

# The Changing Landscape of International Trade: The Distributional Implications of U.S. Trade Liberalization with China

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## **Overview**

In recent research, Justin Pierce and I examine the impact of U.S. trade liberalization with China on U.S. manufacturing (Pierce and Schott 2016). We think the lingering effects of this trade liberalization help explain the resurgence of protectionism that sprang up in the United States during the 2016 presidential election, and which currently hampers efforts toward further trade liberalization, both in the United States and abroad. We think our research also provides insight into attributes of labor 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.

## **I. Description of Trade Liberalization**

Our research focuses on a specific change in U.S. trade policy towards China that occurred in October 2000, known as the U.S. extension of Permanent Normal Trade Relations to China, or PNTR. PNTR was a different sort of trade liberalization in that it eliminated a major source of uncertainty in U.S.-China trade relations rather than change the actual U.S. tariff rates applied to Chinese goods. In that respect, it resembles more recent attempts at trade agreements that emphasize increasing predictability in international trade than

on lowering import tariffs, which have dropped considerably during the postwar period.

Before PNTR, U.S. imports from China faced the same, generally low import tariff rates as most other U.S. trading partners that were members of the World Trade Organization. However, given China's status as a nonmarket 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 United States and China during the 1990s. Absent renewal by the president and Congress, U.S. tariffs on most Chinese imports would have increased substantially.

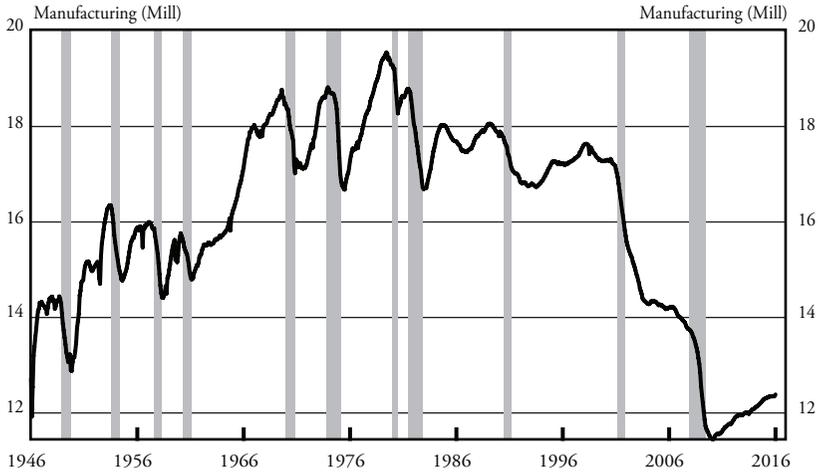
PNTR eliminated the need for annual renewal of China's access to low import tariff rates by rendering China's access to these low tariff rates permanent. As a result, and consistent with the large literature on investment under cost uncertainty, PNTR encouraged U.S. and Chinese firms to increase trade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

On the U.S. side, PNTR improved firms' incentives to invest in various activities that might reduce demand for labor in the United States, including moving production to China, increasing sourcing from Chinese producers at the expense of U.S. producers, and adopting various sorts of labor-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 invest in scaling up production to serve the U.S. market.

## **II. Speed of Employment Decline**

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

**Chart 1**  
**U.S. Manufacturing Employment, 1945-2015**



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

Formal empirical analysis reveals that both the rise in imports and the decline in employment shown in Chart 1 are more substantial in industries more exposed to the reduction in tariff rate uncertainty, and that the overall decline in employment was driven by both increased job destruction and decreased job creation. That is, after 2000, U.S. industries more exposed to PNTR experienced both an increase in firm deaths and firms shedding workers, and a decline in firm births and firms hiring workers.

The sharp drop in U.S. 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 U.S. manufacturing employment in 1979 to just before PNTR, U.S. manufacturing employment fell 2.3 million (or 12 percent). In the next four years, from 2000 to 2003, it fell 2.9 million (or 17 percent). As you can see in the chart, the post-2000 drop is about as large as the decline in the first four years of the Great Recession.

The speed of the post-2000 decline likely 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, (i.e., if there are decreasing returns to scale in reallocation), the labor 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.

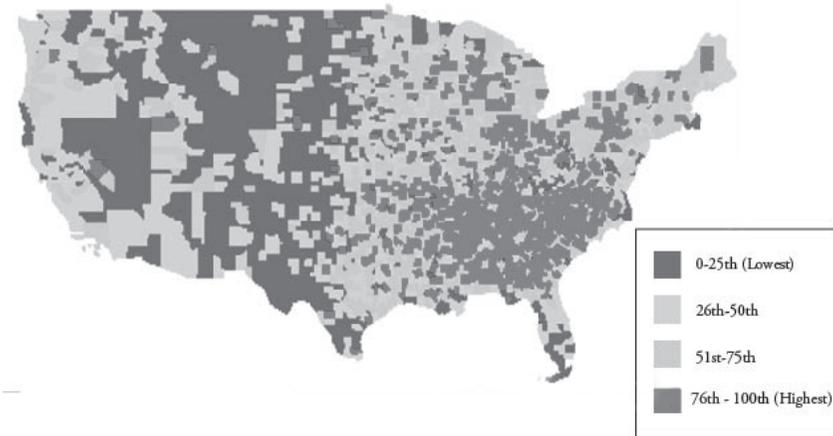
One interesting question that emerges from our analysis is whether the distributional losses in the United States associated with China's rapid growth during the 1990s and 2000s would have been smaller if PNTR had been enacted earlier, say in the 1980s. In that case, U.S. and Chinese firms might not 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.

### **III. 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 Map 1, exposure to PNTR varied widely across the United States, 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.

In fact, our analysis of worker-level earnings data reveals that both manufacturing and non-manufacturing workers located in the most exposed counties experienced similar earnings declines, and that these declines were concentrated among workers with the lowest levels of education (Pierce, Schott and Tello-Trillo 2017). These 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 the

**Map 1**  
**Exposure to Elimination of Tariff Uncertainty with China\***



\*By county

Source: Pierce and Schott (2016).

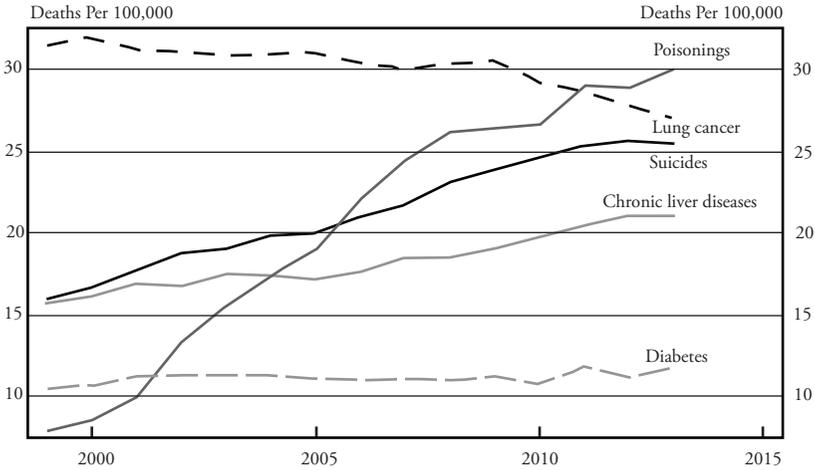
North American Free Trade Agreement (NAFTA) (Hakobian and McClaren 2016).

#### **IV. Broader Impact**

A growing body of research suggests that distributional losses associated with PNTR extend beyond employment and wages. David Dorn and his colleagues (Autor, Dorn and Hanson 2013), for example, show that regions experiencing greater import competition from China exhibit declining labor force participation as well as increased take-up of social welfare benefits such as disability. 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 2016) 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 so-called “deaths of despair”—suicides, drug poisonings and alcohol-related liver disease—among middle-aged whites. The striking post-2000 trends in these death rates are summarized in Chart 2, which is taken from Case and Deaton’s paper and compares them to two benchmarks, mortality due to lung cancer and diabetes.

**Chart 2**  
**Death Rates\***



\*Whites 45-54

Source: Case and Deaton (2015).

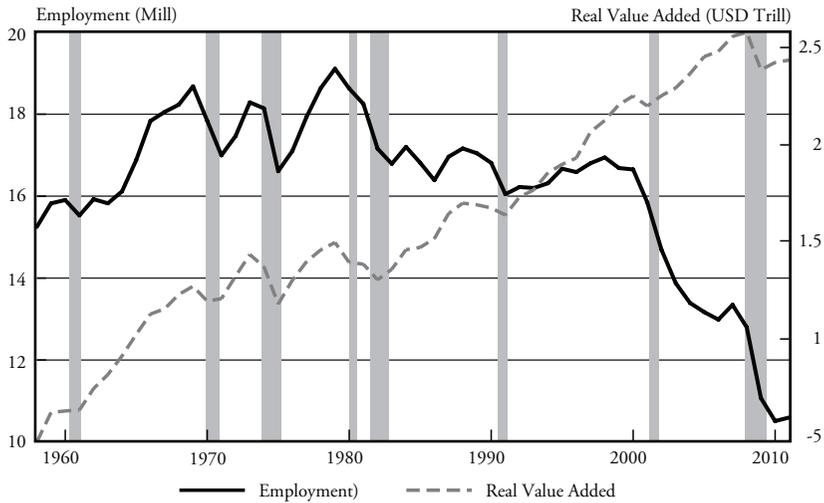
In our own research (Pierce and Schott 2017), we find that countries' exposure to PNTR is associated with long-lasting relative increases in these deaths of despair, and that these increases are concentrated among working-age whites, especially white males.

While researchers have linked increases in these causes of death to other labor 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 a point I raised earlier, is the severity of the labor market shock induced by PNTR, and its long-lasting impact in terms of increased unemployment rates and decreased labor 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 labor market outcomes of displaced workers.

## **V. Manufacturing Is Not Disappearing**

Although my comments so far have focused on the decline of manufacturing employment, it is important to keep in mind that U.S. manufacturing is not disappearing, and that trade liberalization has with China has been found to benefit the United States as a whole

**Chart 3**  
**U.S. Manufacturing Employment vs. Value Added, 1958-2011**



Source: NBER-CES Manufacturing Industry Database.

(Amiti and Feenstra 2017, Handley and Limao 2016). One suggestion of these benefits is provided in Chart 3, which shows that U.S. manufacturing value added continued to grow at more or less the same postwar pace after 2000, even as manufacturing employment fell so substantially. This large increase in labor productivity reflects a reallocation of U.S. manufacturing activity towards more skill- and capital intensive industries where the U.S. has comparative advantage as well as changes in technology which allow firms to substitute capital for labor.

## VI. Whither Policy?

The challenge for policymakers, of course, is to figure out how to ensure that all workers share in the benefits of international trade. Though it is common for trade economists to promote education as the solution to this problem, I think that 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 liberalization in the southeastern United States, for example, might have sought employment

in the growing oil and gas industry here in Wyoming, but the data suggest that such movements are relatively rare. Is this lack of movement due to an information asymmetry, i.e., workers in the southeast do 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 they 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 I think labor 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, I think the lessons learned from such experiments will be useful going forward, as U.S. labor 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 10 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 displayed in Chart 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 in the future seems prudent.

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