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GENERAL DISCUSSION Austan Goolsbee first offered a summary of the paper, noting that the persistent shocks documented in the paper are tied to communities that were highly concentrated in lower-skill manufacturing industries and that the impact that comes from the China shock specifically needs to be separated from the long-term trend of decline in manufacturing employment—was a decline inevitable and merely happened sooner from the shock? Goolsbee also wondered what it was that seemed to make adjustment in US low-skill manufacturing locations so much worse than elsewhere in the world. Goolsbee noted that Chinese competition was predominantly in lower-skill manufactured goods; but the US manufacturing share of employment is actually quite low, and lower-skilled manufacturing is only a fraction of that, whereas in a country like Mexico, manufacturing is a large share of employment and lower-skill manufacturing is the largest component. Goolsbee argued that with so much overlapping of what China exports and what Mexico manufactures, it would seem like the China shock should have been substantially larger on Mexico than on the United States. But Goolsbee then referred to a paper by economists at the Inter-American Development Bank that suggests only a modest impact of the China shock on Mexican labor markets.¹ He said he could not understand why US labor markets would be less flexible than in Mexico following a smaller shock.

1. Juan Blyde, Matias Busso, Valeria Faggioni, and Dario Romero, "The Impact of Chinese Competition on Mexican Labor Outcomes," working paper, 2017, <https://www2.gwu.edu/~iiep/waits/documents/Blyde.pdf>.

Heather Boushey reiterated Goolsbee's prior question on factors contributing to the varying impacts across countries. She also found it interesting that the authors applied this method to the coal community and questioned whether the authors had considered the implications for other sectors that might be affected by the transition to zero-carbon emissions, for instance, automobiles, other manufacturing, cement, or steel. She highlighted that the list of sectors that will be affected by climate change is extensive, so the authors' work may have broader application to those reallocation effects.

Gordon Hanson first thanked both discussants, Marianne Bertrand and Edward Glaeser, for their comments. Hanson then discussed the German example, which Bertrand had highlighted, where differences exist in labor market institutions between the United States and Germany. He also agreed that considering a longer time horizon, accounting for both regulatory and entrepreneurial factors, as well as labor market institutions, is key to understanding resiliency differences across countries.

Hanson then expanded on two other significant differences between the United States and Germany over this time period. First, the particular role of Germany in the European Union and euro area allowed it to sustain structural trade surpluses, while the opposite was true of the United States, which instead runs trade deficits partially due to the reserve feature of the dollar.² Those differences bias the nature of adjustment to be in favor of manufacturing in Germany, while they bias against manufacturing in the US context. The second point he raised considers global supply chains. In Germany supply chains run through manufacturing, where the export side of the German economy that is benefiting from trade with China is largely physical goods, like machine tools.³ In contrast, US trade with China benefits the technology services sector. Hanson concluded that this is the reason that adding exports of manufacturing to China into the model results in nearly no change. He then highlights that exports of technology services are harder to measure and often end up locked in patent boxes in Ireland and other places. Exports of technology services still confer substantial benefits to regions in the United States and other developed countries that are highly concentrated in those industries; however, these

2. David Dorn, "Commentary: The Impact of Trade on Inequality in Developing Countries." In *Economic Policy Symposium Proceedings: Fostering a Dynamic Global Economy* (Jackson Hole, Wyo.: Federal Reserve Bank of Kansas City, 2017), 115–28, <https://ddorn.net/papers/Dorn-JacksonHole.pdf>.

3. Wolfgang Dauth, Sebastian Findeisen, and Jens Suedekum, "Trade and Manufacturing Jobs in Germany," *American Economic Review* 107, no. 5 (2017): 337–42.

regions are not the same as those that were previously producing labor-intensive goods that directly competed with Chinese imports.

Hanson then turned to the example of Mexico, where there is evidence of moderate impacts of the China shock in regions that were specialized in labor-intensive manufacturing. He also noted that—along with Mexico—Hungary, Poland, Turkey, and Thailand were among the most exposed countries to the China trade shock given their pattern of comparative advantage. Hanson suggested that one key contributor in making the Mexican case different from other countries is that at the same time the China shock was wiping out labor-intensive manufacturing, the expansion of Mexican production chains in aerospace, automobiles, and medical devices took up the slack.⁴ In Mexico, labor-intensive manufacturing and capital-intensive manufacturing are both located in the northern region of the country, while in the United States and Germany these sectors of manufacturing are located in different places. This lessened the aggregate impact in Mexico as the country's southern regions were not substantially affected and less regional reallocation was necessary. Hanson also noted that the implementation of NAFTA also occurred during this period and helped to boost Mexican manufacturing exports to the United States.

In regard to the Great Recession and the literature on the housing construction boom helping to mask the employment effects of the decline of manufacturing, Hanson agreed that housing trends across US regions played a role in their divergence.⁵ Specifically, regions subject to the China shock largely avoided the subprime mortgage boom and instead saw much lower price appreciation in the early 2000s, causing the post-2006 collapse in construction to be much less significant for these places. Hanson also noted that many other elements could have made the Great Recession an important factor influencing the nature of adjustment, adding the example of the shutdown of credit as an important vehicle. He then raised the concept from Davis and Haltiwanger that depressed housing market values can also depress entrepreneurial capital for start-up firms, which could also be part of this story.⁶

4. Juan S. Blyde, Matias Busso, and Dario Romero Fonseca, "Labor Market Adjustment to Import Competition: Long-Run Evidence from Establishment Data," working paper 01100 (Washington: Inter-American Development Bank, 2020).

5. Kerwin Kofi Charles, Erik Hurst, and Matthew J. Notowidigdo, "The Masking of the Decline in Manufacturing Employment by the Housing Bubble," *Journal of Economic Perspectives* 30, no. 2 (2016): 179–200.

6. Steven Davis and John Haltiwanger, "Dynamism Diminished: The Role of Housing Markets and Credit Conditions," working paper 25466 (Cambridge, Mass.: National Bureau of Economic Research, 2019).

David Dorn then mentioned that several weeks following this event, the Institute for Fiscal Studies will release a chapter on trade that Dorn is coauthoring, which will include substantial discussion of the international differences between the impact of trade shocks on the United States and different European countries.⁷ He also commented that a primary element is that the magnitude of exporting to China varies greatly across countries, while imports from China vary by a smaller degree. Germany and Switzerland are examples of the few Western countries that have a relatively even trade balance with China, while many others, like the United Kingdom, look exactly like the United States. An additional point he raised is that when looking at labor market impacts across countries in terms of manufacturing employment loss per unit of import competition shock, the United States does not look especially bad.⁸ Some European countries, for example, Spain, have seen employment effects that are much more negative. He then highlighted several factors that explain some of this difference: labor market institutions and active labor market policies, initial industrial specialization, and exports to China. While some of these factors have traction, Dorn expressed his uncertainty that all factors contributing to these country divergences can be fully parsed out.

Finally, James Stock hypothesized that the authors could use their existing work to construct an energy transition shock, similar to the construction of the China shock, since there would be a sequence over time with regional specificity. In response, Hanson confirmed his interest in using earlier shocks to better understand the dimensions and elements of resilience, mentioning a recent grant proposal for a similar topic.

7. David Dorn and Peter Levell, "Trade and Inequality in Europe and the US," discussion paper 14914 (Bonn: Institute of Labor Economics, 2021), forthcoming in *IFS Deaton Review on Inequality*.

8. See figures 3 and 5 in Dorn and Levell, "Trade and Inequality."