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The American Worker Project

What happened to U.S. manufacturing?

The evidence on technology, trade, and structural change

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July 2024

It is not hard to frame the state of manufacturing employment in the U.S. in dismal terms. For maximum pessimism, one can look at 2000 to 2010—right before the 2001 recession through the end of the 2008–09 recession—a period when almost 6 million manufacturing jobs were lost.

But this is just a snapshot of what has happened to U.S. manufacturing jobs over the past 30 plus years. Unpacking the broader trends in manufacturing requires that we zoom out to view the period before the dot-com bubble and beyond the financial crisis and Great Recession.

The current state of manufacturing is a consequence of the interaction of many shocks and trends. These include technological change and automation, international trade, and a broad shift toward service sector employment in the U.S. and many other advanced economies.

This article will review, over the long run, the main factors behind the dynamics of manufacturing employment. One objective is to show that there is not a grand, unifying narrative about the myriad of forces affecting the American economy and its employment composition over time. Trade, technology, and industrial structure interact in complex ways such that isolating the effect of any one factor is difficult.

Moreover, many of the changes are irreversible. Not just because the anecdotal former factory town is now empty, but also because we can't return manufacturing to a bygone era by uninventing, for example, information and communications technology. This complicates the problem of how policy should be designed to best help workers in addition to the choices available to business decision-makers and workers themselves.

The big picture

To help answer the question of what happened to manufacturing, we focus primarily on the period from 1990 to 2022. This will maximize the overlap of comparable U.S. and international data on manufacturing, services, and trade.

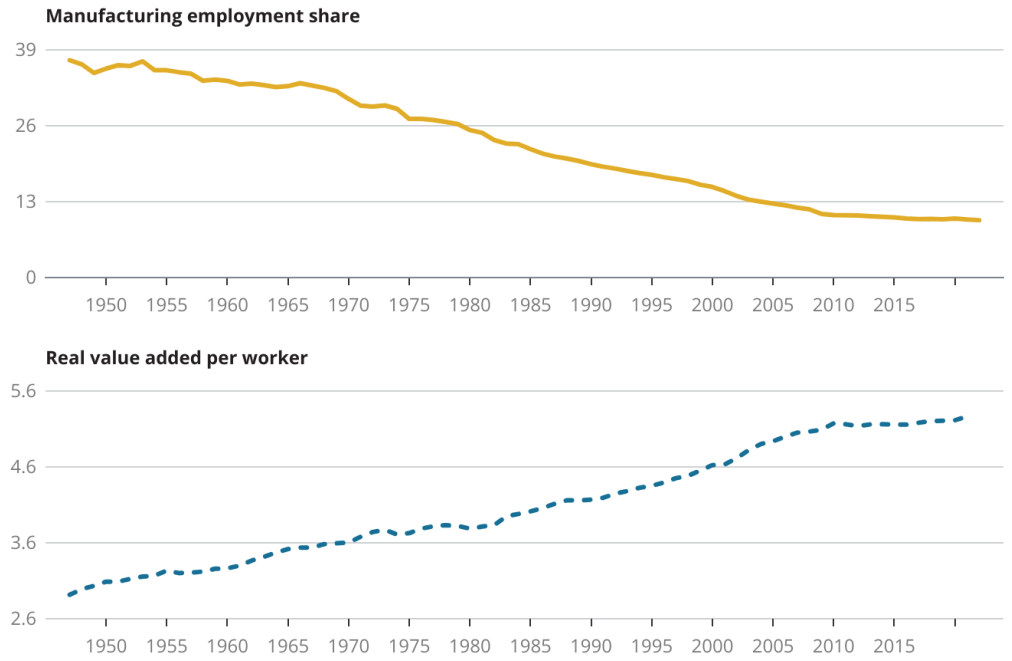
But it's helpful to start by stepping back further and reviewing the period from the end of World War 2 to the present.

For most of the twentieth century, some of the largest American companies were manufacturing firms. Big manufacturing employers were synonymous with high market capitalization, profits, and total revenue. Workers from the assembly line up to the C-suite often spent their entire career at the same plant, employer, or at least the same industry sector. Even in the mid-1990s, household names like General Motors, Ford, GE, and IBM are still in the top 10 of the Fortune 500 (a revenue-based list), but change is well underway.[1]

Nostalgia for the past remains salient in national conversation. But the typical U.S. manufacturing plant is not the vertically integrated megalopolis that Henry Ford once built in River Rouge, Michigan and the typical worker is now employed in the service sector. The total number of manufacturing jobs peaked in 1979 at 19.5 million. Manufacturing was 25 percent of private sector employment at the time, shown in Figure 1. But the decades-long trend is that the manufacturing share of U.S. employment, which peaked during World War 2, has been declining for 70 years and now stands around 10 percent.

Figure 1: U.S. manufacturing employment shares fall as productivity rises, 1947–2022

U.S. employment share of manufacturing and real value added per worker



Source: Employment data are from the Bureau of Labor Statistics. Manufacturing, all employees, seasonally adjusted, series CES300000000. Data are averaged by year. Value added in manufacturing are from BEA. Values are adjusted to real terms using the price index for manufacturing from the Bureau of Economic Analysis in 2012 dollars. Manufacturing defined on a SIC basis through 1996 and NAICS basis from 1997.

This does not mean U.S. manufacturing is in decline generally. Over the same period, manufacturing performance measures have risen dramatically—manufacturing gross output, exports, and productivity are still increasing.

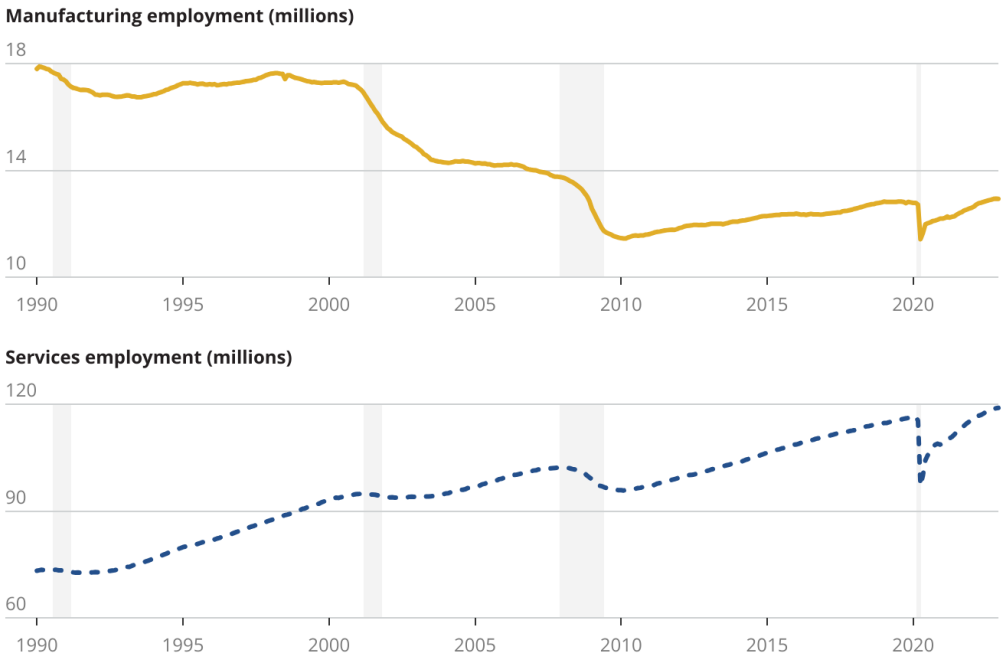
Figure 1 demonstrates how real (inflation adjusted) value added per worker has almost continuously increased since 1947 at a pace that has moderated slightly over the last decade. In short, U.S. manufacturing workers are producing more with less labor over time.

The same pattern prevails in nearly all advanced, high-income economies. The manufacturing share of employment declines at a rate of 30 to 65 percent in Australia, Canada, Germany, France, Japan, South Korea, and the United States from 1980 to 2012.[2]

Returning to the more recent past, Figure 2 breaks U.S. non-farm private sector employment into manufacturing and service jobs.[3]

Figure 2: Employment shifts from manufacturing to services

Manufacturing and services employment levels, 1990–2022



Source: Author's calculations extending version of figure from Bloom et al. (2024). Data are from the Bureau of Labor Statistics. Manufacturing, all employees, seasonally adjusted, series CES3000000001. Services includes all non-manufacturing (services, construction, mining), derived from all employees, private, non-farm, seasonally adjusted, series CES0000000001, less Manufacturing series. Grey bars indicate recessions.

Here we see the drop in manufacturing employment becoming a precipitous fall after 2000, but also a large increase in services employment that underscores broader trends noted above. Perhaps more remarkably,

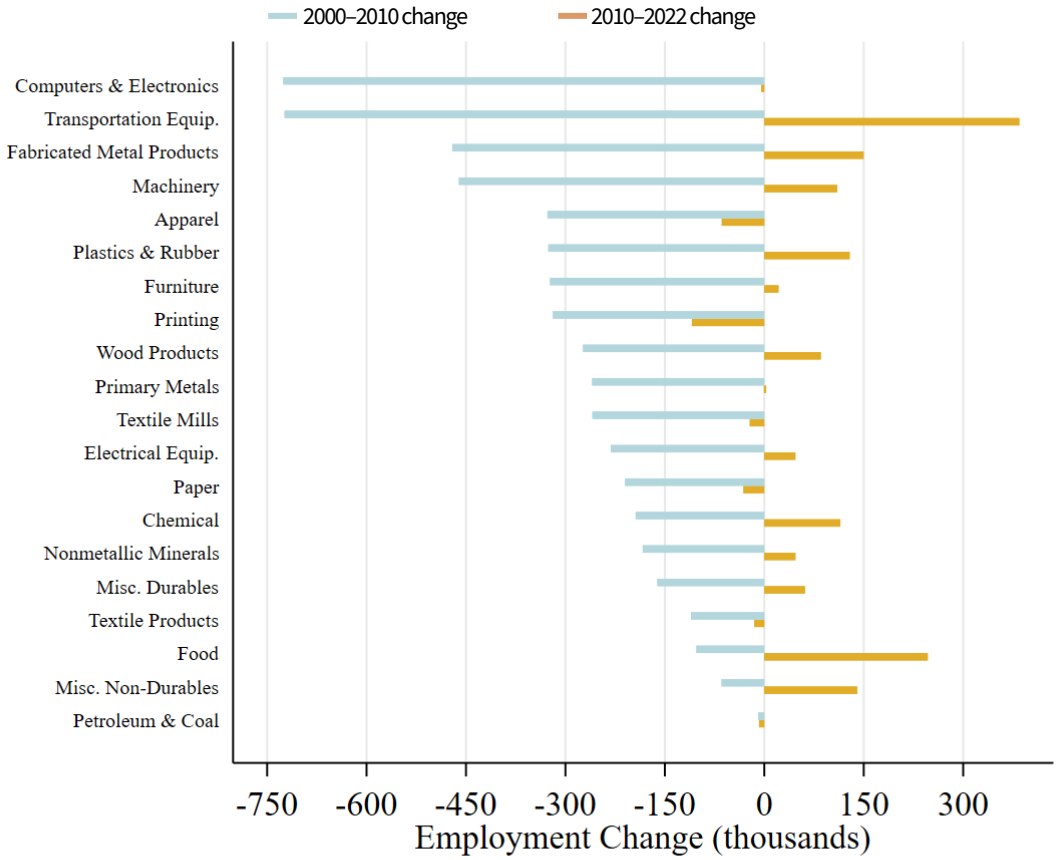
considering popular narratives of malaise, manufacturing employment has increased by about 12 percent relative to 2010 and recovered to nearly 13 million total jobs by 2022.

Nevertheless, many of those jobs are not in the same manufacturing industries or locations where job losses were high in the 2000s.

The distribution of manufacturing jobs across industries changes from 2000 to 2022. Job losses from 2000 to 2010 in manufacturing are highly concentrated in durable goods, as shown in Figure 3. For example, transportation equipment (including motor vehicles) and the computer and electronic products sector lost more than 700,000 jobs each and account for 26 percent of total job losses over this period.[4] The subsequent recovery after 2010 was not in the same sectors hit hard between the two recessions. Food products, chemicals, plastics, and rubber are 11 percent of job losses through 2010 but make up 38 percent of the gains from 2010 to 2022. Sectors such as textiles and apparel are in terminal decline, losing over 70 percent of their workforce through 2022, while other sectors recover.

Figure 3: Distribution of employment across industries is shifted before and after the Great Recession

Manufacturing jobs gains and losses by industry: 2000–2010 vs. 2010–2022



Source: Author's calculations using NAICS 3-digit industry detail from the Bureau of Labor Statistics. Seasonally adjusted monthly data, averaged to annual basis. NAICS 312 & 316 aggregated into Miscellaneous Non-Durables (beverages, tobacco, leather, and allied goods) by BLS.

The manufacturing job losses are more than offset by the 23 million service sector jobs added from 2000 to 2022. The top sector for growth is healthcare, adding 9 million jobs, followed by professional and business services, adding almost 6 million jobs, hospitality at about 4 million jobs, and transportation and warehousing, which added 2.2 million jobs.

The gains in business services, which includes management of companies, administration, scientific and technical services (R&D), and transportation and warehousing are important because they perform activities that are adjacent to manufacturing, international trade, and the offshoring of supply chains. For example, Apple, Inc. engineers design their own semiconductor chips and manage an international supply chain, but do all their manufacturing overseas. Likewise, Amazon, UPS, and FEDEX handle logistics and delivery of the many consumer goods produced abroad that are created, marketed, and sold by U.S. firms.

Technological change

The role of new technology is evident in several dimensions in the data on manufacturing firms. As Richard Baldwin argues in his 2016 book, *The Great Convergence*, a major development after 1990 was the information communications technology revolution that dramatically lowered the cost of communication.[5] An engineer could now email a computer-aided architectural design with precise specifications for an injection-molded industrial light fixture to suppliers anywhere in the world, rather than physically delivering it to a nearby production facility.

The economists Teresa Fort, Justin Pierce, and Peter Schott find support for the associated unbundling of production and service activity in firm and establishment microdata.[6] Before 2000, firms are already engaged in "domestic offshoring", where manufacturing production moves from high wage areas in the north and east to lower wage regions in the south and west. The economists also find that, in general, manufacturing firms are not going out of business, but rather they are shutting down manufacturing plants and shifting toward services employment.

Outside of recessions, services jobs are increasing in firms that are also manufacturers from 1977 onward. Likewise, some firms that previously manufactured goods cease to produce domestically at all and become "factory-less". They continue operations, engage in importing and exporting, and increase employment.[7]

Automation and investment in technology also play a major role, one that is closely related to the increase in productivity measured by value added per worker from Figure 1. As Fort, Pierce, and Schott also document, the share of manufacturing plants purchasing computers goes from about 10 percent in 1987 to more than 60 percent in 2002, with a related uptick in plants using electronic networks. Highlighting the relationship with international trade, these aggregate trends in firm-level data on technology adoption are correlated with U.S. import penetration and the share of manufacturing firms that import. At the same time, automation and robotics are increasing labor productivity, but reducing employment and wages in manufacturing.

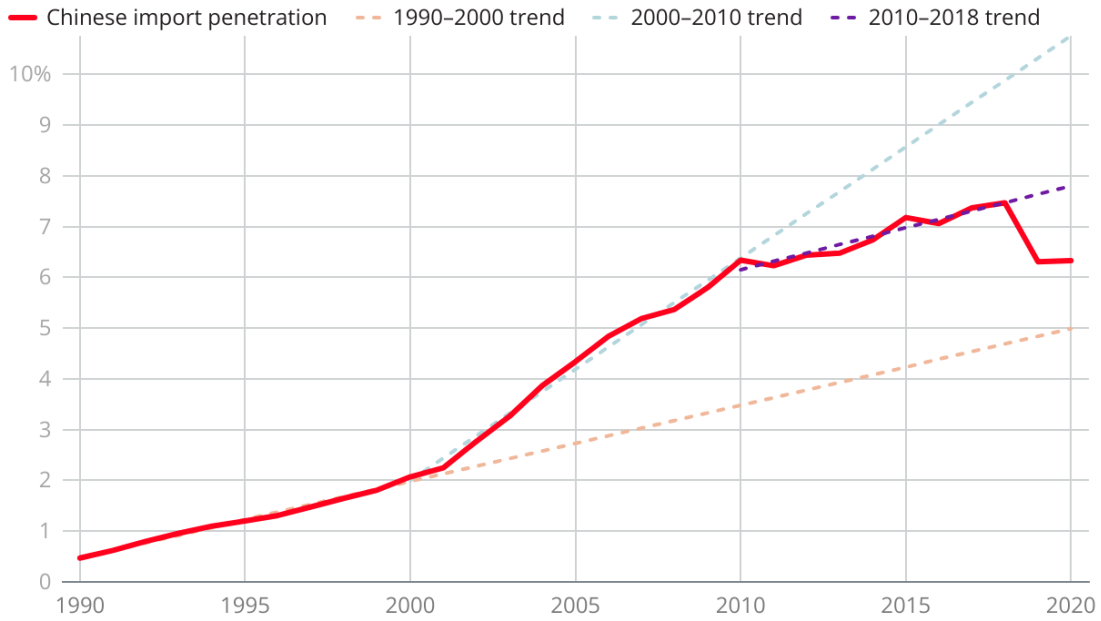
Daron Acemoglu and Pascual Restrepo find that industries predisposed to robot adoption have larger employment declines after 1990.[8] And as the cost of technology falls, increasing automation of routine tasks in goods production has also shifted low-skilled labor into service occupations.[9]

International trade

International trade and import competition from the China Shock reinforced and accelerated the trends in manufacturing and service sector employment. Figure 4 shows Chinese import penetration in manufacturing from 1990 to 2020.[10]

Figure 4: Chinese import competition accelerates after 2000 and then returns to trend

Chinese import penetration in U.S. manufacturing, 1990–2020



Source: Author's calculations, adapted from Bloom et al. (2024). Import penetration is Chinese manufacturing imports divided by gross output plus imports minus exports. Manufacturing gross output data obtained from Bureau of Economic Analysis. Manufacturing imports and exports obtained from U.S. International Trade Commission Dataweb. Imports and exports on a SIC basis until 1996 and NAICS from 1997 to 2020. Trendlines are a simple linear fit of import penetration to year trend for the specified time period.

Economists David Autor, David Dorn, and Gordon Hanson now have an extensive set of research on the China Shock.[11] Their original 2013 paper notes there is an inflection point for Chinese import penetration after 2001. This is the year that China enters the World Trade Organization, and the reduction in uncertainty about access to the American market leads to a surge in Chinese imports into the U.S.[12] But after the global financial crisis, the acceleration slows down and even returns to its pre-2000 trend growth.

While the China Shock itself occurs over the medium term—roughly 2000 to 2010—it has longer term implications for the adjustment of firms, employment, and the regions most exposed to the shock.

Autor, Dorn, and Hanson show that the manufacturing employment to population ratio and manufacturing job growth falls more in local labor markets that are relatively more exposed to import competition from China, as measured by their manufacturing industry composition. It is important to note that their results are estimates of relative differences across geography and cannot directly inform us about aggregate employment effects that,

on net, may have been less severe. An important contribution of their work was to devise a clever way to map the shock—Chinese import competition—into a well-defined concept of a labor market to credibly estimate the reduced employment effects.

This strategy doesn't adapt generally to other contemporaneous shocks, each of which have their own empirical challenges and that may also have affected U.S. manufacturing. The result is a relative abundance of China Shock research papers relative to other factors that impact labor markets. But there is little doubt among most economists that Chinese imports did reduce U.S. manufacturing employment to some extent, and other research finds similar effects using different estimation methods and shock measurement.[13]

The China Shock occurred very fast and U.S. labor markets were simply not able to contemporaneously adjust to the jobs lost in manufacturing—which helps explain why, in the absence of robust government retraining programs, the work of Autor, Dorn, and Hanson also finds large increases in unemployment and other social insurance program claims.

In this summary, I argue it is important to zoom out from the direct job losses and examine the wider impact of trade on manufacturing. Importantly, other research shows that Chinese import competition didn't just cause job losses, but also spurred a reallocation of employment and a reorganization of firms consistent with the patterns described more broadly above—shutting down manufacturing plants but staying in business by shifting into design and services.

Using input-output relationships between industries, Robert C. Feenstra and Akira Sasahara show that growing U.S. export opportunities expanded U.S. employment in both services *and* manufacturing, despite the job losses from Chinese import competition.[14]

In a recent paper, my co-authors and I use administrative microdata on firms and establishments to decompose the margins of employment growth in manufacturing and services using the same estimation method as Autor, Dorn, and Hanson to estimate relative effects across local labor markets.[15]

We find evidence that firms adjust through reorganization both within manufacturing and between the manufacturing and service sectors.

First, while about half of the job destruction from the China Shock is from plant closure, surviving plants have positive net job creation.

Second, the negative manufacturing employment effects from Chinese import competition can be decomposed into firm adjustment margins. About 40 percent of the relative effect is from plant industry switching: continuing plants that switch their primary activity from manufacturing to services. This employment switching shift is oriented almost exclusively away from hard hit durable goods sectors (see Figure 3) towards the service sectors in research, design, management, and wholesale, but would otherwise appear as manufacturing jobs loss in public-use aggregated regional employment data.

Third, most job destruction in manufacturing in response to the China Shock occurs within firms that are contemporaneously expanding services employment. This factor, plus industry switching, drives positive overall

net job creation in services such that overall employment is unaffected by the shock, as the job gains in services offset losses in manufacturing.

It's also critical to distinguish between a firm's own import and export activity, which may be complementary to employment, and industry-level exposure to import competition.[16]

Further evidence of this shakeout in manufacturing and overall employment can be found in my 2021 paper with Fariha Kamal and Wei Ouyang,[17] in which we analyze U.S. job creation since 1991 at goods-trading firms (importers or exporters) versus non-traders. Through the late 2000s, net job creation rates are fairly similar between internationalized firms (importer or exporter) and non-trading firms. But after the Great Recession, we document a "survive, then thrive" pattern with a substantial job creation premium for goods traders.

In the overall economy, goods-trading firms created three out of five net new jobs from 2008 to 2019. In manufacturing, this same set of firms is responsible for nearly all the manufacturing job growth after 2010 that we see in Figure 2. Aggregate job growth at non-trading manufacturing plants is consistently negative, suggesting such plants did not adapt to international competition.

Resilience, product cycles, and broader global trends

In 2023, there are no longer any traditional manufacturing firms in the top 10 of the Fortune 500. This list is topped by service sector companies in retail, technology, and healthcare (for example Walmart, Apple, and CVS). Not surprisingly, these service firms are also some of the most profitable and largest in the U.S.[18]

Manufacturing employment and operations have always been affected by trade and foreign competition. Earlier phases of globalization saw steady growth in jobs, productivity, and trade. Why have recent decades been different? Should we be worried?

The timing of business cycle downturns in 1990 and 2008 and the China Shock played important roles. But these factors also interacted with a manufacturing employment base concentrated in mature, standardized products.

Large manufacturing plants with over 1,000 employees are now increasingly rare in the U.S economy.[19] As documented by Thomas Holmes, employment in such large plants falls from 4.2 to 2.1 million employees between 1987 and 2007.[20] These plants are downsizing rather than shutting down.

In another paper, Holmes and his co-author John Stevens show that as industries mature and begin to operate at scale, the largest plants typically produce standardized goods with less-skilled labor.[21] They tend to be more vulnerable to shocks in general, and especially from low-wage import competition, whereas small to medium sized operations making specialized or complex products are more nimble and better able to adapt.

Taking an even longer view of this product cycle, economists Katherine Eriksson, Katheryn Russ, Jay Shambaugh, and Minfei Xu examine the changing levels of maturity and standardization across industries.[22] When the China Shock arrived, the most exposed industries and regions in the U.S. had concentrated in late-stage production, i.e. locations with low wages, less innovation, and mature, standardized production processes. This made them less resilient in the face of import competition from China in the 2000s. In contrast,

Japanese import competition in the same industries and regions in the 1980s did not have the same effect because they were at a much earlier stage of the product cycle.

The shift away from U.S. manufacturing employment and toward services is consistent with global trends in employment across many countries. In fact, it even appears to be happening in China itself.

Declining manufacturing employment coupled with rising productivity and output is not solely a U.S. phenomenon. Using the OECD's Trade in Employment data we can trace out the path of manufacturing employment since 1995 using internationally comparable data across countries. China remains a manufacturing juggernaut, but its manufacturing employment has been trending sharply downward, peaking at 151 million manufacturing jobs in 2013 and falling to 129 million by 2019.[23] Worldwide manufacturing jobs fall over the same period from 355 to 324 million.

The productivity, technology, and product cycles described above mean jobs can decline even if manufacturing output and trade are rising. But there is no manufacturing job offshoring at a global level because workers cannot be relocated to factories off-world (yet).

What happens to the entire distribution of world manufacturing employment over this time? Table 1 shows that China's share of world manufacturing jobs has fallen since 2013. Surprisingly, the U.S. is bucking the global trend over the past decade by adding jobs and increasing its share of manufacturing employment. Mexico has gained, as have Vietnam and Indonesia, with the latter two possibly benefitting from Chinese firms relocating outside of the mainland.

Table 1: World manufacturing employment rises then falls, driven by losses in China while the U.S. and other countries gain

Selected country and regional shares of world manufacturing jobs

	1995	2000	2013	2019
China	36.8	40.5	43.3	36.6
United States	6.0	5.5	3.5	3.9
Mexico	1.7	2.0	1.6	2.0
European Union	13.2	11.7	8.9	9.9
Vietnam	0.9	1.0	2.1	3.3
India	13.3	13.5	14.4	13.8
Indonesia	3.5	3.6	4.4	5.6
Rest of world	24.6	22.2	21.8	22.9
Total world manufacturing employment (millions)	292.6	321.8	349.6	335.2

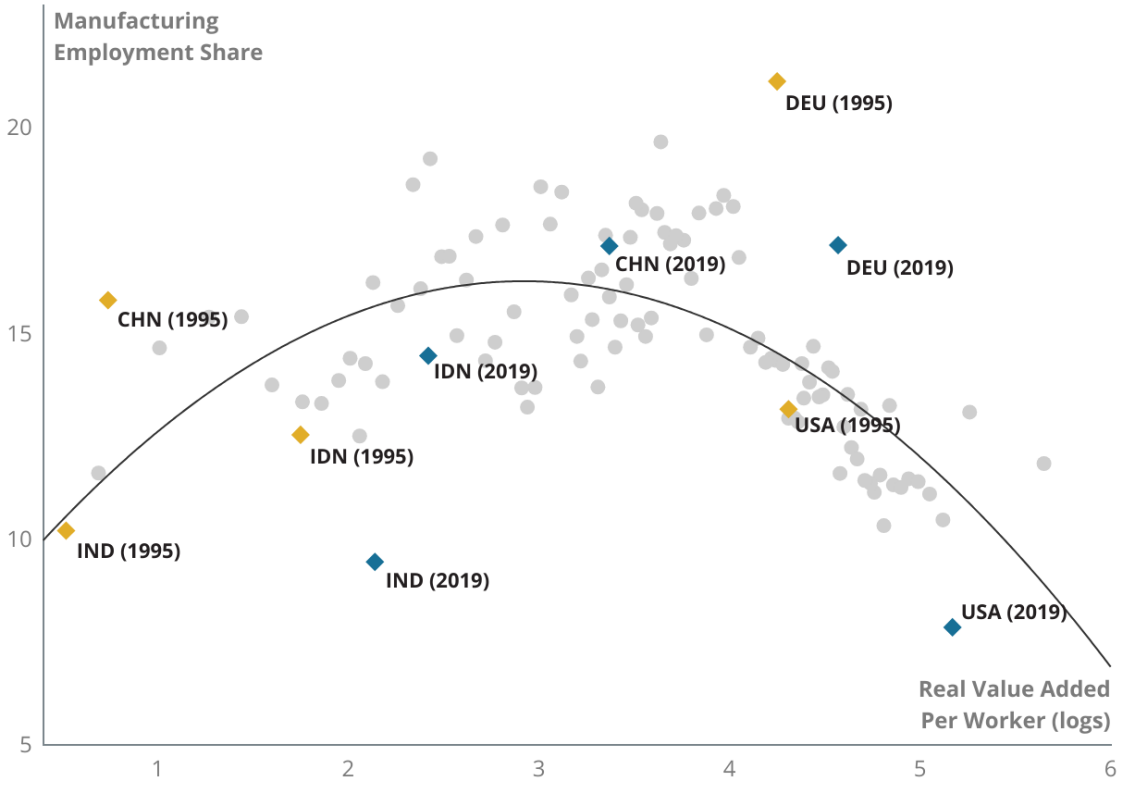
Source: Author's calculations based on the Organization for Economic Cooperation and Development Trade in Manufacturing Data. 1995 is the first year in the database. 2013 is the peak of Chinese manufacturing employment at 151 million jobs. Manufacturing sector defined on the ISIC basis.

These facts fit into a broader pattern of structural change in employment through the phases of industrialization. Among advanced economies there is a negative relationship between productivity and the employment share of manufacturing as productivity gains shift workers out of manufacturing into services.

But earlier in the process of development, the relationship tends to be the opposite: Manufacturing employment shares and productivity increase together as workers shift out of agriculture and into manufacturing.[24] This yields a hump-shaped relationship between the domestic employment share of manufacturing and productivity, which we can see in the cross-country data in Figure 5. There are insights about what may come next from considering where specific countries now find themselves along the process of structural transformation shown in this figure:

Figure 5: Manufacturing shares differ by stages of development, rising with productivity and then falling as countries industrialize and grow richer

Cross-country manufacturing share of employment vs. value added per worker, 1995–2019



Source: Author's calculations using the Organization for Economic Cooperation and Development Trade in Manufacturing and Trade in Valued Added database. Binscatter of cross-country panel of manufacturing employment share on real value added per worker. Gray dots are averages over the 100 centiles of the distribution of real log valued added per worker. The black line is a second order local polynomial through the bin scatter. Solid yellow diamonds are data for selected countries in 1995. Solid blue diamonds are data for selected countries in 2019. Value added is in U.S. dollars and converted to real 2012 dollars using Bureau of Economic Analysis price index for manufacturing.

Advanced economies like the U.S. and Germany are moving down the curve. Newly industrialized countries like India and Indonesia are moving up. Definite predictions are premature, but China may have pushed over the top of the hump as well, explaining part of the manufacturing employment decline after 2013.

What we can argue more forcefully is that it is difficult to imagine any policy or technological changes, short of turning back the clock on U.S. manufacturing productivity (e.g. smashing all the machines), that can bend this curve in a way that reverses the long-run decline in the U.S. employment share of manufacturing.

Conclusion

In examining the trajectory of manufacturing employment within the United States from its peak in the late 1970s to the downturns of the early 2000s and through the recovery after the Great Recession, it is clear that manufacturing is entwined with broader economic transformations. This discussion highlights the role of technological innovation, global trade dynamics, and the structural shift towards service-oriented employment as important factors influencing manufacturing employment trends.

The advent of information and communications technology has led to a fundamental reorganization of firms and manufacturing production that cannot be reversed. Moreover, the integration of global markets, exemplified by the so-called China Shock, has accelerated these changes. Manufacturing in the U.S. has a future that was never befitting of the more popular narrative of malaise and decline. But that future could well be different for the next generation of manufacturing workers, which may operate in industries and locations that do not reflect the past.

Kyle Handley is an economist at the University of California, San Diego in the School of Global Policy and Strategy. *The author is grateful to Aaron Flaaen, Fariha Kamal, Andre Kurmann, Adam Ozimek, and Peter Schott for helpful comments on previous drafts.*

Explore the Economic Innovation Group's American Worker Project here.

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[1] Gary Hoover, "American's Largest Companies 1994–2022", American Business History Center, July 29, 2023 (https://americanbusinesshistory.org/largest-us-companies-1994-2022/, accessed May 17, 2024). Of course, large plants like Tesla's Gigafactory in Texas or Boeing's Everett facility still exist, but they are an exception, not the rule.

[2] These figures end in the last year the Bureau of Labor statistics computed long run international comparisons of labor force statistics for the selected countries from 1970–2012 (BLS, 2013).

[3] The services group includes all non-manufacturing (excluding agriculture), which technically includes mining and construction. Both mining and construction play a limited role in the increasing services employment trends in Figure 2.

[4] The large losses in computers and electronics underscore the uneven distribution of job gains in sectors where one might have expected the U.S. to have a comparative advantage. Jobs are universally down through 2010, but employment grows within the subsectors including semiconductors, computer and peripheral equipment, and instrument device makers after 2010. These gains are masked by the continuing job losses in audio, visual, and communications equipment manufacturing.

[5] Richard Baldwin, 2016. *The Great Convergence: Information Technology and the New Globalization*. Harvard University Press: Cambridge, USA.
[6] Teresa C. Fort & Justin R. Pierce & Peter K. Schott, 2018. "New Perspectives on the Decline of U.S. Manufacturing Employment", Journal of Economic Perspectives, American Economic Association, vol. 32(2), pages 47–72, Spring.
[7] Bernard, Andrew B., and Teresa C. Fort. 2017. "Factoryless Goods Producers in the U.S." Chap. 5 in The Factory-Free Economy: Outsourcing, Servitization, and the Future of Industry, edited by Lionel Fontagné and Ann Harrison. Oxford University Press.
[8] Daron Acemoglu & Pascual Restrepo, 2020. "Robots and Jobs: Evidence from U.S. Labor Markets", Journal of Political Economy, University of Chicago Press, vol. 128(6), pages 2188–2244.
[9] David H. Autor & David Dorn, 2013. "The Growth of Low-Skill Service Jobs and the Polarization of the U.S. Labor Market", American Economic Review, American Economic Association, vol. 103(5), pages 1553–1597, August.
[10] Import penetration simply measures the share of Chinese imports in total domestic consumption: production minus exports sold abroad plus imports consumed at home.
[11] David Autor & David Dorn & Gordon Hanson, 2021. "On the Persistence of the China Shock", Brookings Papers on Economic Activity, Economic Studies Program, The Brookings Institution, vol. 52(2 (Fall)), pages 381–476.
[12] Justin R. Pierce & Peter K. Schott, 2016. "The Surprisingly Swift Decline of U.S. Manufacturing Employment", American Economic Review, American Economic Association, vol. 106(7), pages 1632–1662, July… And: Kyle Handley & Nuno Limão, 2017. "Policy Uncertainty, Trade, and Welfare: Theory and Evidence for China and the United States", American Economic Review, American Economic Association, vol. 107(9), pages 2731–2783, September.
[13] Justin R. Pierce & Peter K. Schott, 2016. "The Surprisingly Swift Decline of U.S. Manufacturing Employment", American Economic Review, American Economic Association, vol. 106(7), pages 1632–1662, July.
[14] Feenstra RC, Sasahara A. The 'China Shock,' exports and U.S. employment: A global input–output analysis. Rev Int Econ. 2018; 26: 1053–1083. More recently, Flaaen and Pierce (2019) show that import tariffs in the 2018–2019 trade war increase costs for U.S. manufacturers and reduce employment.
[15] Nicholas Bloom & Andre Kurmann & Kyle Handley & Philip Luck, 2024. "The Impact of Chinese Trade on U.S. Employment: The Good, The Bad, and Industry Switching", Working Paper.
[16] Pol Antràs & Teresa C. Fort & Felix Tintelnot, 2017. "The Margins of Global Sourcing: Theory and Evidence from U.S. Firms", American Economic Review, American Economic Association, vol. 107(9), pages 2514–2564, September.
[17] Kyle Handley & Fariha Kamal & Wei Ouyang, 2021. "A Long View of Employment Growth and Firm Dynamics in the United States: Importers vs. Exporters vs. Non-Traders", Working Papers 21–38, Center for Economic Studies, U.S. Census Bureau.
[18] "Fortune 500", (https://fortune.com/ranking/fortune500/2023/, accessed 5/17/2024).
[19] Of course, large plants like Tesla's Gigafactory in Texas or Boeing's Everett facility still exist, but they are an exception, not the rule.
[20] Thomas J. Holmes, 2011. "The case of the disappearing large-employer manufacturing plants: not much of a mystery after all", Economic Policy Paper 11–4, Federal Reserve Bank of Minneapolis.
[21] Thomas J. Holmes & John J. Stevens, 2014. "An Alternative Theory of the Plant Size Distribution, with Geography and Intra- and International Trade", Journal of Political Economy, University of Chicago Press, vol. 122(2), pages 369–421.
[22] Eriksson, Katherine & Russ, Katheryn N. & Shambaugh, Jay C. & Xu, Minfei, 2021. "Trade shocks and the shifting landscape of U.S. manufacturing", Journal of International Money and Finance, Elsevier, vol. 111(C).
[23] Richard Baldwin pointed out this fact and the cross-country comparison with OECD data in a newsletter "Where in the world are manufacturing jobs going?" December 23, 2024. https://www.linkedin.com/pulse/where-world-manufacturing-jobs-going-richard-baldwin-x1zbe/ (accessed March 22, 2024). As noted above the falling manufacturing share of employment is also evident in BLS data going back further in time (BLS, 2013).
[24] Berthold Herrendorf, Richard Rogerson & Ákos Valentinyi, 2014. "Growth and Structural Transformation", Handbook of Economic Growth, Vol. 2,Chapter 6, Editors: Philippe Aghion, Steven N. Durlauf, Elsevier.