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The China Dashboard

Is China the boogeyman ? 害怕中国?

Did China steal jobs from the US?

Part 3: Technology, not trade, is the main reason for manufacturing job losses

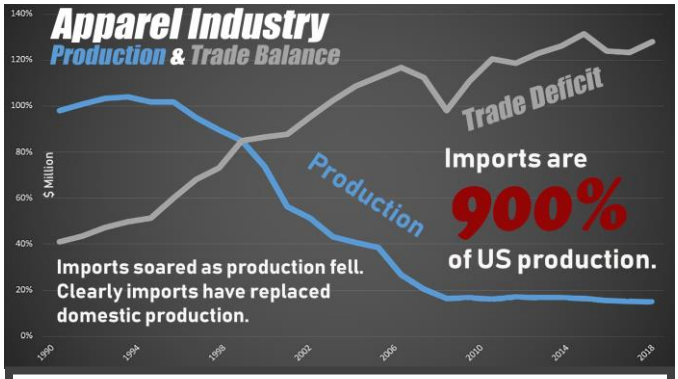
Studies show that most (60-88%) of manufacturing job losses come from technology and productivity gains, not trade. This can actually be seen quite clearly in many industries for which trade is low but job growth is still negative.

Trade vs. Technology: Which is causing job losses?

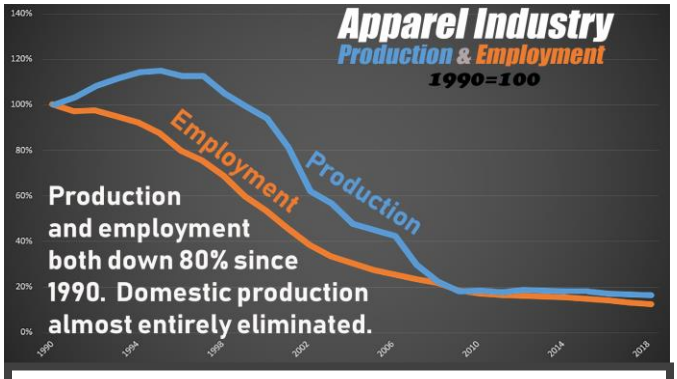
As we explained in Parts 1& 2 of this "Did China steal jobs from the US?" series, there's little doubt that manufacturing jobs are decreasing in every advanced economy. The next question is, what is causing the job losses. The two leading candidates are trade or technology (i.e., increased productivity via automation, etc.). We will examine the data in this part of the series.

Apparel: A clear case of TRADE causing job losses

As the first graph below shows, apparel production has plummeted while imports have soared. The next graph shows that employment fell with production, both down 80% since 1990. With these stats and graphs, it is clear that imports are substituting for US apparel which has led to a loss of manufacturing jobs.



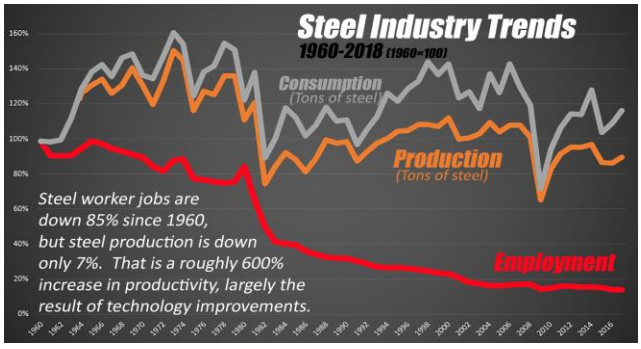
As US domestic production plummeted, imports soared.



Employment plummets along with production.

Steel: A clear case of TECHNOLOGY causing job losses

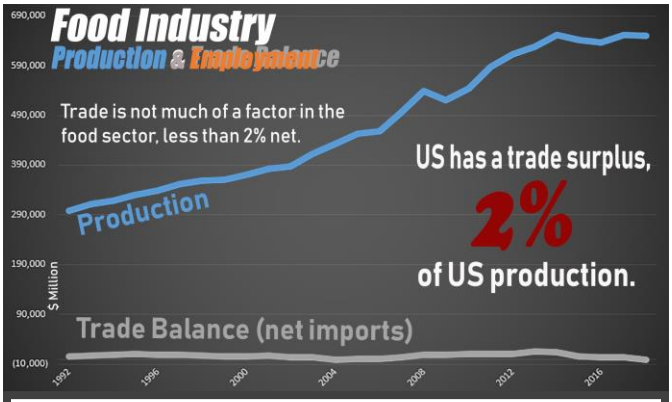
In the graph to the right, "production" isn't in dollar values but in tons of steel, which makes this a technology and productivity analysis only, with no trade or economic influence. Steel industry employment went from 500K in 1960 to roughly 80K today, a decrease of 85%. Yet the US still makes roughly 90% of the steel it made in 1960, which means the steel industry enjoyed a 600% productivity



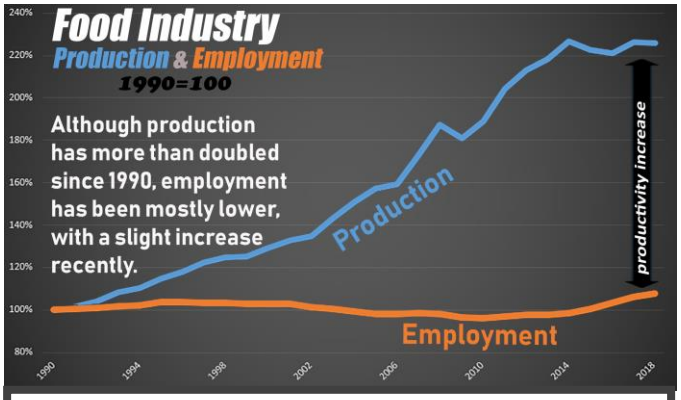
increase. That means more than 400K jobs were lost due solely to technology and productivity improvements, not trade.

More industries like steel: Tech causing job losses

Unlike apparel, in the food industry, trade is a small portion of production. Plus, the US has a trade surplus in food. Yet, despite production more than doubling since 1990, employment hasn't grown. Clearly productivity has increased tremendously in food, another example of technology hindering manufacturing employment.



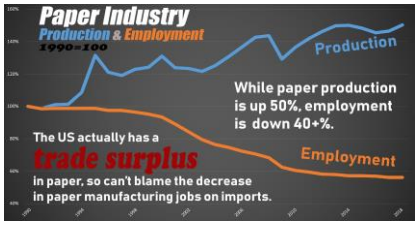
Trade is a relatively small part of the food industry. US has a surplus.

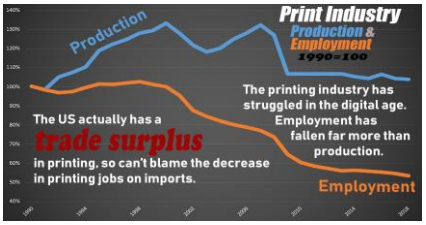


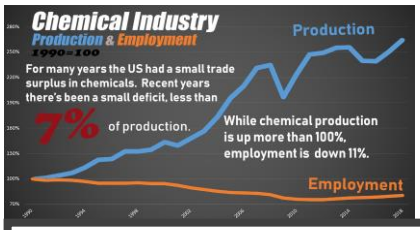
Production doubled, employment barely changed. Productivity surged.

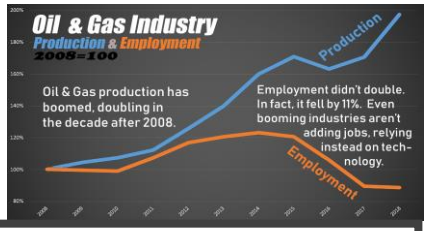
Even booming industries not hiring

Paper, printing and chemicals are all like food in that trade is a relatively minor factor and in some cases the US has a trade surplus. Printing is struggling due to digitization. Paper has grown moderately. Chemical production is way up. Yet all have the same in common—falling employment (blue line rising while orange line falling). Even the oil industry, which doubled production over five years, has actually lost employment. ***Trade can't be blamed for job losses in these industries.***





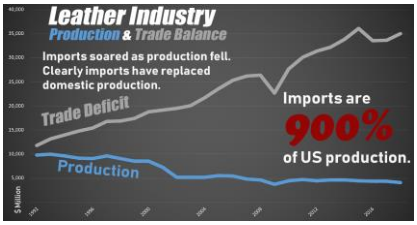


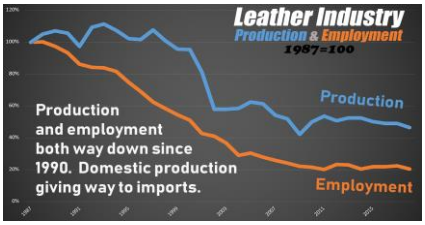


Even industries with rising or booming production, like chemicals and oil, are losing, not adding, jobs.

More industries like apparel: Trade causing job losses

There are also some industries like apparel, where trade is clearly causes job losses. Leather, a related industry, is a good example. But there aren't as many examples trade as there are for technology.





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Crunching the numbers: Technology, not trade, is the main reason for job losses

The industries mentioned here are some of the most clear cut examples, either with very high imports or very low imports. Most other industries are somewhere in the middle—trade plays a larger role, though not as dominant as apparel and leather. For all industries, the pattern relative to employment is the same—generally falling, definitely not rising as fast as production. Economists use more advanced statistical methods to try to determine whether technology or trade is playing a large role in the job losses. Many economic models find that technology accounts for more than 80%, as high as 88%, of the job losses. Other models attempt to account for pricing and valuation factors (like a single microchip being raised in price but still only being one chip). Those models still find that technology accounts for 60% of the job losses. With a range of 60-88%, we can say that most manufacturing job losses are on account of technology and productivity gains, not trade.

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Can such broad, long-term trends really be reversed by trade policy?

In Parts 1, 2 and 3 of this article series, the following points have been made:

- ***On a proportional basis, factory jobs began decreasing in the US 70 years ago (or more)***
- ***On an absolute basis, factory jobs began decreasing in the US 40 years ago (20 years before China joined the WTO)***
- ***The decline in factory jobs is consistent across all advanced economies, even those with trade surpluses***
- ***Most industries aren't hiring factory workers, even industries with booming production***

Given how consistent the trend is over so many decades, countries, and industries, it is difficult to envision that tariffs, renegotiated trade deals, and other trade-related policies can significantly change the course of manufacturing.

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