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The Effect of China Retaliatory Tariffs on Donations from Farmers in the Central Region of the United States

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Abstract

The Trump administration launched a series of actions to raise import tariffs against major U.S. trading partners, particularly China. In response, China retaliated against the U.S. by imposing higher tariffs targeting exports produced in Republican-supporting counties. Soybeans and corn are two targeted agricultural exports with the same tariff rates. However, due to the drastic difference in export amount to China, farmers in counties dominating in producing soybeans would have more negative economic impacts than counties mainly producing corn. In this paper, I use individual farmers' donations to examine the effect of this retaliatory tariff shock from the trade war on farmer voters' attitudes toward their political party in the agricultural counties in the most affected areas ---- the central region of the United States. The empirical results show that China's retaliatory tariff shock has a negative but not significant impact on the value of soybean production compared to corn production and also an unexpected positive but not significant impact on farmers' donations in general. Finally, I do find a significant negative impact from farmers' donations towards the Republican Party because of China's retaliatory tariff shock.

1 Introduction

For decades, the United States has supported free trade to reduce barriers to imports and exports. However, at the beginning of 2018, the Trump administration launched a series of unprecedented actions to raise import tariffs against major U.S. trading partners. Noticeably, U.S. suddenly increased tariffs on nearly 50 percent of its imports from China. In response, U.S. major trading countries, especially China, retaliated against U.S. by imposing higher tariffs on U.S. exports (Bown, 2021). Even though the newly imposed tariff protected a few industries from competing with imports, it was a hard hit for industries heavily reliant on exports. Agriculture, for example, was hit the hardest due to the drastic increase in tariffs. Even with the billion-dollar subsidy program announced by the Trump administration, farmers still endured large economic losses due to the retaliatory tariff shock (Benguria and Saffie, 2020). This also means the tariff shock hit a key voter base for President Trump — the Great Plains area, the heart of the American agricultural sector. The counties most affected by China's tariff are also the counties that supported and helped Trump win the 2016 election (Blanchard et al., 2020). Given the negative economic impacts of the tariffs, did these voters change their thoughts on what they voted for in 2016? Did they even change their political stance and donate to support other candidates in the other political parties due to their economic losses?

In this paper, I will first examine the effect of this retaliatory tariff shock from the trade war on farmer voters' attitudes toward their political party in the agricultural counties in the most affected areas — the central region of the United States. In this paper, I use a three-region model that defines the central region of the United States to be; Arkansas, Colorado, Kansas, Kentucky, Illinois, Indiana, Iowa, Minnesota, Missouri, North Dakota, Ohio, Tennessee, and Texas. I will then examine whether the donations towards committees regardless of the committees' affiliation from farmers in the central region of the United States are affected by the trade war. I will use the campaign donation information from soybean farmers and corn farmers defined by the characteristics of the county as the measurement and examine their response to the retaliatory tariff shock at the county level. I specifically use soybeans and corn as the indicators because even though China has imposed a similar tariff level (almost 25%) on soybeans and corn, most U.S. soybeans are typically exported to China, while most corn do not export to China. As Figure 1

shows, soybeans accounted for the largest share of total trade loss because of retaliatory tariffs, having approximately 71 percent (\$9.4 billion) of annual losses from mid-2018 through the end of the calendar year 2019. However, corn only accounted for 2 percent of the total trade loss (Taheripour and Tyner, 2018; USDA, 2022). These statistics show the differing impact of China's retaliatory tariff on the soybean farmers' and corn farmers' economic benefits in the central region of the United States.

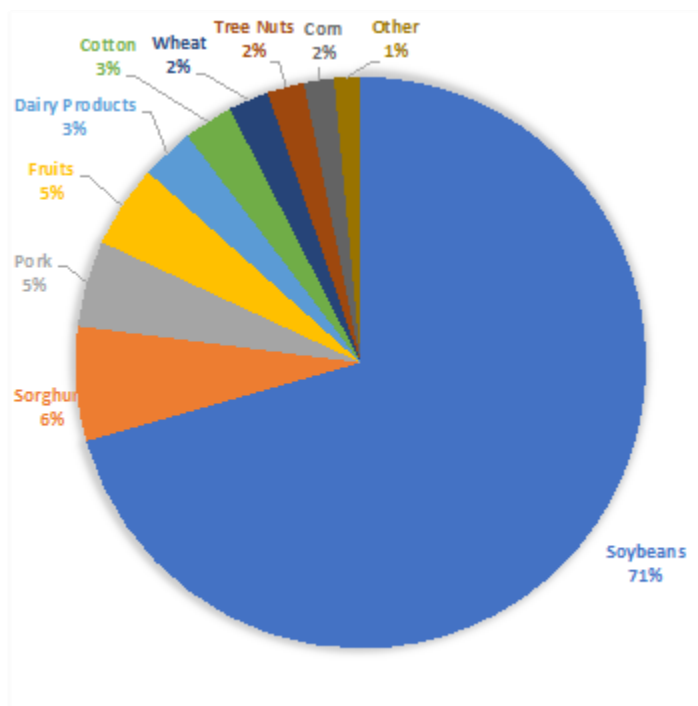


Figure 1. Percent share of annualized losses caused by China's retaliatory tariffs (commodity level) from CRS, 2019a. Retaliatory Tariffs and U.S. Agriculture. Report #R45903. September. Corn accounted for 2 percent and soybeans accounted for 71 percent share of annualized losses caused by China's retaliatory tariffs.

Thus, I use two crops (soybeans and corn) as comparisons and expect to find a difference in farmers' attitudes due to the different economic losses and therefore the number of donations towards different political parties. Since the focus of this paper is on the impact of the US-China trade war, the timeframe of examining the political attitude begins from the 2017 presidential inauguration of Donald Trump. And since COVID-19 changed the macroeconomy and negatively affected the global economy, the timeframe of examining the effects on donation ends before the pandemic hits, which means at the end of 2019.

This paper uses the difference in difference models to exploit the effect of China's retaliatory tariff shock as an exogenous variation on donations to the Democratic or Republican Party among farmers in the central region of the United States. The change in the monetary value of soybeans production and corn production and the change in the farmers' donations in general and to the two major political parties before and after the retaliatory tariff shock at the county level are studied using the difference in difference models. This paper finds negative but not significant correlations between China's retaliatory tariff shock and the value of soybean production compared to corn production, and a positive correlation between China's retaliatory tariff shock and donations in general. However, I do capture a significant negative impact on donations from U.S. farmers in the central region of the United States towards the Republican Party because of China's retaliatory tariff shock.

The remainder of the paper proceeds as follows. Section 2 summarizes some important studies in the area of China's retaliatory tariff in the U.S.-China trade war, its effect on the value of corn and soybean production, and how this paper can contribute to the current literature. Section 3 lists the data sources and a summary of the dataset I used in the analysis. Section 4 presents the empirical models, and Section 5 shows the results, interpretation, and robustness checks. Section 6 concludes by considering the direction for future research.

2 Literature Review

The Trump administration imposed approximately a \$283 billion import tariff over the course of 2018. In response, many U.S. trading partners, especially China, imposed retaliatory tariffs on U.S. exports. Previous literature examined the effect of this tariff and trade protectionism advocated by the Trump administration. Several studies (Fajgelbaum et al., 2020; Amiti et al., 2019) found the negative effects of the trade war. The U.S. tariff and other countries' retaliatory tariffs increased domestic prices, decreased aggregate real income, decreased import variety, created a deadweight loss in warfare, and weaker employment outcomes in more exposed to retaliatory tariffs areas (Goswami, 2020). As the most important agricultural export to China prior to the trade war, U.S. soybeans were imposed an additional 25 percent tariff by China (CRS, 2019a), resulting in a 23.5 million metric tons (MMTs) decrease in soybeans exports and a reduction of 74 percent in 2018 compared to the previous year (Grant et al. 2011). Losses were concentrated in the Midwest where states offer a diversity of agricultural production and soybeans and corn. As shown in Figure 2, most counties that supported Mr. Trump in the 2016 presidential election were threatened and affected the most by China's imposed retaliatory tariffs imposed on U.S. agricultural exports (Porter & Russell, 2018). Most of the regions that produce the field crops that are examined voted for the Republican Party in the 2016 election. This is another reason why I examine specific crops in the central region of the United States.

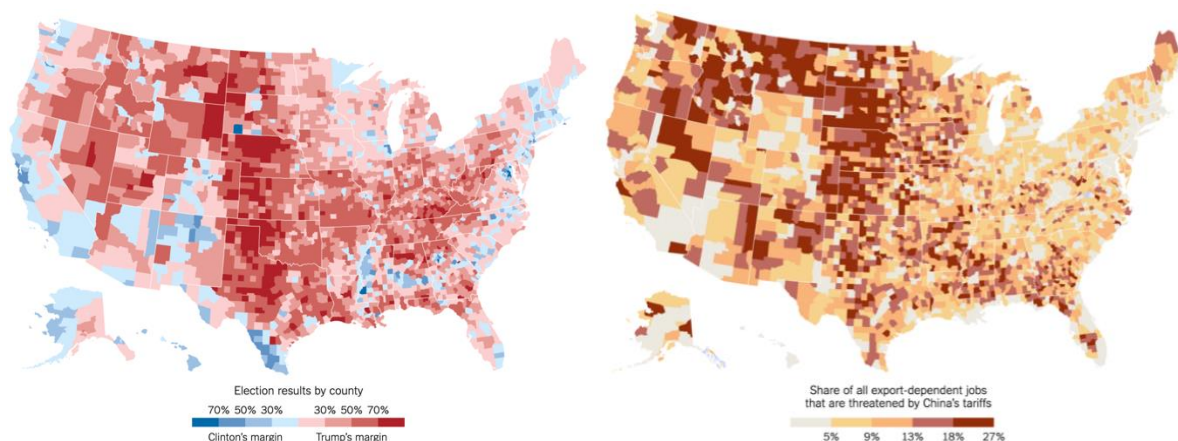


Figure 2. Comparison between counties that were affected by China's retaliatory tariffs (right) and counties voted for Mr. Trump (left) in 2016. From Porter, E., & Russell, K. (2018, October 3). Firing back at trump in the Trade War with tariffs aimed at his base. *The New York Times*.

Retrieved October 8, 2022, from

<https://www.nytimes.com/interactive/2018/10/03/business/economy/china-tariff-retaliation.html>

A significant overlap between counties that voted for Mr. Trump in the 2016 Presidential Election and counties that were targeted by China's retaliatory tariffs.

Kim and Margalit (2021) found strong evidence that Chinese retaliatory tariffs systematically targeted US exports produced in Republican-supporting counties. Voters in the tariffed-affected areas were more likely to know about the adverse impact of the trade war, blame the Republicans for the deteriorating situation, and turn against Republican candidates. Aligned with this finding, Chyzh and Urbatsch (2021) observed the direct relationship between county-level soybean production and the decrease in Republican vote share between the 2016 and 2018 congressional elections. The negative impacts on the Republican vote share are substantively significant, with an average county producing 10,000 bushels of soybeans decreasing vote share for the Republican Party by at most 14%, compared to a 3% downward shift in counties with no soybean production.

Aligned with Bonica's (2019) finding on political donations as a valid indicator of donors' policy preferences, in this paper, I examine individual donations among farmers as a measure of trackable data besides voting to indicate party support and policy preferences. By utilizing donations as the measure of one's affiliated party, my paper provides new insights into how China's retaliatory tariffs have affected the political affiliation among U.S. farmers in the central region of the United States.

3 Data

Two main data sources used in this paper include the National Agricultural Statistics Database from the United States Department of Agriculture (USDA) and individual donations in the campaign finance data from the Federal Election Commission. County-level soybeans and corn value of production measured in million bushels from 2017 to 2019 are collected from USDA. It is noticeable that USDA combined several counties with few soybeans and corn production into combined counties in every state. Since accurate production data from these counties cannot be acquired, I exclude these counties from my analysis.

The main dataset for the empirical analysis is merged by the following steps. I first compare the value of production of soybeans and corn to determine the characteristics of the county. If the county has a greater amount of soybeans production than corn, the commodity of the county would be considered soybeans. If the county has greater production value in corn than soybeans, the commodity of the county would be considered corn. The commodity characteristic of the county is based on 2017 production data to measure the effect of tariff shock. I then multiply the production value of each commodity by its price received in each year to calculate the actual annual price farmers received from growing different field crops. The value of crop production is measured in bushel and price received is measured in dollar per bushel. For the individual donation part, I first sum all individual donations within one county in the central region of the United States and match the donation with the production value of corn or soybeans within each county.

Table 1 is the descriptive summary of variables, including the county-level farmers' donation (measured in dollars) to two major political parties' committees and the county-level value of production of two commodities of interest (measured in millions of bushels) before China's retaliatory tariffs shock and after China's retaliatory tariffs shock. All county-level statistics in Table 1 are in the counties in the central region of the United States (Arkansas, Colorado, Kansas, Kentucky, Illinois, Indiana, Iowa, Minnesota, Missouri, North Dakota, Ohio, Tennessee, and Texas). Noticeably, the impact of China's retaliatory tariffs shock can be preliminarily examined by the means of the variables.

The mean value of soybeans production decreased by 22.83 million dollars, and the mean value of corn production increased by 6.44 million dollars after China's retaliatory tariff shock in the central region of the United States. The mean of farmers' donations to the Democratic

Committee increases by 127.84 dollars while the mean of farmers' donations to the Republican Committee decreases by 30.69 dollars in the central region of the United States.

Table 1. Descriptive Statistics of Variables

| Descriptive Statistics of Variables | | | | | | | | |
|-------------------------------------|---------------------|--------|------------------|-------|--------------------|--------|------------------|-------|
| Period | Before Tariff Shock | | | | After Tariff Shock | | | |
| Obs. | 80 | | | | 80 | | | |
| Variable | Donation | | Production Value | | Donation | | Production Value | |
| | DEM | REP | Soybeans | Corn | DEM | REP | Soybeans | Corn |
| Mean | 234.72 | 225.82 | 97.07 | 44.91 | 362.56 | 66.38 | 74.24 | 51.35 |
| Std. Dev | 681.30 | 670.37 | 92.00 | 43.70 | 682.70 | 651.70 | 87.36 | 87.39 |

Note: Donation is measured in dollars. Production Value is measured in millions of dollars.

Background Review: The 2018 Tariff Shock

In 2018, many United States' major trading partners, particularly China retaliated to the U.S. initiated import tariff raise by levying a retaliatory tariff on U.S. exports. As the world's largest agricultural exporter, U.S. agriculture and food products were targeted in this retaliation. Since agricultural products are relatively easy to substitute with products from different suppliers (CRS, 2018b), China imposes a 25% additional tariff on U.S. agricultural exports, including soybeans and corn. China is the world's largest soybean importer and U.S.'s largest soybean export destination. Thus, China's retaliatory tariff displaced a significant amount of U.S. soybeans but not corn from the export market and had a different impact on farmers' economic benefits. The next section will illustrate how I use empirical models to examine the effect of China's retaliatory tariff shock.

4 Empirical Methodology Section

I utilize the difference in difference models to examine the effect of China's retaliatory tariff shock on farmers in the central region of the United States. The models below aim to understand the impact of China's retaliatory tariff shock on the value of different commodity productions since soybeans farmers face more harm from China's retaliatory tariff shock because China is U.S.'s largest soybean export destination. The models also aim to explore whether the donations from farmers in soybeans-dominant or corn-dominant county have been impact, and if so, how donations from farmers in the central region of the United States towards the two main political parties committee changed. Cross-section data at the county level is analyzed in these models. All models use the same notations, where

t: year *c*: county *p*: political party

The first model is:

$$\ln(\text{value}_{\text{production}})_{ct} = \alpha_0 + \alpha_1 \cdot \text{post}_t \cdot \text{treatment}_c + \alpha_t + \alpha_c + \varepsilon_{ct}$$

This model aims to examine the effect of China's retaliatory tariff shock on value of different commodities production. The dependent variable $\ln(\text{value}_{\text{production}})_{ct}$ is the log value of monetary value in soybeans- or corn-dominant county *c* at year *t*. Noticeably, the monetary value

of commodity production is calculated by multiplying the national price received by the farmers measured in dollars per bushel in the United States and the amount of production measured in bushels. For simplicity, the monetary value of the commodity is then measured in millions of dollars.

The main explanatory variable is the interaction between $post_t$ and $treatment_c$ to examine whether farmers in soybeans-dominant counties may have had a greater impact on soybean production compared to corn farmers due to China's retaliatory tariff shock. $post_t$ is a dummy variable that equals 1 when the year is 2019 (after China's retaliatory tariff shock) and equals 0 when the year is 2017 and 2018 (before China's retaliatory tariff shock). $treatment_c$ is a dummy variable that equals 1 when the commodity is soybean and equals 0 when the commodity is corn. α_t, α_c are the year fixed effect, the commodity fixed effect, and the county fixed effect, respectively. ε_{ct} is the error term.

The second model is:

$$\ln(donation)_{ct} = \beta_0 + \beta_1 \cdot post_t \cdot treatment_c + \alpha_t + \alpha_c + u_{ct}$$

The second model aims to examine the effect of China's retaliatory tariff shock on farmers' donations regardless of the affiliation of the committee. I apply the same strategy used in the first model. The dependent variable is the log value of the farmers' donation county c (either corn-dominant or soybeans-dominant) in year t . All donations come from farmers in the central region of the United States.

The explanatory variable in the second model is the same interaction term in the first model. The interaction between $post_t$ and $treatment_c$ in this model captures whether farmers in soybeans-dominant counties may have had a greater impact on donations compared to farmers in corn-dominant counties due to China's retaliatory tariff shock. β_t, β_c are the year fixed effect, and the county fixed effect, respectively. u_{ict} is the error term.

The third model is:

$$\ln(donation)_{ctp} = \gamma_0 + \gamma_1 \cdot post_t \cdot treatment_c + \gamma_2 \cdot post_t \cdot treatment_c \cdot REP_p + \gamma_t + \gamma_c + e_{ctp}$$

The third model aims to capture the effect of China's retaliatory tariff shock on farmers' donations to two main political parties. The dependent variable is the same variable in the second

model which is the log value of the farmers' donation in county c in year t . The main explanatory variable in the second model is still the interaction term between $post_t$ and $treatment_c$. In the third model, a three-way interaction is included in the model to seize how the interaction term between $post_t$ and $treatment_c$ differs across the two main political parties in the United States. The other explanatory variable is the interaction between $post_t$ and REP_p to examine whether the Republican Party may have had a greater impact on farmers' donation because of China's retaliatory tariff shock. γ_t, γ_c are the year fixed effect, and the county fixed effect, respectively. e_{ctp} is the error term.

5 Results

Table 2 presents the main results from the three models in the methodology section, aiming to capture the effect of China's retaliatory tariffs in response to the United States' sudden increases in tariffs on China's imports on the monetary value of soybean production, the donations from farmers in the central region of the United States towards committees regardless of their affiliations, and the donations from farmers in the central region of the United States towards committees with different affiliations.

Table 2 shows the negative effects of China's retaliatory tariff shock on the value of soybeans production (the main commodity targeted in China's retaliatory tariffs in the US-China trade war, and thus the treatment in the models). The coefficient in Column 1 indicates that the monetary value of soybean production decreased by about 66% ($(\exp(-1.079) - 1) * 100 = -66.006$) at the county level in the central region of the United States after China's retaliatory tariff shock. This is consistent with the previous literature about the negative impact of retaliatory tariffs on soybeans production (CRS, 2019a).

The negative effect of China's retaliatory tariff shock on donations from farmers in the central region of the United States regardless of the affiliations of the committee is shown in Column 2. The coefficient in Column 2 implies that the donation from farmers in the central region of the United States increased by about 40% ($(\exp(-0.513) - 1) * 100 = 40.130$) after China's retaliatory tariff shock. This might be counterintuitive due to the fact that farmers' income, expenditure, and thus donations are based on the monetary value of commodity production. However, this phenomenon can be explained if we further include the estimation in Column 3.

The estimation in Column 3 shows that China's retaliatory tariff shock has a statistically significant impact on donations from farmers from the central region of the United States, especially towards the Republican Party. The donation towards the Republican Party (the ruling party in the United States in 2017-2021) significantly decreased by 91% ($(\exp(-2.4) - 1) * 100 = -90.928$) after China's retaliatory tariff shock. While the coefficient (0.95) in Column 3 might indicate that farmers in the central region of the United States supports through donations more towards the Democratic Party and less towards the Republican Party.

The empirical estimates results show the negative effects of China's retaliatory tariff on the value of commodity production which is consistent with the previous literature about the negative agricultural outcome in more exposed to retaliatory tariffs area, in this context, in soybeans-dominant counties. The results regarding donations are also aligned with Bonica's (2019) findings that donors' policy preferences can be unveiled by political donations. This means farmers in the central region of the United States show less support for the Republican Party because of the US-China trade war initiated by the Trump administration.

Table 2. Relationship between commodities, monetary value of production, political party and donation.

| VARIABLES | (1) Log Production Value | (2) Log Donation Value | (3) Log Donation Value |
|---------------------|--------------------------------|------------------------------|------------------------------|
| post*treatment | -1.079 (0.823) | -0.513 (0.838) | 0.950 (1.082) |
| post*treatment*REP | | | -2.400** (1.113) |
| Observations | 240 | 240 | 240 |
| R-squared | 0.442 | 0.158 | 0.181 |
| constant | 0.691 | 1.698 | 1.698 |
| County Fixed Effect | YES | YES | YES |
| Year Fixed Effect | YES | YES | YES |
| Adjusted R-squared | 0.151 | -0.282 | -0.263 |

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

6. Concluding remarks

This paper utilizes the difference in difference models to exploit the effect of China's retaliatory tariff shock as an exogenous variation on the monetary value of targeted commodity production and donations to the Republican Party among farmers in the central region of the United States. And based on the empirical results, this paper finds a statistically significant negative effect of China's retaliatory tariff shock on donations from farmers in the central region of the United States towards the Republican Party, the ruling party of the Trump presidency. The donations towards committees directly affiliated with the Republican Party significantly decreased by 91% after China's retaliatory tariff shock. However, this paper fails to find any statistically significant negative effects of China's retaliatory tariff shock on the value of soybeans production and the donations from farmers in general.

One of the possible reasons for not finding any significance in commodity production is the limitation of the data availability. The number of observations for donation data is extremely limited. Since I would like to exclude the negative economic impact because of COVID in 2020, I exclude a significant amount of donation data in 2020. More importantly, since individuals tend to donate or donate more in the election year which happens to be 2020, the donation data become more limited. And the fact that many counties that donate, like counties whose notable industry is not agriculture but finance services instead, do not have county-level commodity production data. This is because USDA merged several counties with significantly less commodity production into one combined production data. Since accurate production county-level data cannot be acquired, the number of observations is thus further decreased. Thus, potential selection bias may occur in interrupting the results of this study.

Another limitation of the paper is that the paper does not include the \$12-billion agricultural subsidies program in the summer of 2018 to assist farmers since agricultural subsidies appear to have played a subtle role in the 2018 election (Blanchard et al., 2020). However, there are some grounds for caution in interpreting results without having agricultural subsidies since the loss in monetary value in commodity production might be mitigated by the agricultural subsidies. Future researchers can embed agricultural subsidies at the county level and capture more accurate donation results and reexamine the results I have presented in this paper.

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