

Dustmann, Christian

**Working Paper**

## Trade, Labor Markets, and the China Shock: What Can Be Learned from the German Experience?

CReAM Discussion Paper Series, No. 12/21

**Provided in Cooperation with:**

Rockwool Foundation Berlin (RFBerlin)

*Suggested Citation:* Dustmann, Christian (2021) : Trade, Labor Markets, and the China Shock: What Can Be Learned from the German Experience?, CReAM Discussion Paper Series, No. 12/21, Centre for Research & Analysis of Migration (CReAM), Department of Economics, University College London, London

This Version is available at:

<https://hdl.handle.net/10419/295645>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



# CREAM

**Centre for Research &  
Analysis of Migration**

## Discussion Paper Series

CDP 12/21

▶ **Trade, Labor Markets, and the China Shock:  
What Can Be Learned from the German Experience?**

▶ Christian Dustmann

Centre for Research and Analysis of Migration  
Department of Economics, University College London  
Drayton House, 30 Gordon Street, London WC1H 0AX

[www.cream-migration.org](http://www.cream-migration.org)

# Trade, Labor Markets, and the China Shock: What Can Be Learned from the German Experience?

Christian Dustmann<sup>1</sup>

## Abstract

**Abstract:** A number of recent works have shown that the substantial increase in imports to the United States from China over recent decades led to large but highly concentrated negative labor market outcomes for those workers most exposed to these imports. On the other hand, such substantially negative effects were largely absent in Germany, the world's fourth-largest economy. This paper discusses aspects that likely contribute to explaining these differences: the German industry structure, its nature of industrial relations, as well as the ability to and willingness of workers to retrain. Moreover, with the China shock being in large part over, any future shocks will most likely look quite different. It is unlikely that the economic shocks of the future will affect the same workers, in the same ways, as the China shock did. Therefore, by focusing the policy discussion on trade policy exclusively, we may overlook other looming challenges. Instead, it may be more fruitful to discuss how to design industrial policies, labor market policies, and education and training policies so that modern economies can adapt flexibly to a range of possible shocks.

JEL-Classification: F14, F16, F66

Keywords: Trade, Inequality, Germany, Industrial Relations, Vocational Training

---

<sup>1</sup> Department of Economics and Centre for Research and Analysis of Migration (CReAM), University College London. A version of this paper has been published in “Combatting Inequality”, Olivier Blanchard and Dani Rodrik (ed.), MIT Press, Cambridge (US), 2021. I am very grateful to Stan DeRuiter for many excellent comments.

## **1. Introduction**

Trade creates net benefits for consumers and producers alike and raises GDP (see, among many others, Romer and Frankel 1999; Alcala and Ciccone 2004; Samuelson 1962). However, it also has distributional effects. Evidence from the integration of China into the global economy indicates that detrimental effects of trade were concentrated among specific groups of workers, predominantly those who worked in industries that compete with imported goods (for the United States, see Autor, Dorn, and Hanson 2013; Pierce and Schott 2016; for Germany, see Dauth, Findeisen, and Südekum 2014).

One way to limit the distributional effects of trade on workers would be to simply tax it out of existence via high tariffs on imports. This “solution” is sometimes propagated by politicians,<sup>i</sup> but certainly isn’t a policy many economists would agree with. Another approach is to continue reaping the benefits from trade but to ensure that those in danger of losing out are appropriately prepared to fend off any negative consequences and/or are appropriately compensated.

Here I want to focus on the second point. To do that, I would like to propose some insights based on the German experience, which was different from that of the United States in many respects and address the issue from the perspective of a labor economist.

## **2. Background**

A number of recent works have shown that the substantial increase in imports to the United States from China in recent decades led to large but highly concentrated negative labor market outcomes for those workers most exposed to these imports (Autor, Dorn, and Hanson 2013; Pierce and Schott 2016). While US exports grew as well during this period, the change in export flows was much smaller and thus not able to offset the negative import effects for the workers

most harmed.<sup>ii</sup> A key question that arises is whether this experience has been repeated in other industrialized countries.

Germany, the world's fourth-largest economy, is an interesting case. While the United States had a large and growing trade deficit, Germany had an account surplus and relatively balanced trade with China (Dauth, Findeisen, and Südekum 2017). Its annual trade balance with China increased by about \$36 billion from 2000 to 2014, while the US trade balance decreased by \$196 billion during the same period, according to data from the World Input Output Database (Timmer et al. 2014). That happened despite the fact that Germany was not only affected by the "China shock" but experienced a twin shock, with large increases in imports from emerging economies in Eastern Europe and threats in manufacturing industries of outsourcing to these economies from the early 1990s onward. The value of German goods imports from China grew from \$8.34 billion in 1993 to \$103.33 billion in 2015, while imports from Eastern European countries grew from \$23.42 billion in 1993 to \$188.54 billion in 2015, according to UN Comtrade data (see United Nations International Labour Organization, 2019; United Nations Statistics Division, 2019).

Despite these large import shocks, it is fair to say that Germany largely benefited from trade with China and Eastern Europe, with little evidence of overall negative effects on its labor market (Dauth, Findeisen, and Südekum, 2014). That does not mean that there were no losers, as illustrated, for example, by Klein, Moser, and Urban (2010), Dauth, Findeisen, and Südekum (2021), and others. However, the large negative effects that certain workers in more import-exposed US labor markets experienced because of the China shock were largely absent from the German experience. Moreover, some workers saw significant gains as a result of rising export exposure not only to China but also to Eastern Europe. Dauth, Findeisen, and Südekum (2021) find that workers in highly export-exposed industries saw gains both at their original job and through switching to other firms within the same industry, the latter channel being

especially important for high-skilled workers. We find corroborating evidence in preliminary work illustrating that the positive effects of these export shocks extended up the production chain to intermediate industries (de Ruijter and Dustmann 2019). This amplification of positive export shocks came through both Germany's and other countries' increased exports to China and Eastern Europe. Manufacturing employment, the big loser from increased trade with China in the United States, was a net beneficiary in Germany. While manufacturing employment declined by about 10% from 2000 to 2018 in Germany, much in line with an ongoing shift toward service industries throughout developed countries and labor-saving technological change, manufacturing employment dropped by over 23% in the United States during the same period, according to data from the United Nations International Labor Organization (2019). Also, trade with China has not been identified as a negative factor for Germany in public debate, again unlike in the United States.<sup>iii</sup> Understanding the reasons for these differences may be a key ingredient in preparing for future challenges to the labor market, be they from future trade shocks, technology shocks, or immigration.

### **3. What Makes Germany Different?**

Thus, the same trade shock had apparently opposite effects on two highly industrialized open economies, Germany and the United States, with Germany sustaining balanced trade accounts with China while the United States experienced a large and increasing trade deficit. There are potentially four aspects that contribute to explaining these differences.

#### **3.1 The German Industry Structure**

The first important factor is Germany's industry structure, being highly competitive in the production of goods demanded by China's expanding industrial sector as well as in high-end automobiles for China's increasingly wealthy consumers, while benefiting from imports of upstream Chinese goods that reduce costs of production and enhance German competitiveness.

Hardly any research has looked into changes in labor market outcomes for countries outside the United States resulting from the production chain effects of China's growth. De Ruijter and Dustmann (2019) find that the effects of growth in Chinese (and Eastern European) demand and productive capacity led to significantly increased labor demand for German workers in both the manufacturing and services sectors. While direct changes in trade flows significantly increased demand for workers in the manufacturing sector, upstream effects were nearly as large. Changes in labor demand for service workers were nearly as large (in absolute terms) as those for manufacturing workers, but the effect came almost exclusively via upstream effects. Moreover, and in contrast to the United States, which has long been a more insular country economically, we find that Germany greatly benefits from greater economic integration with its neighbors and those farther afield. Exports from third countries to China drove increased demand for German workers via increased demand for German intermediate inputs.

### **3.2 Industrial Relations in Germany**

Furthermore, the trade shock with China was also felt differently in Germany than in its industrialized continental European neighbors, such as France (Malgouyres 2017) and Italy (Federico 2014), which were more negatively affected. One important contributor to these differences lies in more flexible industrial relations in Germany, which are set outside the policy domain. Other European countries with more rigid labor market regulations saw firms struggle in the face of import competition (for an excellent example in Portugal, see Branstetter et al. 2019). In the late 1990s and early the next decade, German industry responded more flexibly to trade challenges first from Eastern Europe and then from China through downward adjustment of wages, in particular at the lower end of the wage distribution. This became possible partly through the opening up of region- and industry-wide wage agreements for firms that were under particular pressure, where new agreements were then negotiated at the firm level between employers, unions, and work councils. While this led to a widening of the wage

gap at the low end of the wage distribution from the mid-1990s onward (see Dustmann, Ludsteck, and Schoenberg 2009), it also helped the competitiveness of German industry and kept production and jobs in the country (see Dustmann et al. 2014; see also Baumgarten and Lehwald 2019, who demonstrate that flexibility).

### **3.3 Firms' Ability to Retrain Workers**

Moreover, Germany's industrial relations and vocational education system are likely to have helped it respond to the trade shock differently than the United States. This different response may have had two main sources: better preparedness and willingness of firms to retrain workers, and better preparedness of the workforce to reskill and upskill. This is illustrated in a slightly different context in a recent paper by Battisti, Dustmann, and Schönberg (2019) on the effects of technological and organizational change (T&O) on workers. They show that although T&O reduces firm demand and eliminates routine-task jobs relative to abstract-task jobs, affected workers who held these jobs faced no higher probability of nonemployment or lower wage growth than unaffected workers. Rather, firms that adopt T&O play an important and active role in curtailing its potentially harmful effects by offering affected workers retraining opportunities to upgrade to jobs that are more abstract. Firms thus seem to play an active role in ameliorating the possibly harmful effects of T&O. Negative employment effects appear only for workers older than 55, regardless of educational background. A very interesting aspect is that retraining effects are largest for workers in firms that run large apprenticeship training programs and have strong union representation. Thus, what seems essential here is that firms already have the "technology" in place to retrain and upskill workers—which is the case for firms that have training programs in place to train apprentices. Moreover, unions in Germany strongly insist on retraining activities, and firing workers in firms with high levels of union representation is generally more costly. This reinforces an important point: it is worthwhile for firms to retrain workers if the alternative of firing them and hiring better-skilled workers

induces higher costs.

### **3.4 Workers' Ability and Willingness to Retrain**

Another key aspect is how prepared workers are to absorb shocks induced by trade or technology. If occupational skills are highly specific and tailored only to very particular production processes (particularly if acquired in a learning-by-doing way), it may be difficult for workers to be reskilled, as the complementary understanding that supports such skill transformation can be lacking. For instance, for workers employed in the toolmaking industry, knowledge about supportive IT technology, physical properties of materials, and more general insight into production chains will help when reskilling and upskilling. Thus, occupational training that combines on the job training with more fundamental occupation-specific and academic knowledge will add considerable flexibility to retraining possibilities, in contrast to forms of on the job learning where workers acquire skills for only a very specific set of occupational tasks. This increased aptitude for retraining can facilitate and ease workers' switches from import-affected industries to export-oriented industries within the same or a similar occupation group.

The German apprenticeship system provides occupation-specific knowledge acquisition that may help workers respond flexibly to shocks in the future by preparing them for particular occupations through a combination of workplace-based occupation-specific general knowledge and school-based abstract and academic skills (see Dustmann and Schönberg 2012). A broader understanding of occupation-specific production processes therefore helps support the upgrade of skills that involve new technologies. Thus, while for instance the trade shocks of the 1990s and the next decade may have led to the manufacturing of simple tools being delegated to Chinese or Eastern European producers, manufacturing of precision tools may have experienced new export opportunities. Cheaper upstream imports and new export markets support production, while workers' broader skill base facilitated switching from the production

of standard tools to the production of precision tools.

A further important aspect of the German apprenticeship training system is that it develops a wide range of inherent abilities, such as creative skills and manual abilities, talents that may go wasted in an education system focused solely on the development of academic talent. Consequently, it raises the productivity of a far larger pool of workers and provides career opportunities for workers whose poor academic abilities would otherwise restrict them to poorly paid and volatile employment opportunities. Moreover, at the level of the economy, the development of nonacademic skills creates comparative advantage in the production of goods that require such inputs. Thus, broad occupation-related training programs, combined with opportunities for lifelong skill development and possibilities for upskilling and reskilling, seem like crucial ingredients for preparing workers for labor market shocks from trade, technology, or migration.

#### **4. Discussion and Conclusions**

The China shock is in large part over: trade balances have leveled off since around 2014, and there are signs that China's economic growth is weakening and that its economy is increasingly oriented domestically. Any future shocks will most likely look quite different from the recent China shock and may emanate from a different region. India and Southeast Asia are already exporting significantly more than in the past, while Africa's population of over 1.2 billion, projected by the United Nations to more than double to 2.5 billion by 2050, means that it will eventually be a significant economic force as well. Future shocks may also be of an entirely different character: cheaper transportation and global communication means that large-scale migration is more feasible than ever before; automation of production, including artificial intelligence (AI), has significant economic promise but also presents significant peril; and the full nature of the coming climate change shocks is not yet apparent. It is unlikely that the economic shocks of the future will affect the same workers, in the same ways, as the China

shock did. For that reason, by focusing the policy discussion on trade policy exclusively, we may overlook other looming challenges. Instead, it may be more fruitful to discuss how to design industrial policies, labor market policies, and education and training policies so that modern economies can adapt flexibly to a range of possible shocks. These policies should emphasize improved worker-firm relationships and firm-based training, so that countries have flexible workforces that can reskill and upskill in response to changing economic landscapes. In this way, countries can ensure that labor markets are resilient while still remaining competitive.

## References

- Alcala, Francisco, and Antonio Ciccone. 2004. "Trade and Productivity." *Quarterly Journal of Economics* 119(2), 613–646.
- Autor, David H., David Dorn, and Gordon H. Hanson. 2013. "The China Syndrome: Local Labor Market Effects of Import Competition in the United States." *American Economic Review* 103(6): 2121–2168.
- Battisti, Michele, Christian Dustmann, and Uta Schönberg. 2019. "Technological and Organizational Change and the Careers of Workers," mimeo, University College London.
- Baumgarten, Daniel & Lehwald, Sybille. 2019. "Trade Exposure and the Decline in Collective Bargaining: Evidence from Germany," CESifo Working Paper Series 7754, CESifo Group Munich.
- Branstetter, Lee G., Brian K. Kovak, Jacqueline Mauro, and Ana Venancio. 2019. "The China Shock and Employment in Portuguese Firms." NBER Working Paper No w26252, National Bureau of Economic Research, Cambridge, MA.
- Dauth, Wolfgang, Sebastian Findeisen, and Jens Südekum. 2014. "The Rise of the East and the Far East: German Labor Markets and Trade Integration." *Journal of the European Economic Association*. 12(6), 1643-1675.
- Dauth, Wolfgang, Sebastian Findeisen, and Jens Südekum. 2017. "Trade and Manufacturing Jobs in Germany." *AEA Papers and Proceedings*. 107(5), 337-42.
- Dauth, Wolfgang, Sebastian Findeisen, and Jens Südekum. 2021. "Adjusting to Globalization in Germany." *Journal of Labor Economics*. 39(1), 263-302

- de Ruijter, Stan, and Christian Dustmann. Forthcoming. “Imports and Exports: Effects on Labor Markets throughout the Production Chain.” mimeo, University College London
- Dustmann, Christian, Bernd Fitzenberger, Uta Schönberg, and Alexandra Spitz-Oener. 2014. “From Sick Man of Europe to Economic Superstar: Germany’s Resurgent Economy.” *Journal of Economic Perspectives* 28(1) 167–188.
- Dustmann, Christian, Johannes Ludsteck, and Uta Schönberg. 2009. “Revisiting the German Wage Structure.” *Quarterly Journal of Economics* 124(2), 843–881.
- Dustmann and Schönberg. 2012. “What makes Firm-Based Vocational Training Schemes Successful? The Role of Commitment.” *American Economic Journal: Applied Economics* 4(3), 36-61.
- Federico, Stefano. 2014. “Industry Dynamics and Competition from Low-Wage Countries: Evidence on Italy.” *Oxford Bulletin of Economics and Statistics*. 76(3), 389-410.
- Feenstra, Robert C., Hong Ma, and Yuan Xu. 2019. “US Exports and Employment.” *Journal of International Economics*. 120, 46-58
- Feigenbaum, J., & Hall, A. 2015. How Legislators Respond to Localized Economic Shocks: Evidence from Chinese Import Competition. *The Journal of Politics*, 77(4), 1012-1030.
- Klein, Michael W., Christoph Moser, and Dieter M. Urban. 2010. “The Contribution of Trade to Wage Inequality: The Role of Skill, Gender, and Nationality.” NBER Working Paper, No. w15985 , National Bureau of Economic Research, Cambridge, MA.
- Li, Chunding, Jing Wang, and John Whalley. 2019. “Trade Protectionism and US Manufacturing Employment.” NBER Working Paperw25860, National Bureau of Economic Research, Cambridge, MA.
- Malgouyres, Clément. 2017. “The Impact of Chinese Import Competition on the Local Structure of Employment and Wages: Evidence from France.” *Journal of Regional Science*. 57(3), 411-441.
- Pierce, Justin R., and Peter K. Schott. 2016. “The Surprisingly Swift Decline of US Manufacturing Employment.” *American Economic Review* 106(7): 1632–1662.
- Romer, David, and Jeffrey Frankel. 1999. “Does Trade Cause Growth?” *American Economic Review* 89(3) 379–399.
- Samuelson, Paul A. 1962. “The Gains from International Trade Once Again.” *Economic Journal* 72(288) 820–829.
- Timmer, Marcel P., Abdul Azeez Erumban, Bart Los, Robert Stehrer, and de Vries J. Gaaitzen. 2014. “Slicing Up Global Value Chains.” *Journal of Economic*

*Perspectives*. 28(2), 99-118.

United Nations International Labour Organization. 2019. ILOSTAT Manufacturing Employment. Available from <https://ilostat.ilo.org/data/>

United Nations Statistics Division. 2019. United Nations Commodity Trade Statistics Database (comtrade). New York: United Nations. Available from <http://comtrade.un.org/>

---

## Notes

- i The Trump administration's trade war with China is the most prominent recent example of a politician advocating protectionist measures in an effort to protect jobs, but it has many corollaries both in the United States (e.g., the infamous Depression-exacerbating Smoot-Hawley Tariff Act of 1930) and internationally (e.g., UKIP and other Euroskeptic parties).
- ii Some recent work by trade economists shows that nevertheless the United States did benefit from the export opportunities trade with China created, and that any overall net negative employment effects of trade with China may have been almost entirely offset by increased exports alone (Feenstra, Ma, and Xu 2019). However, note that this does not contradict earlier findings: workers benefiting from export growth are not necessarily those harmed by import competition; negative distributional effects are thus still very possible because of the concentrated nature of the effects of Chinese import growth.
- iii While President Trump has consistently characterized China as stealing from ("ripping off") the United States, no similar rhetoric has emerged in any significant way in Germany. The most prominent populist movement, the far right AfD, has not come out in favor of increased protectionism beyond general Euroskepticism. Meanwhile, prominent politicians have generally not been shy about publicizing efforts to strengthen ties with China (see, e.g., <https://www.reuters.com/article/us-germany-china/germany-and-china-vow-to-deepen-ties-amid-trump-concerns-idUSKBN18S4CC> and <https://www.cnbc.com/2019/01/18/germany-and-china-pledge-to-open-markets-deepen-financial-cooperation.html>).