
14 The distributional implications of US trade liberalisation with China

Justin R Pierce and Peter K Schott¹

Board of Governors of the Federal Reserve System; Yale School of Management

The Ricardian model provides a beautiful illustration of the potential gains from trade. In its simplest form, it assumes workers reallocate seamlessly across industries as countries specialise according to comparative advantage. Subsequent extensions of the model – for example, the Ricardo-Viner model – relax this assumption, allowing for some factors to be permanently ‘fixed’ to their initial industries. In these models, gains from trade may be distributed unequally, and some workers can be made worse off by globalisation.

In recent research, we examined the impact of US trade liberalisation with China on US manufacturing employment (Pierce and Schott 2016a). We think the lingering effects of this trade liberalisation help explain the resurgence of protectionism that sprang up in the US during the 2016 presidential election and which currently hampers efforts towards further multilateral trade liberalisation. We think our research also provides insight into attributes of labour market shocks that may exacerbate distributional losses, and that it highlights areas where additional research might be helpful for developing policies to mitigate these losses.

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US trade liberalisation with China

Our research focused on a specific change in US trade policy towards China that occurred in October 2000, known as the US extension of permanent normal trade relations to China, or PNTR. PNTR was a different sort of trade liberalisation in that it eliminated a major source of uncertainty in US–China trade relations rather than changing the actual US tariff rates applied to Chinese goods. In that respect, it resembles more recent attempts at trade agreements that emphasise increasing predictability in international trade rather than furthering the tariff reductions that have characterised the post-war period.

Before PNTR, US imports from China faced the same generally low import tariff rates as most other US trading partners that were members of the WTO. However, given China’s status as a non-market economy, continued access to those low rates required annual re-approval by the president, which could be blocked by Congress. These renewals were uncontroversial during the 1980s, but their success became much less certain after the Tiananmen Square incident in 1989 and subsequent flare-ups of tension between the US and China during the 1990s. Absent renewal by the president and Congress, US tariffs on most Chinese imports would have increased substantially.

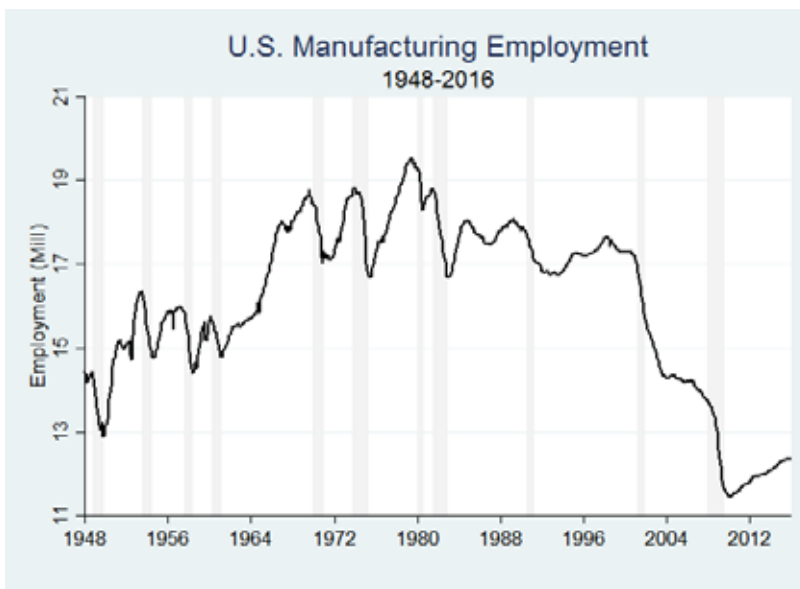
PNTR eliminated the need for annual renewal of China’s access to low import tariff rates by rendering China’s access to these low rates permanent. As a result, and consistent with the large literature on investment under cost uncertainty, PNTR encouraged US and Chinese firms to increase trade between the two countries.

On the US side, PNTR improved firms’ incentives to invest in various activities that might reduce demand for labour in the US, including moving production to China, increasing sourcing from Chinese producers at the expense of US producers, and adopting various sorts of labour-saving technologies to compete with rising imports from China in terms of quality or cost. On the Chinese side, removing tariff-rate uncertainty improved exporters’ incentives to scale up production to serve the US market.

Speed of employment decline

We found that the US extension of PNTR to China can be tied to relative changes in a number of economic and social indicators in the US. First, we find that extension of PNTR in late 2000 coincided with both a substantial increase in US imports from China and, as illustrated in Figure 1, a sharp drop in US manufacturing employment between 2000 and 2003.

Figure 1 US manufacturing employment, 1945-2015



Source: Monthly employment data from the Bureau of Labor Statistics.

Formal empirical analysis revealed that industries more exposed to the reduction in tariff-rate uncertainty exhibited relatively higher increases in imports and relative higher declines in employment, and that the overall relative decline in employment was driven by both increased job destruction and decreased job creation. That is, after 2000, US industries more exposed to PNTR experienced both relative increases in firm deaths and firms shedding workers, and relative declines in firm births and firms hiring workers.

The sharp drop in US manufacturing employment after 2000 differs markedly from the more gradual decline in manufacturing employment that occurred during the prior two decades. Indeed, in the 21 years following the peak in US manufacturing employment in 1979 to just before PNTR, US manufacturing employment fell by 2.3 million (or 12%). In the next four years, from 2000 to 2003, it fell by 2.9 million (or 17%). As can be seen in Figure 1, the post-2000 drop is about as large as the decline in the four years following the start of the Great Recession.

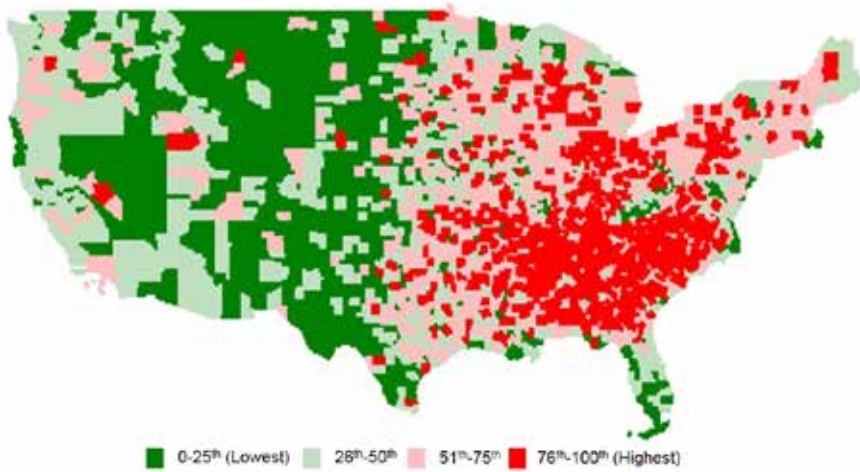
The speed of the post-2000 decline may have exacerbated distributional losses associated with PNTR. That is, to the extent that workers displaced by a change in trade policy are able to transition quickly to employment in other sectors, their earnings losses are likely to be more limited. But if such reallocation is more difficult when a large number of workers needs to relocate simultaneously, the labour market shock may be more disruptive. In that case, reallocation may take longer, displaced workers' earnings may fall more dramatically, and distributional losses may be more severe.

One interesting question that emerges from our analysis is whether the distributional losses in the US associated with China's rapid growth during the 1990s and 2000s would have been smaller if PNTR had been enacted earlier, say in the 1980s. In that case, US and Chinese firms might not have accumulated large levels of pent-up demand for integration that were then released all at once in 2001. In that hypothetical case, integration might have proceeded more gradually, and displaced workers' transitions to other sectors might have been smoother.

Spatial concentration of employment decline

Another important dimension of the employment loss after 2000 is its uneven geographic distribution. Counties with larger shares of employment in industries where the elimination of tariff-rate uncertainty was more binding faced larger employment losses. As shown in Figure 2, exposure to PNTR varied widely across the US, and was particularly high in the southeast. As with the rapidity of the employment decline, this spatial concentration may have magnified distributional losses by making it harder for workers located in the most exposed areas to find alternate employment in a nearby county.

Figure 2 Exposure to elimination of tariff uncertainty with China, by country



Source: Pierce and Schott (2016b).

In fact, our analysis of worker-level earnings data revealed that both manufacturing and non-manufacturing workers located in the most exposed counties experienced similar relative earnings declines, and that these relative declines were concentrated among workers with the lowest levels of education (Pierce et al. 2017). These relative declines among both manufacturing and non-manufacturing workers suggest workers faced substantial frictions in moving to other areas of the country where employment was rising. Our evidence of such frictions here is consistent with findings of similar frictions by researchers examining other changes in trade policy, such as NAFTA (Hakobian and McClaren 2016, Caliendo 2015).

Broader impact

A growing body of research suggests that distributional losses associated with PNTR extend beyond employment and wages. David Autor and colleagues, for example, show that regions experiencing greater import competition from China exhibit declining labour force participation as well as increased take-up of social welfare benefits such as those associated with disability (Autor et al. 2013). Other researchers have found links between exposure to Chinese imports and relative increases in crime (Che and Xu

2016), relative increases in household debt (Barrot et al. 2017), relative declines in the provision of public goods (Feler and Senses 2017), and relative declines in marriage rates (Autor et al. 2017).

These consequences also carry over to health. An influential recent paper by Anne Case and Angus Deaton (2015), for example, documents a striking increase in ‘deaths of despair’ – suicides, drug poisonings and alcohol-related liver disease – among middle-aged whites. In our own research (Pierce and Schott 2017), we find that counties’ exposure to PNTR is associated with long-lasting relative increases in these deaths of despair, and that these relative increases are concentrated among working-age whites, especially white males. This finding is eerily reminiscent of earlier research by Sullivan and von Wachter (2009) which finds that high-tenure workers displaced as part of a mass layoffs in Pennsylvania during the 1980s experience a sharp increase in their probability of death.

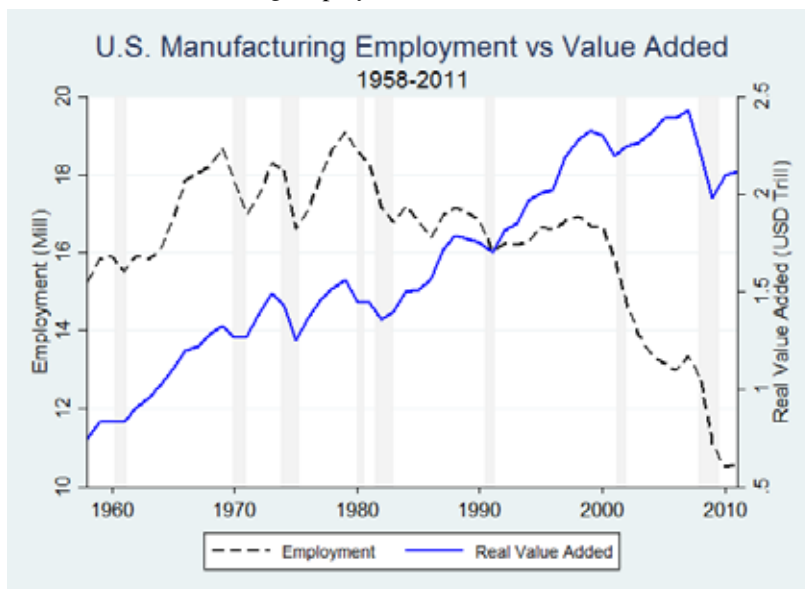
While researchers have linked increases in these causes of death to other labour market shocks, most commonly to downturns in the business cycle, the magnitudes we find with respect to PNTR are much larger. One explanation for the greater magnitudes we find, related to an earlier point, is the severity of the labour market shock induced by PNTR, and its long-lasting impact in terms of increased unemployment rates and decreased labour force participation. An open question is the extent to which the wider disruption caused by these deaths, as well as the likely wider prevalence of declining mental health and drug abuse they suggest, also affect the labour market outcomes of displaced workers.

Manufacturing is not disappearing

It is important to keep in mind that the US manufacturing sector is not disappearing, and that trade liberalisation with China has been found to benefit the US as a whole (Amiti et al. 2017, Handley and Limao 2016). One indication of these benefits is provided in Figure 3, which shows that US manufacturing value added continued to grow at more or less the same post-war pace after 2000, even as manufacturing employment fell so substantially. This large increase in labour productivity reflects a reallocation of US manufacturing activity towards more skill- and capital-intensive industries where the

US has comparative advantage, as well as changes in technology that allow firms to substitute capital for labour.

Figure 3 US manufacturing employment versus value added, 1958-2011



Source: NBER-CES Manufacturing Industry Database.

Whither policy?

A challenge for policymakers, of course, is to figure out how the benefits of international trade can be broadly shared throughout the economy. Though it is common for trade economists to promote education as the solution to this problem, development of appropriate policy responses along this line is hampered by a lack of research into the specific frictions workers face in moving between industries and regions.

An apparel worker displaced by trade liberalisation in the southeastern US, for example, might have sought employment in the growing oil and gas industry in Wyoming, but the data suggest that such movements are relatively rare. Is this lack of movement due to an information asymmetry? In other words, do workers in the south-east not know of job opportunities in other industries in other parts of the country? Or do displaced workers in the southeast know about these opportunities, but face credit constraints hampering

their ability to finance a move or acquire the skills needed to make the transition? Or, is such credit available, but workers are inhibited from taking the opportunity because such moves are risky, and there is no practical way to insure against this risk? Or, perhaps, the limiting factor is the lack of nearby educational institutions at which human capital can be accumulated?

To figure out the answers to such questions, we think labour and international trade economists might try to follow in the footsteps of economists in other fields by devising experiments to identify the factors that are most important in inhibiting worker reallocation, as well as the remedies that might be most effective in mitigating them. Such experiments would no doubt be very expensive to fund, but likely cost effective in the long run.

Moreover, we think the lessons learned from such experiments will be useful going forward, as US labour markets adjust to shocks associated with the implementation of new technologies such as robotics and artificial intelligence.

For example, while industrial robots are already in widespread use in automobile production, their cost-effectiveness in other industries, such as furniture, is estimated to be five to ten years away. Once they become cost effective in furniture, employment in that geographically concentrated industry likely will fall, perhaps rapidly. And, though the number of workers involved in that particular industry might be small compared to the job losses in manufacturing displayed in Figure 1, it is just one of the industries, both inside and outside manufacturing, that might be disrupted.

Investing in research now to learn more about how to address these types of shocks could help preserve the gains from trade that were famously articulated by Ricardo by ensuring that they are broadly shared.

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About the authors

Justin R. Pierce is a Principal Economist at the Board of Governors of the Federal Reserve System. His research focuses on the implications of international trade for U.S. firms and regions. His work has been published in academic journals including *American Economic Review* and the *Journal of International Economics*. Prior to beginning his graduate studies, he worked in the private sector advising domestic and foreign firms regarding antidumping and safeguard investigations. He holds a Ph.D. in economics from Georgetown University.

Peter K. Schott is Professor of Economics at the Yale School of Management, Research Associate at the National Bureau of Economic Research and Special-Sworn-Status researcher at the U.S. Census Bureau. His research focuses on how countries, firms and workers react to globalization. Recent papers examine the decline of U.S. manufacturing employment after China joined the WTO, the misallocation of quota licenses by the Chinese government under the global Multi-Fiber Arrangement, and how to measure changes in countries’ export quality over time. His research has appeared in various academic and other outlets, including *The New Yorker*, *The Economist*, *The New York Times*, *The Wall Street Journal* and the *Harvard Business Review*. Before joining Yale’s faculty, he worked as a commercial banker for Sumitomo Trust & Banking Co., Ltd. in New York and Los Angeles and received a Master’s Degree in political science and a Ph.D. in management from UCLA.