The Myth of America's Manufacturing Renaissance: The Real State of U.S. Manufacturing

BY ADAMS B. NAGER AND ROBERT D. ATKINSON | JANUARY 2015

For the casual observer, it is easy to get the impression that American manufacturing has entered a new and exciting period of revival. Many in the media, along with consulting firms and economists, now tout the term "manufacturing renaissance" to describe this so-called revival. Pointing to companies that have reshored production back from overseas and citing rising costs abroad and reduced costs at home, these optimists assert that the U.S. manufacturing sector, a vital engine of economic growth, is both resuscitated after its decline in the 2000s and positioned to accelerate in coming years.

If only that were true. U.S. government data point to a different picture where, coming out of the Great Recession, American manufacturing has still not recovered to 2007 output or employment levels. Moreover, the lion's share of growth that has occurred appears to have been driven by a cyclical, rather than structural, recovery, and as such may represent only a temporary trend.

After a decade of unprecedented decline in U.S. manufacturing in the 2000s stemming from loss of global competiveness, industry, the public, and policymakers are rightly eager for any sign of good news. But Pollyannaish optimism relating to the limited success of manufacturing since the end of the great recession serves only to obfuscate the ongoing challenges American manufacturing faces, including high effective corporate tax rates, limited public investment in industrial R&D and workforce skills development, and pernicious foreign "innovation mercantilism."[123] In order to ensure that the reshoring and renaissance narrative is more than consultant-driven marketing hype, Congress will need to

act boldly with a robust national traded sector competitiveness strategy.[4] Otherwise, the odds are that in a decade, real U.S. manufacturing output will at best have grown at about the same rate as the U.S. economy, and America will still be running a massive trade deficit in manufactured goods.

THE STATE OF U.S. MANUFACTURING

Since its peak in 1979, U.S. manufacturing employment has declined, with moderate losses through the late 1990s, mostly caused by higher manufacturing productivity relative to the rest of the economy. In the 2000s, however, with the rise of China and the new globalization, U.S. manufacturing employment experienced a decade of unprecedented losses, shedding 5.8 million jobs, or about one-third of the workforce.[5] But unlike the prior two decades, these losses were caused not principally by superior manufacturing productivity growth, as apologists for the health of U.S. manufacturing continue to assert. Rather, they were caused by significant losses in real value added output, in turn causing a large increase in the U.S. trade deficit, which by 2002 also included a deficit in advanced technology industries.

For years, many think tanks, scholars, and pundits turned a blind eye toward the severity of U.S. manufacturing decline, preferring to believe that manufacturing loss is either natural or inconsequential. The Boston Consulting Group (BCG)—perhaps the leading consultancy promoting the notion that all is well with U.S. manufacturing—went so far in 2011 as to congratulate the U.S. economy on the blistering speed at which it was able to shed jobs: "Unlike many other nations, [the United States] quickly ripped off the band aid and allowed industry to adapt. Factories closed, companies failed, banks wrote off losses, and workers had to learn new skills. But U.S. industry and the economy responded with surprising flexibility and speed to reemerge more competitive and productive than ever."[6] If you define running massive trade deficits and losing 11 percent of manufacturing output in a decade while experiencing only moderate growth in productivity as a success, BCG was perhaps right.

According to the dominant narrative, low-paying, low-skilled jobs that Americans do not want or need were offshored to nations such as China that compete only on cost. Offshoring then freed up the American economy to focus on business services and advanced technology products where its comparative advantage truly lies. Manufacturing employment losses could be explained by low-cost production abroad, productivity gains decreasing the need for labor, and a natural shift away from manufacturing toward a knowledge-based service economy.

But as ITIF has shown in "Worse than the Great Depression," this comforting narrative is at best only partially true.[7] To be sure, natural evolution in response to globalization calls for a shift in the structural makeup of the U.S. economy, and we would expect to see the United States shedding cost-based commodity activity and gaining innovation-based production. But the reality is that the U.S. lost more of the former than we should have and gained almost none of the latter. In fact, America ran a trade surplus in high-tech production 15 years ago, and since then we have run a trade deficit. Differential productivity doesn't explain the job losses. U.S. manufacturing lost 11 times more

manufacturing jobs in the 2000s than in the 1990s despite similar rates of manufacturing productivity growth in both decades. And in contrast to all the hype, the U.S. has not become a post-industrial service economy, at least in terms of consumption. Consumption of manufactured goods as a share of U.S. GDP, when measured in inflation-adjusted terms, is the same today as it was 40 years ago. It is only production of manufacturing goods that has fallen as imports have grown much more rapidly than exports.

Fortunately, during the prolonged recovery from the Great Recession, manufacturing employment and output has, for the moment, stabilized and is even exhibiting signs of modest growth as employment continues to grow. However, this recent growth should not be construed as something it is not. Though it is an encouraging sign and certainly an improvement from the rapid decline that characterized the 2000s, the recovery has actually been sub-par compared to prior manufacturing recoveries and current levels of manufacturing output and employment are still below pre-recession levels. Most of the gains appear to be a result of cyclical improvements as demand recovers.

Despite all the hype, the U.S. has not become a post-industrial service economy, at least in terms of consumption.

After years of pervasive bad news, many are more than happy to presumptively declare the positive indicators signs of the rebirth and reemergence of American manufacturing. Cost advantages derived from cheap energy and rising wages abroad (with stagnant wages for production workers at home) are imagined to be drawing a wave of manufacturers that had previously outsourced to return home, sparking a manufacturing renaissance. Optimistically, many, like BCG, predict that this trend is likely to accelerate. However, statistical evidence and theoretical considerations suggest that these declarations are overblown and premature. Harry Moser of the Reshoring Initiative estimates that only 120,000 jobs of the over 720,000 gained between the end of the recession and 2013 were reshored, and further, that the increasing rate of reshoring had not yet overtaken the rate of offshoring, meaning that just as many jobs are leaving as arriving.[8] Moreover, statistics do not back up claims of either rapidly growing U.S. productivity or significant steps toward the U.S. becoming more cost competitive.

MANUFACTURING DECLINE FROM 2000 TO 2009

In the 2000s, American manufacturing experienced the steepest losses in employment in American history and serious decline in output. These were caused in no small way by a significant worsening of the manufacturing goods trade deficit, which was $458 billion in 2013.[9] Additionally, trade in advanced technology products, which in 1990 represented a $35 billion trade surplus for the United States, became a deficit in 2002 and has since declined even further, becoming an $81 billion deficit by 2013.[10]

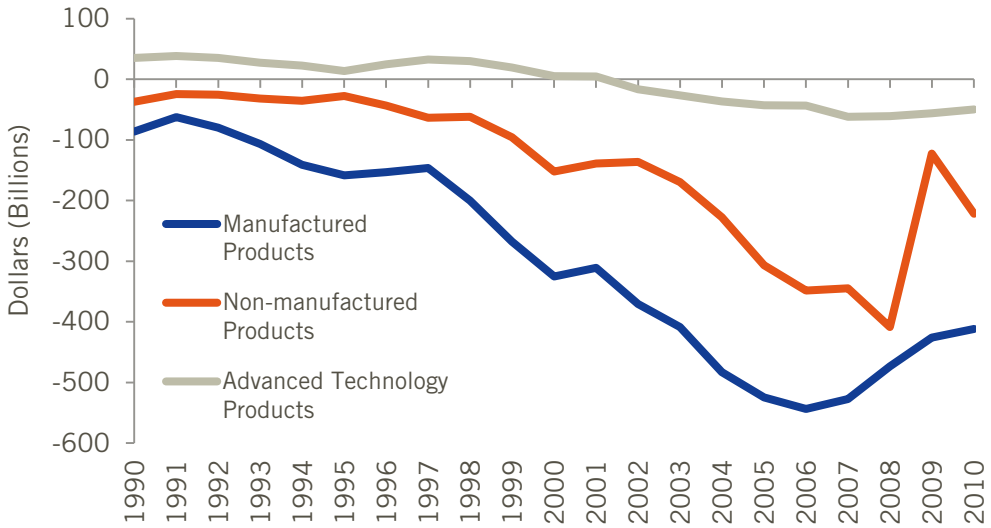

Figure 1: United States Annual Trade Deficits in Manufactured, Non-Manufactured, and Advanced Technology Products, 1989–2013[11]

More than 110 percent of all real manufacturing growth during this period was driven by a single sector, computers and electrical components (NAICS 334).

Between 2000 and 2009, America's manufacturing sector shed 33.6 percent of its jobs (approximately 5.8 million), a 40.1 percent decline when controlling for the fact that the overall workforce grew. To compare, in the 1990s, the United States lost only 3 percent of manufacturing jobs.[12] Yet, manufacturing productivity growth rates were more or less the same in both decades.[13]

When measured properly, manufacturing output also experienced significant decline in the 2000s. From 2000 to 2009, real manufacturing value added officially grew by 7.7 percent. Over the same time, however, GDP grew by 14.7 percent, meaning that manufacturing was in a state of relative decline compared to the rest of the economy.

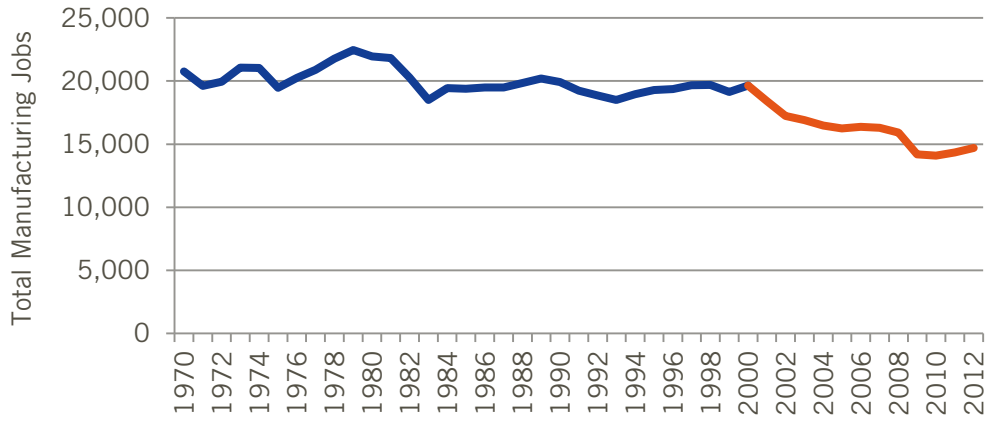

Figure 2: Total Manufacturing Jobs in the United States, 1970–2012 (Thousands)

But even these anemic numbers mask serious mismeasurement of manufacturing output. More than 110 percent of all real manufacturing growth during this period was driven by a single sector, computers and electrical components (NAICS 334), whose output has been shown by numerous academic studies to be seriously overstated as a result of the very rapid

rate of progress in computer processing speeds.[14] Because this one sector (NAICS 334) accounted for all the output growth from 2000 to 2009, the other 18 major manufacturing industries were as a group producing less at the end of 2009 than they were in 2000.[15] Removing NAICS 334 (which accounts for just 9 percent of U.S. manufacturing jobs), U.S. manufacturing contracted by 0.9 percent from 2000 to 2009, with durable goods decreasing by 9.6 percent.[16] Non-durable goods grew only modestly by 5.6 percent. Both of these numbers fall well short of matching GDP growth, which is nominally expected to grow hand in hand with manufacturing value added statistics.

Industry	2000–2009
GDP	14.8%
Manufacturing	7.7%
Manufacturing minus Computers	-0.9%
Durable Goods	8.5%
Durables minus Computers	-9.6%
Non-Durable Goods	5.6%

Table 1: Real Value Added Growth[17]

While losses accelerated during the beginning of the recession, manufacturing value added losses were continuous throughout the decade, especially in durable goods besides NAICS 334. Indeed, from 2000 to 2009, 13 of the 19 manufacturing industries classified by the U.S. Bureau of Economic Analysis (BEA) saw inflation-adjusted declines in value added. Among industries classified as durable goods, only miscellaneous manufacturing, computers and electronic components (NAICS 334), and other transportation equipment (predominately aircraft production) saw increases. Among non-durables, food and beverage manufacturing and chemical products grew roughly on par with GDP. The biggest growth industry in non-durables was petroleum and coal products, which is reported as increasing by 51 percent. However, much of this is based on increasing fuel prices between 2000 and 2009, which mimicked growth.[18] In truth, American's refining capacity grew by only 7 percent over the period.[19] Similarly, coal processing experienced no gross output growth.[20] The remaining 13 manufacturing sectors were producing less in 2009 than in 2000.

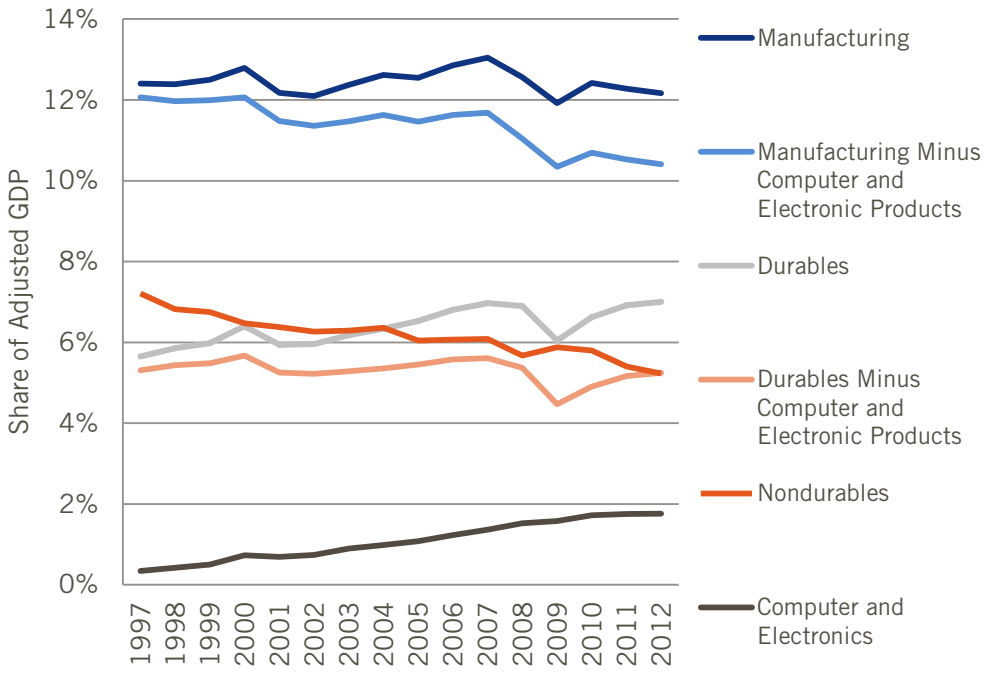

Figure 3: Value Added as a Percentage of GDP in U.S. Industries, 1997–2012[21]

Moreover, the BEA real value added data suffers from a serious import price substitution bias and BEA warns researchers that "improvement in productivity may be slightly overstated due to the fact that low-cost foreign inputs are not adequately captured in existing price indices."[22] Essentially, lower costs created by substituting cheaper parts from abroad for more expensive domestically produced inputs are confused for real gains in productivity, skewing statistics. In addition, BEA statistics have trouble measuring goods with rapid technology advancement which have new models introduced regularly. Economist Michael Mandel describes this problem: "In product categories with declining prices and rapid model changes—such as cell phones, computers, consumer electronics—the official import price indices underestimate the size of the price decline… The reason is simple—when a new model of an imported good is introduced, the BLS [Bureau of Labor Statistics] typically treats it as a new good, and misses all the price decline from one model to its successor."[23] In fact, after correcting for these measurement problems ITIF has estimated that total manufacturing output actually fell by 11 percent from 2000 to 2010, not increased by 7.7 percent as the official data report.[24]

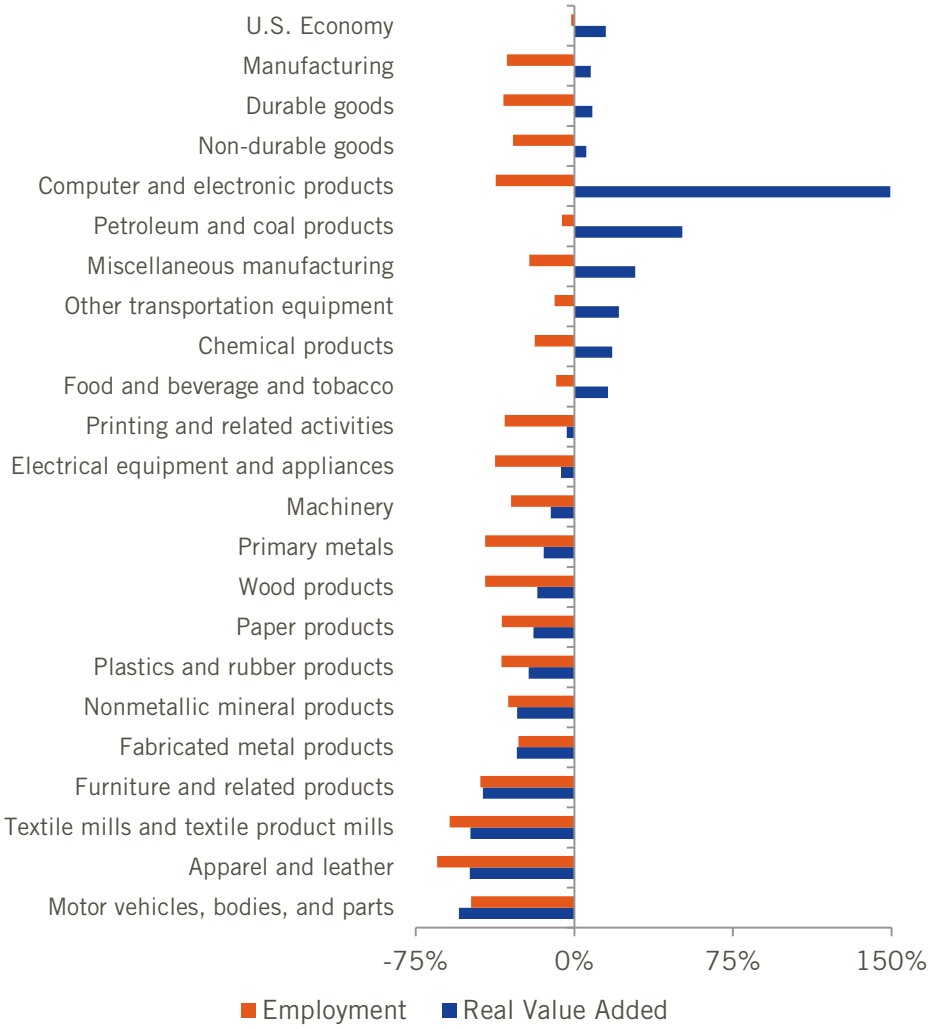

Figure 4: Growth in Real Value Added and Employment by Industry, 2000–2009[25]

In short, the dominant narrative about U.S. manufacturing job losses during the 2000s that these were due to higher differential productivity is wrong. They were due more to output loss caused by declining foreign competitiveness. Indeed, import competition from China has been estimated to be responsible for between one-quarter to more than one-half of the lost manufacturing jobs in the 2000s.[26] A study by the Federal Reserve supports this conclusion, finding that Chinese exports accounted for between 750,000 and 3.5 million lost manufacturing jobs in the 2000s.[27] Acemoglu et al. make a more conservative estimate of between 600,000 jobs and 1.25 million jobs lost to import competition from China between 1999 and 2011.[28] As shown in Figure 4, these are not just low-wage jobs. The United States faces a 20 percentage point gap between imports and exports in advanced technology products. In computers and electrical components, the number drops to 58 percent, as U.S. exports of information and communications technology goods fell from 15 percent of global totals in 1997 to just 7 percent in 2012.[29]

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MANUFACTURING GROWTH SINCE THE GREAT RECESSION

Given the severity of the job losses during and before the Great Recession, it is encouraging that the United States has seen strong job growth since the recession officially ended in 2009. But this rate of growth is still much lower than what would be possible if the economy were in fact "running on all cylinders." The manufacturing sector has also experienced slow but steady growth, resulting in modest gains in employment, manufacturing establishment, and value added statistics.

Optimists are quick to cite these figures to support the argument that U.S. manufacturing is undergoing a renaissance and has restored its global competitiveness. But this is a false reading of these statistics. First, manufacturing output, establishments, and employment have still not completely rebounded from the recession, and gains are still dwarfed by the magnitude of the losses experienced in 2008 and 2009. As discussed below, much of the growth that is being heralded as a renaissance is actually just a steady, cyclical recovery from the depths of the recession.

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Value Added and Employment Figures are Growing but Still Behind

Output growth since the end of the recession in 2009 has been slow but consistent in the manufacturing sector, but even so it has lagged behind GDP growth. (Table 2) While durable goods grew between 2010 and 2013, non-durable goods continued their long decline. Extending the analysis to 2007, manufacturing value added is still 3.2 percent below where it was before the Great Recession, despite 5.6 percent growth in GDP. Non-durable goods declined throughout, which is surprising if only for the reason that many energy-intensive industries are included in non-durables (such as petroleum refining, chemicals, and paper), which presumably have benefited significantly from America's recent energy boom.

Industry	2010–2013	2007–2013
GDP	6.3%	5.6%
Manufacturing	2.4%	-3.2%
Manufacturing minus Computers	1.7%	-7.7%
Durable Goods	11.6%	5.0%
Durables minus Computers	13.3%	-2.2%
Non-Durable Goods	-6.8%	-11.5%

Table 2: Real Value Added Growth[30]

There has also been moderate growth in manufacturing jobs and establishments. Establishment decline extended further into the recovery than other indicators, implying that manufacturers were still shuttering factories. Between the official end of the recession and the beginning of 2013, the United States lost more than 17,000 manufacturing

establishments. That trend has reversed itself only in the last year, when manufacturing establishments increased by 4,400, or 26 percent of establishments lost since the end of the recession. However, establishment numbers are still well below where they were in 2009.

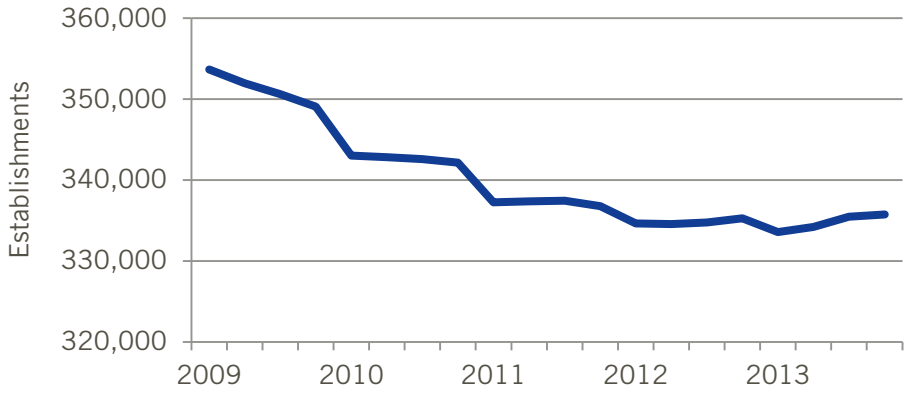

Figure 5: Manufacturing Establishments in the United States[31]

Establishment data has limited usefulness, as it could reflect changes in establishment size or changes in overall manufacturing output. Moreover, an increase in establishments could represent newly built factories to house firms relocating production back to the United States, or it could represent firms reopening factories after shutting their doors during the recession. Hence, it is difficult with this data alone to separate structural growth from a slow, cyclical recovery driven by resuscitated demand.

Manufacturing employment tells a similarly uncertain story. After a decade of decline, manufacturing employment dropped precipitously in 2008 and 2009, shedding over two million jobs in these years alone. Since the beginning of 2010, employment numbers have made a slow but steady comeback, gaining 720,000 jobs from 2010 to the end of 2013.

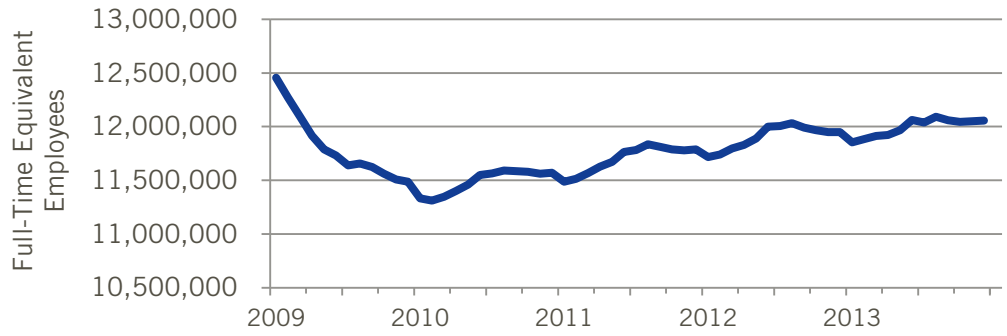

Figure 6: Employment in Manufacturing, 2009–2013[32]

There are several important caveats to these numbers. First, while the growth of 720,000 jobs is certainly substantial, it is important to consider this number in context. Manufacturing job growth has scarcely kept up with the growth of the overall workforce. In the beginning of 2010, manufacturing employment constituted 4.76 percent of the U.S.

workforce. By the end of 2013, it had climbed a modest tenth of a percent to 4.86 percent.[33]

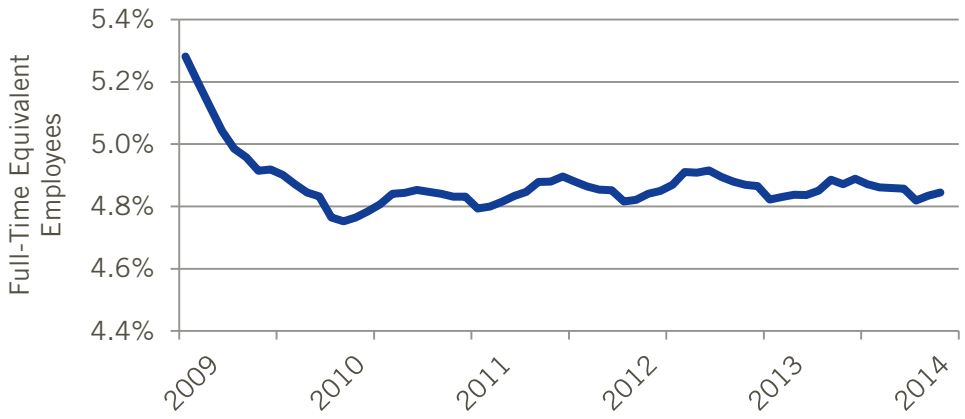

Figure 7: Percentage of U.S. Workforce in Manufacturing[34]

Second, some jobs considered to be gained during the recovery were jobs at factories that cut back production in response to shrinking demand during the recession. In 2008, factory utilization dipped by 17 percentage points, a 22 percent decline. Even factories that would ultimately weather the recession in the long run were forced to severely reduce output, and many of the two million manufacturing jobs lost in 2008 and 2009 were from factories deciding to produce less. Manufacturing establishments that went out of business also accounted for cyclical job losses during 2008 and 2009. As the demand side of the economy recovered, jobs were restored as surviving factories cycled back to full production.

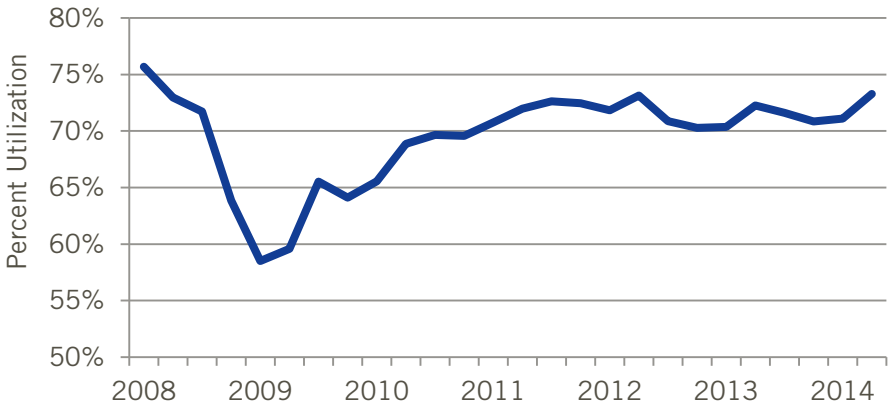

Figure 8: Total Factory Capacity Utilization, all Manufacturing[35]

Third, 720,000 jobs, while a huge number, is still only a gain of about 12 percent of employment lost from 2000 to 2009, or about a third of the jobs lost between 2008 and 2010. From 2008 through 2013, manufacturing employment has still followed an overall rate of decline of about 2.5 percent, which is not much slower than the annual average rate of decline of 2.6 percent from 2000 to 2008.

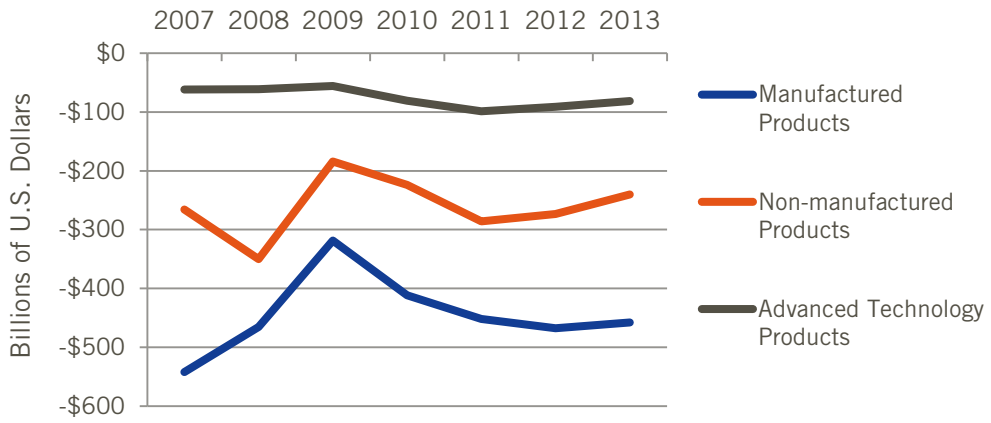

Figure 9: Trade Deficits From 2007–2013[36]

Trade data also support a hypothesis of growth created by resurgent demand. Despite the significant losses for U.S. export manufacturing in 2009, the year saw large reductions in the U.S. trade deficit of both manufactured and non-manufactured goods. But these changes reflect declining U.S. consumer spending on imports. As demand has recovered, the U.S. trade deficit has also increased, though some moderate improvement was seen in 2013.

Thus, manufacturing employment could be projected to go two ways. The prevailing optimistic interpretation predicts that growth in manufacturing will continue. However, the analysis below suggests that much of the growth since 2010 is merely cyclical recovery instead of structural growth driven by renewed international competitiveness.

Cyclical Recovery Explanation

While the renaissance narrative has become dominant in the last few years, the data point to the conclusion that a not-insignificant share of the employment and value added manufacturing recovery is due to cyclical, not structural, forces.

Rising firm, employment, and output numbers are not necessarily inconsistent with the story that American manufacturing continues to face competitiveness challenges. During the recession, the United States saw significant manufacturing loss. As demand recovered, some establishments reopened and others expanded, representing a cyclical recovery from a deep recessionary decline.

Strong manufacturing employment growth following a recession has indeed been the norm, in part because durable goods industries in particular are highly cyclical, falling more in downturns and gaining more in recoveries. We see this trend in post-war recoveries from 1949 to the 1980s. (Table 3) However, the last three recoveries have been more problematic, in large part because cyclical recovery has coexisted with structural decline. The recessions in 1990–1991 and 2000–2001 were the first recessions since the Second World War to see manufacturing losses both during and after a recession. While the current manufacturing recovery is more robust than either of these two recent recoveries, it is relatively weak compared to recoveries prior to 1990. If measured from the beginning of

2010, when the unemployment rate hit its recession apex, the United States added 4.2 percent of manufacturing jobs in 30 months, on par with historical averages. However, considering the severity of job losses leading up to and during the recession, the jobs recovery still appears weak. Net job growth from 12 months before to 30 months after the recent recession was at -15 percent, compared to a pre-2000 average of 0.3 percent.

Recession Year	Percent Jobs Lost from 12 Months Prior to the Start of the Recession to the End of the Recession	Percent Jobs Regained from the End of the Recession to 30 Months After	Net Job Growth
1949-50	-10.6%	15.0%	2.8%
1953-54	1.8%	5.9%	7.8%
1957-58	-8.7%	4.8%	-4.3%
1960-61	-3.8%	5.4%	1.4%
1969-70	-7.5%	8.3%	0.2%
1973-75	-6.4%	8.1%	1.2%
1980-82	-13.8%	6.3%	-8.4%
1990-91	-4.7%	-2.2%	-6.8%
2000-01	-8.5%	-10.3%	-17.9%
2007-09	-16.3%	1.3%	-15.2%
Average Prior to 2000	-6.7%	6.5%	-0.8%
Average After 2000	-12.4%	-4.5%	-16.6%
Average 1949–2011	-7.9%	4.3%	-3.9%

Table 3: Manufacturing Job Gains During and After Recessions[37]

Comparing the performance of durable and non-durable manufacturers gives an insight into the recovery process. While non-durable goods need to be consumed in the present period, consumers can more effectively put off purchasing durable goods. Production of non-durables declined more gradually, but has been slow to recover. From 2010 to 2013, while durable goods grew by 12 percent, non-durable goods continued to decline by 7 percent, a reflection of continued competitiveness difficulties for U.S. manufacturing.

The cyclical nature of durable goods is observable in the auto industry, a key driver of recent manufacturing job growth. During the recession, consumers were loath to make purchases of cars due to decreased confidence, lower credit availability, and reduced incomes. From 2007 to 2009, auto sales fell precipitously by 65 percent, only to climb back in the next three years, growing by 279 percent from 2009 to 2012. But this resurgence in passenger vehicle sales does not reflect a rebound in the global competitiveness of the U.S. automobile sector. Other durable goods industries such as aviation and machinery reflect similar trends.

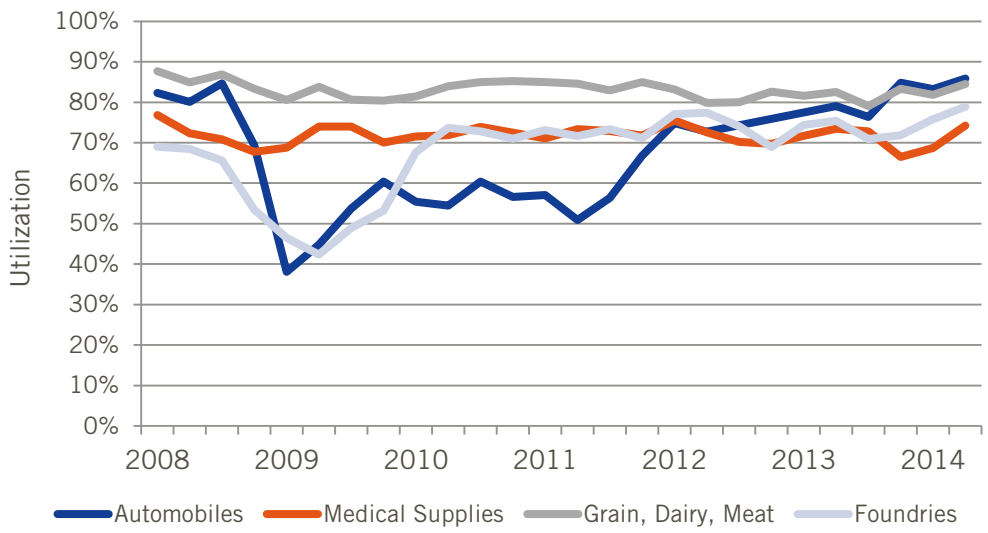

Figure 10: Factory Capacity Full Utilization in Durable and Non-Durable Industries[38]

From 2010 to 2013, 72 percent of total manufacturing jobs gained were in either transportation equipment (e.g., autos, aerospace, etc.) or primary and fabricated metals.

Factory utilization statistics also illustrate this dynamic. In non-durable sectors such as food and medical supplies, factory utilization remained consistent throughout the recession and recovery, supported by inelastic demand. Car manufacturing and foundries, on the other hand, plummeted, with factories mothballing production in 2009 due to the large demand shock. Unlike with food, consumers can put off buying a car for a few years. Metal production in foundries, which provides inputs for the depressed, durable manufacturing sector, saw similar fluctuations. In 2008, factory utilization for automobile production fell by 44 percentage points, while foundries production fell by 23 percentage points. Now, factory utilization for automobile manufacturers is actually 4 percentage points higher, and foundry utilization 10 percentage points higher, than they were before the downturn, as American car sales satisfy pent up demand and demand for metals for manufacturing returns.[39] In fact, from 2010 to 2013, 72 percent of total manufacturing jobs gained were in either transportation equipment (e.g., autos, aerospace, etc.) or primary and fabricated metals.[40] Together, these sectors accounted for 187 percent of the real value added growth in manufacturing between 2010 and 2013.[41] During the recession, imports of cyclical goods also decreased. From 2008 and 2009, the U.S. trade deficit in transportation equipment and primary and fabricated metals shrank by 70 percent and 57 percent respectively, despite the decreases in domestic production. These figures are consistent with the cyclical recovery explanation.

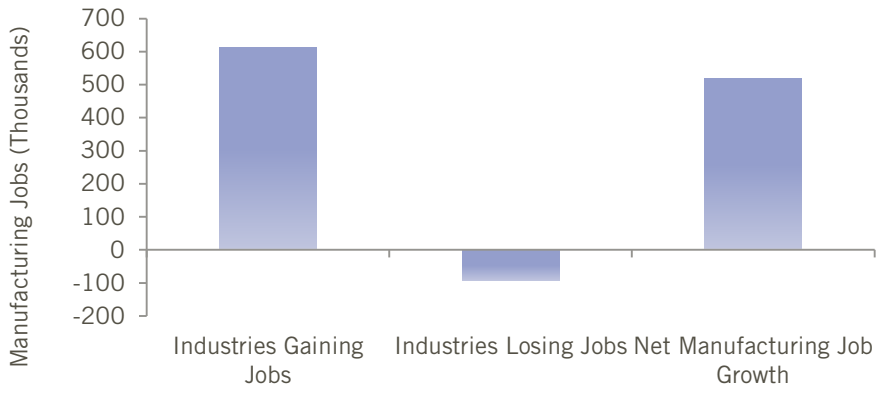

Figure 11: Manufacturing Jobs Added (Thousands), 2010–2013[42]

This is why a recent International Monetary Fund paper that explored the recovery noted that the "increase in U.S. manufacturing output following the recession (between 2009Q2 and 2013Q3) has been almost entirely driven by the higher production of durable goods," reaching the conclusion that "this rebound is in part the natural consequence of a stronger cyclical decline for durables than for non-durables."[43]

As can be seen in Figure 12, manufacturing value added in 2013 is about 5 percentage points below where it was in 2007 when compared to GDP. Durable goods, which are more susceptible to shocks in demand because of their elasticity, experienced a sharp decline but bounced back quickly. Non-durables, on the other hand, actually gained in 2008 relative to GDP, as non-durable goods like food represent many of the last things consumers would cut back on. Non-durable goods then saw milder but consistent decline relative to GDP from 2009 to 2013.

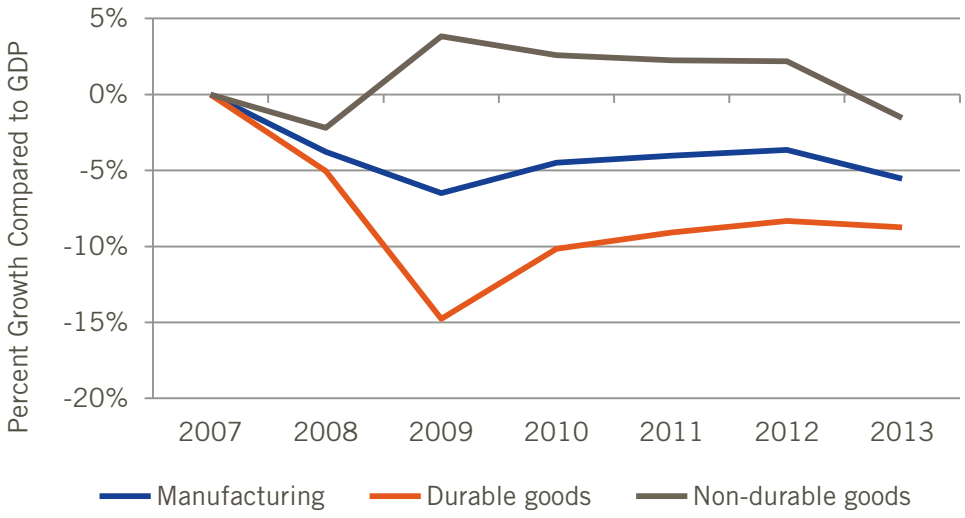

Figure 12: Value Added Growth from 2007 to 2013 as a Change from Percentage of GDP (2007=1)[44]

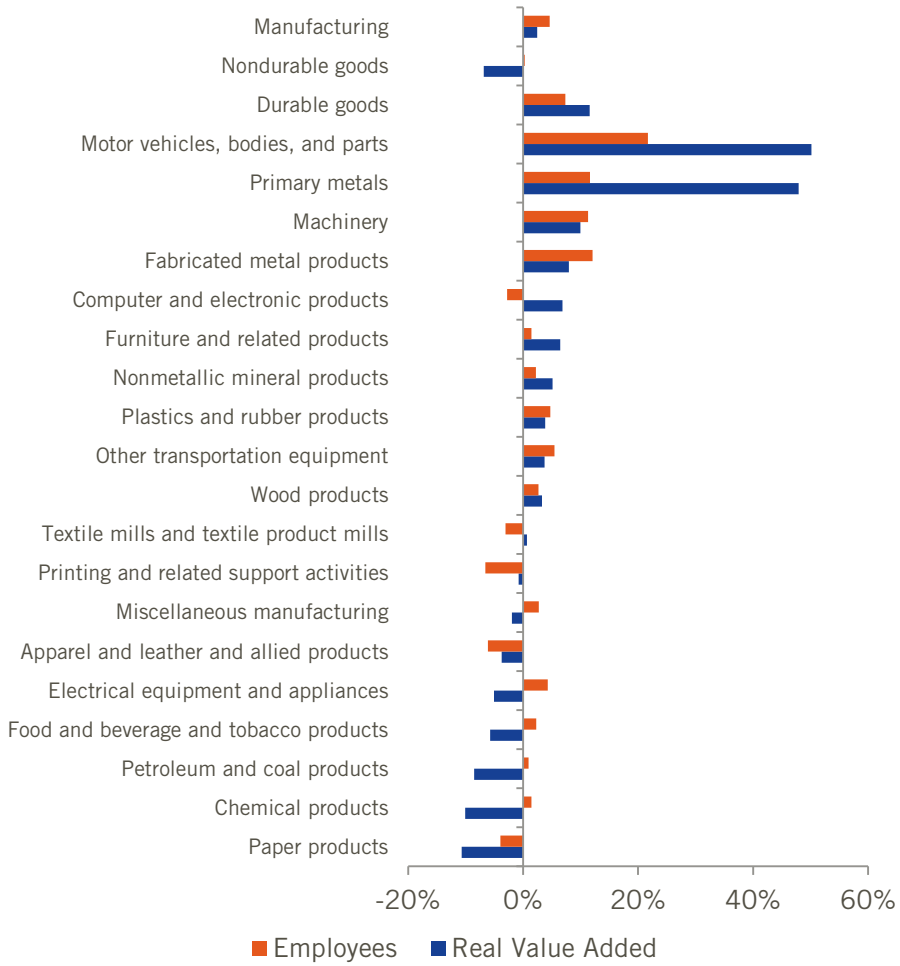

Figure 13: Manufacturing Growth from 2010 to 2013[45]

Outside of durable goods such as metal production and fabrication, cars, and machinery, data show modest growth or continued losses by American manufacturers. Considering that overall GDP growth over these three years was at 6.3 percent, 2.4 percent growth by the manufacturing sector is relatively weak compared to the rest of the economy. While durable goods increased by 11.6 percent, growth was concentrated in highly cyclical industries. It would be unsurprising to see growth in these industries flatten once they return to pre-recession levels and excess demand created by delayed purchases is satisfied.

The manufacturing sector is currently reshoring as many jobs as it is off-shoring, and of course movement of this type is to be expected in equilibrium. The question remains, however, if manufacturing has fully bottomed out, and, if so, what its chances are for making actual gains

"TORTURING THE DATA" TO MASK MANUFACTURING DECLINE

The debate over the structural health of U.S. manufacturing is wrapped up in the trade debate and has become a proxy for views on whether one supports globalization or not. Unfortunately, rather than presenting unbiased analyses of the performance of U.S. manufacturing, some free trade advocates have gone to great lengths to paint a picture suggesting all is well with U.S. manufacturing. They fear that an accurate portrayal of U.S. manufacturing will result not in a robust U.S. manufacturing strategy but in trade protectionism.

Perhaps no one has gone further down the road of trying to find good economic news for U.S. manufacturing than Theodore H. Moran and Lindsay Oldenski of the Peterson Institute for International Economics, who recently published a report titled "The US Manufacturing Base: Four Signs of Strength."[46] The policy brief tortures the data in order to claim that U.S. manufacturing is perfectly healthy. Their goal is clearly to tell an upbeat story lest bad news embolden the trade protectionists, something the Peterson Institute takes great pains to prevent from happening. To begin with, Moran and Oldenski contend that U.S. manufacturing output is still on the rise. They reach this conclusion through misleading baselines and a number of statistical errors. The report claims: "Real value added in manufacturing has been growing rapidly for more than four decades and is on track in 2014 to surpass the all-time 2006-2007 high." First, this tacitly acknowledges that U.S. manufacturing is still not fully recovered from the recession. Second, celebrating rapid growth in manufacturing real value added from the 1960s to the late 1990s is irrelevant, as it is an accepted fact that U.S. manufacturing grew steadily in the 20th century. Using a baseline over 50 years old obscures the large and unprecedented manufacturing output declines of the last 15 years.

To explain away job losses in manufacturing, the report claims that output growth and unemployment losses were both occurring consistently between 1960 and 2007, ostensibly demonstrating that job losses are caused by increasing productivity. But again, the paper ignores the fact that job losses were 11 times higher in the 2000s than in the 1990s even though manufacturing productivity growth rates were similar in both periods. The paper reasons that because manufacturing jobs have declined in the past, any level of current job loss must be natural and healthy. In reality, job losses are occurring much faster than productivity gains, and output is shrinking as a result.

The report also does not compare growth rates to increases in GDP, which provides important context for growth figures. In this case, as GDP grew by 5.9 percent between 2007 and 2013, declining manufacturing output over the period is significant. It also pointedly ignores the mismeasurement of NAICS 334, though the report brings up the problem and acknowledges the skew.[47]

Moran and Oldenski try to mask decline by displaying output data from the 2000s and the recovery side by side while using annual averages over very different lengths of time. They do report a 1 percent annual decline in output over the decade—even with NAICS 334 included—however, they obscure it by presenting 2010–2013 growth data next to it, which unsurprisingly shows 4 percent annual growth. As we know, much of this was driven by a cyclical recovery after an unprecedented manufacturing output drop during the Great Recession.

Later, Moran and Oldenski attempt to prove the growth of the manufacturing industry with just a single data point, 2010–2011, which the authors use to argue both that economic growth is occurring faster in manufacturing than in the economy as a whole and that the United States is experiencing faster growth than other nations. This cherry-picked data bias is refuted by a comparison of manufacturing output and GDP growth from 2000 onwards.

However, their most outlandish claim is that outward expansion by companies to foreign countries somehow also boosts economic activity by the same firms at home. The report reviews companies that open offshore factories, but does not analyze whether the new operation represents a new establishment to serve foreign markets (which indeed results in some ancillary manufacturing output in the United States, especially in headquarter functions), or a shift of U.S. domestic production offshore. In short, their analysis finds only that growing and expanding firms tend to see higher sales, employment, exports, and R&D, which should not surprise anyone. What we are not able to observe from this analysis is how an offshoring move—simply substituting U.S. jobs for jobs abroad—will affect the U.S. economy. Looking at macro-level data for answers, it is clear that Moran and Oldenski's promises of higher domestic R&D, sales, exports, and employment from offshoring have gone unfulfilled.

RESHORING MYTHS

Behind much of the belief in a structural rebirth of manufacturing is the plethora of highly publicized anecdotes about companies returning from overseas to once again produce domestically. Many of these articles imply that a recent reshoring move by a single company is the first domino in what promises to be a cascade of returning jobs and industries. Others consider an American manufacturing resurgence to be inevitable. Believers in the reshoring story have stated:

- "After years of offshore production, General Electric is moving much of its far-flung appliance-manufacturing operations back home. It is not alone. An exploration of the startling, sustainable, just-getting-started return of industry to the United States…"[46]

- "From ExOne's 3-D manufacturing plant near Pittsburgh to Dow Chemical's expanding ethylene and propylene production in Louisiana and Texas, which could create 35,000 jobs, American workers are busy making things that customers around the world want to buy."[47]

- "When I looked more deeply at the endowments given to this continent, I became very optimistic. I think many business leaders will realize, soon, that they are underinvesting in North America."[48]
- "America's economy is finally beginning to feel like it is picking up pace."[49]
- "Lower energy costs, the narrowing wage gap and other factors have a slow-motion effect that isn't yet visible in the trade balance."[50]

These stories have helped restore the confidence of U.S. manufacturing executives. In a recent survey, 68 percent of manufacturing executives reported that their firms were likely to accelerate the growth of their U.S. manufacturing operations in the next five years, and 57 percent agree that the United States is undergoing a manufacturing renaissance.[51]

These views are supported by optimistic reports from organizations such as the Boston Consulting Group, which predicts that "conditions are coalescing for another U.S. resurgence," citing shipping costs, a weaker dollar, and Chinese wage growth as factors chipping away at China's cost advantage.[52] In fact, one report predicts that within five years, low-cost U.S. states will be within 10 percent to 15 percent of costs in coastal Chinese cities.[53]

The outlook of the U.S. manufacturing sector today is certainly an improvement from the 2000s, and three straight years of manufacturing job growth is nothing to scoff at.

It is certainly possible that this newfound optimism is grounded in reality. The outlook of the U.S. manufacturing sector today is certainly an improvement from the 2000s, and three straight years of manufacturing job growth is nothing to scoff at. Harry Moser of the Reshoring Initiative estimates that as many as 25 percent of the production offshored during the 2000s could potentially be produced at comparable prices or less expensively in the United States when all costs and risks are considered.[54]

However, while onshoring is occurring, certainly much more than in the 2000s, it does not appear so far to be a mass wave. The Reshoring Initiative estimates that reshoring in 2013 restored around 30,000 jobs to 40,000 jobs, about 60 percent of these returning from China, while the economy simultaneously offshored an estimated 30,000 jobs to 50,000 jobs overseas. All told, of the some 120,000 jobs reshored in the last four years, there were equivalent numbers going offshore. These figures are clearly an improvement from a decade ago, when in 2003 approximately 150,000 jobs left America, compared to about 2,000 jobs returning.[55] However, this evidence makes celebrating a manufacturing renaissance feel premature. Indeed, much of the reshoring story is based on several misconceptions about U.S. cost advantages.

Myth 1: China's Rising Labor Costs are Reducing Cost Disparity

The new manufacturing narrative is that declining U.S. costs and rapidly rising Chinese wages are reducing the cost disparity and making it profitable to produce in the United States. To be sure, Chinese wages have grown on average 16.7 percent annually from 2002 to 2009.[56] However, due to reliability issues in China's statistical methodology, it is not clear how accurate these data are.

Even assuming accuracy, there are several problems with leaping to the conclusion of a significantly declining cost differential. First, it assumes that labor cost growth in China will continue at this pace, which recent economic forecasts from China cast doubt upon.[57] Second, it is important to look beyond the raw numbers. Most of China's current production occurs in its coastal provinces, where wages have increased significantly. But just as U.S. producers moved manufacturing jobs to the U.S. South to keep wages relatively low, manufacturers in China are moving to the interior, where GDP per capita in highly populated provinces such as Henan and Sichuan is less than half of that in coastal provinces such as Jiangsu and Zhejiang.[58] A major infrastructure push has begun to open these regions for production and tap into this large pool of low-wage workers. Moreover, if companies are pushed from coastal Chinese cities by rising wages, they can also move to other, even lower wage nations, such as Vietnam, India, or Cambodia, before considering returning to the United States. In fact, even if Chinese wage growth continues at over 15 percent per year from 2010 to 2015, the average Chinese laborer would still earn just roughly $4.40 an hour, a scant 12 percent of U.S. wages.[59]

But it is not labor cost that matters, but labor cost adjusted for productivity. Indications point to the conclusion that Chinese manufacturing labor productivity is increasing at a much more rapid pace than U.S. productivity. While detailed, reliable data is unavailable, a paper examining Chinese productivity growth in manufacturing found that between 1999 and 2007, Chinese labor productivity tripled, growing at a pace of 15 percent per year.[60] The Boston Consulting Group, a firm believer of an imminent manufacturing renaissance, estimates a lower rate of 8.5 percent over the next five years, which is still a substantial amount of growth.[61] Assuming 8.5 percent productivity growth, Chinese unit labor costs are only rising by approximately 8 percent per year. At these growth rates, Chinese productivity rates have grown by approximately 266 percent since 2002. Part of this productivity growth is explained by China's expansion into advanced industries, with exports growing from around $150 billion to over $600 billion between 2003 and 2012.[62]

Myth 2: Global Shipping Costs Give the United States an Advantage

Toward the second half of the last decade, global shipping costs increased significantly. The Baltic Dry Index, which measures, aggregates, and condenses the cost of dry shipping to and from major ports worldwide, increased by 635 percent from 2000 to 2008, raising alarm bells abroad and temporarily lending credence to those hypothesizing that manufacturing would inevitably return to the United States.[63] Global demand growth outpaced the global supply of shipping capacity, which was slow to adjust to changes in demand given long order periods for new ships and high costs associated with taking vessels temporarily out of circulation. Shipping costs shot up as producers bid each other up for a scarce and vital commodity. Oil prices, which increased more than threefold between 2000 and 2008, also contributed to elevated costs.[64] Interestingly, the U.S. trade deficit continued to grow over this period, suggesting that shipping costs were not all that important to the U.S. trade deficit.

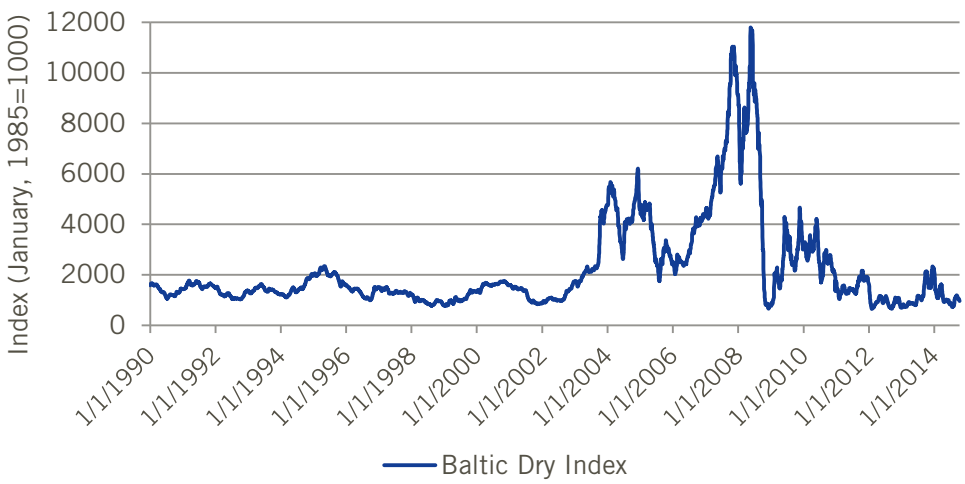

Figure 14: Baltic Dry Index, 1990–2014[65]

However, as soon as the recession hit, global shipping capacity, which was just beginning to catch up with pre-recession demand, was suddenly in a state of severe overcapacity as a result of the sharp, negative demand shock. The cost of international shipping declined almost overnight, with the Baltic Dry Index falling 93 percent in under six months to prices comparable to pre-recession rates.[66] Today, shipping costs have returned to normal as the shipping industry readjusts to demand and oil costs decline.

Myth 3: The Shale Gas Revolution Will Drive Reshoring

Shale oil and natural gas, made more available by new mining techniques and discoveries, have lowered energy costs in the United States by 11 percent from 1998 to 2010. This energy boom cuts U.S. production costs, making it more affordable to produce in the United States. A report from PricewaterhouseCoopers estimates that shale gas will create one million jobs by 2025, claiming that "with shale gas resources more abundant than previously thought, U.S. manufacturers can look forward to multiple new opportunities and a significant uptick in employment in the sector."[67]

However, the broad economic impact predicted by this paper has so far not materialized. In fact, shale gas and increased U.S. oil production has had only a marginal impact on most industries. The benefits are concentrated in oil and gas refining and energy intensive industries. This is because for 90 percent of the manufacturing sector, energy costs are lower than 5 percent of shipment value.[68] Energy cost reductions will have only marginal impact on cost for the vast majority of industries, and will have no significant overarching impact on firm location choices.

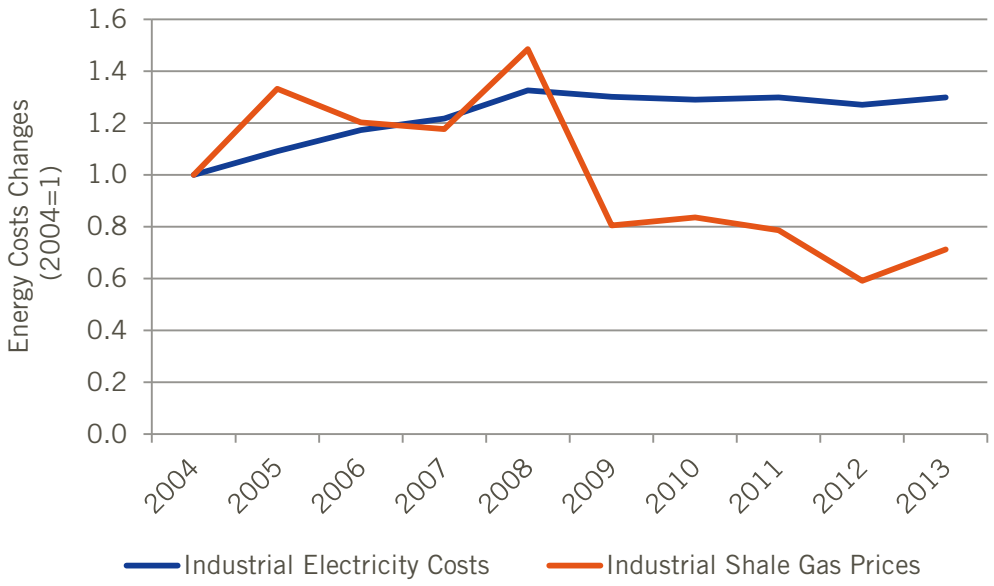

Figure 15: Industrial Electricity and Natural Gas Costs (Index: 2004=1)[69]

While shale gas will certainly create, and has already created, some industry growth, the benefits are largely restricted to the petrochemical sector and drilling operations. A minor boom in chemicals and petroleum production may indeed have been a large component of the limited manufacturing growth seen in the last few years. However, real value added output in both chemical products and coal and petroleum products have declined sharply from 2007 to 2013, decreasing by 10.9 percent and 18.5 percent respectively. Raw output numbers in aluminum and steel, both energy intensive industries, show moderate but not extensive growth, with output growing by 19.3 percent and 6.3 percent respectively from 2007 to 2013.[70] While theory predicts an employment gain of 3 percent in these industries, John Hatzius of Goldman Sachs writes that "we have not yet seen a material pickup in output in the parts of the manufacturing sector that should benefit most from low natural gas prices, such as aluminum, steel, plastics, basic chemicals, and fertilizer and other agricultural products," adding, "at least so far, the benefits from the increase in U.S. energy production seem to have been confined to the direct effects on output and income."[71] The production of shale gas itself has driven some growth, and the construction of new mining facilities accounts for almost the entire recent jump in non-residential construction seen by the United States.[72]

Real value added output in both chemical products and coal and petroleum products have declined sharply from 2007 to 2013, decreasing by 10.9 percent and 18.5 percent respectively.

Myth 4: A Weak U.S. Dollar Will Lead to Reshoring

Macroeconomic theory dictates that currency fluctuations should be one of the most powerful forces for restoring trade balances. If a country is running a trade deficit, its currency should weaken, making imports more expensive and exports more cost competitive in global markets. A weak dollar would be expected to help the United States reduce its trade deficit.

However, the dollar was weakening for much of the 2000s, but not by enough because the trade deficit kept growing. The dollar did not fall more, in part because the official policy of every administration has been to support a strong dollar, as opposed to a dollar whose

price is determined in international markets, and because other nations have manipulated their currencies for competitive advantage.[73]

Unfortunately for U.S. competitiveness, the value of the dollar has not continued to fall and recently has increased in value. (Figure 16) To the extent that the dollar has rebounded, it is less attributable to U.S. competiveness and more due to uncertainty abroad. With questions about China's strength and the continuing troubles in the Euro-zone, the dollar could quickly recover its strength relative to foreign currencies.

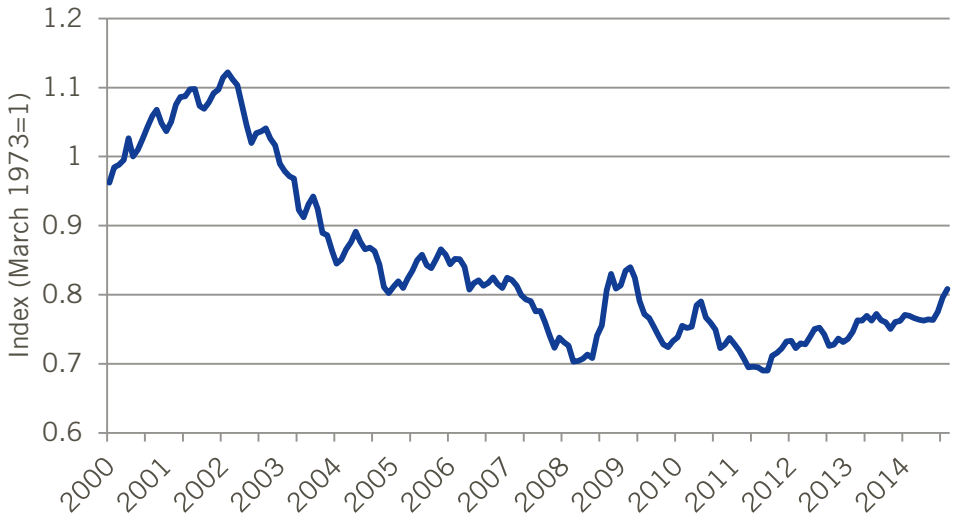

Figure 16: Dollar Value, Trade Weighted Basket[74]

Myth 5: Strong U.S. Productivity Growth is Cutting Relative Cost Differences

The renaissance narrative touts the emerging American super-factory, where new production methods such as robotics, digital factories, and 3D printing are transforming manufacturing and dramatically reducing the need for manufacturing labor. This idea is convenient, as it both justifies U.S. manufacturing employment losses and presents the United States with a clear road to restoring manufacturing strength.

The appeal of the "future factory" is alluring, and it is what we should be working toward. The technology to make it possible is being steadily developed, though a more coordinated national strategy could accelerate the rate of innovation and bolster productivity. As GE CEO Jeff Immelt stated, "Manufacturing is being digitized, democratized, and the science is awesome, I mean, really awesome."[75] However, while Joel Kurtzman of the Milken Institute might be ready to declare that "because of factory automation and robotics, the productivity is staggering," productivity numbers indicate that this is not yet a reality.[76] In fact, U.S. productivity has averaged only 2.5 percent annual growth since 2009, compared to 4.2 percent growth in the European Union and 8.5 percent growth in China, as estimated by BCG.[77] (Figure 17)

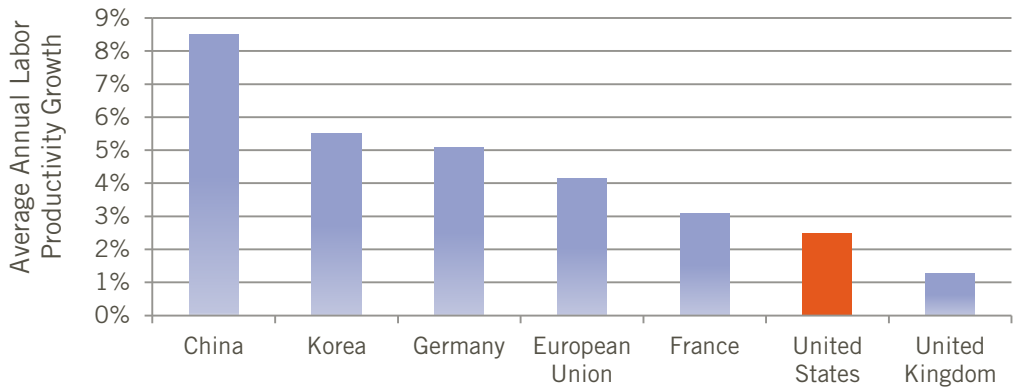

Figure 17: Average Annual Labor Productivity Growth in Manufacturing, 2010–2013[78]

To be clear, strong productivity growth is one of the three factors that could spark a real manufacturing renaissance (the others being robust innovation in new products, and the ability to cost-efficiently produce short production runs). But to assume that accelerated productivity will appear by itself at the rates needed to ensure a true renaissance is risky. The safe bet would be to support public policies such as the National Institute of Standards and Technology's Manufacturing Extension Partnerships, the National Network of Manufacturing Innovation, and expanded tax incentives for investing in new manufacturing production technology to help companies drive productivity.

CONCLUSION

Conditions for U.S. manufacturing are certainly better than they were a decade ago, as employment and output are both growing, albeit slowly. Despite this improvement, there is not yet evidence to support the notion of a U.S. manufacturing renaissance. Much of the growth since the recession's lows was just a cyclical recovery instead of real structural growth that will improve long-term conditions, and there is a strong possibility that manufacturing will once again decline once domestic demand recovers.

American manufacturing has lost a net of over a million jobs and over 15,000 manufacturing establishments since the beginning of the Great Recession. Value added is also down by 3.2 percent from 2007 to 2013, despite overall GDP growth of 5.6 percent. Moreover, America faces a $458 billion trade deficit in manufacturing goods.

In short, it is unwise to assume that U.S. manufacturing will continue to rebound without significant changes in national policy. The optimistic message of the manufacturing renaissance provides the public, business leaders, and policymakers with a dangerous sense of complacency that reduces the urgency and necessity for Congress and the administration to take the bold steps needed to truly and sustainably revitalize American manufacturing.

To realistically assess our options, it is important to have a clear idea of where we are. The debate on U.S. manufacturing should not be informed by anecdotal evidence, consulting reports for industry, or think tanks with agendas of keeping bad news from dampening support for further global integration.

It is beyond the scope of this report to lay out a detailed national manufacturing strategy, but ITIF has done so before in its report "Fifty Ways to leave your Competitiveness Woes Behind."[79] If we are wrong in our assessment and the renaissance promoters are right, the only risk to enacting such a strategy is that we will be even stronger in manufacturing-based competitiveness than we would be otherwise. Surely, this is not a bad outcome.

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