



COALITION FOR A PROSPEROUS AMERICA

WORKING PAPER

Manufacturing Jobs and Income Decline

By Jeff Ferry, CPA Chief Economist

August 15, 2019

Summary

After the year 2000, US manufacturing employment experienced a rapid, unprecedented decline with the loss of some six million manufacturing jobs. Many commentators have described this as a normal, even healthy evolution, with workers allegedly moving into “jobs of the future” in the service sector. A new analysis from the Coalition for a Prosperous America examined US government data on wages and hours by sector to determine if those who lost manufacturing jobs are doing better or worse than before. The data confirms that there is a large and ongoing shift of US workers into service sectors, with a concentration in particular sectors such as Health Care and Leisure & Hospitality. However these growth sectors offer worse hourly wages and hours per week than the manufacturing sector. The net effect of the sectoral shifts in employment between 2000 and 2018 was that the average worker who left manufacturing after 2000 was, by 2018, 19 percent worse off than he would have been had he or she remained in manufacturing. From the point of view of the workforce at least, the decline of manufacturing was a negative development.

It's well-known that the US manufacturing workforce has declined dramatically in the past three decades. Until 1990, the decline in the US manufacturing workforce was very gradual. In 1970, the US had 17.8 million manufacturing workers. In 1990, 20 years later, the figure had edged down to 17.7 million. Ten years later, it was down 2.4 percent to 17.3 million manufacturing workers.

But in the decade following 2000, commensurate with China's entry into the WTO, manufacturing employment fell off a cliff. By 2010, manufacturing employment was down a shocking 33.2 percent at 11.5 million. Since 2010, the figure has crept up somewhat, to reach 12.8 million in May 2019.

Meanwhile, the total US working population has grown dramatically over those years. In 1970, manufacturing workers accounted for 22.6 percent of total US civilian employment. As of May 2019, they accounted for just 8.2 percent of the total.

An important question surrounding the decline of manufacturing is whether those leaving manufacturing are transitioning into better or worse jobs. The CPA economics team examined the shifting composition of the US workforce to see if we could measure the economic fates of the millions who have left manufacturing. Their fate also tells us something about the future economic growth potential of the US economy.

Higher Ground vs. Flipping Burgers

By using Bureau of Labor Statistics (BLS) data on the changing composition of the US workforce over time, and the wages paid by each industry sector, we can measure where the employees who left manufacturing ended up, and how their income changed. Some say the long-term decline in US manufacturing doesn't matter because employees leaving manufacturing are, on average, moving into better-paying service sector jobs. Advocates of this thesis often say the US economy is "moving to higher ground." Critics of that view point out that the service sector is very broad, including everything from a fast-food worker flipping burgers and earning the minimum wage to a software engineer earning \$200,000 a year. If more workers are moving into sectors like fast-food than sectors like software, then the US is on the road to economic decline, or at least decline for the majority of workers.

This debate over the transformation of the US economy has raged since at least the 1970s, when a presidential advisor said that low-tech service jobs were just as good as high-tech manufacturing jobs, allegedly commenting: "Microchip or potato chips, what's the difference?" Others have argued that the decline in manufacturing has been accompanied by a boom in high-quality service sector jobs. For example, economists Kate Whitefoot and Walter Valdivia at Brookings, [point out](#) that although US automakers have moved the production of millions of vehicles to Mexico, most US cars and trucks are still designed in the US, and the US majors have beefed up their US-based design teams, even if many of those workers are today employed by design consulting firms instead of within the automakers.

There's no doubt that in recent years, the top 20 percent of US earners have done better than the bottom 80 percent in terms of income growth, and have seen real

improvements in their standard of living. Studies show that's even more true for the top 1 percent and the top 0.1 percent. In this study we look at the category the BLS calls production and non-supervisory workers (PNS), which in 2018 accounted for 68 percent of the total of 156 million US civilian employees. This group gives us insight into the experience of the typical American worker.

We chose to look at the period 2000 to 2018. A span of eighteen years, including the recessions of 2001 and 2008 along with the subsequent recoveries, is long enough to provide insight into fundamental trends. This is also the period when economic globalization moved into high gear, following the admission of China into the World Trade Organization (2001), and the NAFTA-fueled acceleration of investment in Mexico by multinational corporations. There is growing consensus that these two events played a crucial role in the decline of US manufacturing employment.

The BLS divides the civilian workforce into 19 major sectors. Three sectors, Manufacturing-Durable Goods, Manufacturing-Nondurable Goods, and Mining & Logging are goods-producing sectors. The other 16 are services sectors. Over the 2000-2018 period, total US production and non-supervisory employment rose 15.2 percent to reach 105.5 million employees in 2018. All sectors but four saw an increase in jobs in these 18 years. The four sectors that saw declines in numbers were Durable Manufacturing (down 28.8 percent), Nondurable Manufacturing (down 27.6 percent), Utilities (down 8.6 percent) and Information (down 11.0 percent).

Table 1 shows the 19 sectors with their employment in 2000, their employment in 2018, the change in employment over the period, and the change in their percent of the total. The largest sectors in 2000 were

Retail Trade, although Manufacturing would have been second if Durables and Nondurables were combined. By 2018, Leisure & Hospitality was the largest sector,

and Health Care second. Combined Manufacturing was now fourth.

Table 1: Employment Change by Sector

Rank in 2018	Sector	Employment 2000	Employment 2018	Change in Employment
<i>Units</i>		<i>Million Employees</i>	<i>Million Employees</i>	<i>%</i>
1	Leisure and Hospitality	10.51	14.36	36.6%
2	Health Care	9.67	14.13	46.2%
3	Retail Trade	13.04	13.60	4.3%
4	Administrative and Waste Services	7.33	8.41	14.8%
5	Professional and Technical Services	5.10	7.19	41.2%
6	Financial Activities	5.82	6.64	14.2%
7	Manufacturing-Durable Goods	7.66	5.46	-28.8%
8	Construction	5.30	5.39	1.7%
9	Other Services	4.30	4.85	12.9%
10	Wholesale Trade	4.69	4.80	2.4%
11	Transportation and Warehousing	3.75	4.64	23.6%
12	Manufacturing-Nondurable Goods	4.77	3.45	-27.6%
13	Social Assistance	1.74	3.43	97.3%
14	Educational Services	2.08	3.19	53.0%
15	Information	2.50	2.23	-11.0%
16	Management of Companies & Enterprises	1.37	1.50	9.5%
17	Real Estate and Rental and Leasing	0.99	1.23	24.1%
18	Mining and Logging	0.45	0.55	22.7%
19	Utilities	0.49	0.44	-8.6%

Source: BLS and CPA calculations

The decline in the pair of manufacturing sectors stands out as being nothing like anything else shown in Table 1. The other two sectors that saw an absolute decline, Utilities and Information, experienced much smaller declines. The decline in the Information sector (NAICS 51) of 275,400 employees, is completely explained by the decline in the Publishing (Except Internet) Industry (NAICS 511). Publishing lost 312,000 employees as the rise of the Internet forced newspapers or other publications to cut staff and sometimes close their doors for good.

The dramatic decline in both manufacturing sectors supports the argument that foreign competition rather than technological change was responsible for the employment decline. If technological change were the dominant factor, one would expect to see technological change driving similar double-digit declines in many other sectors. But that did not happen. For example, transportation and warehousing should have been heavily impacted by technology. The rise of Amazon, with its highly automated warehouses, and the emergence of a series of software companies that automate inventory management should have made this sector more productive, i.e. less labor-

intensive. Yet it expanded employment by 23.6 percent increase in the period. Other service sectors also showed job growth. What made manufacturing unique was not technological job loss, but the massive loss of market share, revenue, and jobs to foreign importers.

What happened to the 28 percent of the manufacturing workforce that left manufacturing jobs in these 18 years? To understand where they went, we looked at the sectors that gained share in the period. Note that we are not examining the fate of the individuals who lost manufacturing jobs. Many of them became unemployed and stayed unemployed for years. Some withdrew from the labor force entirely. Because it is harder to measure the incomes of those who have left the labor force, we are looking here only at those who were still in the US workforce in 2018, and trying to assess whether the decline in manufacturing has raised or lowered real wages for the average production worker who is still working.

Since most sectors were growing along with the total economy during these years, we measure the shifting composition of the workforce by measuring *the change in percentage of the total workforce*. For example, the construction sector grew by 91,400 employees over our period. But its share of the total production workforce shrunk, because it went from 5.78 percent of the workforce in 2000 to 5.11 percent in 2018. Therefore, the construction sector shrunk by 0.68 percent of the total workforce.

Table 2 shows the 19 sectors divided into eight Share Gainers and eleven Share Losers over the 2000-2018 period. The top gainers are Health Care and Leisure & Hospitality, which between them added 8.3 million workers in the period. This is not surprising as the health care industry has grown as our population ages, medical care improves, while the unique US system of health care provision provides little to no market mechanism for consumers to limit purchases when health care prices rise, and

healthcare, for the most part is a non-tradable sector. The Leisure & Hospitality sector includes bars, coffee shops, restaurants, and hotels. This sector has grown dramatically as people eat out and travel more.

Table 2 lets us clearly see the impact of the decline of manufacturing jobs on the incomes of the production workers who lost their jobs. If we assume that they went into the Share Gainers, i.e. the growing industries in America in those years, they would have suffered on average a 19.2 percent fall in their standard of living. The average income of a Share Gainer production worker was \$730.80 per week, as compared to the average weekly income of a manufacturing worker last year of \$904.46.

Note that this average 19 percent loss occurred even though manufacturing wages rose more slowly in those 18 years than average wages in Share Gainer industries. That sluggish rise in manufacturing wages, only 7.4 percent in real terms as compared to 21.9 percent for the Share Gainer industries was due to the combination of downward pressure on manufacturing wages from foreign competition, combined with upward pressure on wages in the Gainer industries because of rising demand for those services.

Yet even despite that Share Gainer wage growth, the Share Gainer industries don't pay production workers as well as manufacturing. The main reason is that the Share Gainer industries are dominated by several relatively low-paying industries, specifically Leisure & Hospitality, Social Assistance, and Educational Services. Those three sectors accounted for nearly 21 million employees, 20 percent of the total production workforce. All three sectors suffer from low hourly pay. Leisure & Hospitality has the double burden of low hourly pay and low weekly hours. It is now the largest single sector in the US economy in terms of production employment, and its average weekly earnings of \$427 is only 56 percent of the national average, and just 47

percent of what a manufacturing worker earns.

Table 2. Share Gaining and Share Losing Employment Sectors with Income Changes

Rank	Sector	Change in Share 2000-2018	Employment 2000	Employment 2018	Change in Employment	Weekly Earnings 2000	Weekly Earnings 2018	Change in Earnings	Change in Real Earnings
<i>Units</i>		<i>Percentage Points</i>	<i>Million Employees</i>	<i>Million Employees</i>	<i>Million Employees</i>	<i>Dollars per week</i>	<i>Dollars per week</i>	<i>%</i>	<i>%</i>
Share Gainers									
1	Health Care	2.84%	9.67	14.13	4.47	\$474.74	\$863.96	82.0%	36.2%
2	Leisure and Hospitality	2.13%	10.51	14.36	3.85	\$216.94	\$344.49	58.8%	13.0%
3	Social Assistance	1.35%	1.74	3.43	1.69	\$292.82	\$426.94	45.8%	0.0%
4	Professional and Technical Services	1.25%	5.10	7.19	2.10	\$744.34	\$1,290.23	73.3%	27.5%
5	Educational Services	0.75%	2.08	3.19	1.10	\$449.37	\$679.16	51.1%	5.3%
6	Transportation & Warehousing	0.30%	3.75	4.64	0.89	\$561.84	\$837.54	49.1%	3.3%
7	Real Estate and Rental and Leasing	0.08%	0.99	1.23	0.24	\$403.30	\$754.92	87.2%	41.4%
8	Mining & Logging	0.03%	0.45	0.55	0.10	\$734.72	\$1,322.78	80.0%	34.2%
	<i>Gainer Totals</i>	8.73%	34.29	48.73	14.43	\$435.83	\$730.80	67.7%	21.9%
Share Losers									
1	Manufacturing-Durable Goods	-3.19%	7.66	5.46	-2.20	\$623.49	\$952.34	52.7%	6.9%
2	Manufacturing-Nondurable Goods	-1.94%	4.77	3.45	-1.32	\$536.81	\$828.78	54.4%	8.6%
	<i>All Manufacturing</i>	-5.13%	12.43	8.91	-3.52	\$590.23	\$904.46	53.2%	7.4%
3	Retail Trade	-1.35%	13.04	13.60	0.56	\$333.21	\$481.86	44.6%	-1.2%
4	Construction	-0.68%	5.30	5.39	0.09	\$684.61	\$1,102.08	61.0%	15.2%
5	Information	-0.62%	2.50	2.23	-0.28	\$699.97	\$1,130.87	61.6%	15.8%
6	Wholesale Trade	-0.57%	4.69	4.80	0.11	\$630.26	\$979.15	55.4%	9.6%
7	Utilities	-0.11%	0.49	0.44	-0.04	\$849.36	\$1,407.78	65.7%	19.9%
8	Other Services	-0.10%	4.30	4.85	0.55	\$413.49	\$634.17	53.4%	7.6%
9	Management of Companies and Enterprises	-0.07%	1.37	1.50	0.13	\$540.05	\$1,083.89	100.7%	54.9%
10	Financial	-0.06%	5.82	6.64	0.82		\$995.78	84.6%	38.8%

	Activities					\$539.35				
11	Administrative and Waste Services	-0.03%	7.33	8.41	1.08	\$387.13	\$619.58	60.0%	14.2%	
	<i>Loser Totals</i>	-8.73%	57.25	56.77	-0.48	\$505.06	\$791.20	56.7%	10.9%	
	<i>Change in weekly earnings from Manufacturing to Share Gainers</i>						-19.20%			
	<i>Change in weekly earnings from all Share Losers to all Share Gainers</i>						-7.63%			
<i>Source: BLS and CPA calculations</i>										

On top of the relatively low pay of the Share Gainer industries, they also fail to offer very exciting growth prospects for the future. Three of the largest sectors, Health Care, Social Assistance, and Educational Services, are intimately related to government spending. Productivity gains or losses are hard to measure in these sectors and even harder to manage. Their growth is likely to be funded by the taxpayer (or the health insurance premium payer, which is effectively the same thing from an economic growth perspective). The large Leisure & Hospitality sector does generate export revenue for the US in the form of tourist dollars, but as a sector based on personal service it is hard for productivity to accelerate at the sort of sustained rates that drive substantial economic growth.

Professional and Technical Services does offer high pay, growth in employee numbers, and the opportunity to increase productivity. This is the heart of the “moving to higher ground” argument. Employment is up 41 percent in this sector and the average weekly pay of \$1290 exceeds the pay of many other industries. But the sector is simply not large enough to significantly impact the employment and wage trend in national totals.

The original idea of the “higher ground” proponents was that the US would become the idea and design base for the world’s great companies, with countries like China operating as the “workshop,” building the products. But time has shown this is a delusion. South Korea began that way in the 1960s, deferentially approaching leading US and European companies to learn about the latest manufacturing techniques. As time

went on, it learned that the real money was in designing the products and owning the brand names. Today, South Korea is the world’s leading manufacturer of cellphones, televisions, and other consumer products. China watches Korea’s progress carefully, imitating it with far less concern for norms of accepted international behavior.

US economic growth in the two centuries prior to the 1970s was achieved primarily through selling into the ever-growing domestic market. Our economy was powered by domestic growth and the domestic consumer. Times have changed. Today, the international market is a large component for success of US goods-producing industries and hence the US standard of living. With other countries targeting what they see as high-value industries, the US is not just in danger of, but actually has been, forced into greater reliance on low-value, low-growth industries. The success of superstar companies like Google or Apple or Pfizer should not blind us to the fact that today Leisure & Hospitality is our largest sector for non-management employees. It’s a sector that pays \$13.84 an hour and the average worker works just 25 hours a week, with benefits like health insurance small to nonexistent.

The success of the top 20 percent of the working population as reflected in the growth of Professional & Technical Services is real. But it is too slender a reed on which to build a national economic growth strategy for a nation of 330 million people.

With thanks to Amir Khalegi for support on data collection and analysis.