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Productivity, crises and imports in the loss of manufacturing jobs

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Abstract

The massive loss of manufacturing jobs in the United States even as manufacturing output continued to increase has been a source of debate between those who see this primarily as a result of globalization and trade, on one hand, and those for whom the dynamics of capitalism with its economic turbulence, job-displacing technology and productivity increases is the major cause, on the other. It is a debate with political implications. In the United States, those who see trade imbalances as the major cause of job loss compose a broad spectrum including many liberal economists, trade union leaders, related think tanks and the Trump Administration who place the blame on a foreign 'other' rather than multinational capital. Supporting this analysis are a series of recent academic articles that largely ignore economic crises and reject productivity, in particular, as reasons for declining manufacturing employment. This article will critically analyse their arguments and propose a different explanation rooted in the turbulence, competition and class conflict inherent in capitalism as these have unfolded in the United States during the neoliberal era.

Keywords

economic turbulence, hedonic adjustments, productivity, value added, work intensification

Introduction

The huge loss of manufacturing jobs from the early 1980s to the present has been a disorienting and troubling trend for organized labour and a matter of debate among economists and labour and political activists alike. From 1979 to early 2007, just before

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the Great Recession set in, 4.5 million production and nonsupervisory disappeared from US manufacturing despite a doubling of output over that period. Nearly 2 million more such jobs were lost from the onset of the 2008 Great Recession to its low point in 2010 (Bureau of Labor Statistics (BLS) 2015a; Council of Economic Advisors 2011: 250). The debate over the underlying causes of this dramatic decline is more than an academic exercise. For one thing, these are among the better paying working-class jobs in an era where job growth in the United States has come heavily in the service sector where pay is lower on average. It is also a debate with highly political implications. To put it bluntly, attributing the major cause of job loss to imports and trade imbalances – a view that runs from the US trade union leadership, through duelling economists, all the way to the Trump Administration with its shotgun trade wars – leads to attention on a foreign 'other', including not only those who produce imports but those who migrate to the United States and elsewhere, rather than a focus on the employers and how they shape the workplace and the rewards of labour. While focusing on capitalism's periodic crises, on one hand, and productivity produced by employers' actions, whether via new technology or more direct forms of work intensification, on the other, draws attention to the ruling capitalist culprits. This is important in recent decades as many union leaders have been led into labour-management cooperation schemes and made wage and other concessions that have tended to demobilize union members in hopes of making their employer more competitive and, hence, saving jobs. Needless to say, it is a strategy that has not stopped the massive loss of manufacturing jobs (Moody 2007: 106–114; Moody 2017b: 97–99).

There are, of course, other causes of job loss in manufacturing such as business failures and corporate downsizing. Manufacturing in the United States, however, accounted for only 3.5% of all jobs lost due to business failures compared to over 10% globally (Dun Bradstreet 2012; Hirsh 2019). In any case, most manufacturing job loses fell within the recessions discussed later in this article. Employment downsizing due to corporate mergers are a result of both foreign and domestic competition, but the resulting declines in employment would show-up as increases in productivity as merged firms produced more with fewer workers. The central question comes back to the relative roles of imports, economic volatility and productivity.

Three academic articles in particular have taken up the debate arguing that productivity cannot explain the overall loss of manufacturing jobs and the most likely cause is to be found in the trade imbalances experienced by the United States for some time – in particular as a result of the rise of Chinese imports after 2000 (Baily & Bosworth 2014; Houseman 2018; Houseman et al. 2014). These papers overlap in purpose, arguments and results; frequently cite one another; and in two cases have a dominant overlapping author, so that the arguments will be treated together for coherence and space. In addition to the fact that these are well-known economists at prestige institutions whose work must be taken seriously, a number of colleagues have pointed me towards one or more of these articles. The arguments made by these authors are of two major types:

1. The appearance of relatively high productivity in manufacturing for the last two or three decades is an illusion due to the overwhelming dominance of productivity in the computer and electronic products (C&EP) sector. As the three papers

dealing with this argument point out, this is due to 'quality-adjustments' in the price deflators of the rapidly evolving products of this sector.
2. US trade imbalances which have grown for some time and have accelerated due to Chinese imports have been a major cause of lost manufacturing jobs in the United States. The post-2000 loss of manufacturing jobs 'coincided' with the dramatic rise in Chinese imports. This is the mostly likely cause of manufacturing job loss.

These arguments will be critically examined in this order, followed by an alternative analysis of manufacturing job loss during the neoliberal era since the early 1980s focusing on the major trends in capitalist turbulence and work intensification.

Productivity and the optical illusion of 'quality-adjusted' value added

Baily and Bosworth (2014), Houseman et al. (2014) and Houseman (2018) are all concerned with showing that productivity cannot explain the massive job loss in manufacturing and that the mystery of lost jobs is solved best by looking at the rise of imports, especially from China. To do away with productivity as a major cause, all three articles argue that the relatively high figures for manufacturing value added and hence productivity for the last two or more decades are an illusion because it is the 'outlier' gains of the C&EP sector that account for virtually all the value added and productivity increases over those years (Baily & Bosworth 2014: 3; Houseman 2018: 2, 11–15; Houseman et al. 2014: 4).

For example, Baily and Bosworth (2014: 6) produce a table showing that while manufacturing value added grew by an average of 2.6% a year from 1987 to 2011, if C&EP is deducted, manufacturing value added for this period falls to 0.6% a year, practically nothing. Value added for C&EP, however, grew by 19.5% a year according to these figures – accounting for virtually all the increase in manufacturing value added for those years. There is a problem here with their periodicity since they include 3 years of the Great Recession and one of the very slow recovery that took hold in 2011. From 2008 through 2011, both value added and productivity collapsed due to the recession. This biased their longer-term figures dramatically downwards (BLS 2018b; Bureau of Economic Analysis (BEA) 2018). Below, we will move the goal post back to 2007 to adjust for the impact of the recession and what happened before and after. It is worth noting here that manufacturing output as measured by the Federal Reserve industrial production index over the period 1987 to 2007 grew by nearly 4% a year on average, though at a somewhat slower than the average rate after 2000 (Council of Economic Advisors 2011: 250). Simple arithmetic tells us that this level of growth accompanied by a decline of 2.4 million production and nonsupervisory workers in the relevant workforce (BLS 2018d) can only be accomplished by increases in productivity.

Ironically, perhaps, the C&EP sector declined somewhat over the period under consideration. In the late 1990s, C&EP accounted for 13% of both manufacturing shipments and value added. By 2006, this had fallen to 10% of value added and 7.8% of shipments. The production and nonsupervisory workforce in this sector also fell by just over a quarter of a million jobs from just over 1 million in 1990 to 752,400 in 2007, declining slightly as a percent of the manufacturing labour force from 7.9% to 7.5%, just as manufacturing productivity was increasing by over 3% a year on average (BLS 2018c, 2018d; Moody 2017a).

The biggest problem, however, is with the 'real' value added figures for C&EP that underlie the table and, indeed, the whole argument presented in all three articles. As Houseman explains, repeating the argument made by Baily and Bosworth, and Houseman et al.,

> The computer industry, in turn, is an outlier and statistical anomaly. Its extraordinary output and productivity growth reflect the way statistical agencies account for improvements in selected products produced in this industry, particularly computers and semiconductors. (Houseman 2018: 2)

What is this 'way statistical agencies account for improvements' in some products? Both the BLS and the BEA employ 'quality' adjustments in their price indexes for some products in an effort to incorporate changes in products that affect consumer welfare or utility. This is known as a 'hedonic' quality adjustment. As the BLS definition of hedonic puts it,

> The use of the word 'hedonic' to describe this technique stems from the word's Greek origins meaning 'of or related to pleasure'. Economists approximate pleasure to the idea of utility – a measure of the relative satisfaction from consumption of goods. (BLS 2018a)

In other words, a hedonic adjustment is meant to take into account the increased consumer satisfaction or utility derived from changing product characteristics assumed to be improvements; for example, faster computers with more capacity. These quality adjustments do not, however, include the quality impact on consumers of environmental, safety or health problems inherent in many products. The Environmental Working Group, for example, cites studies that point towards health risks associated with cell phone radiation. PCs and laptops have related musculoskeletal, vision and repetitive stress problems (Environmental Working Group 2013). These, of course, are 'externalities' rather than product qualities or 'utilities' in the minds of neoclassical economists.

Nor are many C&EP socially neutral. While we may all derive varying degrees of utility from our laptops, the computer-based scanners worn by Amazon warehouse workers that track their movements and pacing hardly bring them pleasure – though they certainly are of utility to Amazon's managers and shareholders. But then, of course, as any neoclassical economist would remind us, it is Amazon, not its employees who are the customers for these devises even though it is the employees who use them. Indeed, computers and their components are powerful weapons in the hands of capital in the daily conflict between workers and bosses (Bridle 2018: 116–117). Is the welfare GPS gives to the driver in an unfamiliar city the same as that UPS derives from tracking its drivers? While smart phones helped launch mass strikes of teachers in West Virginia and other 'red' states, they also allow Facebook, Google and other businesses to 'harvest' our personal information for their own profit and to sell them on to businesses and data brokers who make still more profit (Susskind 2018: 66–67; Fry 2018: 36–37). The idea that there is a universal metric for pleasure or utility in these products is an absurdity, though one consistent with neoclassical mythology. Yet, all these products fit into the quality adjustment for the Computer and Electronics Products of which they are part.

The more common way of determining price changes and inflation in constructing a price index is the matched model used by BLS and BEA and the explicit quality adjustment used in the BLS's Producer Price Index (PPI) in which information on price changes 'can often be provided by its manufacturers'. These are 'generally cost-based' and, hence, evidence based. The authors of an article explaining these various adjustments, who are or were researchers from both the BLS and BEA who generally approve of quality adjustments, nevertheless point out,

> Because the measurement objective of real GDP is economic output, rather than welfare, the Bureau of Labor Statistics believes that cost information is appropriate for adjusting prices in an index whose purpose is to deflate nominal industry revenues to measure real output. (Groshen et al. 2017: 191–192)

Sensible enough. Hedonic measures, however, are not based on regular producer cost or price information, but on estimates of the value of a product's new or changing characteristics to consumers. As political economist Anwar Shaikh describes such quality adjustments, 'The quality-adjusted price approach … has an entirely different purpose: it seeks to define prices so that they refer not to actual commodities but rather to putative "user benefits" associated with these commodities'. Thus, they 'rely on many subjective judgements about the improved quality of new goods' (Shaikh 2016: 811–812). Hedonic adjustments are therefore a hybrid of observed nominal prices and estimated dollar values of new or improved characteristics of a product to consumers.

In the case of products that are assumed to have rapid changes such as computers, semiconductors and related products, these 'quality' adjustments tend to be multiple and frequent and the resulting price indexes extreme. For example, the BLS adjusted consumer price index (CPI 1997 = 100) for all items rose from 100 in December 1997 to 147.7 in August 2015, while that for personal computers and peripherals fell from 100 to 4.2 over that period, a fall of 96%. This would mean that a computer costing $1000 in 1997 and dropping to $500 in 2015 would have ended up with a 'real' 2015 price of $11,904.76, despite the actual selling price falling by half (BLS 2015b). Given that in the real world the actual prices of computers and related products have fallen significantly over the years, this hedonic adjustment clearly has little to do with reality or even consumer experience. Such adjustments have even less to do with actual even conventionally measured production costs, much less the relative amounts of socially necessary labour involved in their production and changing characteristics.

The distance between the average price index of most goods and the quality-adjusted ones is compounded by the fact that only some items undergo hedonic adjustments. Aside from computers and electronic products, clothing (fashions change) and some electrical products, 90% of items by dollar value in both the BLS and BEA price indexes for manufactured goods are still adjusted by cost-based methods (Wasshausen & Moulton 2007: 102, 112). This is the case in the BEA chain price index used by Baily and Bosworth (2014), Houseman et al. (2014) and Houseman (2018) in their comparisons of value added for manufacturing as a whole, on one hand, and computers and electronic products, on the other. So, for example, the BEA chain price index (2009 = 100) for manufacturing as a whole rose from 101.832 in 1997 to 114.738 in 2017, while the index for C&EP fell from 516.722 to 92.709 over that period (BEA 2018). Since a fall in the index means an increase in the 'real' price, that of the C&EP sector soared away from the manufacturing value added or GDP average – presumably on the wings of consumer satisfaction.

This is demonstrated graphically in Figure 6 provided by Houseman in her 2018 article in a line graph based on an index (1977 = 100) in which Private Industries and Manufacturing without computers are represented by straight lines at zero while computers rise sharply from near zero in the mid-1980s to nearly 20,000 in 2016 (Houseman 2018: 36). This contrasts dramatically with the value of shipments of computers and electronic products which rose from $371 billion in 1995 to $511 billion in 2000 and then fell to $364 billion in 2010 and $145 billion in 2017 (US Census Bureau 2018). Much of this drop was due to the falling prices of computers and many electronic products as well as the impact of the recession on demand and the fact that few computers are actually made in the United States anymore. Although briefly mentioned, these actual events do not figure in the calculations or conclusions drawn in the three articles under consideration.

All three articles explicitly note and approve of the fact that the outsized growth of the C&EP sector is due to the quality adjustment. Houseman, for example, writes, 'It should be emphasized that the statistical agencies are correct to adjust prices for improvements in product quality' (Houseman 2018: 12) In approving of quality adjustments they are not mavericks since hedonic adjustments have been an accepted part of 'real' national income accounts calculation by mainstream economists and government agencies since the mid-1980s, despite a good deal of controversy about just how to make the estimates that determine the index (Groshen et al. 2017).

While the concept of hedonics dates back as far as the late 1930s, the development by the BEA of quality-adjusted indexes for computers and peripherals had corporate origins in the mid-1980s. At that time, write two BEA economists, 'BEA collaborated with IBM to develop quality-adjusted price indexes for computers and peripheral equipment. The BEA-IBM price indexes for computers and peripherals were introduced into the national income and products accounts in December 1985'. Other computer-related products such as semiconductors were similarly adjusted later in the 1990s. The vast majority of other manufactured products, however, remain adjusted by older cost-based methods (Wasshausen & Moulton 2007: 98–102, 112).

To get a clearer idea of how these hedonic indexes affect the measure of value added, Tables 1 and 2 show the difference between the nominal and adjusted 'real' value added for manufacturing with and without C&EP. The figures, drawn from the same BEA sources as those used by Houseman and the others, have been divided between the pre– and post–Great Recession decades to more accurately capture the impact of the recession.

A few things stand out. An obvious difference is that C&EP as a percentage of all manufacturing is more or less stable in nominal terms, falling slightly over the whole period, while 'real' value added of this sector grows by almost six times. Nevertheless, by

Table 1. C&EP and manufacturing nominal value-added growth, 1997–2007, 2007–2017 (billions of current dollars).

Industry	1997	2007	Annual ±	2017	Annual ±
Manufacturing	1390.1	1854.3	3.3%	2244.3	1.9%
C&EP	196.3	227.3	1.6%	299.1	2.9%
Manufacturing w/o C&EP	1193.8	1627.0	3.6%	1945.2	1.8%%
C&EP % of Manufacturing	14.1%	12.3%		13.3%	

Source: Bureau of Economic Analysis (BEA) (2018) GDPbyInd_VA_1947-2017-Excell, 18 April 2018. Available at: http://www.bea.gov/sites/default/files/2018-04/GDPbyInd_VA_1947-2017.xlsx.
C&EP: Computer And Electronic Products.

Table 2. C&EP and manufacturing 'real' value-added growth, 1997–2007, 2007–2017 (billions of chained 2009 dollars).

Industry	1997	2007	Annual ±	2017	Annual ±
Manufacturing	1365.1	1924.8	3.7%	1955.8	0.015%
C&EP	37.9	202.6	39.5%	322.6	5.4%
Manufacturing w/o C&EP	1327.2	1722.2	2.7%	1633.2	–0.05%
C&EP % of Manufacturing	2.8%	10.5%		16.5%	

Source: Bureau of Economic Analysis (BEA) (2018) GDPbyInd_VA_1947-2017-Excell, 18 April 2018. Available at: http://www.bea.gov/sites/default/files/2018-04/GDPbyInd_VA_1947-2017.xlsx.
C&EP: Computer And Electronic Products.

either method, there is growth in total manufacturing value added in the 1997–2007 pre-recession period: $559.7 billion in nominal terms and $464.2 when adjusted by the chain index. Furthermore, the rates of growth for manufacturing in these two measures are not that radically different during the decade 1997–2007: 3.3% nominal, 3.7% 'real'. It is, of course, very different for C&EP: 'real' growth of nearly 40.0% a year compared to only 1.6% for nominal C&EP. Things are even more different in the years 2007–2017 as this period is deeply affected by the Great Recession and the slow recovery that followed. The question remains, however, does this phenomenal growth of C&EP in quality-adjusted terms actually eliminate all or most growth of value added and productivity in manufacturing as the authors of the three articles claim even for the pre-recession period of 1997–2007?

There is certainly a difference in the proportion of C&EP in the total growth of manufacturing value added between the quality-adjusted 'real' figure which accounts for 29% of growth and that of the nominal proportion of 6.7%. But this means that even in 'real' terms, 71% of the growth in manufacturing value added comes from that of all the other industries. While this outsized increase in 'real' C&EP would inflate the overall

Table 3. Average annual productivity increases in manufacturing, 1987–2007.

Industry	% change
All Manufacturing	3.6
Computer & Electronic Products	12.5
Primary Metals	3.1
Transportation Equipment	3.2
Textile Mills	3.7
Electrical Equipment	3.2
Household Appliances	4.4
Industrial Machinery	3.2
Metal Forgings & Stampings	3.2
Medical Equipment	3.5
Basic Chemicals	3.6
Soap, Cleaning Compounds, and Toiletries	3.5
Pulp, Paper, and Paperboard	3.1
Animal Food	3.2

Source: Bureau of Labor Statistics (BLS) (2009, 2017).

average manufacturing value added somewhat, it does not affect virtually all the other industries which are still deflated by cost-based methods. Even in 'real' terms, manufacturing minus C&EP grew by $395 billion from 1997 to 2007. In any case, 71% is certainly enough to allow significant productivity growth throughout the manufacturing sector as Table 3 demonstrates for the longer period used by Baily and Bosworth and Houseman et al. with the goal post moved back from 2011 to 2007 before the recession took hold. Bear in mind that these official productivity figures are based on 'real' value added so that C&EP productivity and to a lesser extent that of 'All Manufacturing' are overstated here as well, while the percentage changes in all the other industries included in Table 3 are based almost entirely on cost-adjusted price indexes and are more realistic. In addition to the industries listed there are many more with a respectable average annual productivity increase in the 2.5%–2.9% range.

The dual related conclusions here are that (1) Price indexes constructed with hedonic methods are, in fact, not price indexes at all, but an ideological hybrid that includes subjective estimates of consumer 'utility' that obscure the actual trends in value added and productivity and (2) even with this 'real' adjustment, C&EPs do not totally eclipse value added and productivity growth in other manufacturing industries to the degree the three articles claim. Productivity growth from 1987 to 2007 is enough to partially explain the loss or lack of growth of manufacturing jobs between recessions over those years.

Imports and the China factor

The impact of imports on manufacturing employment is certainly one factor in the loss of so many jobs in the last couple of decades. But is it the major cause of the dramatic decline in these jobs? On this matter, all three of these papers argue that it is primarily the rise of imports that is behind the huge job losses of the two or three decades – above all the jump in imports from China since 2000. Here, despite its importance to these authors, there is no original research or calculation. A few studies are cited by Baily and Bosworth (2014) and Houseman (2018) concerning the impact of Chinese imports, exchange rate appreciation and offshoring of aspects of production. The most serious estimate cited, however, is that by Autor et al. (2013) that, as Houseman (2018) reports, finds 'a quarter of the decline in manufacturing employment from 1990 to 2007 is related to the growth of Chinese imports' (p. 21).

Autor et al. (2013) assess the impact of Chinese imports using 722 'Commuter Zones' based on Census County Business Patterns data. So far so good. But to compare them, they employ a 'general equilibrium' model across the country. Not so good in this turbulent era when businesses move location or fail at high rates unevenly across the country for reasons other than trade. They also employ a 'monopolistic competition model' for some of their measurements (Autor et al. 2013: 2125–2128), a notion that hardly fits today's real global capitalist competition and which eliminates one strong reason why so many businesses fail. The most astounding methodological flaw, however, is the omission of the recessions of the period which receive only a passing footnote at the beginning of the article, but do not appear again in the calculations or analysis of job loss (Autor et al. 2013).

The graph in Figure 1 at the beginning of the article by Autor et al. shows a solid blue line of the proportion of Chinese imports to 'total US spending' rising from 0.6% in 1987 to 4.6% in 2007. A big increase, but still a relatively modest proportion of US spending. Manufacturing employment as a percent of population is represented by a descending dotted red line falling from 12.6% to 8.4% over that period with the two crossing at 2002 (Autor et al. 2013). Why this ratio was used instead of direct figures for total job losses is not clear. In any case, the fall of the employment/population ratio can be largely attributed to the aging population, on one hand, and the long-term fall in the labour force participation rate of prime-age males (25–54 years old), on the other hand, which began to fall sharply in the 1970s and 1980s even before Chinese imports were a factor and, as we will see below, in large part was the result of the loss of manufacturing jobs during the recessions of the neoliberal period (Executive Office of the President of the United States 2016; Toossi 2015: 7).

The two lines in Autor et al.'s Figure 1, however, do not rise and fall in a linear fashion. Rather, the Chinese import penetration ratio shows a sharp acceleration around 2001 partly as a result of China joining the WTO. The manufacturing employment/population ratio, on the contrary, shows accelerated declines around 1990 and 2001, both of these being recession years prior to the acceleration of Chinese imports. The drop in the prime-age male labour force participation rate is graphically presented in the Obama White House's assessment of this decline and follows the same recession-driven pattern, being expressly attributed to the recessions in that report (Executive Office of the President of the United States 2016: 7). As we will see below, it was during these recessions, as well as those of 1980–1983 and 2008–2010, that big drops in manufacturing employment occurred. Given the impact of these recessions and the weak effect of recoveries on employment levels due to rising productivity, it seems a stretch to attribute so much manufacturing job loss to Chinese imports given the relatively small percentage of total US spending over this period they composed even by 2007.

This is not to say that imports, Chinese or otherwise, have no impact on employment, wages and so on. The big job losses in manufacturing in the period of 2000–2007, however, occurred during the recession of 2001–2003 when Chinese imports grew by just half and merchandize imports as a whole actually fell. From 2003 to 2007, even as Chinese imports more than doubled and total imports nearly doubled, there was relatively little job loss among production and nonsupervisory manufacturing workers until the Great Recession of 2008. A lag in the impact of rapidly rising imports, especially those from China, might have pushed some job losses forward into the 2008 recession, but given that Chinese imports were less than 5% of total spending, it is unlikely they accounted for much of the huge job loss of that recession. Perhaps ironically, the biggest loss of jobs from 2000 to 2007 was in C&EP, one of the few industries along with textile, apparel and machinery in which imports did account for major job losses (Autor et al. 2013; BLS 2017; Moody 2017a: 195; US Census Bureau 2001: 802, 2008: 790, 2011: 401, 808, 812).

As always, computation is based on theory, whether or not it is acknowledged or even conscious. As Shaikh writes of neoclassical theory, 'neoclassical economics presents the exchange of equivalents as the central organizing principle of capitalist society, only introducing production as a means of indirect exchange between the present and the future'. Production, however, 'precedes the exchange of products. And it is in production that we confront the constant struggles about wages and the length and intensity of the work' (Shaikh 2016: 9). When this dimension of capitalist competition, with its increase in productivity-enhancing capital and work intensification, is missing, all the mathematics in the world cannot eliminate the distortion of reality inherent in neoclassical assumptions. An alternative analysis that is based primarily on the dynamics of capitalist production, including both economic turbulence and the intensification of labour that underlies productivity growth is presented next.

Real capitalism and manufacturing job loss

This alternative analysis is rooted not in the idealized marketplace of neoclassical economics with its 'general equilibrium' but in the very real and well-documented turbulence of contemporary capitalism, on one hand,[1] and the class conflict over the surplus produced by labour inherent in the system, on the other. Whether one looks at BLS employment figures, the employment/population ratio or the labour force participation rate that underlies it, all show sharp declines during the recessions of the neoliberal era. Behind these drops, of course, are the enormous job losses experienced by manufacturing production and nonsupervisory workers during the four major recessions of the period. Table 4 shows these losses for each of these four major recessions of the period. The total net loss of manufacturing production jobs from 1979 through 2010 equals a massive 6.4 million jobs (BLS 2018d).

In both the 1990–1991 and 2001–2003 recessions, US trade imbalances actually declined somewhat indicating that it was the impact of the recession rather than that of trade that cost the bulk of these huge job losses in those years. Following these recessions,

Table 4. Manufacturing production jobs lost during recessions.

Years[a]	Manufacturing
1979–1982	2,751,000
1990–1991	663,000
2001–2003	2,198,000
2008–2010	1,797,000

Source: Bureau of Labor Statistics (BLS) (2018d).
[a]From January of first year to December of last.

the negative trade balance rose again, but the job losses in manufacturing during the periods between the recessions were relatively small because between 1991 and 1999 and again between 2001 and 2007, domestic production rose despite increased imports and a rising negative trade balance. In the periods 1990–2000 and 2000–2007, productivity in manufacturing rose by 4.1% and 4.7%, respectively, which held job growth between recessions down, while unit labour costs fell (Moody 2017a: 18–19).

To get a better idea of the impact of productivity we can look at the figures for manufacturing value added without C&EP (to eliminate hedonic adjustments) growth in Tables 1 and 2, which show that value added grew by 3.6% a year in nominal and 2.7% in 'real' terms from 1997 to 2007. The manufacturing production workforce minus those in C&EP fell from 11.8 million to 9.2 million over that decade (BLS 2018c). Thus, the annual growth of real value added per production worker in manufacturing without C&EP was 6% a year. This is much higher than the BLS productivity figures in Table 3 which are based on all the hours of all employees including the self-employed, whereas here we include only the number production and nonsupervisory workers who are most likely to include those who produce value, while the value added figure excludes most hedonic adjustments. The fact that overall imports increased significantly in this period no doubt reduced the potential total increase in domestic manufacturing output and value added but given the growth rate of value added achieved by a declining workforce, it is clear that it was productivity that produced the increase in value added (and output), while killing jobs or restraining job growth between recessions.

What is behind this relatively high level of productivity whether measured in official figures as in Table 3 or in the calculation above? Looking at the huge job loss in manufacturing, Houseman (2018) argues that 'studies have failed to uncover a strong relationship between automation and manufacturing job loss during this period' (p. 24). In this, she is more or less right as investment in automation, robotics and so on has been weak and declining for some time (Mishel & Bivens 2017: 8–10; Roberts 2016: 256–257). But automation is not the only source of productivity. Capital investment in general plays an important role in competition and productivity. More specifically, in the last decade or so, investment in types of new technology such as that associated with surveillance and work measurement have enabled degrees of work intensification that underlie a good deal of the productivity increases up to the recession in 2008. On the contrary, her statement that, 'Productivity growth … does not by itself cause employment declines' but 'should lead to inflation-adjusted wages, and higher wages, and … declining prices' which 'stimulates demand for manufactured products', thereby increasing employment is pure neoclassical fantasy (Houseman 2018: 7). As has been shown over and over, wages have stagnated while productivity has increased for nearly four decades (Bivens & Mishel 2015: 2–24; International Labour Organization (ILO) 2014 [2015]: 45–48). What then is driving productivity increases?

The major driving force behind increased labour productivity from the early 1980s to 2007 just before the Great Recession has been capital's aggressive campaign of work intensification. This offensive has included the introduction of lean production methods with their 'constant improvement' in worker performance; the Just-In-Time (JIT) acceleration of the labour process ('management-by-stress') and the pace of supply chain networks; related work intensification programmes such as Total Quality Management that aid in filling in the pores of the work day; alternative work schedules with 10-hour shifts that maximize the productivity curve; the simultaneous introduction of Human Resource Management with its 'performance assessments'; the reduction in break time; and more recently, the many digital and biometric forms of workplace surveillance, work measurement and algorithm-driven work patterns (Moody 2017a: 13–19). Indeed, about 75% of US employers monitor their workers on the job, a practice that covers 80% of employees using computers (Ball 2017: 88; Pauli & Arthur 2011: 49–58). Technology and capital play a role in many of these direct forms of work intensification, to be sure. But it is the intensification of work itself and the elimination of jobs inherent in this process that account for the bulk of productivity increases through the neoliberal era and, hence, the failure of periods of growth to generate higher levels of employment lost during the recessions. In other words, it is class struggle by capital, along with its self-generated turbulence, that are at heart of massive job loss of the neoliberal era.

Resistance to work intensification and austerity appeared to revive in 2018 as rank and file teachers initiated mass strikes in half a dozen Republican-dominated states; thousands of hotel workers struck the nation's largest hotel chain, Marriot, and Chicago's 26 full-service hotels; while healthcare workers continued a wave of strikes that began a number of years earlier (BLS 2019; Moody 2019). Yet, these signs of renewed opposition to the 'enemy at home' occurred in the nation's realm of social reproduction rather than that of goods production. These are jobs that cannot be exported, while immigrants have played an important role in the resistance. But in manufacturing where the exaggerated threat of imports and the foreign 'other' have been given new traction by the Trump Administration and are still a large part of the narrative that emanates from many union leaders with resonance among the members, resistance remains sporadic at best. The new leverage offered by tight JIT production processes and the digitally driven and highly vulnerable supply chains that connect phases of production have yet to be tested in more than a handful of incidences (Moody 2017a: 59–69).

The continued decline of union membership and strikes in manufacturing are obvious results of this failure to confront capital but so is the retreat of so much of the union leadership. This has involved not only granting concessions on wages and benefits, but the surrender of the workplace to management's will – rendering the resistance to work intensification difficult. Indeed, at least since the early 1950s, 'productivity bargaining' in which wage and benefit increases were linked to and thereby limited by productivity gains institutionalized this surrender as a central piece of bureaucratic business unionism in the United States more often than not. The rise of lean production methods and now the spread of the digitally driven workplaces and their connecting supply chains have both compounded matters and made production more vulnerable to concerted worker action. If, however, organized labour remains focused on the foreign 'other' and its imports and immigrants and does not turn its attention to the workplace and the home-grown culprits, it will be difficult to stem the continued decline of the unions let alone organize the millions who live and work under the increasing weight of capital's 'purely despotic' rule (Marx 1990: 450).

Note

1. For various analyses of this turbulence, see Brenner (2006); McNally D (2011); Roberts (2016) and Shaikh (2016).

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