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## What Are the Price Effects of Trade?

### Evidence from the United States and Implications for Quantitative Trade Models

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**W**hat are the price effects of trade? Canonical trade models predict that trade benefits consumers through lower prices but may hurt some workers through reduced earnings.

While recent reduced-form evidence indicates that increased trade with China had a large adverse impact on U.S. labor markets, much less is known about the potential benefits to U.S. consumers through lower prices. The magnitude of the price response is an empirical question because various mechanisms could be at play. As trade with China increases, to what extent do retailers adjust prices for U.S. consumers? Are price changes driven by products imported from China, or is there a broader impact on prices of domestically produced goods? To the extent that prices fall, which consumers benefit most? Data limitations explain the relative scarcity of evidence on these questions, which can only be answered with comprehensive price data.

We use microdata from the Bureau of Labor Statistics to obtain comprehensive coverage of price dynamics over a long panel, going back to the 1980s, with both consumer prices and producer prices. We estimate the response of prices to the rise in trade induced by supply shocks in China.

Several challenges arise when estimating the causal effect of increased trade with China. A causal interpretation of the estimated impact of the change in import penetration from China on U.S. inflation could be misleading because there may be many unobserved supply and demand shocks

affecting U.S. industries that correlate with trade with China and that have a direct effect on U.S. consumer prices. For example, China may decide to enter product categories where U.S. suppliers are easy to outcompete due to low productivity growth (implying higher U.S. inflation in these product categories and an upward bias of the estimate).

Additionally, the estimates may omit other explanatory variables that have a causal effect. For instance, China has a comparative advantage in specific product categories, which may be on different inflation trends compared with other product categories. Trade with China is large for computers, consumer electronics, and apparel. Because of high rates of innovation for computers and consumer electronics and because of the fashion cycle for apparel, these categories are characterized by low inflation.

To overcome these challenges, we use two complementary research designs borrowed from recent work studying the consequences of trade with China on employment across U.S. industries. First, we leverage a change in U.S. trade policy passed by Congress in October 2000, which eliminated potential tariff increases on Chinese imports. This uses transparent policy variation and lends itself to year-by-year tests for pre-existing trends. But the effects of trade induced by changes in policy uncertainty may differ from those of more common permanent changes in foreign productivity. To gauge the generalizability of our main estimates, we also instrument for changes in import penetration from China in the United States with contemporaneous changes in eight comparable economies.

Our estimates indicate that the price effects of increasing trade with China are large. When using the change in U.S. trade policy in 2000, we find that a one percentage point increase in the import penetration rate from China causes a fall in inflation of 2.2 percentage points. And when using contemporaneous changes in comparable economies, the corresponding fall in consumer prices is 1.4 percent. With both strategies used jointly, we find that a one percentage point increase in import penetration causes consumer prices to fall by 1.9 percentage points.

We investigate several potential mechanisms that could account for our estimates. To uncover the relevant mechanisms, we document which products drive the price response. We isolate the roles of continued products (as opposed to new products) and domestically produced goods (as opposed to foreign products). We find that continued products account for approximately 70 percent of the overall price effects and that domestic products account for between 44 and 85 percent. These results show that much of the effect does not result directly from cheaper imports from China and instead materializes via domestic goods.

The domestic price response could result from two potential channels: changes in production costs or changes in markups. We first assess the role of changes in domestic production costs, which we decompose into several potential sources: wages, intermediate inputs and offshoring, and returns to scale and productivity. Although these channels are theoretically plausible, empirically we find they can account for only a small fraction of the estimated price response.

Next, we turn to the potential relevance of markups. Theoretically, the large price effects can be explained by models that feature strategic interactions in pricing. Intuitively, as Chinese producers become more productive they reduce their prices, which leads U.S. producers to reduce their markups through strategic interactions. Because of the fall in U.S. prices, U.S. consumers do not substitute as much toward the products from China. Therefore, the

equilibrium change in import penetration rate from China is lower than it would be without the price response for U.S.-produced goods.

We conduct empirical tests of the markup channel by examining the response of estimated markups for publicly listed firms. We observe a fall in estimated markups: when the import penetration rate from China increases by one percentage point, domestic markups fall by 1.8 percentage points. This estimate is large in magnitude and statistically indistinguishable from our estimate for the response of domestic prices. We also document that the price effects are significantly larger in industries where domestic market concentration is higher and where China's initial market share is lower. These patterns are in line with the model: there is more domestic market power to be disrupted by China when the domestic market is more concentrated.

Finally, we discuss how our estimates shed light on the distributional effects of the China shock. We first benchmark our estimates of the price response, which benefits consumers, to the employment effects estimated in prior work. Our baseline estimation indicates that falling prices in product categories that are more exposed to trade with China create \$411,464 in consumer surplus for each displaced job. The estimates vary from \$288,147 to \$477,555 across specifications. These large magnitudes suggest that it may be possible to compensate those who suffer from the labor market impacts of trade shocks. We also find that the magnitude of the price response is larger for product categories that cater to lower-income households.

#### **NOTE:**

This research brief is based on Xavier Jaravel and Erick Sager, "What Are the Price Effects of Trade? Evidence from the US and Implications for Quantitative Trade Models," Centre for Economic Performance Discussion Paper no. 1642, August 2019, <https://cep.lse.ac.uk/pubs/download/dp1642.pdf>.