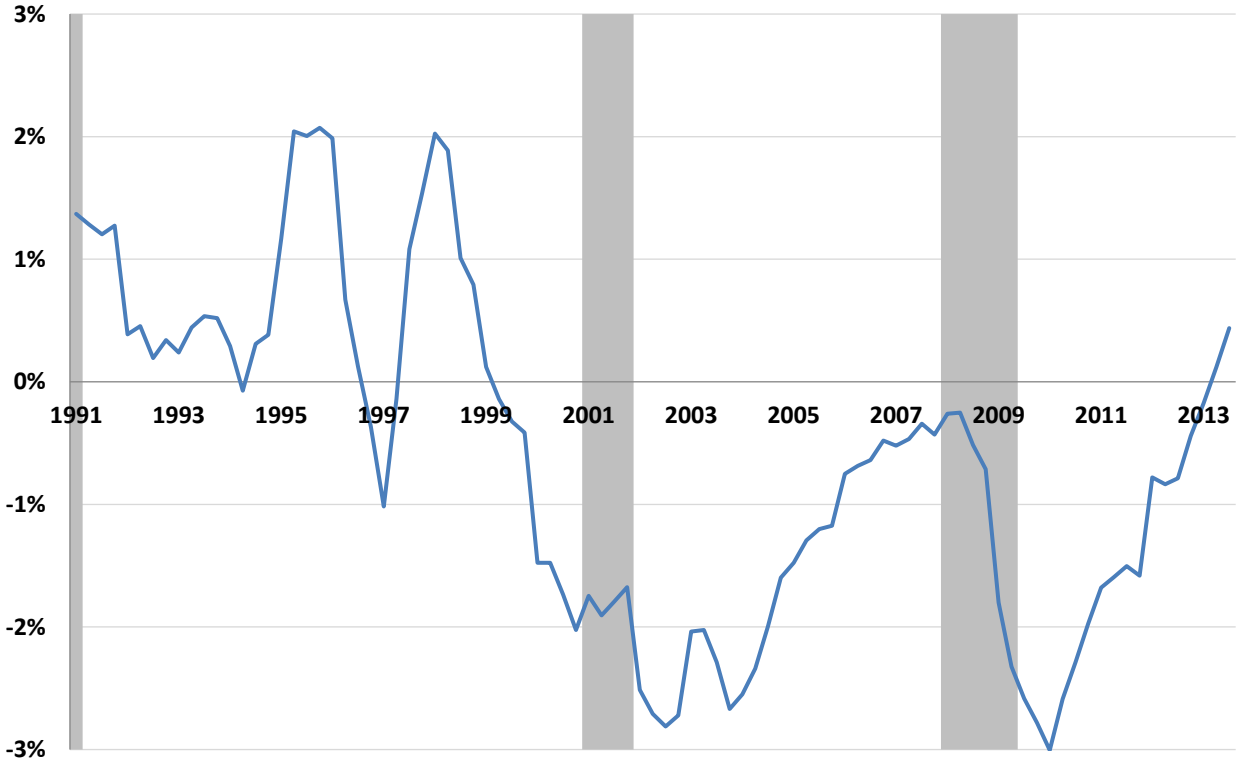
Less than a year after manufacturers began increasing workers' hours, they also started boosting their payrolls for the first time since the late 1990s (see Figure 6). Employment growth has remained steady; since overall U.S. employment began increasing again in March 2010, the manufacturing sector created a net

[12] Two recently released reports from the White House and the Department of Commerce provide even more detail about recent growth in foreign investment, and how the manufacturing sector has played a starring role. The Executive Office of the President and the Department of Commerce, "Winning Business Investment in the United States," May 2014. Available at: http://www.esa.doc.gov/sites/default/files/reports/documents/winningbusinessinvestmentintheunitedstates.pdf and The Department of Commerce and the President's Council of Economic Advisers, "Foreign Direct Investment in the United States," October 2013. Available at: http://www.esa.doc.gov/sites/default/files/reports/documents/fdireport-ceafinalrt.pdf.

[13] In the Current Employment Statistics survey, production workers include working supervisors and all nonsupervisory employees (including group leaders and trainees) engaged in fabricating, processing, assembling, inspecting, receiving, storing, handling, packing, warehousing, shipping, trucking, hauling, maintenance, repair, janitorial, guard services, product development, auxiliary production for plant's own use (for example, power plant), recordkeeping, and other services closely associated with the above production operations.

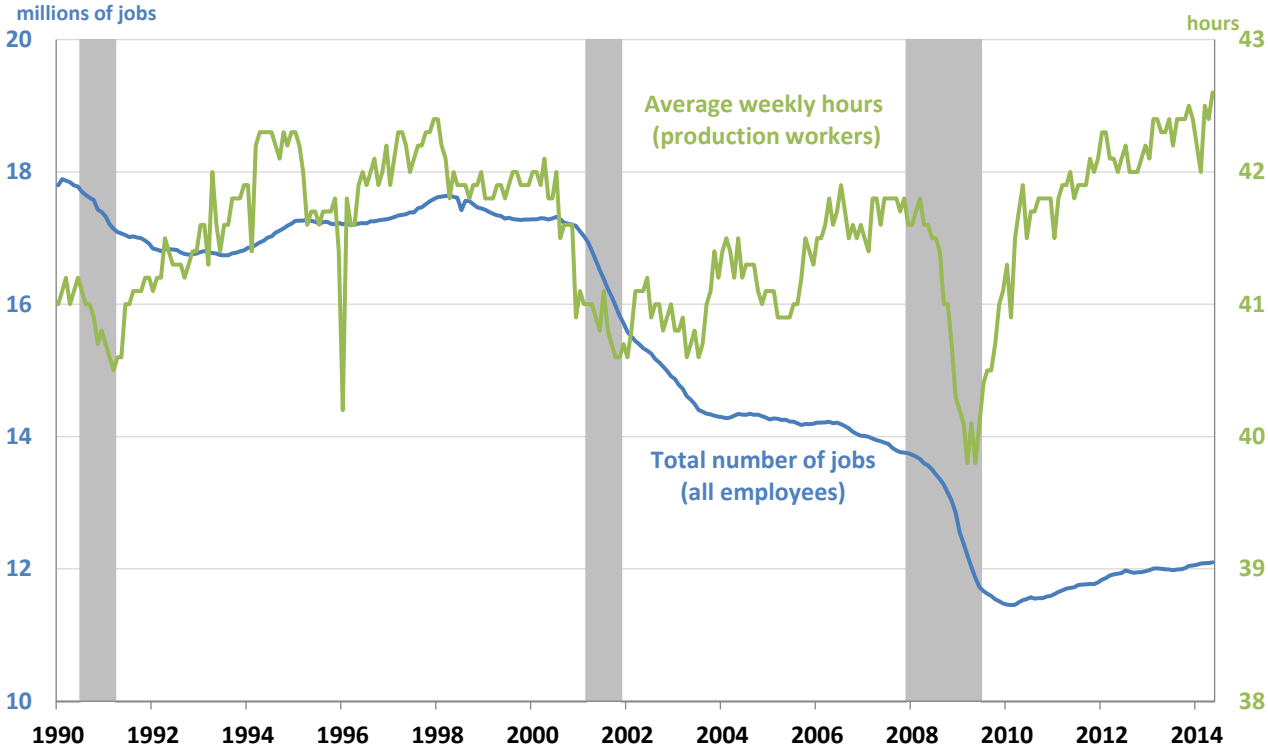
Figure 5. Manufacturing Establishments

year-over-year percent change



Source: Bureau of Labor Statistics

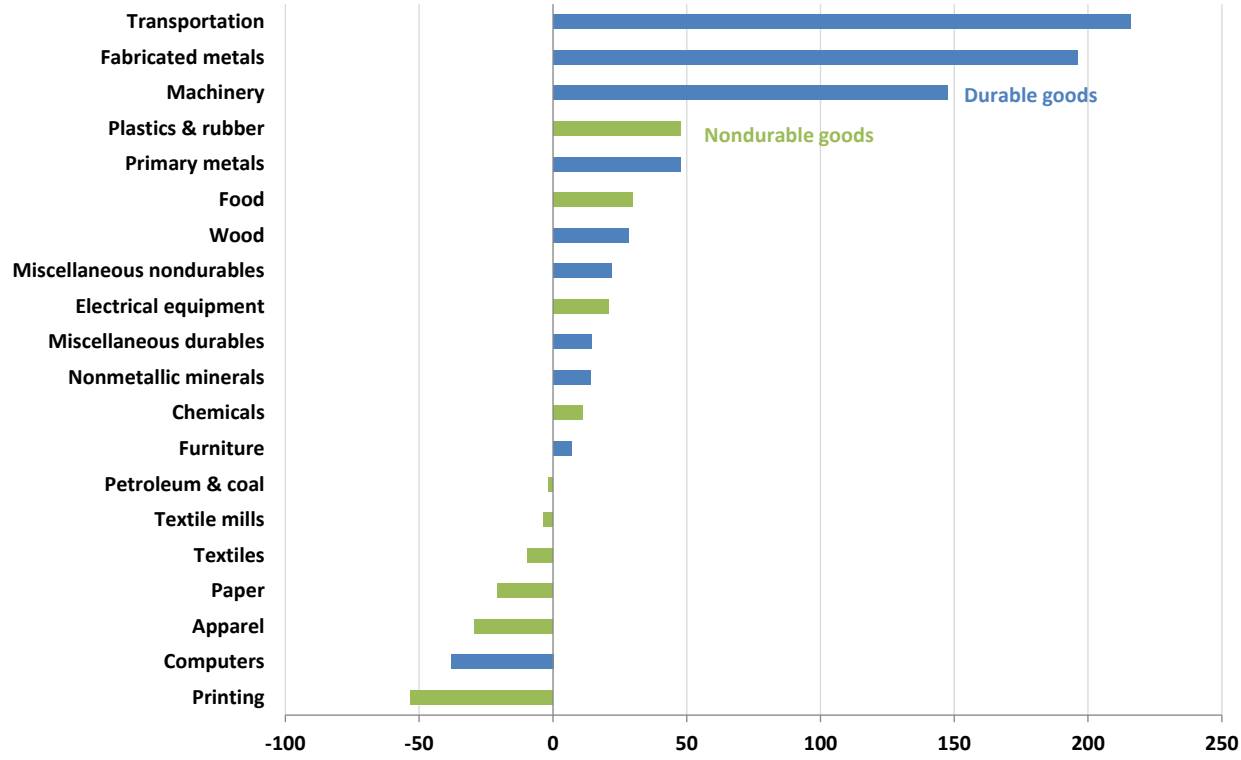
Figure 6. Manufacturing Employment and Average Weekly Hours, January 1990-May 2014



Note: Shaded areas indicate recessions.
Source: Bureau of Labor Statistics

Figure 7. Total Change in Manufacturing Employment, March 2010-May 2014

thousands of jobs



Source: Bureau of Labor Statistics

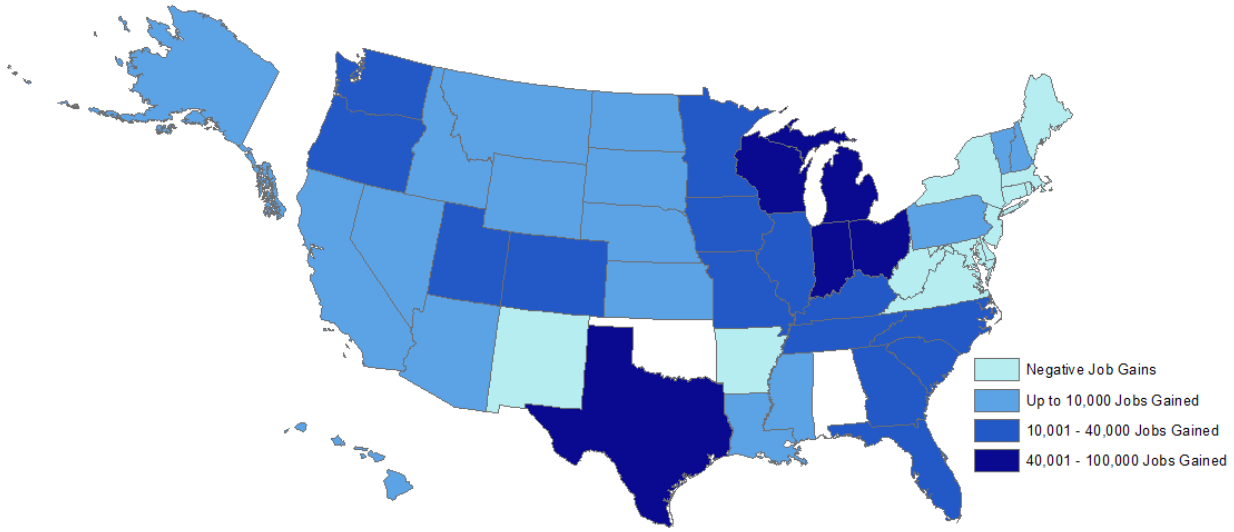
646,000 jobs (as of May 2014)—7 percent of the nation's overall job growth during this period.

Job growth has been strongest in transportation, fabricated metal, and machinery industries

The manufacturing sector comprises industries that create a diverse collection of goods. Just as with output, the growth in manufacturing employment has varied widely by industry (see Figure 7). Since manufacturing began adding jobs, all of the gains have been in durable goods industries. Digging deeper, 87 percent of the job gains in manufacturing have been in three durable goods industries: transportation equipment, fabricated metal products, and machinery.[14] Together, these three industries composed 34 percent of all manufacturing employment as of May 2014, so they have contributed more than their share of job growth during the post-recession period. Overall, nonfarm employment in the United States has rebounded and is above its pre-recession high. While the same cannot be said for the manufacturing sector, where only 28 percent of lost jobs have been replaced, the top three job-gaining industries have all recovered

[14] Looking at these industries in more detail provides some additional insight about the contours of the manufacturing expansion. Within the transportation equipment industry, motor vehicle parts were responsible for 56 percent of the overall job growth for the industry. Data for detailed manufacturing industries lag one month from aggregated data and estimates are calculated through April 2014 in this report. Machine shops and threaded product manufacturing (NAICS 3327) added 38 percent of the jobs in fabricated metal manufacturing, while agriculture, construction, and mining machinery contributed 37 percent within machinery manufacturing. For descriptions of these industries, see http://www.census.gov/eos/www/naics/.

Figure 8. Manufacturing Job Growth Since the Recession
Change in Employment by State, February 2010-April 2014



Source: Bureau of Labor Statistics

more than 60 percent of the jobs lost to the recession. Only one manufacturing industry has surpassed its pre-recession employment level: miscellaneous nondurable goods, due to quickly growing employment at breweries, wineries, and distilleries.[15]

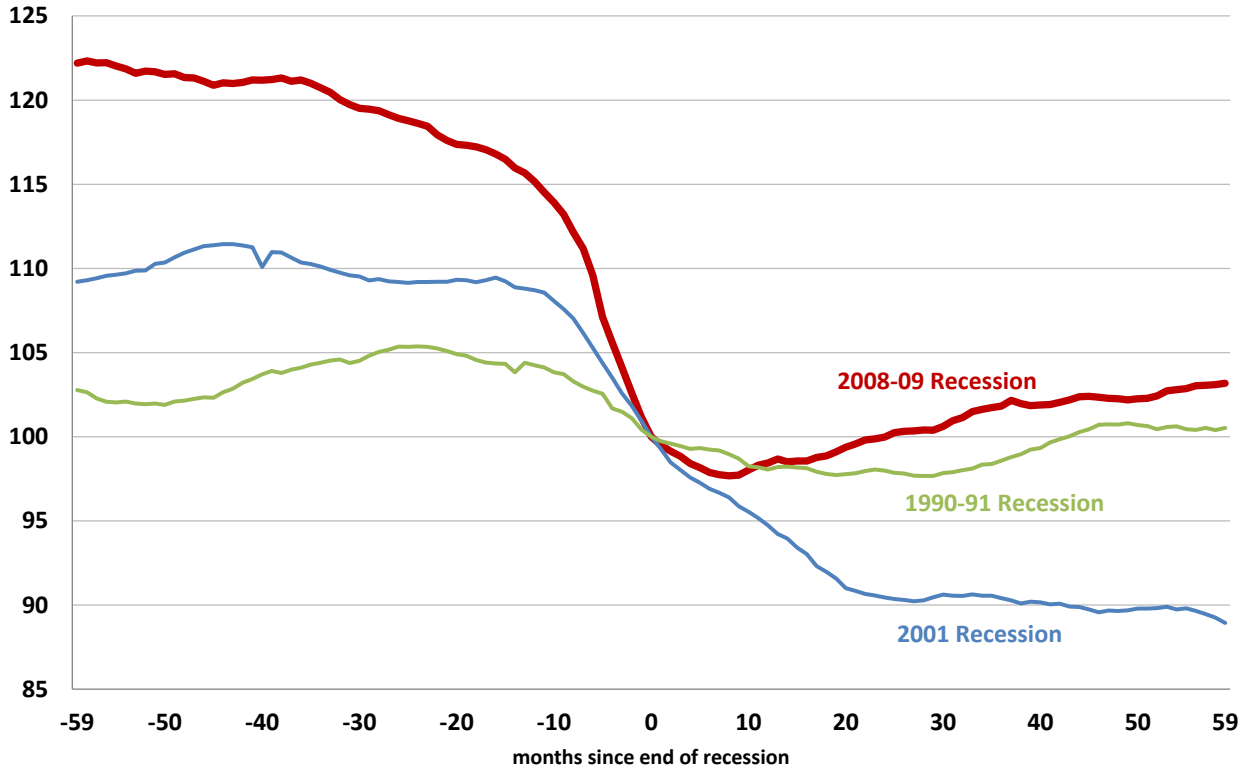
The Midwest and Texas have posted the bigest employment gains

The jobs data provide timely geographic detail not yet available for the output and export data cited earlier. While the job gains in manufacturing have been widespread throughout the country, more than half of the jobs added in the sector are located in five states: Michigan (96,800); Texas (73,000); Indiana (63,500); Ohio (58,000); and Wisconsin (42,600) (see Figure 8).[16] The geographic concentration of the manufacturing employment gains are in part due to the geographic clustering of the expanding industries.

Clusters are geographic concentrations of interconnected industries and supportive organizations that make regions uniquely competitive for jobs and private investment.[17] The Midwest (including Michigan, Indiana, Ohio, Wisconsin, Illinois, and Missouri) and the South (Kentucky, Tennessee, North Carolina, South Carolina, Alabama and Georgia, where a large number of manufacturing jobs have also been added) are areas where there is a large concentration of transportation equipment

[15] Miscellaneous nondurables includes beverages and tobacco products and leather and allied products.
[16] Manufacturing employment data are not available for Alabama and Oklahoma from the Current Employment Statistics survey. The job gains are calculated through April 2014, the latest data available at the time this report was published.
[17] The U.S. Economic Development Administration (EDA) and the Harvard Business School have teamed up to create the U.S. Cluster mapping Project. For more information, see: http://www.eda.gov/about/cluster-mapping.htm.

Figure 9. Index of Manufacturing Employment Before and After Recessions
(final month of recession = 100)



Source: Bureau of Labor Statistics

manufacturing.[18] Over half of the country's employment in this industry is located in these 12 states: the six Midwest states are home to a third of the employment in this industry, while the six states in the South are responsible for another 18 percent.[19]

Additionally, these areas are also sometimes referred to as the "machinery belt," especially in the Midwest, because of the high employment percentages in machinery, primary metals, fabricated metal products, and motor vehicles and parts. The clustering of these industries in these areas allows for common access to machines and tools for forming metal and to skilled workers.[20] Recent research shows that industry clusters and supporting industries nearby experience higher growth in employment, wages, number of establishments, and number of patents than non-clustered industries. This research undergirds some recent policy initiatives in the Department of Commerce (see Box 1).

[18] Susan Helper, Timothy Krueger, and Howard Wial. "Locating American Manufacturing: Trends in the Geography of Production." The Brookings Institute. Available at: http://www.brookings.edu/~/media/research/files/reports/2012/5/09%20locating%20american%20manufacturing%20wialh/0509_locating_american_manufacturing_report.pdf.

[19] Calculated using Q3 2013 data from the Quarterly Census of Employment and Wages, Bureau of Labor Statistics.

[20] Mercedes Delgado, Michael E. Porter, and Scott Stern. "Clusters, Convergence, and Economic Performance." The National Bureau of Economic Research. Available at: http://www.nber.org/papers/w18250.

Box 1. Investing in Manufacturing Communities Partnership

On May 28, 2014, U.S. Secretary of Commerce Penny Pritzker announced the first 12 communities that will be designated Manufacturing Communities as part of the Investing in Manufacturing Communities Partnership (IMCP) initiative. The interagency program, led by the White House and the U.S. Department of Commerce, is designed to accelerate the resurgence of manufacturing in communities nationwide by supporting the creation of long-term economic development strategies that help communities attract and expand private investment in the manufacturing sector and increase exports.

Each of the selected communities represents a cluster of specialized manufacturing. For example, the 13-county Southeastern Michigan region represents 22 percent of the motor vehicles made in the United States and takes in over 70 percent of the spending on U.S. auto research and development. The Washington Puget Sound region is home to the largest aerospace cluster in the world with over 132,000 aerospace-related employees and more than 1,350 aerospace-related firms.

These communities serve as a reminder that manufacturing in the United States is alive and well and that "Made in America" continues to be a source of pride. Below is the list of the 12 manufacturing community designees and their key, high-level manufacturing industry.

- Southwest Alabama – shipbuilding (transportation equipment)
- Southern California – aerospace (transportation equipment)
- Northwest Georgia – carpet (textiles and textile mills)
- Chicago metro region – metals and machinery (primary metals, fabricated metals, and machinery)
- South Kansas – aerospace (transportation equipment)
- Maine's Greater Portland region– food (food)
- Southeastern Michigan – automotive (transportation equipment)
- New York's Finger Lakes region – photonics, optics, and precision machining (machinery, and computers and electronics)
- Southwestern Ohio Aerospace region – aerospace (transportation equipment)
- Tennessee Valley – automotive (transportation equipment)
- Washington Puget Sound region – aerospace (transportation equipment)
- Milwaukee 7 region – energy, power and controls; water technologies; and food (machinery; computers and electronics; electrical equipment, appliance, and components; and food

For more information, visit http://www.eda.gov/challenges/imcp/.

Is There a Renaissance in U.S. Manufacturing?

It may seem reasonable that employment would grow during an expansion, but job gains in manufacturing have not been immediate or guaranteed following the prior two recessions (see Figure 9). Even now, the growth makes only a modest dent in reversing the cuts that occurred during the recession. The employment decline associated with the 2008-09 recession was especially severe compared with the two preceding recessions in 1990-91 and 2001. However, the creation of jobs after the most recent recession has been faster; just nine months after the official end of the recession, the manufacturing sector began adding jobs. After the 2001 recession, manufacturing employment continued to decline over the years until plummeting in 2008 (as shown in Figure 6). And, even though there were some scattered months of manufacturing employment gains after the end of the 1990-91 recession, persistent job growth took more than two years and employment never made it back to the pre-recession level.

Employment projections published by the Bureau of Labor Statistics (BLS) suggest that manufacturing employment will decline by about a half million jobs from 2012 to 2022, as the industry becomes more highly innovative, productive, and globally-oriented. However, the decline projected by BLS is considerably smaller than the decline over the prior 10 years.[21] BLS expects that this relative stabilization in manufacturing employment will be driven by an increase in the sector's annual output growth rate over the next ten years (from 0.2 percent over the 2002 to 2012 period to a predicted 2.4 percent from 2012 to 2022).

Notwithstanding these projections, the need to replace workers will create millions of job openings in the coming years. There will always be jobs available in manufacturing as current workers leave their jobs for retirement and other reasons and new workers are hired to replace them. BLS does not estimate job openings by industry, but it does by occupation, and those numbers are telling. From 2012 to 2022, BLS projects that the number of workers in production occupations (which typically are in manufacturing) will ratchet up by about 76,000 to just over 9.0 million. However, once turnover is taken into account, the projected number of openings will be more than 2.0 million spread out over the ten-year period.

Conclusion

The manufacturing sector still faces significant challenges. The foreign trade deficit is large and persistent. A handful of industries and a handful of states account for a disproportionate share of its rebound. While gains have been made in employment, they have been modest compared with the total number of jobs lost during the great recession.

However, U.S. manufacturing is expanding, and may have turned a corner. While growth in manufacturing has usually followed recessions, there is evidence that the manufacturing rebound this time around—measured in terms of employment and output—has exceeded what would have been expected given the historical cyclical pattern. The White House Council of Economic Advisers (CEA) has analyzed the sector's growth since the recession while also attempting to account for structural changes such as globalization that

[21] Henderson, Richard. *Industry employment and output projections to 2022.* Monthly Labor Review. Bureau of Labor Statistics. Accessed online: http://www.bls.gov/opub/mlr/2013/article/industry-employment-and-output-projections-to-2022.htm. Labor force projections are based largely on econometric models, which, by their very nature, project future economic behavior on the basis of a continuation of economic relationships that held in the past. For more information, see: http://www.bls.gov/emp/ep_projections_methods.htm.

have affected manufacturing in the last several decades.[22,23] Their analysis finds that less than one quarter of the employment growth in manufacturing since 2010 was due to a cyclical rebound and that job gains since then are roughly half a million above and beyond that. Whether or not this constitutes a "renaissance" is open to interpretation. Renaissance or not, evidence abounds that U.S. manufacturing has emerged out of the recession with renewed strength.

[22] The White House. 2014 Economic Report of the President, page 80. Accessed online May 22, 2014: http://www.whitehouse.gov/sites/default/files/docs/full_2014_economic_report_of_the_president.pdf, analysis updated June 2014.

[23] "The Case for a Manufacturing Renaissance." Prepared remarks by Gene Sperling, Brookings Institution. Accessed online: http://www.whitehouse.gov/sites/default/files/docs/the_case_for_a_manufacturing_renaissance_gene_sperling_7-25-2013_final_p....pdf.

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