# Globalizing the Supply Chain: Firm and Industrial Support for US Trade Agreements

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# The questions

Opportunities to globalize the supply chain through the multinationalization of production and sourcing have grown enormously.

Concurrently, the breadth and depth of trade liberalization has changed with a growing orientation towards trade facilitation, investment, and regulatory harmonization.

**Research questions**:

- To what extent are industrial preferences over trade driven by opportunities to globalize the supply chain?
- What broader impacts have these forces had on the pro-trade coalition, and trade politics generally?

# Opportunities to globalize the supply chain

| | Stage of production | |
|---|---|---|
| | Inputs | Final products |
| Within the firm | | |
| Outside the firm, direct | | |
| Outside the firm, indirect | | |

# Growth in production within the bounds of the firm

| | Stage of production | |
|---|---|---|
| | Inputs | Final products |
| Within the firm | Global vertical integration via FDI | Final product offshoring via FDI |
| Outside the firm, direct | | |
| Outside the firm, indirect | | |

- FDI stock grew from 6% to 30% of world GDP from 1980 to 2011.
- Related-party imports (or intra-firm trade) account for 48% of US imports in 2011.

# Growth in foreign sourcing of intermediate inputs

| | Stage of production | |
|---|---|---|
| | Inputs | Final products |
| Within the firm | Global vertical integration via FDI | |
| Outside the firm, direct | Arm's length contracting of inputs | |
| Outside the firm, indirect | Consumption of intermediates via wholesale | |

- Trade as a share of world GDP tripled from 1950 to 2011.
- 56% of goods trade is in intermediates; 73% of services trade (Miroudot et al 2009).

# Distributive consequences of comprehensive trade liberalization

**The varieties of trade**: Firms and industries face own-industry import competition and export opportunities; opportunities to deepen global sourcing of inputs; opportunities to produce final products abroad; and even effects of trade on downstream industries.

**Location**: A firm's location critically shapes how these trade flows are evaluated. What firms located at home oppose, firms located abroad generally embrace.

**Intra-industry variation**: While not the focus of this paper, intra-industry variation is lurking in the background especially in the contrast between firms and trade associations.

# The proposed model and hypotheses

### Hypothesis

*Industries with greater imports from a country originating from home-market multinationals should be more likely to feature support for trade liberalization with that country, especially among firms.*

### Hypothesis

*Industries which source a greater amount of intermediate imports from a country should be more likely to feature support for trade liberalization with that country.*

And of course: import competition; export opportunities; and 'downstream' exports via supply to export-competitive home market industries.

# The context: public positiontaking on US PTAs

US trade agreements as main site for conflict over trade politics.

Public positiontaking (mainly support) is regular and politically important; little special interest support for trade liberalization in the US outside of industry.

A vast literature on causes, forms, and consequences of PTAs.
- causes: Mansfield and Milner 2012; Manger 2012, 2009; Buthe and Milner 2012, Chase 2003.
- forms: Kim (2015); Dur et al 2014; Manger 2005.
- consequences: Baccini et al 2016; Rickard and Kono 2014; Davis 2004.

A great deal of variation across US FTAs and goods-producing industries in extent of trade flows and multinationalization.

# The outcome: public position-taking by US firms and associations on FTAs

| | | Firms | | | Associations | | |
|---|---|---|---|---|---|---|---|
| Agreement | Year | # Support | Avg. Sources | # Sources | # Support | Avg. Sources | # Sources |
| NAFTA | 1994 | 1272 | 1.10 | 20 | 124 | 1.71 | 20 |
| Jordan | 2001 | 7 | 1.00 | 3 | 5 | 1.00 | 2 |
| AUSFTA | 2004 | 135 | 1.10 | 5 | 48 | 1.24 | 11 |
| Chile | 2004 | 90 | 1.00 | 4 | 32 | 1.33 | 4 |
| Singapore | 2004 | 79 | 1.36 | 5 | 15 | 1.47 | 5 |
| CAFTA-DR | 2005 | 184 | 1.18 | 5 | 69 | 2.07 | 22 |
| Bah/Mor/Omn | 2006 | 44 | 1.11 | 5 | 16 | 1.25 | 5 |
| Peru | 2007 | 36 | 1.06 | 4 | 46 | 1.46 | 8 |
| Pan/Col | 2011 | 269 | 1.12 | 14 | 121 | 1.81 | 41 |
| KORUS | 2011 | 177 | 1.31 | 36 | 170 | 1.98 | 43 |

Outcomes at the 6-digit NAICS industry level (403) per agreement (10) so N = 4030.:

| | | |
|---|---|---|
| **# supporting firms**: | count, of supporting firms | 1.13 median expectation |
| **Association support**: | dichotomous, 1+ association expresses support | 29% of cases |

# The explanatory variables: proxying vertical FDI

| | Stage of production | |
| --- | --- | --- |
| | Inputs | Final products |
| Within the firm | | Final product offshoring via FDI |
| Outside the firm, direct | | |
| Outside the firm, indirect | | |

- I proxy for vertical FDI using US related-party imports measured at the 6-digit NAICS level for each set of agreement countries.
- Error due to imports by foreign MNCs with affiliates in the US.

# The explanatory variables: estimating imported inputs

| | Stage of production | |
|---|---|---|
| | Inputs | Final products |
| Within the firm | Global vertical integration via FDI | |
| Outside the firm, direct | Arm's length contracting of inputs | |
| Outside the firm, indirect | Consumption of intermediates via wholesale | |

- 5% of the value added of the $100 billion dollar US auto industry comes from using flat glass as an input.
- Suppose also that 1% of flat glass used in the United States comes from South Korea.
- $.05 \cdot .01 \cdot \$100\text{billion} = \$50$ million of South Korean flat glass is used by the auto industry annually.
- Summing across all inputs (glass, leather, steel, car parts, electronics) is total reliance of the auto industry on South Korean-made inputs.

# Models

$$
\begin{aligned}
\theta \quad = \quad & \beta_0 + \beta_1 \ln \text{Rel. party imports} + \beta_2 \ln \text{Inputs} + \beta_3 \ln \text{Downstream exports} + \\
& + \beta_4 \ln \text{Sales} + \boldsymbol{\beta_{5-12}} \cdot \text{Differentiation} \cdot (\ln \text{Exports} + \ln \text{Imports}).
\end{aligned}
$$

# Supporting firms is modeled using negative binomial regression;
Assoc. support is modeled using logistic regression.

Standard errors are clustered at the 3-digit NAICS-agreement level.

# First differences

All continuous variables are moved from their 25th to their 75th percentile.

| Outcome: | # Firms | Assoc. |
|---|---|---|
| Related-party and intermediates trade: | | |
| Rel. party imports | 0.45*** | 0.10*** |
| Inputs | 0.95*** | 0.13*** |
| Downstream exports | 0.13*** | 0.00 |
| Ordinary trade: | | |
| Imports $\times$ Homog. | −0.06 | −0.20*** |
| Imports $\times$ Diff. | 0.07 | 0.09** |
| Exports $\times$ Homog. | 0.18** | 0.13*** |
| Exports $\times$ Diff. | −0.02 | −0.04*** |
| Other controls: | | |
| Sales | 0.19*** | 0.02** |
| Homog. $\rightarrow$ Mod. | 0.02 | −0.05 |
| Homog. $\rightarrow$ Diff. | 0.36** | −0.17 |
| N | 4030 | 4030 |

Recall that the median expected number of firms expressing support is 1.13 per industry-agreement; the proportion of associations is .29.

# Robustness of the main findings

The core findings are similar:

- using competing approaches to specifying trade flows.
- excluding NAFTA.
- using alternative approaches to measure vertical FDI based on US direct investment abroad and VIIT/HIIT.
- among manufacturers only.
- with additional measures related to the collective action problem: industrial concentration, firm numbers, association resources.

# Counterfactual exercise

What would support for trade agreements in the US have looked like if opportunities to globalize the supply chain were shrunk, for each industry, by 90%?

What about if imports increased by 10 times, and exports declined by 90%?

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| | Current levels | Predicted levels | Difference | 95% CI |
|---|---|---|---|---|
| **Scenario: De-globalization of Supply Chains** | | | | |
| No. firms support | 1.13 | 0.64 | 0.49 | [0.41, 0.57] |
| Pr. assoc. support | 0.29 | 0.20 | 0.09 | [0.07, 0.11] |
| **Scenario: Sharp Deterioration in Relative Exports** | | | | |
| | Current levels | Predicted levels | Difference | 95% CI |
| No. firms support | 1.13 | 1.03 | 0.10 | [0.00, 0.20] |
| Pr. assoc. support | 0.29 | 0.23 | 0.06 | [0.03, 0.09] |

Notes: All estimates are first differences from models above among the complete sample ($N$ = 4030). Changes in variables are 1/10 the observed value or 10 times the observed value. Standard errors are clustered at 3-digit NAICS-agreement level.

# Effects of globalization of the supply chain

The nature of the pro-trade coalition is changed:

- there is vastly *more support* for liberalization than there would be absent globalization of the supply chain.
- support for trade has been created in *uncompetitive industries*, undermining efforts to form a coherent industrial opposition.
- the center of political activity has moved *from associations to firms*.

Moving beyond preferences and coalitions, the effects on trade policy are significant: deeper and broader liberalization, focused on the special interests of firms with global supply chains.

And an answer to the question: Why did the United States embrace globalization despite severe dislocation and economic costs?