MANUFACTURING POLICY INITIATIVE AT O'NEILL
INSIGHT INTO MANUFACTURING POLICY

Trends in US Manufacturing Employment

Cliff Waldman

No issue facing domestic manufacturers generates more interest among politicians than jobs. Seismic shifts in the global political landscape of the past decade (Trumpism, Brexit) have been partially catalyzed by destabilizing changes in the manufacturing employment picture.

In this issue of *Insight into Manufacturing Policy*, government-generated data on employment and wages is used to illustrate changes over time by subsector. This data gathering is part of a broader project which analyzes the recent evolution and relative standing of key U.S. manufacturing health indicators by subsector.

Trends in Aggregate Employment

For this article, manufacturing establishments are identified at the three-digit NAICS level. A finer distinction (e.g., four- or five-digit NAICS level) would provide more detailed data but it would be more difficult to visualize in tabular form. The years of interest are 1993, 1999, 2005, 2014, and 2017. These years were chosen to avoid the distorting influence of recession and recovery years. And by avoiding 2018, we can eliminate the potentially distorting influence of the U.S.-China trade war.

Table 1 shows the absolute number of jobs for the selected years. The dramatic fall in manufacturing employment between 1999 and 2005 is evident as is the further employment decline into 2014 in the wake of the Great Recession and slow recovery. As the manufacturing jobs picture stabilized into 2017, there were employment gains in 12 of the 20 subsectors.

If one converts these numbers into percentages (as shares of total manufacturing employment), one would find employment to be relatively concentrated. For example, in 2017, double-digit employment shares are seen in food manufacturing, fabricated metal products, and transportation equipment. These three subsectors accounted for nearly 38 percent of total manufacturing employment. Subsectors with employment shares below one percent in 2017 were either very labor intensive, such as apparel, or very capital intensive, such as petroleum.

Only a few of the 3-digit industry subsectors experienced dramatic fluctuations in their employment share rankings. Apparel, for example, experienced a drop from a ranking of 7 in 1993 to 16 in 1999, clearly catalyzed by the general dwindling of domestic U.S. labor-intensive manufacturing. By contrast, the employment share ranking

Table 1. Manufacturing Jobs (thousands).

Subsector	*1993*	*1999*	*2005*	*2014*	*2017*
Food	1535	1550	1478	1485	1599
Textile mills	479	397	218	117	112
Textile products mills	233	232	176	115	116
Apparel	856	341	251	140	119
Wood	527	623	561	372	397
Paper and paper products	640	616	484	373	366
Printing and related support	785	815	646	454	440
Petroleum and coal products	146	128	112	112	115
Chemicals	1025	983	872	803	824
Plastics and rubber products	848	947	802	674	717
Nonmetallic mineral products	491	541	505	384	410
Primary metals	619	625	466	399	371
Fabricated metal products	1510	1728	1522	1454	1424
Machinery	1331	1468	1164	1127	1079
Computer and electronics	1656	1781	1316	1049	1039
Electrical equip. and appliances	576	588	434	378	386
Transportation equipment	1915	2088	1772	1559	1643
Furniture and related products	576	665	567	370	395
Misc. durable goods	703	724	647	582	594
Misc. non-durable goods	325	283	231	239	291
TOTAL	16776	17323	114226	12185	12439

Source: Bureau of Labor Statistics.

of nonmetallic mineral products rose from 16 in 1993 to 10 in 2017. Overall, the dominating subsector is transportation equipment. That sector's employment share ranked first in every measured year between and including 1993 and 2017. Other high-ranked industry subsectors for employment share include computers and electronic products, fabricated metals, machinery, and food manufacturing.

Trends in Average Earnings

Table 2 shows average earnings by manufacturing subsector. Petroleum and coal provided the highest average wages. In 2017, the average hourly earnings in petroleum and coal was $39.95, nearly twice the $20.89 average for total manufacturing.

Table 2. Average Hourly Earnings (current $).

Subsector	*1993*	*1999*	*2005*	*2014*	*2017*
Food	9.82	11.40	13.04	15.55	16.92
Textile mills	9.12	10.90	12.38	14.15	15.97
Textile products mills	8.10	10.04	11.61	13.35	14.80
Apparel	6.75	8.35	10.26	13.51	14.35
Wood	9.40	11.18	13.16	15.57	17.47
Paper and paper products	13.13	15.58	17.99	20.35	21.75
Printing and related support	11.67	13.67	15.74	18.01	18.61
Petroleum and coal products	19.43	22.22	24.47	35.39	39.95
Chemicals	13.97	16.40	19.67	21.49	24.29
Plastics and rubber products	10.56	12.25	14.80	16.51	17.63
Nonmetallic mineral products	11.83	13.97	16.61	19.16	20.34
Primary metals	14.08	16.00	18.94	22.41	23.10
Fabricated metal products	11.40	13.34	15.80	18.68	20.15
Machinery	12.72	14.77	17.02	21.00	22.41
Computer and electronic products	11.95	14.37	18.39	23.36	24.58
Electrical equip. and appliances	10.65	12.90	15.24	18.28	19.72
Transportation equipment	16.21	18.24	22.09	24.96	25.36
Furniture and related products	9.25	11.28	13.45	15.67	17.52
Misc. durable goods	9.64	11.55	14.07	17.31	19.04
TOTAL	11.69	13.85	16.55	19.56	20.89

Source: Bureau of Labor Statistics.

Petroleum and coal ranked first in every measured year of the sample (rankings not shown). Other relatively high earnings industry subsectors include chemicals, primary metals, and transportation equipment. The lowest average wages are found in apparel and textiles, both of which are relatively labor-intensive and trade-exposed, making them prone to outsourcing.

The data in Tables 1 and 2 show that manufacturing employment and average wages are sometimes correlated and sometimes not. Over time, there has been minimal volatility in earnings share at the subsector level, even less than employment share.

Conclusion

US manufacturing employment is relatively concentrated in a few subsectors. Furthermore, only a few subsectors show strength in both employment and wages. Chemicals, computers and electronic products, and transportation equipment maintained high rankings for both employment share and earnings share since the 1990s. Notably, transportation equipment ranked first in employment and second in earnings over the entire observation period. This might explain the long-standing interest by politicians in automobile assembly plants, where the largest segment of domestic manufacturing workers can be found.

For further reading:

Fort, Teresa C., Pierce, Justin R. and Schott Peter K. (2018), New Perspectives on the Decline of U.S. Manufacturing Employment, #2018-023, Finance and Economic Discussion Series, Federal Reserve Board.

Houseman, Susan N. (2018), Understanding the Decline of U.S. Manufacturing Employment, Working Paper 18-287, W.E. Upjohn Institute for Employment Research.

Peer Reviewers: Thomas Kevin Swift, Chief Economist and Managing Director, American Chemistry Council, and Chad Moutray, Chief Economist, National Association of Manufacturers