Bean Counters: The Effect of Soy Tariffs on Change in Republican Vote Share Between the 2016 and 2018 Elections.

Olga Chyzh  
*Iowa State University*, ochyzh@iastate.edu

Robert B. Urbatsch  
*Iowa State University*, rbu@iastate.edu

Follow this and additional works at: [https://lib.dr.iastate.edu/pols_pubs](https://lib.dr.iastate.edu/pols_pubs)

Part of the Agribusiness Commons, Comparative Politics Commons, International Business Commons, International Relations Commons, Marketing Commons, Models and Methods Commons, Political Theory Commons, and the Taxation Commons

The complete bibliographic information for this item can be found at [https://lib.dr.iastate.edu/pols_pubs/57](https://lib.dr.iastate.edu/pols_pubs/57). For information on how to cite this item, please visit [http://lib.dr.iastate.edu/howtocite.html](http://lib.dr.iastate.edu/howtocite.html).
Bean Counters: The Effect of Soy Tariffs on Change in Republican Vote Share Between the 2016 and 2018 Elections.

Abstract
How do trade wars affect presidential support? President Trump's aggressive tariffs on China despite his largely rural electoral support base provide a unique opportunity to analyze the relationship between international trade policy and domestic support. If trade-related considerations were ever decisive to American voters, the stark decrease in soy prices, a direct effect of Trump-initiated tariffs immediately preceding the 2018 midterm election, serves as a critical test for studying their effect. This letter shows a robust inverse relationship between county-level soybean production and the change in Republican vote share between the 2016 and 2018 congressional elections.

Disciplines
Agribusiness | Comparative Politics | International Business | International Relations | Marketing | Models and Methods | Political Science | Political Theory | Taxation

Comments
This unpublished article is cited as Chyzh, O.V., Urbatsch, R. Bean Counters: The effects of soy tariffs on change in Republican vote share between the 2016 and 2018 election. March 11, 2019. Posted with permission.
Bean Counters: The Effect of Soy Tariffs on Change in Republican Vote Share Between the 2016 and 2018 Elections

Olga V. Chyzh and Robert Urbatsch

March 11, 2019

Abstract

How do trade wars affect presidential support? President Trump’s aggressive tariffs on China despite his largely rural electoral support base provide a unique opportunity to analyze the relationship between international trade policy and domestic support. If trade-related considerations were ever decisive to American voters, the stark decrease in soy prices, a direct effect of Trump-initiated tariffs immediately preceding the 2018 midterm election, serves as a critical test for studying their effect. This letter shows a robust inverse relationship between county-level soybean production and the change in Republican vote share between the 2016 and 2018 congressional elections.
The American public deems foreign policy a low-salience matter under most circumstances (Kleinberg and Fordham, 2017; Lavine et al., 1996; Rosenau, 1961; Williams, Brule and Koch, 2010). Barring reactions to an occasional ongoing active military conflict, that is, voters are relatively insensitive to international affairs. Trade policy, in particular, is noted for lacking electoral resonance (Guisinger 2017, although see Fordham and McKeown 2003). While other countries periodically might have electoral battles fought around trade policy (e.g., Brodie, 1989; Irwin, 1994; Martin, 1954), the United States’ size and self-sufficiency traditionally have limited public interest in international economic affairs.

Enter President Donald Trump, who shook up the typically obscure issue of trade by launching a series of aggressive trade wars with other countries (Noland, 2018). This, in turn, provoked retaliation, most notably by China (Li, Zhang and Hart, 2018; Liu and Woo, 2018). In light of America’s extensive agricultural exports to China, this exchange of trade barriers sits uneasily with President Trump’s very rural-skewing base of support (Monnat and Brown, 2017). China’s targeting of tariffs was particularly threatening to the soybean sector: as the world’s largest importer, China had considerable power in soybean markets (Taheripour and Tyner, 2018). Indeed, upon imposition of Chinese tariffs, prices in the American soybean market fell rapidly; while a bushel of soybeans had a cost within a few cents of $10.25 for most of spring 2018, the price fell by over a dollar over the month of June as tariffs bit, falling to a ten-year low in September. Even after some year-end recovery, the price remained around $9.00 at the close of 2018. Soybean producers’ revenue thus fell by over 10% from what might have been anticipated during the planting season, and profits fell by concomitantly further.

Nor was the American soybean sector a trivial economic interest: with around $41 billion worth of output in 2016 and 2017, it represented the second most valuable crop in the United States (behind only maize), and one where output had increased dramatically in recent years—an increase largely spurred by increased Chinese demand (USDA, 2018). Moreover, the costs of this trade conflict would have spilled well beyond soybean producers themselves in
communities heavily invested in soybeans, as providers of services or even homeowners would have seen their sales and assets fall concomitantly with soybean farmers’ reduced incomes (Scheve and Slaughter, 2001). While Secretary of Agriculture Sonny Perdue announced a multibillion-dollar bailout program to ameliorate the effect of the trade war on farmers, relatively few of these funds were promptly disbursed, and the effort was perceived as not nearly covering farmers’ losses (Rappeport, 2018).

This context provided unusually stark impetus for voters in soybean-producing areas to pay attention to, and make electoral decisions on the basis of, trade policy. Indeed, support for Trump and his Republican Party marks something of a critical test of the relevance of international political economy for American voters: with a clear shift in market conditions widely attributed to American trade-policy choices, trade-policy had unparalleled visibility and importance. If trade-related considerations were ever decisive in Americans’ decisions of whether and for whom to vote, for those living in soybean-producing areas, the November 2018 general election would be the time.

To determine whether voters punish the incumbent President’s party for economically consequential international trade policies, we model the change in the Republican vote share between the 2016 and 2018 elections to the House of Representatives as a function of county-level soy production. We find strong evidence that voters hold the president’s party accountable for trade policies where those policies have direct economic impact. Counties that are most reliant on soy production have shifted against the Republican Party by roughly 50 percentage points more than we would otherwise expect.

**Trade Policy and Voting Behavior**

Research on whether voters hold politicians accountable for trade policy offers mixed results. Several studies have demonstrated a lack of a relationship between individual support for specific trade policies and how such policies would affect these individuals’ personal in-
come (Hainmueller and Hiscox 2006, Mansfield and Mutz 2009, although see Fordham and Kleinberg 2012). Some interpret these findings as more evidence of the well-known public disinterest when it comes to foreign policy issues (Lavine et al., 1996; Rosenau, 1961; Williams, Brule and Koch, 2010). Others argue that the seeming public’s apathy on trade issues is a relatively recent phenomenon, resulting from the post-World War II fractionalization of US protectionist interests in response to the shift from manufacturing to service jobs, growing orientation towards imports, and the weakening of labor unions (Hiscox, 2002). As a result of these structural changes in the US economy, a host of other political issues with larger and less splintered support bases simply overshadowed trade policy, allowing politicians and economic elites to take advantage of the resulting lack of accountability and shape more liberal trade policies than would be supported by the general public (Guisinger, 2017). A third perspective, known as the sociotropic explanation, posits that average voters are generally unable to correctly infer the consequences of specific trade policies on their individual income (Kono, 2006; Rho and Tomz, 2017), and instead rely on easy-to-access information about the state of the local and national economy from the media, elite discourse, or organizations like the AARP (DiGiuseppe and Kleinberg, 2018; Mansfield and Mutz, 2009).

In the United States, the economic costs of free trade have been found to translate to electoral penalties for the incumbents in two ways. First, locales that are most disadvantaged by free trade may increase support for Democratic political candidates that favor worker compensation and other redistributive policies (Che et al., 2016). Alternatively, the backlash to free trade may lead to the rise of economic nationalism—a protectionist sentiment that attributes domestic economic misfortunes to the influence of out-groups (e.g., foreigners). Research shows evidence of both types of electoral responses to economic shocks: Autor et al. (2017) finds that voters in ethnically diverse districts respond to economic shocks by supporting politicians that advocate for worker compensation policies, while districts with majority non-Hispanic white populations react by increasing support for right-wing candidates with protectionist views. Margalit (2011) finds that, while job loss generally
results in anti-incumbent effect at the polls, this effect doubles in size when the job loss is due to offshoring as opposed to other factors such as domestic competition (also see Jensen, Quinn and Weymouth, 2017; Kleinberg and Fordham, 2013).

While most research so far has focused on testing for evidence of backlash against free trade and globalization, the election of Donald Trump set up unique conditions for a critical test of the reverse effect of whether voters are also likely to punish politicians for adverse economic effects of protectionism. Elected on a platform of economic protectionism and xenophobia, Trump was quick to deliver the promised tariffs against China, which were promptly reciprocated by Chinese tariffs against US-produced soy crops—a production staple of Trump’s agricultural support base. The sharp decrease in demand for soybeans led to a substantial price drop, as well as uncertainty about the future of the entire $41 billion US soy industry as well as other economic activity in soy-producing communities (since trade exposure spills over to the county (Scheve and Slaughter, 2001)). If Trump’s conservative rural support base were ever to infer a direct link between trade policy and their personal well-being and hold the Republican Party accountable, this effect should show in the outcome of the 2018 congressional elections. This strong policy salience is, however, countered not only by the low baseline lack of interest in foreign affairs but also by intense partisan polarization (Abramowitz and Webster, 2016; Gelman et al., 2016). The goal of this letter is to use data on the change in the county-level Republican vote share between the 2016 and 2018 congressional elections to test for evidence of shrinking support for the Republican party in locales that are highly reliant on soy production.

Research Design

The dependent variable is the change in Republican vote share between the 2016 and 2018 general elections to the House of Representatives, $\Delta Republican\ Votes$. We measure this variable as an odds ratio of Republican-to-Democrat votes between the two elections,
This measure allows us to account for change in the Republican-to-Democrat vote share resulting from changes in each party’s relative (Republican-to-Democrat) vote share and relative turnout. A value of 1 indicates no change in the relative vote share, higher values indicate changes in favor of the Republican party, and lower changes indicate changes in favor of the Democrats. Effectively an odds ratio, the measure allows for interpreting results as percent changes. For example, a value of 1.1 would be interpreted as a 10% increase in the odds that a local voter supported the Republican candidate, while a value of 0.8 would mean a 20% shift in favor of the Democrats. To construct the measure, we collected vote totals for the two major parties in the elections for the position of the US House of Representative in the 2016 and 2018 general elections reported at the county level.\footnote{For states that report election results at the levels of precincts or municipalities, and for counties split among two or more congressional districts, reports were aggregated to the county level.} We excluded counties where elections were not contested in both election years, since some states do not report votes for uncontested races, as well as results for Alaska (for which county-equivalent units are not consistently defined).\footnote{Reported results do include results from Pennsylvania, which redrew Congressional-district boundaries between 2016 and 2018. Omitting such redistricted counties from the dataset does not substantially change results.} The resulting sample includes 2414 counties from 49 states. All data were obtained from state-level Secretary of States or equivalents (e.g., the Secretary of the Commonwealth of Massachusetts). We log-normalized the dependent variable in the statistical analysis, so that, e.g., doubling and halving the ratio had symmetrical effects.

Figure 1 shows the spatial distribution of the dependent variable. The prevalence of the blue color is consistent with the “blue wave” trope used by the pundits to describe widespread electoral gains by the Democrats in the 2018 elections. The map colors, of course, are solely indicative of the change in vote share between the two elections, not of
the actual electoral outcome. For example, North Dakota elected a Republican to the US House of Representatives in both the 2016 and the 2018 elections, albeit with a significantly narrower margin in all but one county. Whereas in 2016, in an average North Dakotan county, there were almost 5 Republican voters for each Democratic voter, the corresponding number in the 2018 congressional race was just under 3—a 40 percent decrease. As some initial evidence of voters punishing the incumbent party for consequential trade policies, we see that some of the largest shifts against the Republican party (over 40%) took place in rural agricultural counties of the Midwest and along the Missouri and the Mississippi rivers—areas that correspond to the highest reliance on soy production.

The key independent variable is a county’s economic reliance on soybean production. For robustness purposes, we measure soy production in two ways: in millions of bushels and
Figure 2: 2012 Soy Production (bushels)

Note: Data obtained from the USDA.

in dollar sales. Both of these measures are based on 2012 figures—the most recent data released by the US Department of Agriculture (USDA). Both measures of soy production are log-normalized in the statistical analysis. Figure 2 shows the distribution of soybean production by county.

We control for a number of factors that may influence vote choice and turnout, such as county-level GDP/capita and its square term, percent unemployment, education, urbanization, percent of black and other minorities, percent of Hispanic and Latino population, percent foreign population, as well as the percent margin that voted for Trump in the 2016 Presidential election. To account for possible district-level effects, such as the incumbency advantage and district’s ideological leaning, we also estimate a second model on a subsample of counties that are not split among two or more congressional districts. Data on county-level
GDP were obtained from the Bureau of Economic Analysis website. We measure educational attainment using two variables: percent of the county population whose highest educational attainment equals to a high-school degree or equivalent (variable High School), and as percent of population whose highest educational attainment is a Bachelor’s degree, Bachelor’s. Data on all demographic variables were obtained from the most recent release of the US Census American Community Survey (2013–2017 averages). \( \Delta Incumbency \) is an ordinal variable that takes a value of -2 for districts that had an incumbent Republican candidate in 2016 but an incumbent Democrat candidate in 2018, -1 for districts that had an incumbent Republican candidate in 2016 and an open-seat race in 2018 or an open-seat race in 2016 and an incumbent Democrat in 2018, 0 for districts where the incumbency status was the same in both elections, 1 for districts that had an incumbent Democratic candidate in 2016 and an open-seat race in 2018 or an open-seat race in 2016 and an incumbent Republican in 2018, and 2 for districts that had an incumbent Democratic candidate in 2016 but an incumbent Republican candidate in 2018. District’s Ideology is measured using the Cook Political Report’s Partisan Voting Index as of 2015, coded as the number of percentage points more Republican than the country as a whole the district has voted in recent presidential elections. All control variables were log-normalized as necessary.

We test our hypotheses by estimating a two-level ordinary least squares regression with counties (level 1) nested within states (level 2) (Gelman and Hill, 2007). More formally, index counties as \( i \in 1, 2, \ldots, I \) and states as \( j \in 1, 2, \ldots, J \), then the expected \( \Delta Republican \) Votes in each county \( i \) that is nested in state \( j \) is modeled as:

\[
\Delta Republican \text{ Votes}_{ij} = (\alpha + \alpha_j) + \beta_1 * Soy \text{ Production}_i + \beta_2 * GDP/cap_i + \beta_3 * (GDP/cap.)^2_i + \beta_4 * Unemployment_i + \beta_5 * High-School_i + \beta_6 * Bachelor’s_i + \beta_7 * Urbanization_i + \beta_8 * Black_i + \beta_9 * Other \text{ Non-White}_i + \beta_{10} * Latino_i + \beta_{11} * Foreign_i + \beta_{12} * Trump’s \text{ Margin}_i + \epsilon_i + u_j,
\]

where \( \alpha \) and \( \alpha_j \) are the overall and the state-specific intercept, respectively, \( \beta_1 - \beta_7 \) are
Table 1: Change in Republican Vote Share Between 2016 and 2018 Elections as a Function of Soy Production

<table>
<thead>
<tr>
<th></th>
<th>All Counties</th>
<th>Single-District Counties</th>
<th>All Counties</th>
<th>Single-District Counties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soy Production</td>
<td>-0.045* (0.019)</td>
<td>-0.043* (0.016)</td>
<td>-1.009* (0.477)</td>
<td>-0.780* (0.390)</td>
</tr>
<tr>
<td>Soy Sales</td>
<td>0.021 (0.020)</td>
<td>-0.008 (0.019)</td>
<td>0.021 (0.199)</td>
<td>-0.009 (0.019)</td>
</tr>
<tr>
<td>GDP/cap.</td>
<td>-0.011 (0.018)</td>
<td>0.007 (0.020)</td>
<td>-0.007 (0.018)</td>
<td>0.010 (0.020)</td>
</tr>
<tr>
<td>(GDP/cap.)²</td>
<td>0.002 (0.002)</td>
<td>0.002* (0.002)</td>
<td>0.002* (0.002)</td>
<td>0.003* (0.002)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>0.005* (0.002)</td>
<td>0.007* (0.002)</td>
<td>0.005* (0.002)</td>
<td>0.007* (0.002)</td>
</tr>
<tr>
<td>High-school</td>
<td>-0.006* (0.003)</td>
<td>-0.002 (0.003)</td>
<td>-0.006* (0.003)</td>
<td>-0.002 (0.003)</td>
</tr>
<tr>
<td>Bachelor’s</td>
<td>-0.057 (0.033)†</td>
<td>-0.071* (0.035)</td>
<td>-0.063* (0.033)</td>
<td>-0.066* (0.035)</td>
</tr>
<tr>
<td>Urbanization</td>
<td>-0.001 (0.011)</td>
<td>0.019† (0.011)</td>
<td>-0.002 (0.013)</td>
<td>0.017† (0.011)</td>
</tr>
<tr>
<td>Black</td>
<td>-0.010 (0.017)</td>
<td>0.010 (0.015)</td>
<td>-0.008 (0.066)</td>
<td>0.012 (0.015)</td>
</tr>
<tr>
<td>Other Non-White</td>
<td>0.035* (0.019)†</td>
<td>0.031† (0.019)</td>
<td>0.033† (0.039)</td>
<td>0.029† (0.019)</td>
</tr>
<tr>
<td>Latino</td>
<td>-0.001 (0.014)</td>
<td>0.007 (0.012)</td>
<td>0.001 (0.014)</td>
<td>0.007 (0.012)</td>
</tr>
<tr>
<td>Foreign</td>
<td>-0.124* (0.039)</td>
<td>0.054† (0.033)</td>
<td>-0.123* (0.039)</td>
<td>0.050† (0.043)</td>
</tr>
<tr>
<td>Trump’s 2016 Margin</td>
<td>0.076* (0.016)</td>
<td>0.070* (0.016)</td>
<td>0.076* (0.016)</td>
<td>0.070* (0.016)</td>
</tr>
<tr>
<td>ΔIncumbent</td>
<td>-0.000* (0.001)</td>
<td>-0.000* (0.001)</td>
<td>-0.000* (0.001)</td>
<td>-0.000* (0.001)</td>
</tr>
<tr>
<td>Dist. Ideology</td>
<td>-0.171* (0.024)</td>
<td>-0.203* (0.029)</td>
<td>0.171* (0.024)</td>
<td>-0.202* (0.029)</td>
</tr>
</tbody>
</table>

Variance:

<table>
<thead>
<tr>
<th></th>
<th>States</th>
<th>County</th>
<th>States</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>States</td>
<td>0.022</td>
<td>0.022</td>
<td>0.022</td>
<td>0.022</td>
</tr>
<tr>
<td>County</td>
<td>0.130</td>
<td>0.070</td>
<td>0.131</td>
<td>0.070</td>
</tr>
</tbody>
</table>

Observations:

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>2414</td>
<td>49</td>
</tr>
<tr>
<td>States</td>
<td>1534</td>
<td>31</td>
</tr>
</tbody>
</table>

Notes: *p < .05, †p < .1 (two-tailed). State-level random effects are not shown.

Coefficient estimates on the covariates, while $\epsilon_i$ and $u_j$ are county- and state-level random components, respectively. For counties uniquely assigned to districts, district-level variables are further added to this model.

Results

The results of the statistical analysis are presented in Table 1. In the first two models, soy production is measured in millions of bushels, whereas models 3-4 are estimated measuring soy reliance in terms of soy sales (in USD). Models 1 and 3 are estimated on the full sample, whereas models 2 and 4 are estimated on a subsample of counties that are not split between congressional districts.
Consistent with our expectation, the effect of *Soy Production* is consistently negative and statistically significant in all model specifications. This indicates a direct relationship between county economic reliance on soy production and decrease in Republican vote share between the 2016 and the 2018 congressional elections, while holding all other variables constant. To facilitate the interpretation of our model, we plotted the expected percent change in Republican vote share as a function of county soy production in Figure 3. The figure shows a drastic effect: counties that are reliant on soy production even to a small degree have shifted against the Republican party by anywhere between 25 and 50 percentage points more than counties that produce no soy.

Control variables act in expected directions. Our model suggests that increases in Republican vote share were observed in counties with higher unemployment rates, higher percent of population with no college education, and higher percent of black and Hispanic populations. The latter finding is consistent with the premises of economic nationalism espoused by the Trump administration (i.e. minorities are blamed for various social and economic problems). A gain in Republican incumbency advantage, as measured by our \( \Delta Incumbent \) variable is also associated with expansion in Republican vote share, as one would expect. In contrast, counties with higher proportions of college-educated populations and greater levels of urbanization were associated with decreases in Republican vote share between the two elections. *Trump’s Margin* is negative and statistically significant, which indicates that counties that Trump won by the largest margins exhibited the largest decreases in Republican vote share, which is to be expected due to regression to the mean. Finally, *District Ideology* is negative, possibly as a result of a regression to the mean effect—districts that voted Republican by more points than the national average experienced a decrease in the midterm election.
Conclusion

In studies of international political economy, the general public often appears as only marginally sensitive at most to trade policy; when the public does demonstrate concern for trade, that concern often seems more responsive to identity cues than personal pocketbook issues. However, in exploring the effects of one particularly dramatic shift in trade policy preferences, the United States-China trade war of 2017–2018 and its sudden imposition of restrictions on American soybean exports, the above analysis finds strong effects. Localities that were dependent on soybean production and thus suffered most from the trade confrontation tended to see relatively large shifts against voting for the incumbent President’s party. This result is particularly notable since most previous studies of trade-policy preferences have found larger public responses in response to open trade policy, rather than to the protectionist, higher-barrier policy examined here. Future research should complement this finding with individual-level analysis to better examine who, exactly, responded to the change in trade
policy. Was the effect concentrated among farmers themselves, or did it extend to other locals? And did those who change their voting behavior actually switch parties, or, more likely, simply become less likely to turn out to vote for their partisan preference? It is also worth exploring responses to the ongoing trade conflict in other countries and industries. While the context of the United States agriculture is *sui generis*, the potential for governments to suffer electoral costs from trade wars may be expanding under the Trump administration.
References


