Voting, lobbying, and trade policy
A structural estimation framework

Kishore Gawande
University of Texas at Austin

Pablo M. Pinto
University of Houston

Santiago M. Pinto*
Federal Reserve Bank of Richmond

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* The views expressed herein are those of the author and are not necessarily those of the Federal Reserve Bank of Richmond, or the Federal Reserve System.
State of research on the political economy of trade:

- Empirical contributions in the “old” and “new” endogenous tariff formation tradition rely on reduced-form estimates of formal (or informal) models
  - In the process they have documented empirical regularities about trade politics: i) Special interests matter; ii) geography matters; iii) institutions matter; iv) firm productivity and size matter
  - Yet several of these results are not easily reconciled
- This research appears to have one-sided benefits
  - New findings but limited theoretical progress
  - No significant expansion of theory, or new theory motivated by empirical regularities

Contrast with trade theory

- The “gravity model” of trade has been expanded to match empirical “regularities” to theory
- Resulted in new predictions, such as Eaton and Kortum 2002 and Eaton Kortum Kramarz 2011; and theoretical refinements
**Our contribution: structural framework**

- Develop a structural estimation framework of the PE of trade
  - Start with a very general *two-stage political economy model*
  - Match model’s prediction with actual data on tariffs and NTMs

- Hope to make progress in PE of trade as normal science
  - Use structural parameters to create counterfactuals
  - Expect process to inform theory and new predictions
**MODEL PREDICTIONS: STAGE 1**

**District-specific tariffs** $t_r$ maximize each district’s welfare ($\Omega_r$):

$$\max \Omega_r(t_r) = \sum_j \sum_m \Lambda_{jr}^m W_{jr}^m, \quad r = 1, \ldots, R$$

where $t_r = (t_{1r}, \ldots, t_{jr})$ is the vector of preferred tariffs for each sector $j$ by district $r$

$j = 1, \ldots, J$: sectors (e.g., $J =$ NAICS 3-digit industries)

$r = 1, \ldots, R$: districts (e.g., $R = 435$)

$m = \{L, K\}$: agent types

$n_{jr}^m =$ population of type-$m$ agents in sector $j$ in region $r$

**Model has GH-flavor with a twist:**

- $\Lambda_{jr}^m$ is the weight district $r$ places on the welfare of an agent of type $m$ living in district $r$ and working in industry $j$,

- Regional weights need not match the weight placed by the centralized planner on agents, industries and regions ($\Gamma_{jr}^m$)
STAGE 1: DISTRICT TARIFFS BY SECTOR \( (t_{jr}) \)

- Assume a specific factors economic structure:
  - Agents own labor (L) and (shares of) specific capital (K)
  - Labor is mobile across sectors \((j)\) within region \((r)\)
- The preferred tariff \( (t_{jr}) \) for sector \( j \) by representative from region \( r \) is given by:

\[
t_{jr} = -\frac{n}{M_j'} \left[ \frac{\Lambda^K_{jr} n^K_{jr}}{\lambda_r} \frac{q_{jr}}{n^K_{jr}} - \left( \frac{\lambda^L_r}{\lambda_r} \frac{D^L_j}{n^L} + \frac{\lambda^K_r}{\lambda_r} \frac{D^K_j}{n^K} - \frac{M_j}{n} \right) \right]
\]

where \( \lambda^m_r = \sum_j \Lambda^m_{jr} n^m_{jr} \), \( m \in \{L, K\} \) are the weights, and \( \lambda_r = \lambda^L_r + \lambda^K_r \)
STAGE 2: NATIONAL TARIFFS ($t_j$)

The vector of sectoral tariffs ($t_1, \ldots, t_J$) maximize aggregate (national) welfare ($\Omega^A$):

$$\max \Omega^A(t) = \sum_r \sum_j \Gamma_{jr}^K W_j^K + \sum_r \sum_j \Gamma_{jr}^L W_j^L$$

- Institutionally, national sectoral tariffs $t_j = 1, \ldots, J$ are the result of a bargaining game among representatives in Congress and the President.

Sectoral tariffs are given by:

$$t_j^\Omega = -\frac{n}{M_j'} \left[ \sum_r \frac{\Gamma_{jr}^K n_j^K q_{jr}}{\gamma} - \left( \frac{\gamma^L D_j^L}{\gamma n^L} + \frac{\gamma^K D_j^K}{\gamma n^K} \right) + \frac{M_j}{n} \right]$$

- Note that the welfare weights in $\Omega_r$ and $\Omega^A$ may differ.
DISTRICT AND NATIONAL TARIFFS DIFFER

District vs. Aggregate:

\[ t_{jr} - t_j^\Omega = - \frac{n}{M_j'} \left[ \frac{\Lambda_{jr}^K n_{jr}^K q_{jr}}{\lambda_r n_{jr}^K} - \sum_r \frac{\Gamma_{jr}^K n_{jr}^K q_{jr}}{\gamma n_{jr}^K} \right] \]

Message: If welfare weights are equal and the spatial distribution of activity is uniform across regions, district’s sectoral tariffs may still be different from zero if the allocation of production across jurisdictions is not homogeneous.
Using (2), we can move to an econometric model designed to produce estimates of the welfare weights $\Lambda_{jr}^K$

Rewrite (2) using import demand elasticities $\epsilon_j = M'_j(p_j/M_j)$, where $p_j$ is import price

$$\frac{t_j}{(P_j/M_j)} = -\frac{n}{M'_j(P_j/M_j)} \left[ \sum_r \frac{\Gamma^K_{jr} n^K_{jr}}{\gamma} \frac{q_{jr}}{n^K_{jr}} - \left( \frac{\gamma^L D^L_j}{\gamma n^L} + \frac{\gamma^K D^K_j}{\gamma n^K} - \frac{M_j}{n} \right) \right]$$

Therefore, ad-valorem tariffs $\tau_j (= t_j/p_j)$ are:

$$\tau_j = \frac{-n}{\epsilon_j} \left[ \sum_r \frac{\Gamma^K_{jr} n^K_{jr}}{\gamma} \frac{(q_{jr}/M_j)}{n^K_{jr}} - \left( \frac{\gamma^L (D^L_j/M_j)}{\gamma n^L} + \frac{\gamma^K (D^K_j/M_j)}{\gamma n^K} - \frac{1}{n} \right) \right]$$
Rewriting in a form suitable for estimation:

\[
\tau_j = \sum_r \left[ \frac{\Gamma^K_{jr} n^K_{jr}}{\gamma} \cdot \frac{n}{n^K_{jr}} \cdot \left( \frac{q_{jr}/M_j}{-\epsilon_j} \right) \right] \\
- \frac{\gamma^L}{\gamma} \cdot \frac{n}{n^L} \cdot \left( \frac{D^L_j/M_j}{-\epsilon_j} \right) - \frac{\gamma^K}{\gamma} \cdot \frac{n}{n^K} \cdot \left( \frac{D^K_j/M_j}{-\epsilon_j} \right) + \frac{1}{-\epsilon_j}
\]  

There are two components:

- **Demand-for-protection component:**
  - Since \(-\epsilon_j > 0\), \(\tau_j\) increases with the (regional) output-to-(national) import ratio \(q_{jr}/M_j\)
  - This is reminiscent of Grossman-Helpman model

- **Consumption-distortion component:**
  - \(\tau_j\) decreases with the national consumption-to-import ratios \(D^L_j/M_j\) and \(D^K_j/M_j\)
  - We can simplify the second component further by assuming equal preferences and weights on consumption
Suppose there is no heterogeneity between $L$ and $K$ in their tastes. Then their demand-to-import ratios are same:

\[
\frac{D^K_j}{M^K_j} = \frac{D^L_j}{M^L_j} \left( = \frac{D_j}{M_j} \right),
\]

where $M^K_j = M_j \times \frac{n^K_j}{n_j}$ and $M^L_j = M_j \times \frac{n^L_j}{n_j}$. Then tariff equation is:

\[
\tau_j = \sum_r \left[ \frac{\Gamma^K_{jr} n^K_{jr}}{\gamma} \cdot \frac{n}{n^K_{jr}} \cdot \left( \frac{q_{jr}/M_j}{-\epsilon_j} \right) \right] - \frac{\gamma^L + \gamma^K}{\gamma} \cdot \left( \frac{D_j/M_j}{-\epsilon_j} \right) + \left( \frac{1}{-\epsilon_j} \right)
\]

\[
= \sum_r \left[ \frac{\Gamma^K_{jr} n^K_{jr}}{\gamma} \cdot \frac{n}{n^K_{jr}} \cdot \left( \frac{q_{jr}/M_j}{-\epsilon_j} \right) \right] - \frac{q_j/M_j}{-\epsilon_j}
\]

(4)

The first equality is due to homogeneous tastes, and the second uses $D_j = q_j + M_j$. The second component is simply sector $j$’s national output-to-import ratio.

(4) is the basis for structural estimation.
We estimate the structural parameters by OLS using the econometric specification

$$\tau_j = \sum_{r=1}^{R} \beta_r \left( \frac{q_{jr}/M_{jr}}{-\epsilon_j} \right) + \alpha \left( \frac{q_j/M_j}{-\epsilon_j} \right) + u_j.$$

As above,
1. Assume $\Gamma_{jr}^K = \Gamma_r^K$, that is, welfare weights vary across districts, not within districts (across sectors)
2. Same for labor weights. $\Gamma_{jr}^L = \Gamma_r^L$
3. We use $n_r n_r^K = 1/0.28$ for every district $r$ (national ratio of non-production to production workers in manufacturing)

Under these assumptions, the coefficient $\beta_r$ becomes

$$\beta_r = \frac{\Gamma_r^K n_r^K}{\gamma^K + \gamma^L \cdot n_r^K} \cdot \frac{n_r}{\left( \sum_r \Gamma_r^K n_r^K + \sum_r \Gamma_r^L n_r^L \right) \cdot 0.28}.$$
ESTIMATING STRUCTURAL PARAMETERS

- To structurally estimate the model we need a few assumptions
  1. Estimate GH-type coefficients on variables \( Z_{jr} = \frac{q_{jr}}{M_{jr}} \)
     1.1 Use import demand elasticities \( \epsilon_j = M_j' \left( \frac{p_j}{M_j} \right) \) (\( p_j \) = import price)
     1.2 Replace \( t_j \) with ad-valorem tariffs \( \tau_j = \frac{t_j}{p_j} \)
  2. Since \( M_{jr} \) is unavailable we approximate it as \( M_{jr} = M_j \times \left( \frac{n_r}{n} \right) \)
  3. Equal weights across sectors \( j \) within region \( r \)
  4. The consumption component is given by: \( \frac{q_j/M_j}{-\epsilon_j} = \sum_{r=1}^{R} \frac{q_{jr}/M_j}{-\epsilon_j} \)
  5. We aggregate districts into \( R \) “regions”

- The re-parameterized model is:

\[
\tau_j = \sum_{r=1}^{R} \left[ \frac{\Gamma_r^K n_r^K}{\sum_r (\Gamma_r^K n_r^K + \Gamma_r^L n_r^L)} \cdot \left( \frac{n}{n_r^K} \right) \frac{q_{jr}/M_j}{-\epsilon_j} \right] - \frac{q_j/M_j}{-\epsilon_j} + e_j.
\]

- The estimates reveal the weight on specific capital \( (\sum_r \Gamma_r^K n_r^K) \) relative to total welfare weights \( (\sum_r (\Gamma_r^K n_r^K + \Gamma_r^L n_r^L)) \)
ESTIMATION AND DATA

- We estimate the **structural parameters** by OLS using the econometric specification

\[
\tau_j = \sum_{r=1}^{R} \beta_r \left( \frac{q_{jr}/M_{jr}}{-\varepsilon_j} \right) + \alpha \left( \frac{q_j/M_j}{-\varepsilon_j} \right) + u_j.
\]

- We collected **data** on:
  1. Tariffs and imports \((M_j)\) (USITC Dataweb; Feenstra’s site)
  2. Output \((q_{jr})\), and consumption \((D_{j}^{L} \text{ and } D_{j}^{K})\) (County Business Patterns: 2002)
  3. Employment by type of economic agent, sector and region \((n_{jr}^{K} \text{ and } n_{jr}^{L})\) (County Business Patterns: 2002; NBER manufacturing database)
  4. Import demand elasticities \((\varepsilon_j)\) (Kee, Nicita and Olarreaga (2008))

- Data was available from different sources and at different levels of geographical and industry aggregation

- Convert the data from to NAICS 3-digit level, and map from MSAs and Counties onto the CDs for the 107th Congress (2002)
Results from three different regional groupings

**Case 1: Geography**
- Weights by 9 geographic subdivisions from US Census

**Case 2: Political Geography**
- Weights by 18 regions: 9 geographic subdivisions x Party

**Case 3: Competitiveness of CDs**
- Weights by 9 regions based on battleground state in 2000 Presidential election and competitiveness of Congressional seat
### Case 1: Weights by Geography

Regression model for second stage welfare weights

Dependent Variable: *8-Digit Applied Tariffs, 2002*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff.</th>
<th>Std. err.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_1$ New England</td>
<td>0.046</td>
<td>(0.013)</td>
</tr>
<tr>
<td>$\beta_2$ Mid-Atlantic</td>
<td>0.115</td>
<td>(0.016)</td>
</tr>
<tr>
<td>$\beta_3$ East North Central</td>
<td>0.269</td>
<td>(0.015)</td>
</tr>
<tr>
<td>$\beta_4$ West North Central</td>
<td>0.000</td>
<td>–</td>
</tr>
<tr>
<td>$\beta_5$ South Atlantic</td>
<td>0.171</td>
<td>(0.010)</td>
</tr>
<tr>
<td>$\beta_6$ East South Central</td>
<td>0.000</td>
<td>–</td>
</tr>
<tr>
<td>$\beta_7$ West South Central</td>
<td>0.127</td>
<td>(0.039)</td>
</tr>
<tr>
<td>$\beta_8$ Mountain</td>
<td>0.026</td>
<td>(0.013)</td>
</tr>
<tr>
<td>$\beta_9$ Pacific</td>
<td>0.188</td>
<td>(0.030)</td>
</tr>
<tr>
<td>$\alpha$ $(q_j/M_j)/</td>
<td>\epsilon_j</td>
<td>$</td>
</tr>
<tr>
<td>$\beta_0$ Constant</td>
<td>0.043</td>
<td>(0.020)</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>8315</td>
</tr>
<tr>
<td>Pseudo $R^2$</td>
<td></td>
<td>0.173</td>
</tr>
</tbody>
</table>
# Case 1: Weights by Geography

## Second Stage Welfare Weights on Specific K

<table>
<thead>
<tr>
<th>Region</th>
<th># Districts</th>
<th>Normalized K-weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England</td>
<td>23</td>
<td>0.019</td>
</tr>
<tr>
<td>Mid-Atlantic</td>
<td>65</td>
<td>0.047</td>
</tr>
<tr>
<td>East North Central</td>
<td>73</td>
<td>0.098</td>
</tr>
<tr>
<td>West North Central</td>
<td>31</td>
<td>0.000</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>75</td>
<td>0.068</td>
</tr>
<tr>
<td>East South Central</td>
<td>26</td>
<td>0.000</td>
</tr>
<tr>
<td>West South Central</td>
<td>47</td>
<td>0.052</td>
</tr>
<tr>
<td>Mountain</td>
<td>24</td>
<td>0.011</td>
</tr>
<tr>
<td>Pacific</td>
<td>69</td>
<td>0.080</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>433</strong></td>
<td><strong>0.375</strong></td>
</tr>
</tbody>
</table>

## Overall Weights for 433 Districts

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$K$-weight / total</td>
<td>0.375</td>
</tr>
<tr>
<td>$L$-weight / total</td>
<td>0.625</td>
</tr>
<tr>
<td>$L$-weight / $K$-weight</td>
<td>1.667</td>
</tr>
</tbody>
</table>
CASE 1: WEIGHTS BY GEOGRAPHY
**CASE 2: WEIGHTS BY PARTY & GEOGRAPHY**

Estimated Weights on Specific Capital by Geography and Party

<table>
<thead>
<tr>
<th>Region</th>
<th>Republican</th>
<th>Democrat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. New England</td>
<td>0.000</td>
<td>0.015</td>
</tr>
<tr>
<td>2. Mid-Atlantic</td>
<td>0.000</td>
<td>0.056</td>
</tr>
<tr>
<td>3. East North Central</td>
<td>0.055</td>
<td>0.050</td>
</tr>
<tr>
<td>4. West North Central</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>5. South Atlantic</td>
<td>0.034</td>
<td>0.050</td>
</tr>
<tr>
<td>6. East South Central</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>7. West South Central</td>
<td>0.000</td>
<td>0.028</td>
</tr>
<tr>
<td>8. Mountain</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>9. Pacific</td>
<td>0.022</td>
<td>0.062</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>0.111</strong></td>
<td><strong>0.260</strong></td>
</tr>
</tbody>
</table>

**Overall Weights for 433 Districts**

<table>
<thead>
<tr>
<th>Weight Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$K$-weight / total</td>
<td>0.371</td>
</tr>
<tr>
<td>$L$-weight / total</td>
<td>0.629</td>
</tr>
<tr>
<td>$L$-weight / $K$-weight</td>
<td>1.695</td>
</tr>
</tbody>
</table>
CASE 2: WEIGHTS BY PARTY & GEOGRAPHY

Weights by Political Geography
107th Congress, 2002
### Case 3: Weights by Electoral Outcomes

#### Regions by Political Blocs based on 2000 Elections

<table>
<thead>
<tr>
<th>State-wide vote in Presidential election</th>
<th>House election in CD</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Competitive</td>
<td>Safe Dem.</td>
<td>Safe Rep.</td>
<td>Total</td>
</tr>
<tr>
<td>Competitive</td>
<td>0.010</td>
<td>0.048</td>
<td>0.071</td>
<td>0.129</td>
</tr>
<tr>
<td>Safe Dem.</td>
<td>0.014</td>
<td>0.061</td>
<td>0.037</td>
<td>0.112</td>
</tr>
<tr>
<td>Safe Rep.</td>
<td>0.004</td>
<td>0.059</td>
<td>0.094</td>
<td>0.157</td>
</tr>
<tr>
<td>Total</td>
<td>0.028</td>
<td>0.168</td>
<td>0.202</td>
<td>0.398</td>
</tr>
</tbody>
</table>

#### Overall Weights for 433 Districts

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>$K$-weight / total</td>
<td>0.398</td>
</tr>
<tr>
<td>$L$-weight / total</td>
<td>0.602</td>
</tr>
<tr>
<td>$L$-weight/$K$-weight</td>
<td>1.513</td>
</tr>
</tbody>
</table>
### CASE 3: WEIGHTS BY ELECTORAL OUTCOMES

Regions by Political Blocs based on 2000 Elections

<table>
<thead>
<tr>
<th>State-wide vote in Presidential election</th>
<th>House election in CD</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Competitive</td>
<td>Safe Dem.</td>
<td>Safe Rep.</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td>Competitive</td>
<td>17</td>
<td>17</td>
<td>83</td>
<td>172</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[.03]</td>
<td>[.16]</td>
<td>[.22]</td>
<td>[.41]</td>
<td></td>
</tr>
<tr>
<td>Safe Dem.</td>
<td>8</td>
<td>75</td>
<td>42</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[.02]</td>
<td>[.16]</td>
<td>[.09]</td>
<td>[.27]</td>
<td></td>
</tr>
<tr>
<td>Safe Rep.</td>
<td>5</td>
<td>51</td>
<td>80</td>
<td>136</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>198</td>
<td>205</td>
<td>433</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[.07]</td>
<td>[.43]</td>
<td>[.51]</td>
<td>[1.00]</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

1. Cells contain the number of districts.
2. Proportion of manufacturing workforce in brackets.
CASE 3: TARIFFS – WEIGHTS BY ELECTORAL OUTCOMES

Weights by Competitiveness of State and CD
107th Congress, 2002

[Map showing weights by competitiveness of state and congressional district]
We do not observe tariffs demanded by regional representatives. Use the parameters (weights) from the structural model to:

- Derive the (implicit) district specific tariffs that would be demanded by a representative from a region.
- Compare with observed national tariffs (and NTMs).

To illustrate, we present results using estimates from Case 2, where regions reflect nine geographic subdivisions and party.
CASE 2: PROTECTION BY SECTOR

Predicted and Effective Sectoral Protection

- APPAREL
- CHEM
- COMPUTER
- ELECEQUIP
- FABMETAL
- FURN
- LEATHER
- MACHINERY
- MISCMFG
- NONMETAL
- PAPER
- PETRO
- PLASTRUBB
- PRIMMETAL
- TEXTILE
- TEXTPROD
- TRANSPORT
- WOODPROD

- Predicted Tariffs
- Effective Tariffs
- Core NTMs

All Congressional Districts and 18 NAICS sectors
**Case 2: Protection by Region**

Mean Predicted and Effective Protection by Region and Party

- New England - Rep
- New England - Dem
- Mid-Atlantic - Rep
- Mid-Atlantic - Dem
- East North Central - Rep
- East North Central - Dem
- West North Central - Rep
- West North Central - Dem
- South Atlantic - Rep
- South Atlantic - Dem
- East South Central - Rep
- East South Central - Dem
- West South Central - Rep
- West South Central - Dem
- Mountain - Rep
- Mountain - Dem
- Pacific - Rep
- Pacific - Dem

Predicted Tariffs: Green
Effective Tariffs: Blue
Core NTMs: Red

433 Congressional Districts x 18 NAICS sectors
EXAMPLE FROM CASE 2: MIDWEST REP CDs

Mean Predicted and Observed Protection in Region
East North Central - Republican CDs

- APPAREL
- CHEM
- COMPUTER
- ELECEQUIP
- FABMETAL
- FURN
- LEATHER
- MACHINERY
- MISCMFG
- NONMETAL
- PAPER
- PETRO
- PLASTRUBB
- PRIMMETAL
- TEXTILE
- TEXTPROD
- TRANSPORT
- WOODPROD

Predicted Tariffs, Effective Tariffs, Core NTMs
EXAMPLE FROM CASE 2: MIDWEST DEM CDs

Mean Predicted and Observed Protection in Region
East-North Central - Democrat CDs

- APPAREL
- CHEM
- COMPUTER
- ELECEQUIP
- FABMETAL
- FURN
- LEATHER
- MACHINERY
- MISCMFG
- NONMETAL
- PAPER
- PETRO
- PLASTRUBB
- PRIMMETAL
- TEXTILE
- TEXTPROD
- TRANSPORT
- WOODPROD

- Predicted Tariffs
- Observed Tariffs
- Core NTMs
Incentives created by political dynamics on second stage

- Incentive structure varies across policy instruments
  - Tariffs are constrained by international agreements
  - NTMs enacted by delegated authority with more limited ex-post participation by Congress
  - Follow different political logic: Republican President places more weights on Republican districts
CASE 1: NTMs – WEIGHTS BY GEOGRAPHY

NTMs Weights by Geographic Divisions
107th Congress, 2002
CASE 2: NTMs – WEIGHTS BY PARTY & GEOGRAPHY

Weights by Political Geography
107th Congress, 2002
CASE 3: NTMs – WEIGHTS BY ELECTORAL OUTCOMES
CONCLUSION

- Results indicate that interests of labor-as-consumers matters in the determination of US tariffs and NTMs
  - The structure of protection reveals an aggregate welfare weight on special interests that is one-third the aggregate welfare weight on consumers
  - Industrial areas in Midwest are weighted more heavily, but latent demand for protection is not satisfied; could explain China-shock and party switching
- Weights on districts depend on instrument of protection: differences between tariffs and NTMs, consistent with institutional structure for enacting policies
  - Tariffs enacted by log-roll of safe CDs; marginal districts lose
  - NTMs reflect higher weights on Republican CDs: substitute for tariffs in Rep CDs, and complement tariffs in Dem CDs
Structural estimation contributes to advancing theory and empirical contributions to the PE of trade.

Substantively, it allows to assess how far actual tariffs are from tariff preferences of districts.

- Help understand the political fallout from the China shock.
- Address questions such as: why did the Democratic Party, which has historically represented areas and voters hurt by trade, tended to vote for liberalization in Congress?
EXTENSIONS: LOBBYING

Incentives created by political dynamics on second stage

- Extend analysis to special interest influence and lobbying (Appendix)
  - Theoretical issues: where lobbying occurs is consequential
  - Empirical issues: estimating the model with lobbying is more intensive in data
Suppose that lobbying is organized at the national level and decided by the owners of the specific factors (sectors)

- A subset of sectors $L \subset J$ are organized
- Government chooses tariff vector $t$ that maximizes $a \Omega + C$
  
  $\Omega$: welfare, $C$: campaign contributions, $a$: trade-off between welfare and contribution dollars (Grossman and Helpman (1994))

- Equivalent to solving the following problem:

$$
\max U(t) = \sum_{j \in L} W_j^K + a \Omega = \sum_r \sum_{j \in L} W_j^K + a \sum_r \sum_{j \in J} \sum_m \Gamma_{jr}^m W_{jr}^m,
$$

- For organized sectors ($j \in L$):

$$
t_j^U = -A \frac{n}{M_j} \left\{ \sum_r \left( \frac{\Gamma_{jr}^K n_{jr}^K}{\gamma} + \frac{n_{jr}^K}{a_\gamma} \right) q_{jr} - \left[ \frac{\gamma^L D_j^L}{\gamma n^L} + \left( \frac{\gamma^K}{\gamma} + \frac{n_{jr}^K}{a_\gamma} \right) D_j^K \right] + \frac{1}{A} \frac{M_j}{n} \right\}
$$

where $A \equiv a_\gamma / (a_\gamma + n_{jr}^K)$

- For sectors that are not organized ($j \in J \setminus L$), $t_j^U = t_j^\Omega$ (previous eq. (2)):

$$
t_j^\Omega = - \frac{n}{M_j} \left\{ \sum_r \frac{\Gamma_{jr}^K n_{jr}^K}{\gamma} q_{jr} - \left[ \frac{\gamma^L D_j^L}{\gamma n^L} + \frac{\gamma^K}{\gamma} D_j^K \right] + \frac{M_j}{n} \right\}
Thank you!
ESTIMATES FROM CASE 2: TARIFFS AND NTMs

Average Tariffs and Non-Tariff Measures by Geography and Party

New England-R
New England-D
Mid-Atlantic-R
Mid-Atlantic-D
East-North Central-R
East-North Central-D
West-North Central-R
West-North Central-D
South Atlantic-R
South Atlantic-D
East-South Central-R
East-South Central-D
West-South Central-R
West-South Central-D
Mountain-R
Mountain-D
Pacific-R
Pacific-D

Average Tariff
Average NTM
ESTIMATES FROM CASE 2: SOUTH ATLANTIC - REP
ESTIMATES FROM CASE 2: SOUTH ATLANTIC - DEM

Mean Predicted and Observed Protection in Region
South Atlantic - Democrat CDs

Predicted Tariffs
Observed Tariffs
Core NTMs