

ON THE MONEY

A Hannah News Service Publication

Vol. 132, No. 19

By Bill LaFayette, PhD, owner, Regionomics® LLC

October 13, 2017

Ohio Manufacturing Update

Manufacturing is a crucial part of Ohio's economy, providing 13 percent of the state's jobs and 17 percent of gross domestic product – each nearly half again the corresponding national average. The output and sales of Ohio's factories brings wealth into the state from the nation and the world. Although the recovery that began in 2009 featured the first sustained manufacturing employment growth in 20 years, that growth has stalled over the past couple of years. Even more troubling is the stagnation of growth in manufacturing Gross Domestic Product (GDP).

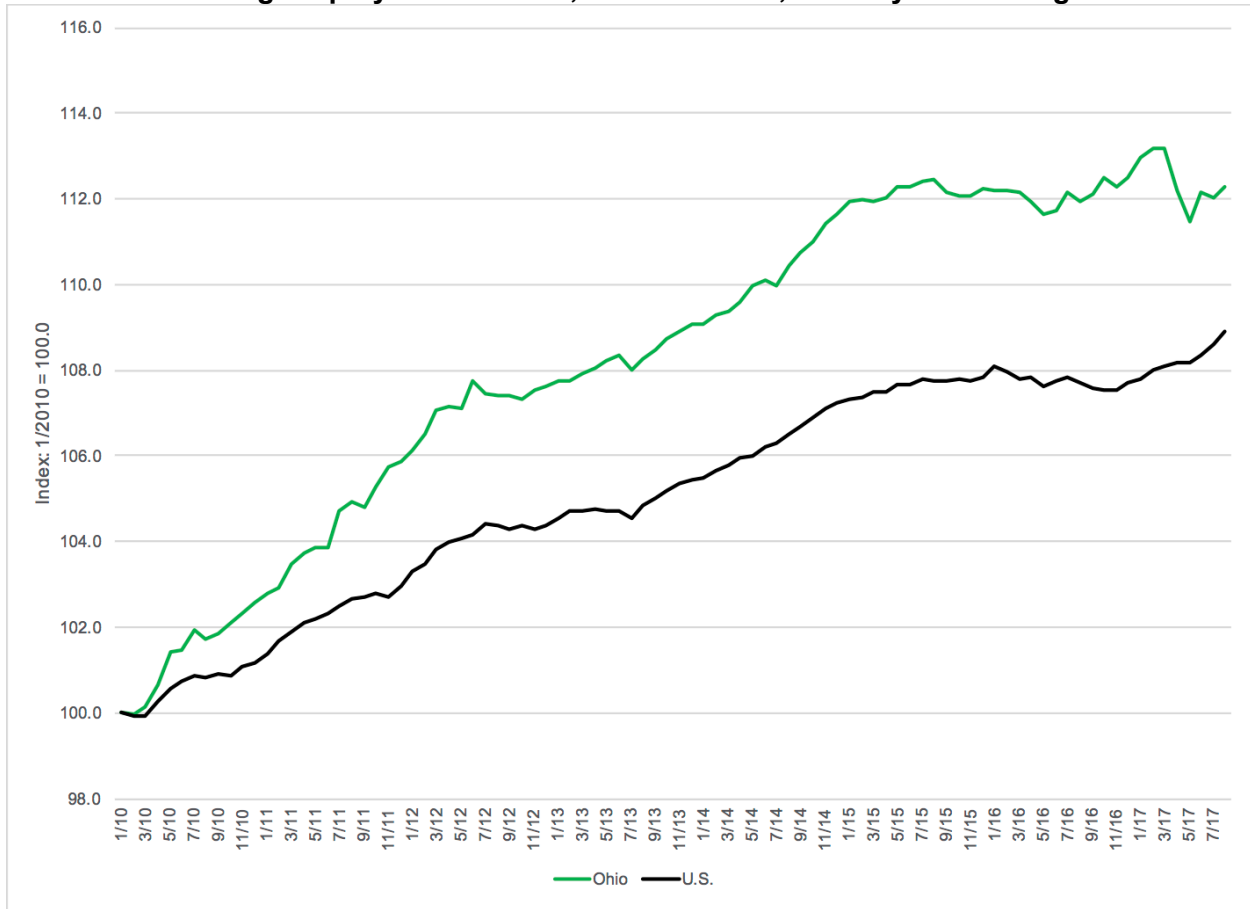
On the Money last surveyed Ohio's manufacturing sector in the October 9, 2015, issue (Vol. 131, No. 19). That analysis showed a continued employment growth trend, but a slowing of growth both nationally and in Ohio. With employment and GDP growth now at a standstill, it is important to revisit these trends.

Employment Trends

Figure 1 on the next page compares monthly Ohio manufacturing employment growth to the U.S. average from January 2010 (the beginning of the employment recovery) through August 2017. The chart shows employment on an index basis, with state and national employment in January 2010 set to 100. The result is a comparison of cumulative state and national employment growth.

This employment series (the Current Employment Statistics from the U.S. Bureau of Employment Statistics) is an estimate based on a somewhat limited sample. Consequently, employment totals during the past year in particular are less reliable than earlier estimates, and Ohio totals are less reliable than U.S. totals. Note that U.S. employment growth has resumed over the past nine months. The increase since November 2016 has been 155,000 jobs, or 1.3 percent. The Ohio trend has continued flat since mid-2015, aside from the surge and dip during the end of 2016 and the beginning of 2017, which may be dampened when these estimates are revised in March 2018.

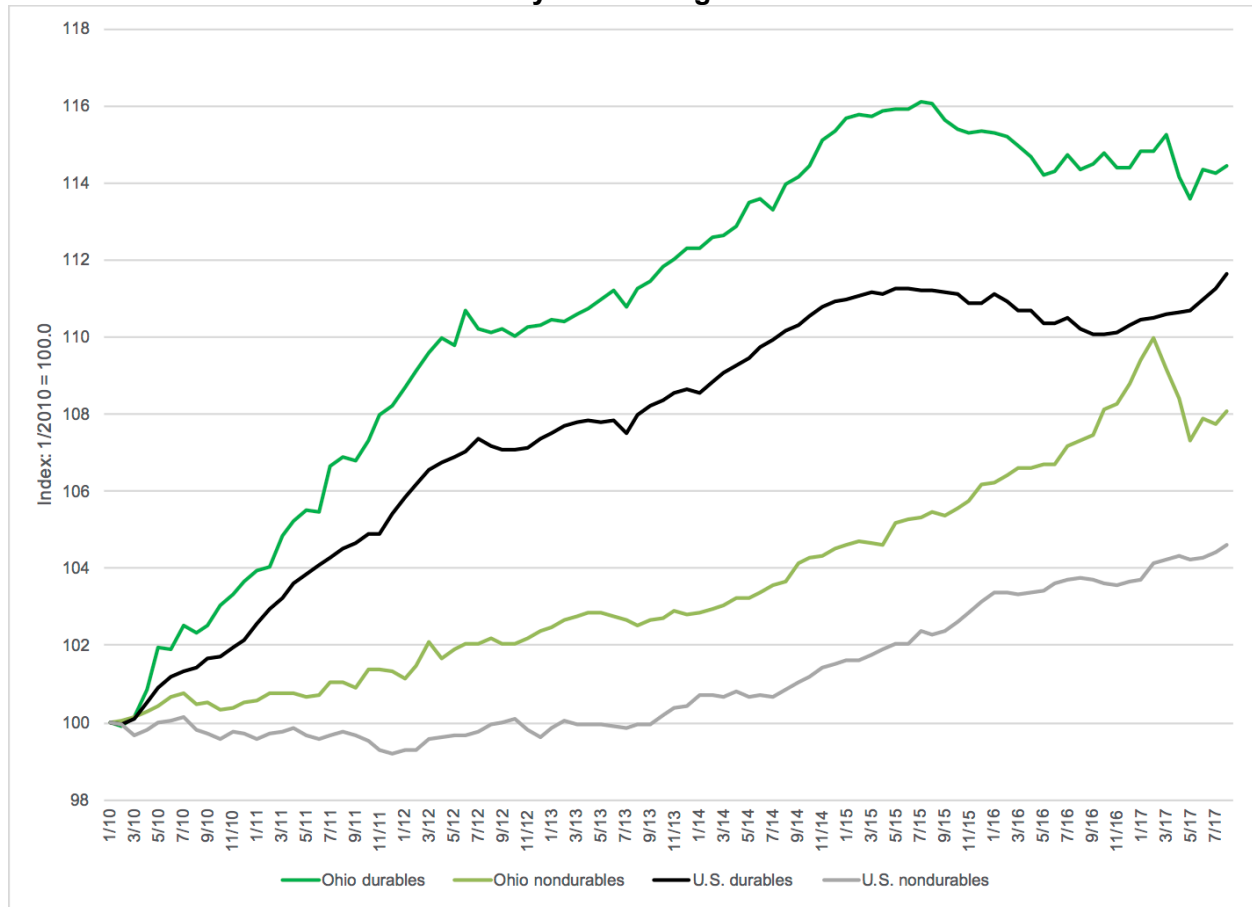
Figure 1
Manufacturing Employment Growth, Ohio and U.S., January 2010 – August 2017



Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

Figure 2 divides the total manufacturing employment trend into its two primary components, durable goods and nondurable goods. Durable goods are those that are intended to last for a longer period of time (typically three years or more) and thus do not have to be purchased as frequently as nondurable goods, which are consumed in a relatively short period. Durable goods account for the majority of manufacturing employment, 67.2 percent of Ohio manufacturing employment and 62.5 percent of that in Ohio. As this figure reveals, the employment increase during the first few years of the expansion was primarily driven by the growth in durables employment. Growth in both components was stronger than average in Ohio. Ohio nondurable employment growth has been relatively slow but positive throughout the expansion, while growth did not begin at the national level until September 2013. More recently, the overall employment stagnation consisted of a decline in durable goods employment offset by a continuing increase in nondurables employment. The surge and dip in employment pointed out earlier was completely in nondurables. (The smaller employment in nondurables implies that these totals are less reliable than durable employment estimates.)

Figure 2
Durable and Nondurable Goods Manufacturing Employment Growth, Ohio and U.S.
January 2010 – August 2017



Source: Current Employment Statistics, U.S. Bureau of Labor Statistics.

Manufacturing Characteristics and Trends in Ohio's Regions

Manufacturing employment accounts for a larger-than-average share of total employment in 74 of Ohio's 88 counties. Manufacturing employment shares range from a low of 2.5 percent of wage and salary employment in Monroe County to a high of 42.9 percent in Shelby County. Among the six large metro counties, manufacturing is 9.7 percent of total employment in Cuyahoga County, 4.8 percent in Franklin County, 9.4 percent in Hamilton County, 10.8 percent in Lucas County, 10.1 percent in Montgomery County, and 11.1 percent in Summit County. Each of these employment shares is less than that of the corresponding Metropolitan Statistical Areas (MSAs), while nine of the 11 counties with the smallest manufacturing employment shares are in southern and southeastern Ohio. The fact common to these two observations is that the large tracts of low-cost, developable land that manufacturing plants require are less common in these counties. Land is more expensive nearer to large cities. Although land is relatively inexpensive in the south and southeast, the hilly terrain makes the cost of development high. In contrast, the flat terrain of northwestern Ohio is certainly one reason why manufacturing is more heavily concentrated there.

The regional diversity of Ohio’s economy makes a study of manufacturing at the regional level important. This makes use of the familiar 13 regions that have been used consistently in these articles. These include the six largest MSAs and seven other areas encompassing smaller MSAs and rural areas, and designated on the basis of some level of economic similarity among adjacent counties – primarily based on manufacturing and agriculture. The regions are mapped in Figure 3.

Figure 3
Ohio Regions



Northwest Toledo MSA West North Central Cleveland MSA Akron MSA
 Northeast West Columbus MSA East North Central Dayton MSA
 Cincinnati MSA South Southeast

Table 1 summarizes basic characteristics of manufacturing employment in these 13 regions. The table presents the region’s 2016 annual average manufacturing employment, the percentage of total wage and salary employment, the manufacturing employment location quotient, and employment change over the course of the expansion and during the last year. Location quotient is the percentage of total local employment in manufacturing divided by the total U.S. percentage in manufacturing. Thus, a location quotient greater than 1.00 indicates

that manufacturing accounts for a larger-than-average share of total employment in the region. The suppression of 2015 and/or 2016 employment totals in two smaller counties means that the 2016 employment total is estimated for the Southern region and the one or both net changes are estimated for the South and Southeast. These estimates are likely quite close to their actual values, however.

**Table 1
Regional Manufacturing Employment, Concentration, and Growth**

	Employment	Pct.of total	Location quotient	Percentage change	
				2010-2016	2015-2016
U.S.	12,296,697	8.6%	1.000	7.0%	0.0%
Ohio	685,083	12.7%	1.479	10.4%	-0.1%
Northeast	69,985	15.9%	1.855	6.5%	-2.8%
Southeast	11,382	8.9%	1.039	-8.1%	-1.8%*
South	18,611*	13.3%	1.547	-4.2%*	-1.1%*
West	73,876	25.3%	2.951	23.5%	1.6%
Northwest	21,322	30.3%	3.531	15.7%	-0.3%
West North Central	49,168	22.5%	2.628	9.5%	0.6%
East North Central	32,241	26.3%	3.071	22.3%	1.9%
Akron MSA	39,431	12.3%	1.440	5.6%	-1.4%
Cincinnati MSA**	90,084	10.5%	1.221	9.0%	1.4%
Cleveland MSA	120,955	12.3%	1.437	3.8%	-2.6%
Columbus MSA	71,412	7.0%	0.814	10.5%	-0.2%
Dayton MSA	41,221	10.6%	1.242	15.3%	3.3%
Toledo MSA	44,595	14.4%	1.677	25.5%	2.1%
Total non-MSA	276,585	19.5%	2.272	12.0%	-0.2%
Total MSA	407,698	10.5%	1.227	9.5%	-0.1%

*Regionomics estimate. **Ohio counties only.

Source: Quarterly Census of Employment and Wages, U.S. Bureau of Labor Statistics.

As noted earlier, manufacturing employment is particularly concentrated in the Northwest, but also in the West, West North Central, and East North Central regions. Central Ohio’s Columbus MSA is the only region of the state with a below-average manufacturing concentration. However, this is true only in Delaware and Franklin Counties; manufacturing provides a greater-than-average share of employment in each of the other eight counties of the Columbus MSA. Manufacturing is 27.6 percent of total Union County employment, 16th highest in the state. In general, manufacturing employment is more heavily concentrated outside of the state’s six largest MSAs.

Employment growth between 2010 and 2016 exceeded the national average in many regions, with strongest growth in the West, East North Central, and the Toledo MSA. Growth was little better than half the national average in the Cleveland MSA, however, and the South and Southeast suffered net employment declines. Comparisons are more mixed over the past year. The national total was essentially unchanged (net growth of 5,000 jobs) and statewide employment declined marginally. The Dayton and Toledo MSAs and the East North Central region enjoyed respectable growth, while employment declines occurred in seven of the 13 regions. Manufacturing employment declined 3,252 in the Cleveland MSA, a larger decline than the statewide loss of 892.

Ohio Manufacturing Output Trends

The increasing adoption of technology in manufacturing has resulted in output becoming less closely linked to employment than in the past. However, output trends are important in assessing the ability of Ohio manufacturing to attract wealth to the state's economy and to provide indirect employment among suppliers. They are also needed to measure the productivity of the workforce. Figure 4 compares cumulative growth in Ohio and U.S. manufacturing GDP – excluding inflation – over the course of the expansion. Ohio GDP increased 25 percent between 2010 and 2014, but fell 2.6 percent the following year. National manufacturing GDP increased far more slowly but more steadily. Total seven-year gains were 22 percent in Ohio and 10.6 percent nationwide.

Figure 4
Real Manufacturing Gross Domestic Product Growth, Ohio and U.S., 2009-2016



Source: U.S. Bureau of Economic Analysis.

Figure 5 allocates growth between the durable and nondurable goods subsectors. The durable goods subsector's GDP grew rapidly during the first two years of the expansion, but then the trend broke. Over the following five years, durable goods GDP increased 6.3 percent in Ohio and 3.9 percent nationwide. Nondurable goods output declined about 9.5 percent statewide and nationally between 2009 and 2012. Growth over the following years totaled 12.8 percent in Ohio; U.S. nondurable goods GDP increased 5 percent.

Figure 5
Real Durable and Nondurable Goods Manufacturing Gross Domestic Product Growth
Ohio and U.S., 2009-2016



Source: U.S. Bureau of Economic Analysis.

Table 2 shows GDP levels, concentration, and growth at the subsector level. Note that these totals are for 2015 rather than 2016; GDP estimates at the subsector level are not yet available for 2016. Location quotients here are calculated in the same way as in earlier tables, except that they are calculated on the basis of total state and national GDP rather than employment. A number of GDP location quotients are significantly different from the corresponding employment location quotients because of differences in output per worker among different subsectors. Notable is the tripling of GDP in motor vehicles and parts, a key reason for the stronger-than-average growth in manufacturing GDP overall. This is somewhat misleading, however: motor vehicle GDP declined 78 percent between 2006 and 2009, and its level in 2015 was still 28 percent less than in 2006. Among other large industries, GDP growth in fabricated metal products and machinery was somewhat higher than average, and food and beverages achieved positive growth in Ohio while declining nationally. Petroleum and coal products manufacturing GDP fell, but less than average. However, the decline in chemical products manufacturing was far greater than average.

Table 2
Manufacturing Subsector GDP, Concentration, and Net Change

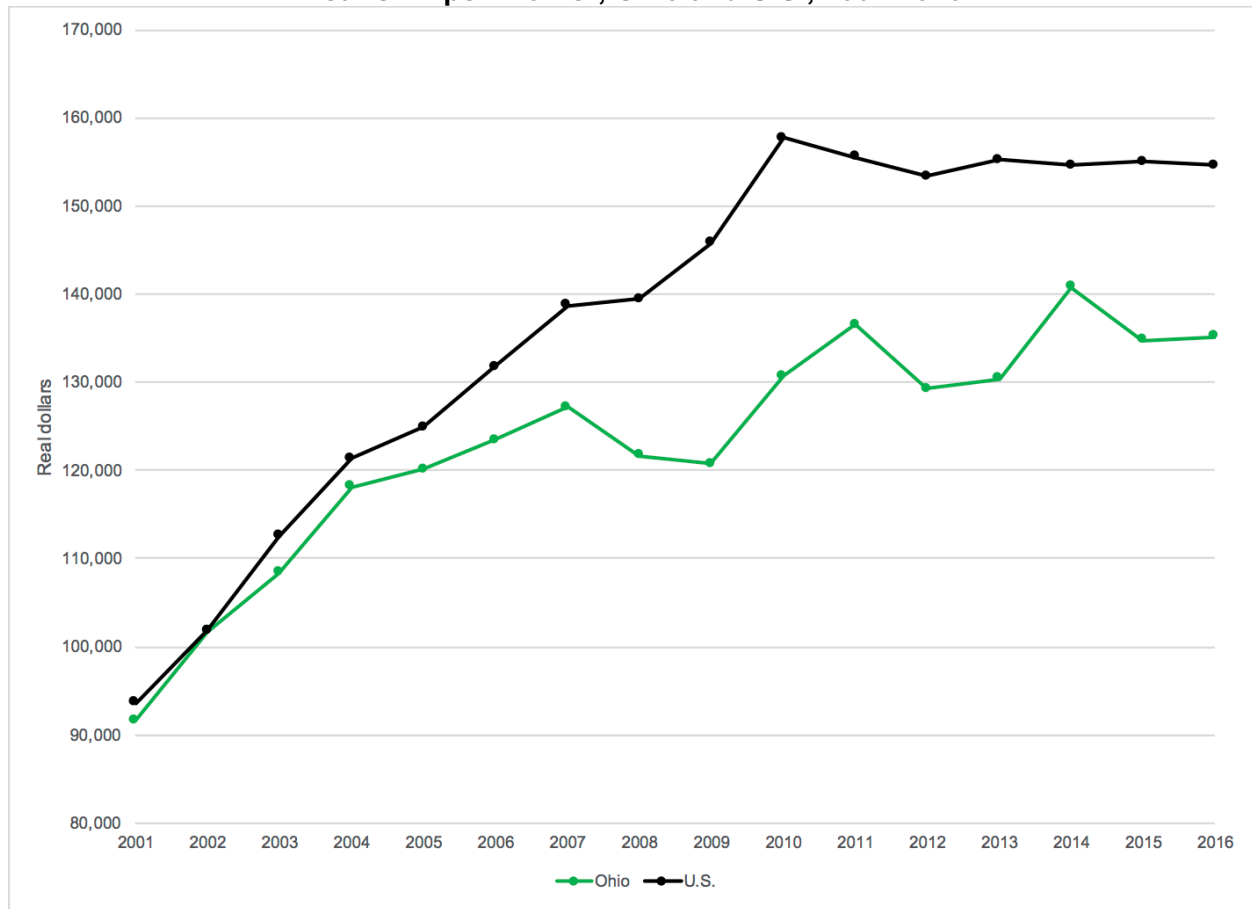
Subsector	GDP (millions) 2015	Loc. quotient	Net change, 2009-2015*	
			Ohio	U.S.
Manufacturing	\$ 95,503	1.394	13.8%	8.0%
Durable goods mfg.	52,511	1.428	36.4%	23.8%
Wood products mfg.	661	0.755	-15.3%	9.7%
Nonmetallic mineral products mfg.	2,771	2.036	27.2%	13.6%
Primary metals mfg.	5,655	2.633	56.5%	25.1%
Fabricated metal products mfg.	10,682	2.260	21.8%	19.4%
Machinery mfg.	7,825	1.602	38.0%	22.6%
Computer & electronic products mfg.	2,471	0.287	51.8%	21.8%
Electrical equipmt. & appliance mfg.	3,497	2.047	-7.1%	4.0%
Motor vehicles and parts mfg.	11,744	2.520	199.5%	199.9%
Other transportation equipment mfg.	4,467	1.073	-15.6%	0.1%
Furniture and related products mfg.	831	0.998	-6.8%	9.0%
Miscellaneous mfg.	1,908	0.685	-7.7%	-6.9%
Nondurable goods mfg.	42,991	1.354	-6.9%	-6.8%
Food and beverage mfg.	10,947	1.379	4.0%	-8.0%
Textile mills and textile product mills	369	0.650	17.1%	3.0%
Apparel, leather & allied prods. mfg.	120	0.341	-23.7%	6.1%
Paper products mfg.	1,776	1.012	-21.2%	-12.6%
Printing and related support activities	1,730	1.390	-8.2%	4.5%
Petroleum and coal products mfg.	10,472	1.827	-7.8%	-21.7%
Chemical products mfg.	11,825	1.013	-19.0%	-3.2%
Plastics and rubber products mfg.	5,754	2.322	10.2%	8.0%

*Excluding inflation.

Source: U.S. Bureau of Economic Analysis.

Earlier articles have called attention to the unfavorable comparison between manufacturing GDP per worker (a key measure of productivity) in Ohio and nationally. Figure 6 updates this analysis. GDP per worker in Ohio tracked closely to the national average through 2004, but then began to lag through the remaining years of the 2002-2007 expansion. Per-worker GDP suffered a 5.1 percent decline in Ohio in 2008 with the collapse of the auto industry, while U.S. GDP per worker continued to increase. GDP per worker in Ohio has remained below average over the course of the expansion. Ohio's 2016 GDP per worker was \$135,200 annually (in 2009 dollars), 12.6 percent less than the \$154,600 national average. However, Ohio GDP has exhibited a slight increase more recently while U.S. growth has been flat. Ohio GDP per worker in 2016 was 3.4 percent higher than it was in 2010, while the national average was 2 percent lower. A consistently below-average GDP per worker does not in itself imply a problem because this disparity could be due to a focus on industries that by their nature have a lower output per worker. However, the fact that GDP per worker was essentially equal to the national average little more than a decade ago and is now 12.6 percent below average does suggest cause for concern.

Figure 6
Real GDP per Worker, Ohio and U.S., 2001-2016

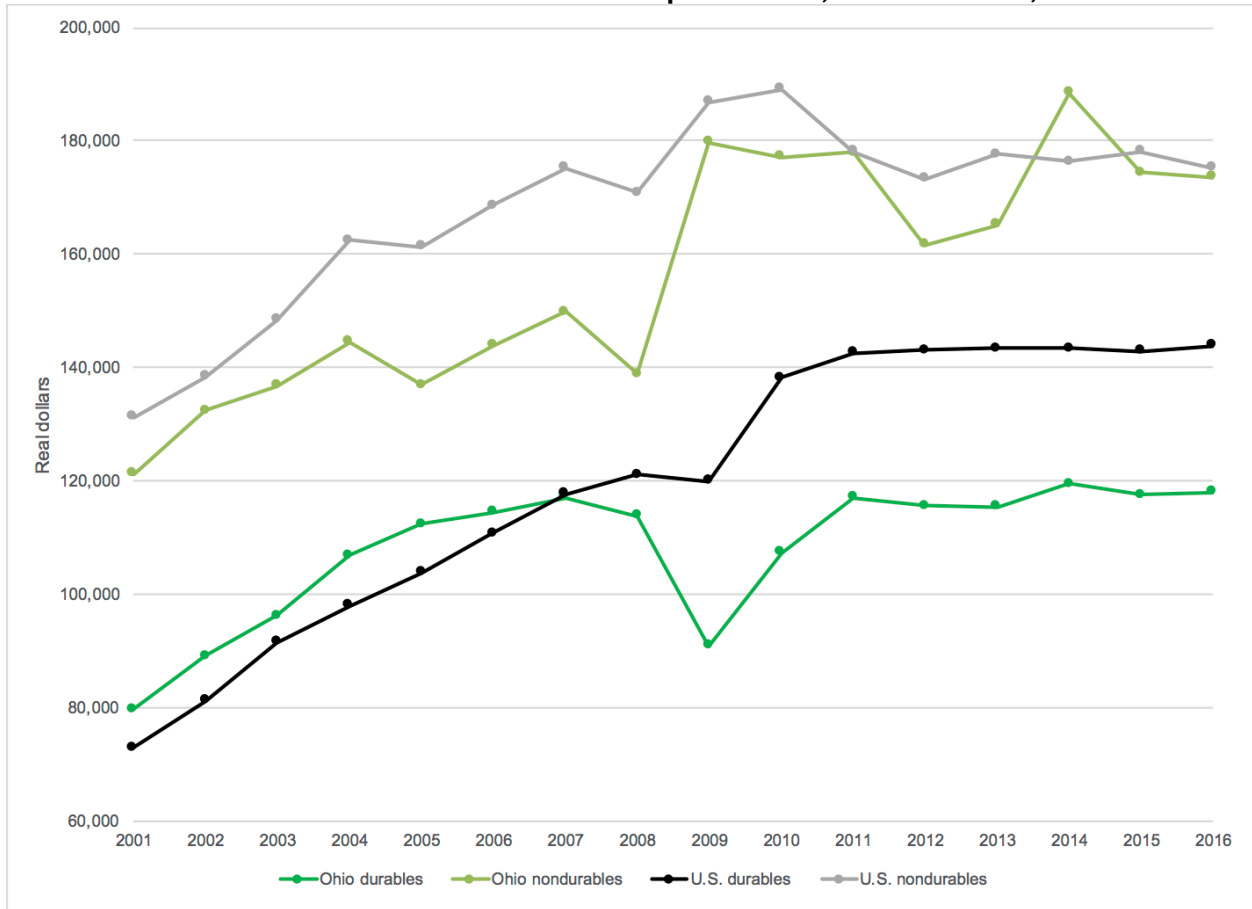


Source: Calculated from U.S. Bureau of Economic Analysis and U.S. Bureau of Labor Statistics data.

Finally, Figure 7 contrasts GDP per worker in durable goods and nondurable goods industries as a way of identifying the source of the trends in Figure 6. The average Ohio and U.S. nondurable goods worker consistently generates more output than the average durable goods worker – again because of the nature of production. GDP per durable goods worker was approximately \$8,000 more than average before 2005 but fell below average in 2008. It is worth noting that per-worker durable goods output has remained essentially unchanged both nationally and in Ohio since 2011. Automation has been far less successful in increasing worker productivity during this expansion than during the last one.

GDP per nondurable goods worker also increased far more in the 2002-2007 expansion than more recently. Here, however, GDP per worker in Ohio was much less than average during the last decade and is now close to average. While durable goods GDP per worker declined in the recession year of 2009, nondurable GDP per worker surged. The GDP of Ohio's durable goods industries declined in both 2008 and 2009, for a total loss of 39 percent. In contrast, nondurable goods GDP declined in only 2008, losing only 10.5 percent, but then gained more than 17 percent the following year. Meanwhile, nondurable goods employment declined in both 2009 and 2010. This led to the strong increase in productivity that continues to benefit the subsector today.

Figure 7
Real Durable and Nondurable Goods GDP per Worker, Ohio and U.S., 2001-2016



Source: Calculated from U.S. Bureau of Economic Analysis and U.S. Bureau of Labor Statistics data.

"On The Money" (c) 1995-2017 Hannah News Service Inc., 21 West Broad Street, Suite 1000, Columbus, Ohio 43215.

All Rights Reserved. Phone Number (614) 227-5820