The US-China Trade War is Harming American Communities

by Michael E. Waugh

Trade creates winners and losers. In the context of the US-China trade war—the unprecedented tit-for-tat increase in tariffs by the US and China—this observation suggests that changes US and Chinese trade policy are redistributing the gains from trade. I argue that empirical evidence supports this case—that the trade war is inducing concentrated losses in consumption and employment for American communities most exposed to Chinese retaliatory tariffs.

What are the costs of the trade war? The trade war affects welfare through two mechanisms. As consumers, trade benefits us through lower prices and increased variety. In the context of the US-China trade war, the expectation is that US tariffs on Chinese goods will impose hardship on *all* US consumers through higher prices and a reduction in variety. This prediction is becoming apparent as Fajgelbaum, Goldberg, Kennedy, and Khandelwal (2019), Amiti, Redding, and Weinstein (2019), and Cavallo, Gopinath, Neiman, and Tang (2019) find that the US tariffs are leading to higher prices and a reduction in welfare for all consumers.

From a US workers perspective, there is a second hardship of the trade war: Retaliatory Chinese tariffs on US exports affect labor income and/or production opportunities for those directly impacted. For example, the farmers or workers engaged in agriculture and manufacturing production that China targeted with retaliatory tariffs. Unlike the price effects—which are spread widely across the US population—this "labor-income channel" is concentrated. That is for those who had a position of comparative advantage for the Chinese market and lost it due to tariffs—they bear this burden of the trade war *alone*.

Measuring the consumption response to trade shocks. In Waugh (2019), I focus on this second hardship and measure the effect of retaliatory Chinese tariffs on county-level consumption and labor market outcomes. The research design is simple: I exploit variation in a county's exposure to Chinese retaliatory tariffs between 2017 and 2018 and correlate it with changes in consumption and employment at the county level. The focus on Chinese retaliatory tariffs stems from a desire to measure a trade-induced change in labor income/production opportunities; e.g., soybean farmers in Iowa lose the ability to sell their product due to Chinese retaliation.

The focus on consumption is a unique aspect of my work. Most research focuses on trade-induced labor market outcomes, e.g., the seminal work of Autor, Dorn, and Hanson (2013). From a welfare perspective, however, labor market outcomes may not reflect how economic welfare is allocated across those who are differentially impacted by trade. Moreover, abrupt changes in trade policy will have different welfare consequences, depending on the opportunities households have to adjust to these shocks.

A reason for the past focus on labor market outcomes is because measuring consumption at the microeconomic level is, in general, difficult. My approach to measuring consumption is to use a unique data set with the universe of new auto sales at the US county level, at a monthly frequency. This data set allows me to proxy consumption behavior with purchases of an easily defined object, and variation at both a narrow geographic dimension and at high frequency. High frequency is important in this context, due to the rapidly changing nature of trade policy during 2018.

The unequal burden of the trade war. Figure 1 illustrates that the burden of Chinese retaliation is concentrated. It plots the change in a county's tariff (which is a employment weighted average of the tariff at the sectoral level) between December 2017 and December 2018. In this map, a county is colored according to its position within the distribution across counties; red indicates a county's tariff increased a lot and blue indicates that a county's tariff did not increase that much.

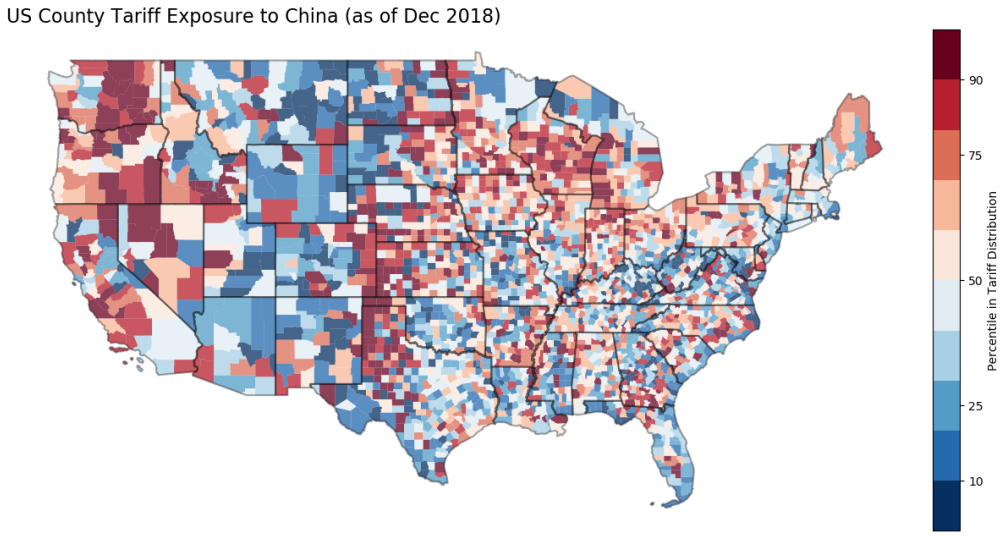

Figure 1: Tariff Exposure by County, Continental US ("lower 48")

Consistent with the notion that much of the Chinese tariff retaliation targeted agriculture commodities, much of the US midwest and agriculture intensive areas of California, Oregon, and Washington are heavily exposed to Chinese retaliation. Rural counties also happen to have experienced larger tariff increases.[1] Overall, I find that a county's share of employment in goods producing industries and a county's rural population share accounts for 17 percent of the variation in the change in tariffs.

Those bearing the burden of the trade war suffered. Both visually and through formal econometric specifications, I find that changes in trade policy had large effects on consumption, with high-tariff counties experiencing between a 2 and 5.5 percentage point decline in new auto sales growth relative to low-tariff counties.

This simplest way to arrive at these conclusions is to compare auto sales growth in counties that had large increases in tariffs versus those that had small increases in tariffs. Here high versus low is a comparison of counties in the upper quartile of the change-in-tariff distribution and those in the lower quartile, as of December 2018, i.e., the dark red areas of Figure 1 versus the blue areas.

Figure 2 plots this comparison between January 2018 and January 2019. Dashed vertical lines (with annotation) indicate important events during the trade war. Units on the y-axis are in log points, so an interpretation of the value of 0.01 is a 1 percentage point difference in annual growth rates. Prior to the implementation of tariffs in July 2018, Figure 2 shows that there is no difference in auto sales growth

[1] Casual observation also suggests that counties facing the most retaliation are also the counties which voted more strongly for President Trump in the 2016 US election. In a formal regression analysis, I do find that relationship, however, most the variation in tariff retaliation is simply explained by the export exposure of a county to China in the past.

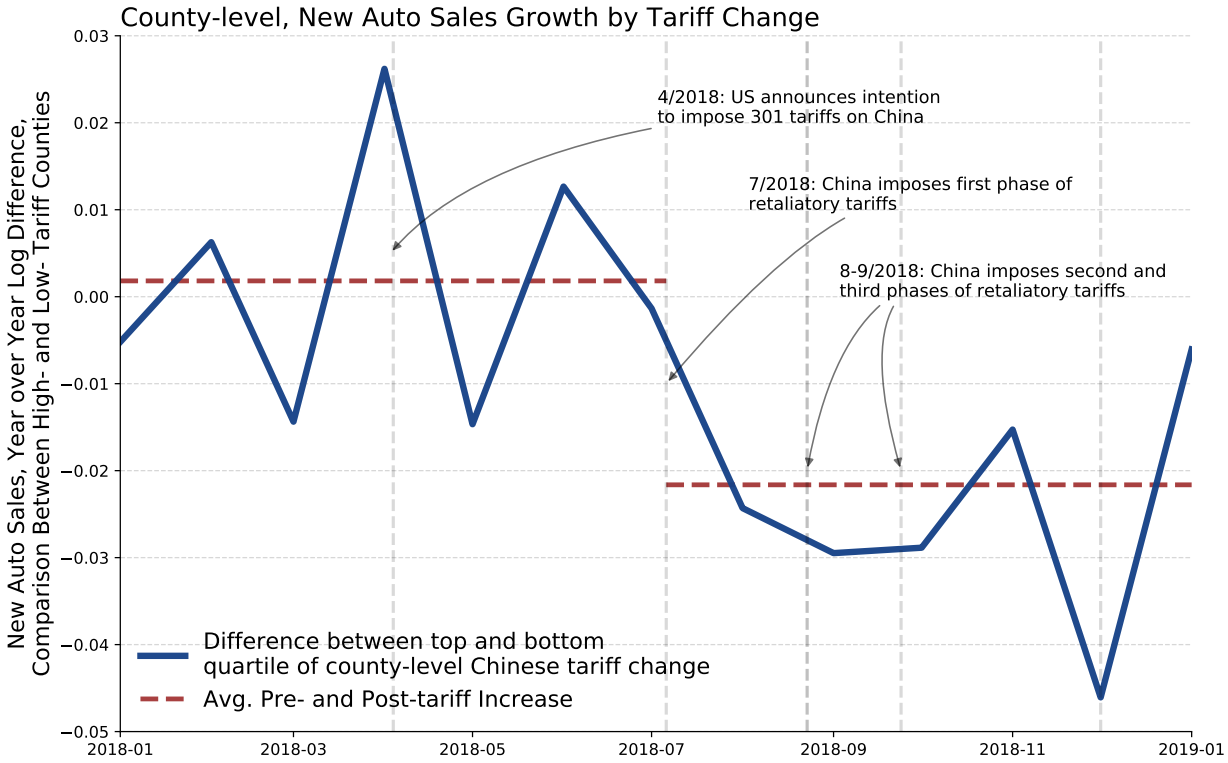

Figure 2: US County-level Auto Sales and Chinese Retaliatory Tariffs

between high- and low-tariff counties. A difference immediately emerges after the implementation of the first round of tariffs in July 2018. For the second half of 2018, high-tariff counties grew slower relatively to low-tariff counties. The magnitude is large, with a two percentage point difference. In words, consumption in high-tariff counties grew two percentage points slower after the implementation of the tariffs.

In formal econometric specifications, I find even larger results. Depending on controls and inclusion of various fixed effects, I find that the elasticity of consumption growth to tariffs can be as large as -1.4,—i.e., one percentage point increase in a county's exposure to Chinese retaliatory tariffs leads to a 1.4 percentage point decrease in auto sales growth. This translates to a 5.5 percentage point decline in auto sales growth for counties in the upper quartile of the tariff distribution.

From an aggregate perspective, some simple tabulations suggest that the impacts—just from auto sales—are in the same ballpark relative to estimates of other effects from the trade war. My calculations show that the trade war caused $9.3 billion in lost auto sales. This number is as large as the aggregate effects ($7.8 billion) found by Fajgelbaum et al. (2019). An important distinction, however, is that the loss that I am measuring is concentrated. It is the few communities who are exposed to retaliatory tariffs who are bearing this burden.

These consumption losses are connected with negative labor market outcomes. Using the monthly data from the BLS's Quarterly Census of Employment and Wages I find that total employment growth declines by one percentage point for counties in the upper quartile of the tariff distribution. More intriguing is

that non-tradable employment (e.g, employment in restaurants, retail, and services) declines as well by a similar magnitude. The decline in non-tradable employment suggests that through county-level equilibrium effects, consumption and local demand conditions are softening for the communities most affected by Chinese tariffs. Because non-tradable employment and, in turn, non-tradable consumption is declining, this finding also suggest that the aggregate consumption response is substantially larger than effects discussed above.

Why? What now? Overall, the employment effects connect well with the reductions in consumption. That is, for counties who were more exposed to Chinese retaliatory tariffs, these tariffs reduced a county's ability to export, it feed into the labor market (both tradable and non-tradable), and this mechanism reduced consumption.

With that said, there are some open questions as to Why? In my results, there is some suggestive evidence that something more beyond the labor market is behind the fall in consumption. The role of expectations and uncertainty are primary culprits. To tease this out, a formal economic model is probably needed—in particular, one that takes into account the durable nature of consumption in the data I am using and can examine the idea that expectations play an important role.

A more pressing question is: What is going on now? The US-China trade war has, if anything, been escalating. Understanding the effects of the trade war is very important in the context of the current economic environment in the US, i.e. the slowing down of economic growth and recessionary concerns. These results have policy implications for short-run demand management policy in the US and the appropriate response to the trade war. The conventional wisdom is that the trade war is a negative, aggregate supply shock with declines in output and inflationary pressure. In contrast, the trade-war-induced declines in consumption that I am finding suggest that there are important demand-side effects from the trade war for consideration in the formulation of policy in the US.

References

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