

TRENDS IN MANUFACTURING EMPLOYMENT IN THE LARGEST INDUSTRIALIZED ECONOMIES DURING 1998-2014

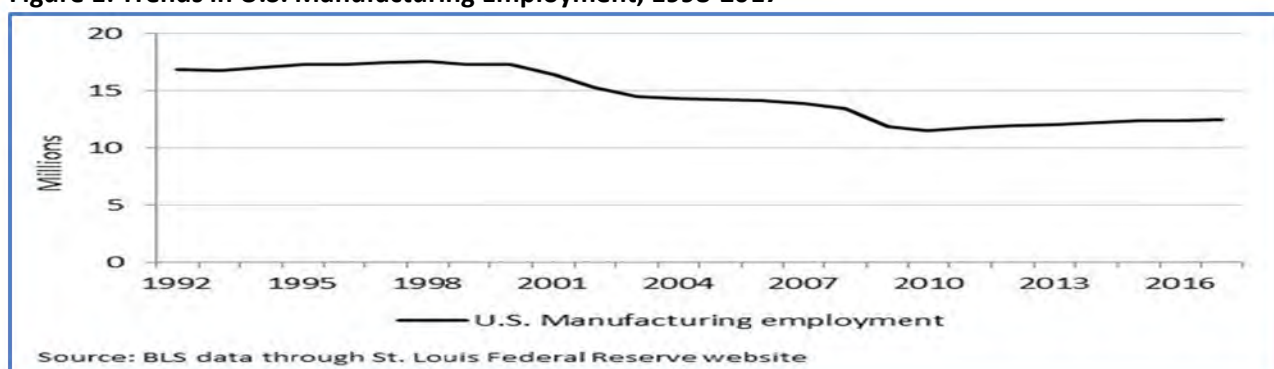
John Benedetto (Office of Economics, John.Benedetto@usitc.gov)

Despite an increase in the size of its working age population over the past two decades, the United States experienced a large decline in manufacturing employment since 1998. In contrast, during this period, the four other largest manufacturing economies in the world (China, Germany, Japan, and Korea) either experienced (a) increases in manufacturing employment, or (b) declines in manufacturing employment that were somewhat reflective of their simultaneously shrinking workforce.

Background on U.S. Manufacturing Employment

U.S. manufacturing employment has been declining since the 1980s, but most of the decline occurred in the 20 years since 1998 (see Figure 1). In 1998, U.S. manufacturing employment reached 17.6 million before falling to 13.4 million in 2008 (before the Great Recession), and then to a low of 11.5 million in 2010. There was then a small rise from 2010-2017. The overall decline from 1998 to 2017 was 29.3 percent. Data show U.S. real value-added in manufacturing rising by 32.3 percent, and manufacturing labor productivity rising by 57.8 percent, over the same period.¹ Economists at the U.S. International Trade Commission and elsewhere continue to investigate and analyze these divergent trends.

Figure 1: Trends in U.S. Manufacturing Employment, 1998-2017



Economists have offered numerous reasons for the drop over 1998-2010. Some economists posit that automation and reduced dependence on manufacturing (relative to services) explain most of the declines in U.S. manufacturing employment.² Others find larger effects due to increased net manufactured goods imports, or have asked why automation would be associated with falling manufacturing employment after 1973 when it was correlated with growing manufacturing employment before then.³

Manufacturing Employment Losses In Other Industrialized Countries

To explain manufacturing job losses in the United States, economists have investigated trends in other large economies, (e.g., those in Japan and Western Europe).⁴ Data summarizing those trends are presented in Table 1 and the textual summaries that follow. These data generally demonstrate how the U.S. experience has been unique among the five largest manufacturing economies.⁵ OECD data are used for comparative purposes; supplemental information is provided where OECD data do not exist (e.g., for China).

¹ Calculations based on Department of Commerce's Bureau of Economic Analysis and Bureau of Labor Statistics data.

² For example, see Lawrence and Edwards (2013), and Hicks and Devaraj (2015).

³ For example, see Andes (2015), Houseman (2016), and Mishel and Bivens (2017).

⁴ For example, see Levinson (2017).

⁵ The countries identified are the five largest manufacturing economies in the world. Nager and Atkinson (2015).

Disclaimer: The views expressed are those of the author and not those of the USITC or any of its Commissioners.

Table 1: Manufacturing Employment and Workforce Growth Rates of the United States, Germany, Japan, and Korea Since 1998

Country	Change In Manufacturing Employment Since 1998-2014	Growth in OECD Measure Of Working-Age Population, 1998-2014
United States	23.3 percent lower	16.4 percent higher
Germany	8.9 percent lower	4.8 percent lower
Japan (through 2013)	24.5 percent lower	9.1 percent lower
Korea	10.5 percent higher	11.2 percent higher

Note: All calculations have been conducted by the author based on OECD data. Data for Japan's working age population are only available through 2013. Data for Germany before 2005 are based on older OECD data from the Federal Reserve Bank of St. Louis.

Germany. Since the early 1990s, when Germany was merging West and East Germany, the unified country experienced a rate of manufacturing job loss similar to that in the United States.⁶ However, from 1998-2014, Germany's decline in manufacturing employment was less severe than the United States', and the trend in working-age population was the opposite.

Japan. From 1998-2013, Japan's drop in manufacturing employment was close to that of the United States. However, in Japan's case, the size of the working-age population shrunk, unlike in the United States.

Korea. Korea has shown increasing manufacturing employment, as the size of its overall workforce has increased at roughly the same rate. Additionally, it should be noted that comparison with 1998 might overestimate manufacturing employment increases, since Korea was in the midst of the Asian crisis at the time and its manufacturing sector was negatively affected. Nonetheless, by 2017, Korean manufacturing employment still exhibited growth and was higher than in any year between 1998 and 2014.⁷

China. Judith Banister of the Bureau of Labor Statistics (BLS) and Nicholas Lardy of the Peterson Institute of International Economics have described Chinese manufacturing employment data.⁸ Both have found that manufacturing employment rose by millions of workers over recent decades. Specifically, Lardy reported that Chinese urban manufacturing employment grew from 32.4 million in 2000 to 52.4 million in 2014, while Chinese urban private and self-employed workers in manufacturing grew from 10.9 million in 2003 to 27.2 million in 2014.⁹ Banister, who combined the urban data with additional data on rural areas, found that Chinese manufacturing employment grew from 85.9 million in 2002 to 99.0 million in 2009.¹⁰

Sources:

Abraham and Kearney, "Decline in Employment to Population Ratio," NBER, February 2018; Andes and Muro, "Don't Blame The Robots For Lost Manufacturing Jobs," *Brookings Institution*, Apr. 2015; Atkinson, Stewart, Andes, and Ezell, "Worse Than The Great Depression:." ITIF, Mar. 2012; Banister, "China's Manufacturing Employment and Hourly Labor Compensation, 2002-2009." *BLS International Labor Comparisons*, Jun. 2013; Hicks and Devaraj, "The Myth And Reality Of Manufacturing In America," Ball State University Center For Business And Economic Research, Jun. 2015; Houseman, "Is American Manufacturing In Decline?" Oct. 2016; Lardy, "Manufacturing Employment In China," *Realtime Economic Issues Watch*, PIIIE, Dec. 2015; Lawrence And Edwards. "U.S. Employment Deindustrialization" *Policy Brief*, PIIIE, Oct. 2013; Levinson, "U.S. Manufacturing In International Perspective," CRS, Report R42135, Jan. 2017; Mishel and Bivens. "The Zombie Robot" EPI, May, 2017; Nager and Atkinson, "A Critique Of CRS' 'U.S. Manufacturing In International Perspective,'" ITIF, Aug. 2015; OECD, *Employment By Economic Activity: Manufacturing: All Persons For Germany, Korea, And Japan*, Retrieved From FRED, Federal Reserve Bank Of St. Louis; OECD (2017), *Population (Indicator)*; OECD (2017), *Working Age Population (Indicator)*; China, *2016 Statistical Yearbook*; UN, *World Population Prospects*, 2012 Revision.

⁶ Levinson (2017). Levinson calculates that German manufacturing employment fell by 27 percent over 1990-2016, while U.S. manufacturing employment fell 28 percent over the same period.

⁷ Data from OECD.

⁸ In 2013, the U.S. Bureau of Labor Statistics (BLS) reported that no comprehensive source of frequently published Chinese official data provides nationwide employment and labor compensation statistics on Chinese manufacturing.

⁹ 2003 was the earliest year of available data. Lardy (2015).

¹⁰ Banister (2013).