

# Intra-Industry Trade, Global Supply Chains and the Political Economy of Preferential Trade Liberalization

Leonardo Baccini  
(with Andreas Dür and Manfred Elsig)

McGill University

IPES 2015, Stanford University, U.S.

# Motivation and Research Question

## Two important trends in the global economy:

1. Globalization of production: trade in intermediates now accounts for two-thirds of imports for most OECD countries
2. Increase in intra-industry trade (IIT) for many years according to most measures

## Research question:

How do these developments affect the political economy of trade?

# State of the Art

## Nascent literature on global supply chains and trade policy:

- ▶ GSCs are largely seen as facilitating trade liberalization (Chase 2003; Manger 2009; Baldwin 2011; Antràs and Staiger 2012; Blanchard and Matschke, 2014; Blanchard et al 2015; Jensen et al 2015; Johns and Wellhausen 2015; Kim 2015)

## Large literature on IIT and trade policy:

- ▶ IIT reduces adjustment costs and hence resistance to trade liberalization (Helpman 1981; Krugman 1981; Lipson 1982; Milner 1997; Manger 2015; Kim and Wong 2015)
- ▶ Gilligan (1997) and Kono (2009), however, come to the opposite conclusion

# Our Contribution

## Combining IIT with GVCs:

- ▶ We argue that the presence of GSCs moderates the effect of IIT on trade liberalization
- ▶ IIT facilitates trade liberalization for finished goods but not for intermediates
- ▶ This argument helps resolve the conflicting evidence regarding the effect of IIT

## Data:

- ▶ We use an original dataset on tariff concessions at the HS-6 level in 61 PTAs to examine our argument
  - ▶ complete coverage of tariff data
  - ▶ complete tariff transition period

# Demand for Trade Liberalization

		Type of good	
		Finished	Intermediate
IIT	High	High demand	Low demand
	Low	Low demand	High demand

## Hypothesis:

Whereas more IIT facilitates the liberalization of finished goods, it makes the liberalization of intermediate goods more difficult.

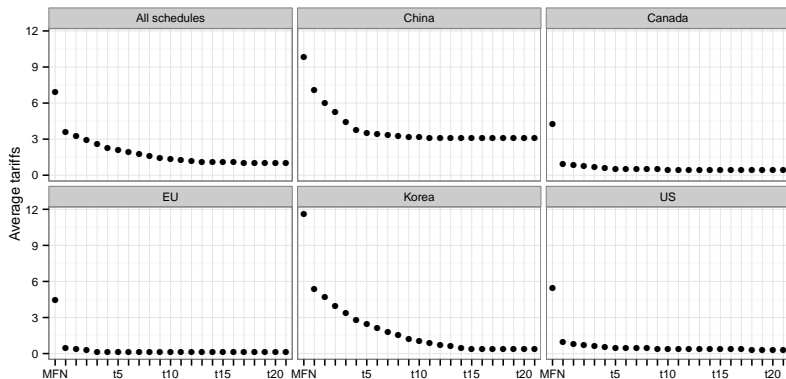
# Research Design

## Our data

- ▶ Original dataset containing the tariff concessions exchanged in 61 PTAs at the 6 digit HS level
  - Australia, Canada, China, European Union, Japan, South Korea and the United States
  - Total of 48 countries covered
  - 1995 to 2014
- ▶ 156 tariff schedules with around 5,000 tariff lines each
  - WITS alone not sufficient
  - WITS coverage considerably worse than ours
- ▶ Around 800,000 observations

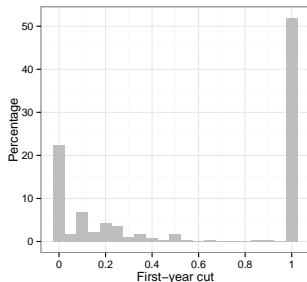
# Research Design

Tariff cuts over time, by major trading entity.

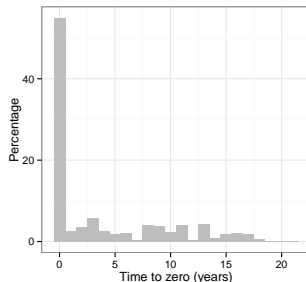


# Dependent Variables

First-year cut as % of tariff rate  
 $t_{min1}: (t_{min1} - t_0)/t_{min1}$   
*(Proportional cut)*



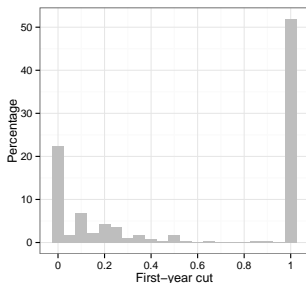
Years needed for tariff to go to  
 zero  
*(Time to zero)*



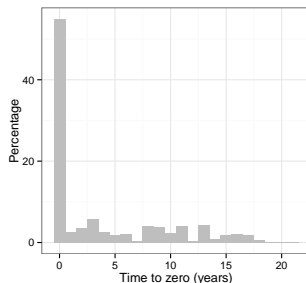


# Dependent Variables

First-year cut as % of tariff rate  
 $t_{min1}$ :  $(t_{min1} - t_0)/t_{min1}$   
*(Proportional cut)*



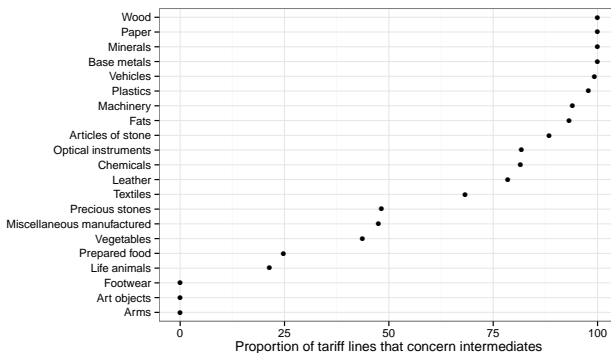
Years needed for tariff to go to  
 zero  
*(Time to zero)*



# Predictors

## Good type:

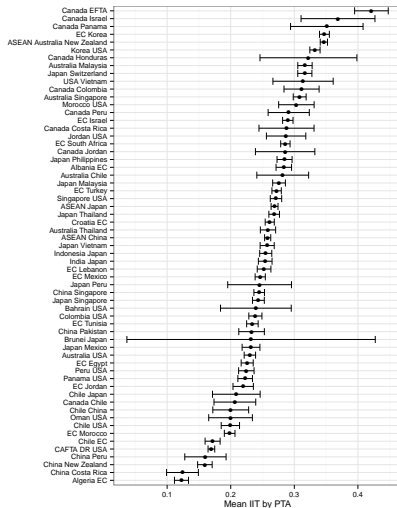
- ▶ Final vs. intermediate and mixed (Francois and Pindyuk 2012 and Bekkers et al. 2012)



# Predictors

## Intra-industry trade:

- ▶ Simultaneous imports and exports of a good
- ▶ Measured at the HS6 level
- ▶ IIT missing to control for missing observations



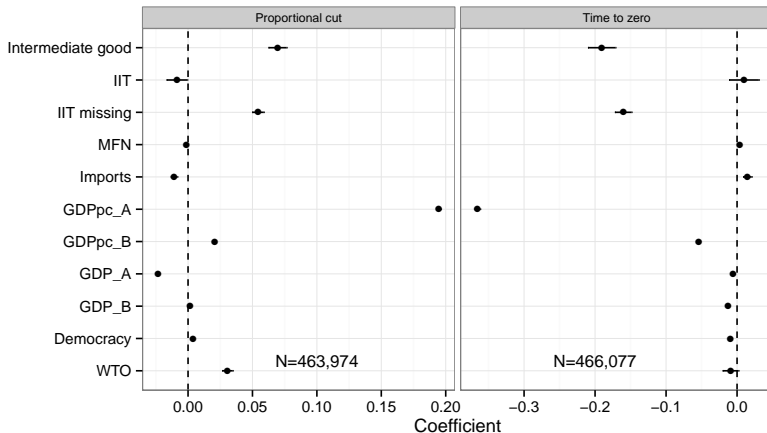
# Estimation Techniques

- ▶ OLS regression with Country A FE
- ▶ Heckman selection model
- ▶ Multilevel analysis (HS2 random intercept)
- ▶ Quantile regression
- ▶ Logistic regression

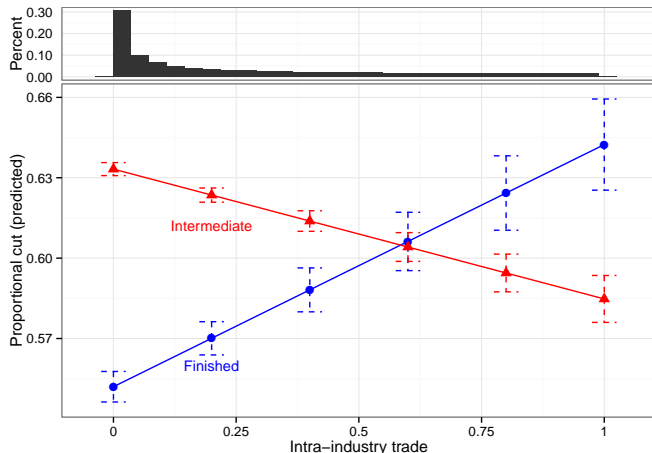
# Estimation Techniques

- ▶ OLS regression with Country A FE
- ▶ Heckman selection model
- ▶ Multilevel analysis (HS2 random intercept)
- ▶ Quantile regression
- ▶ Logistic regression

# The Additive Results



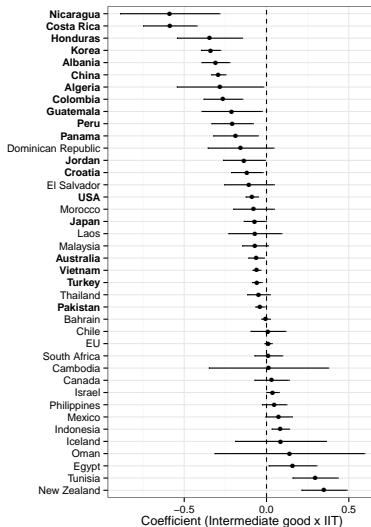
# Testing the Hypothesis: Proportional Cut



**Intermediates:** if IIT  $0 \rightarrow 1$ , tariff cut decreases by 9%.

**Finished goods:** if IIT  $0 \rightarrow 1$ , tariff cut increases by 14%.

# Testing the Hypothesis: Proportional Cut by Country A





# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues

# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓

# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods)

# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods) ✓

# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods) ✓
- ▶ Power story (pressure from Country B)

# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods) ✓
- ▶ Power story (pressure from Country B) ✓

# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods) ✓
- ▶ Power story (pressure from Country B) ✓

## Different Operationalization of Main Variables

- ▶ Import elasticity

# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods) ✓
- ▶ Power story (pressure from Country B) ✓

## Different Operationalization of Main Variables

- ▶ Import elasticity ✓



# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods) ✓
- ▶ Power story (pressure from Country B) ✓

## Different Operationalization of Main Variables

- ▶ Import elasticity ✓
- ▶ Homogenous vs differentiated goods

# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods) ✓
- ▶ Power story (pressure from Country B) ✓

## Different Operationalization of Main Variables

- ▶ Import elasticity ✓
- ▶ Homogenous vs differentiated goods ✓

# Additional Evidence

## Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods) ✓
- ▶ Power story (pressure from Country B) ✓

## Different Operationalization of Main Variables

- ▶ Import elasticity ✓
- ▶ Homogenous vs differentiated goods ✓
- ▶ BEC categorization for intermediates vs finished goods

## Additional Evidence

### Testing the Mechanism

- ▶ Identification issues ✓
- ▶ Tariff escalation (primary goods) ✓
- ▶ Power story (pressure from Country B) ✓

### Different Operationalization of Main Variables

- ▶ Import elasticity ✓
- ▶ Homogenous vs differentiated goods ✓
- ▶ BEC categorization for intermediates vs finished goods ✓

# Conclusion

## Key findings

- ▶ Neither IIT nor GSCs unambiguously facilitate trade liberalization; rather:
  - ▶ For finished goods, IIT facilitates trade liberalization; for intermediates, it does not
  - ▶ At low levels of IIT, GSCs facilitate trade liberalization; at high levels, they do not
- ▶ Potential losers seem still to be key in understanding tariff concessions in PTAs

Many thanks!

# Bibliography

- Antràs, Pol, and Robert W. Staiger. 2012. "Offshoring and the Role of Trade Agreements." *American Economic Review* 102(7): 3140–83.
- Baldwin, Richard E. 2011. "21st Century Regionalism: Filling the Gap between 21st Century Trade and 20th Century Trade Rules." WTO Staff Working Paper ERSD-2011-08.
- Blanchard, Emily and X. Matschke. 2015. "U.S. Multinationals and Preferential Market Access." Forthcoming in *Review of Economics and Statistics*.
- Blanchard, Emily, C. Bown and R. Johnson. 2015. "Global Supply Chains and Trade Policy". Working paper.
- Basu, Sudip R. 2011. "Retooling Trade Policy in Developing Countries: Does Technology Intensity of Exports Matter for GDP per Capita." Policy Issues in International Trade and Commodities UNCTAD/ITCD/TAB.
- Bekkers, Eddy, Joseph Francois, and Miriam Manchin. 2012. "Import Prices, Income, and Inequality." *European Economic Review* 56(4): 848–69.

## Bibliography

- Broda, Christian, Joshua Greenfield, and David Weinstein. 2006. "From Groundnuts to Globalization: A Structural Estimate of Trade and Growth." NBER Working Paper 12512.
- Chase, Kerry. 2003. "Economic Interests and Regional Trading Arrangements: The Case of NAFTA." *International Organization* 57(1): 137–74.
- Gilligan, Michael J. 1997. "Lobbying as a Private Good with Intra-Industry Trade." *International Studies Quarterly* 41(3): 455–74.
- Helpman, Elhanan. 1981. "International Trade in the Presence of Product Differentiation, Economies of Scale and Monopolistic Competition: A Chamberlin-Heckscher-Ohlin Approach." *Journal of International Economics* 11(3): 305–40.
- Jensen, J. Bradford, Dennis P. Quinn, and Stephen Weymouth. 2015. "The Influence of Firm Global Supply Chains and Foreign Currency Undervaluations on US Trade Disputes." *International Organization* 69(4): 913–47.



# Bibliography

- Johns, Leslie and Wellhausen Rachel. 2015. "Under One Roof: Supply Chains and the Protection of Foreign Investment". Forthcoming in *American Political Science Review*.
- Kim, Soo Yeon. 2015. "Regionalisation in Search of Regionalism: Production Networks and Deep Integration Commitments in Asia's PTAs". In *Trade Cooperation: The Purpose, Design and Effects of Preferential Trade Agreements*, eds. Andreas Dür and Manfred Elsig. Cambridge: Cambridge University Press, 195–217.
- Kim, In Song and Weihuang Wong. 2015. "Intra-industry Trade and Trade Liberalization: Evidence from Preferential Tariffs Data". Working paper.
- Kono, Daniel Yuichi. 2009. "Market Structure, Electoral Institutions, and Trade Policy." *International Studies Quarterly* 53(4): 885–906.
- Krugman, Paul R. 1981. "Intraindustry Specialization and the Gains from Trade." *Journal of Political Economy* 89(5): 959–73.

# Bibliography

- Lipson, Charles. 1982. "The Transformation of Trade: The Sources and Effects of Regime Change." *International Organization* 36(2): 417–55.
- Manger, Mark S. 2009. *Investing in Protection: The Politics of Preferential Trade Agreements between North and South*. Cambridge University Press.
- Manger, Mark. 2015. "PTA Design, Tariffs and Intra-Industry Trade." In *Trade Cooperation: The Purpose, Design and Effects of Preferential Trade Agreements*, eds. Andreas Dür and Manfred Elsig. Cambridge: Cambridge University Press, 195–217.
- Milner, Helen V. 1997. "Industries, Governments, and Regional Trade Blocs." In *The Political Economy of Regionalism*, eds. Edward D. Mansfield and Helen V. Milner. New York: Columbia University Press, 77–106.
- Rauch, James E. 1999. "Networks versus Markets in International Trade." *Journal of International Economics* 48(1): 7–35.

# The Importance of GVCs

## Difference between finished goods and intermediates:

- ▶ Firms increasingly offshore parts of the production process (vertical specialization)
- ▶ Creates trade in intermediates that can take place within a firm or at arm's length ("contract manufacturers")
- ▶ Trade barriers on intermediate goods become a major obstacle for firms that import them (cumulative effects)

# Finished Goods

## Conventional argument about IIT applies:

- ▶ If IIT is low, the adjustment costs for import-competitors are high; they strongly oppose liberalization
- ▶ If IIT is high, import-competitors are less concerned (Helpman 1981; Krugman 1981; Lipson 1982; Milner 1997; Manger 2015)
- ▶ An increase in IIT increases net demand for trade liberalization of finished goods

# Intermediates

## Opposite argument about IIT applies:

- ▶ Demand for liberalization from downstream industries should be higher if IIT is low than if IIT is high
  - If IIT is low, downstream industries tend to be unified in their support of trade liberalization
  - If IIT is high, downstream industries will be divided (those sourcing abroad benefit from trade liberalization; those sourcing domestically are either indifferent or support tariffs e.g. because a tariff reduction would benefit their competitors)
- ▶ An increase in IIT reduces net demand for trade liberalization

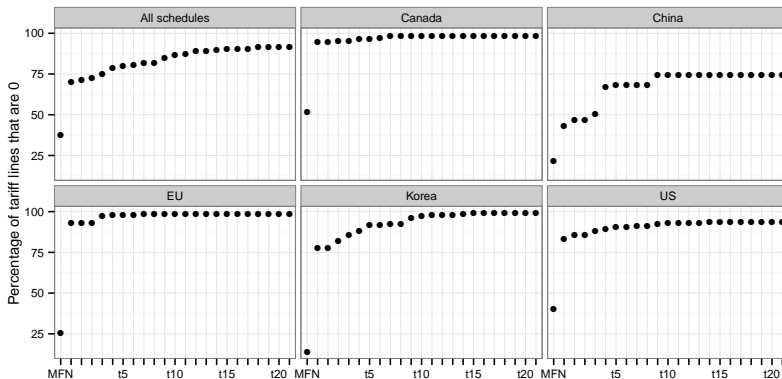
# Research Design

## Our data:

- ▶ We use tariff concessions in PTAs to test our argument
- ▶ Tariff liberalization remains a key element of PTAs
- ▶ Some tariffs are liberalized immediately, others are liberalized after a few years, still others are completely exempted
- ▶ PTAs ideal testing ground because IIT is dyadic

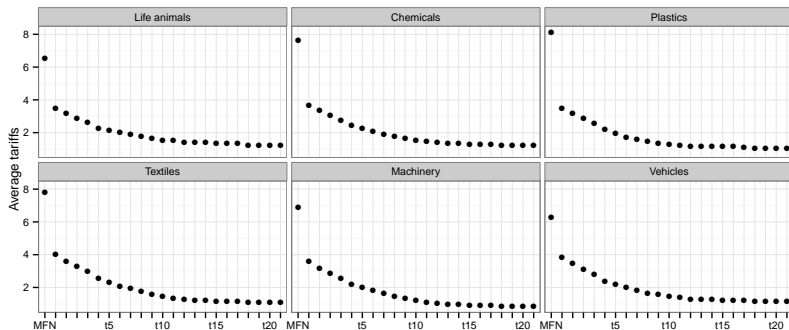
# Research Design

Share of tariff lines with zero duties.



# Research Design

Tariff cuts over time, by economic sector.

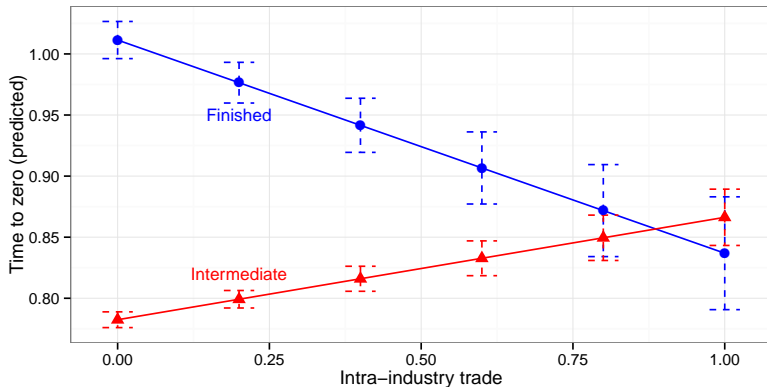




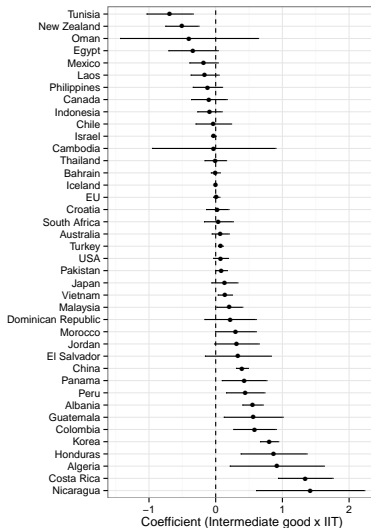
# Control Variables

- ▶ Tariff level at  $t_{min1}$
- ▶ Imports
- ▶ GDP per capita (countries A and B)
- ▶ GDP (countries A and B)
- ▶ Democracy
- ▶ WTO membership
- ▶ In some models: random or fixed effects for country A, PTA and HS2 sector

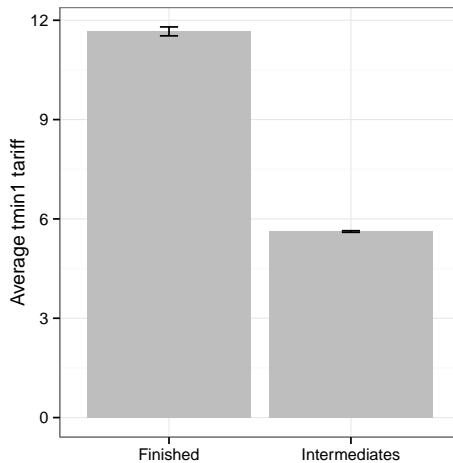
# Testing the Hypothesis: Time to Zero



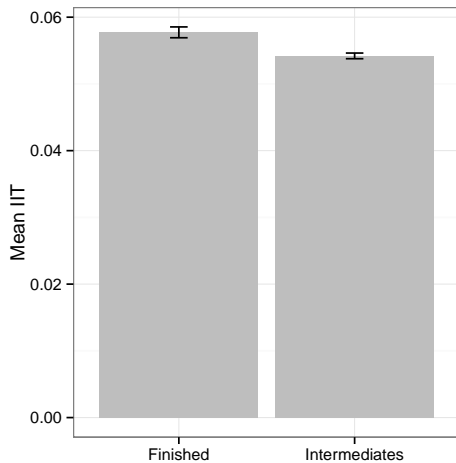
# Testing the Hypothesis: Time to Zero by Country A



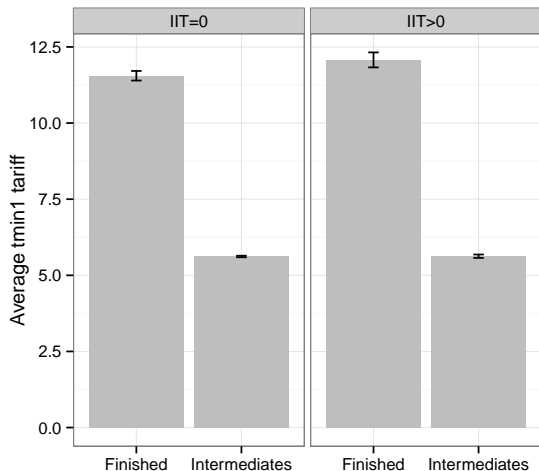
# Pre-preferential Tariffs



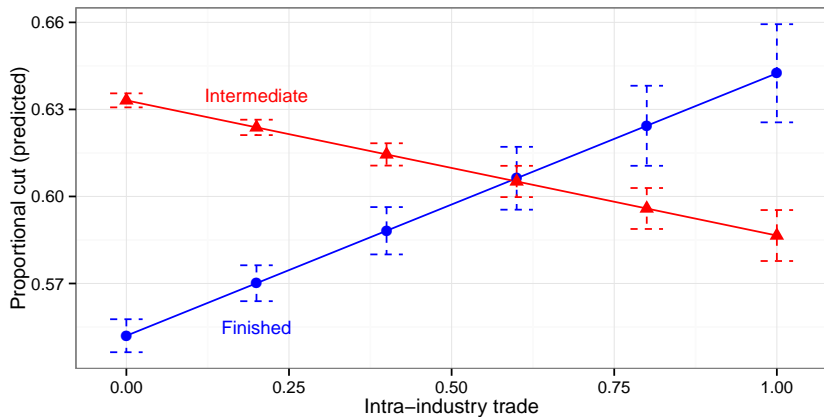
## IIT



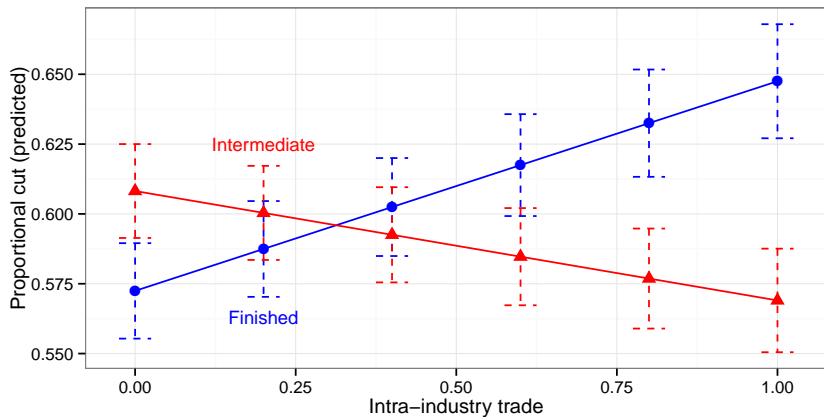
# Pre-preferential Tariffs & IIT



# Heckman Model

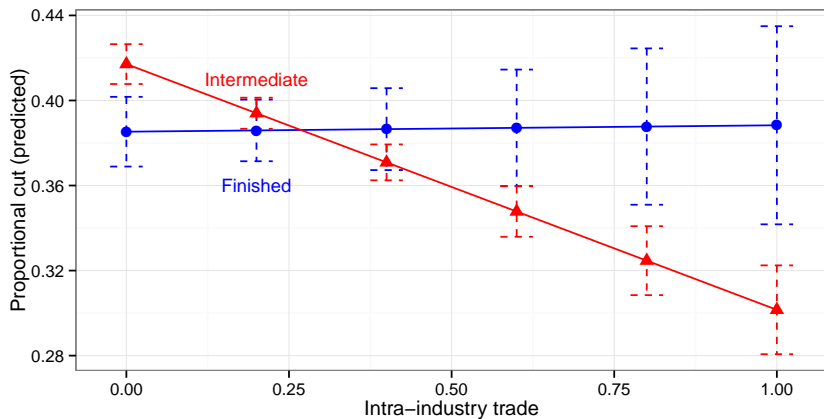


## Random Effects at HS2 Level

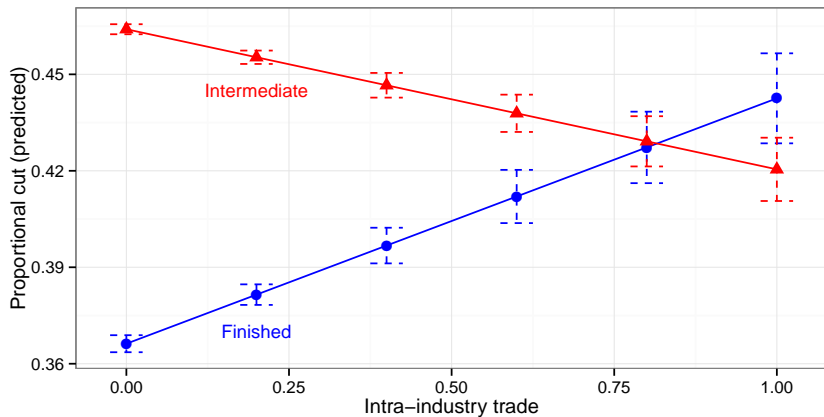




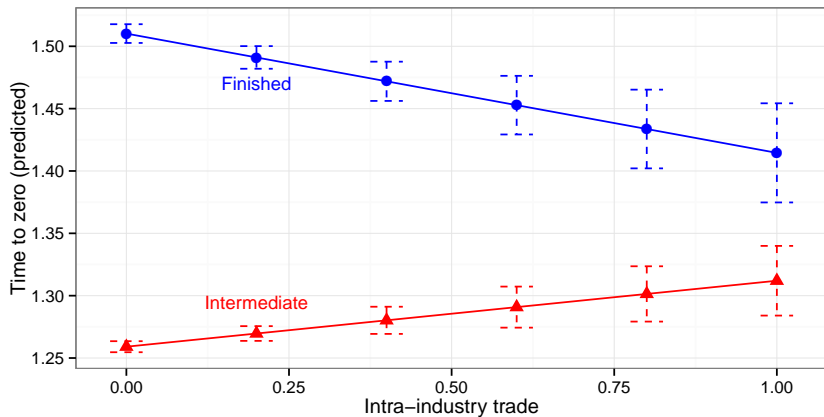
# Exogenous Industries



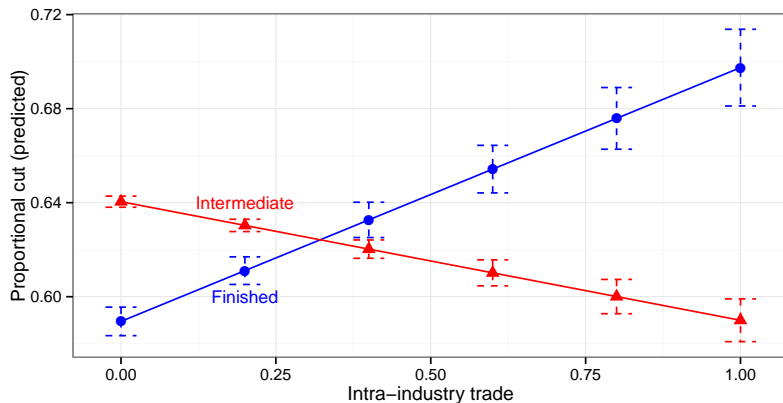
# Quantile Regression - Proportional Cut (25 quantile)



# Quantile Regression - Time to Zero (75 quantile)

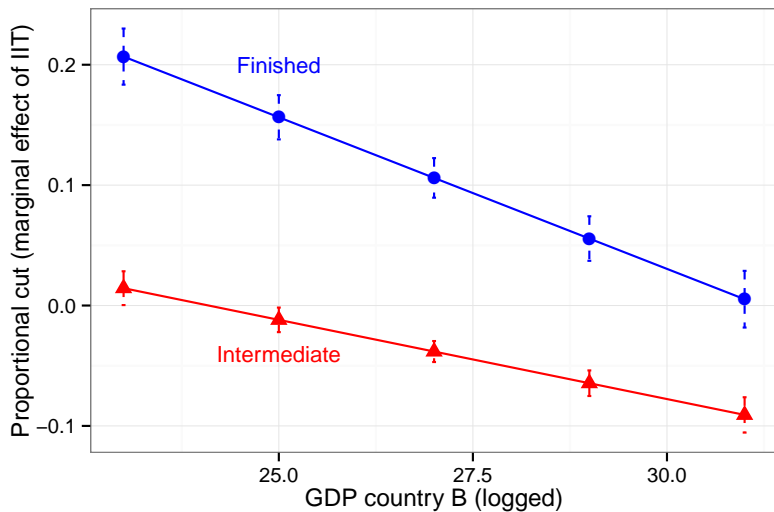


# Excluding Primary Commodities from the Analysis



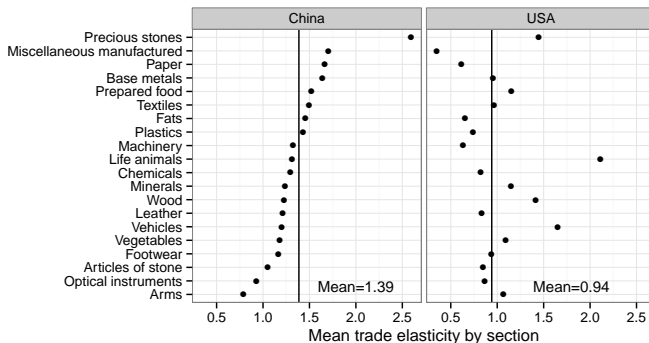
Data for primary commodity from Basu 2011.

## Power Story (Country B)

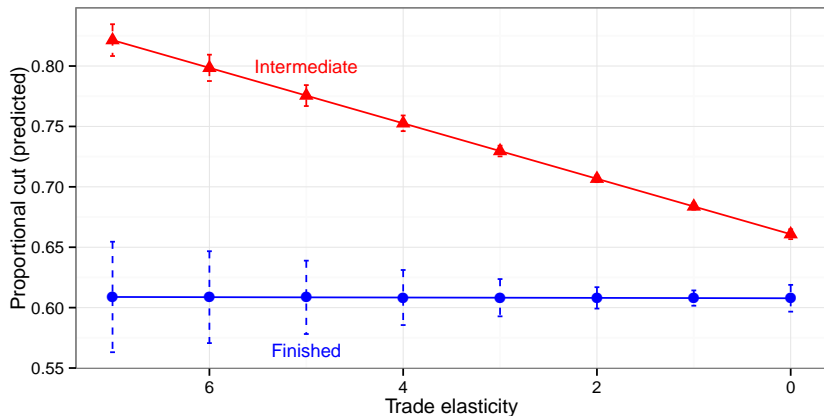


# Trade Elasticity as Proxy for IIT

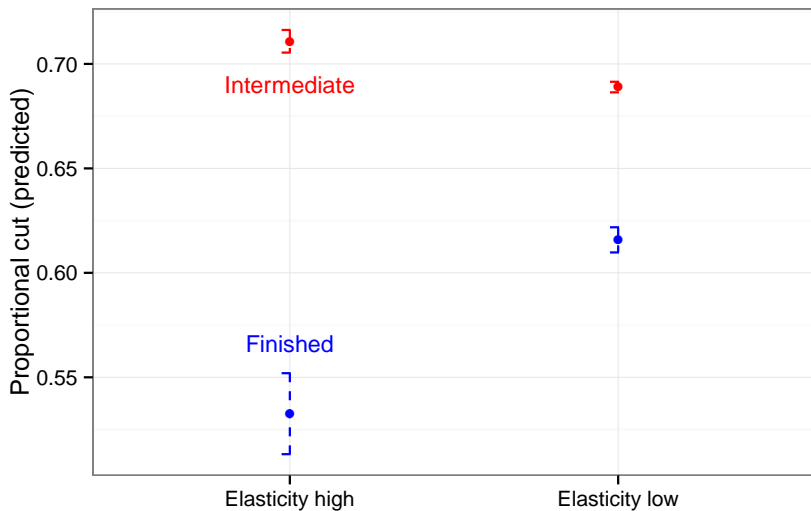
- ▶ Trade elasticity captures the extent to which prices react to imports
- ▶ Low elasticity is an indication of high IIT
- ▶ Import demand elasticities by country at the 3 digit level from Broda et al. 2006



# Trade Elasticity as Proxy for IIT



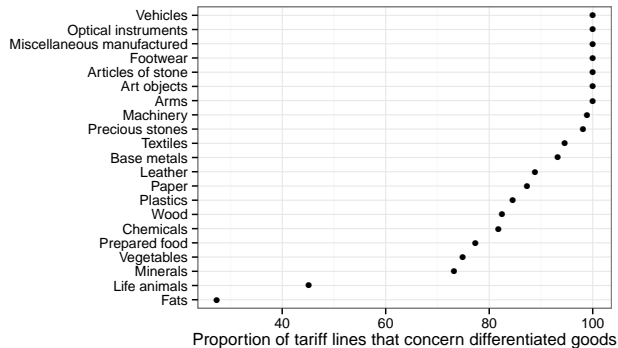
# Trade Elasticity as Proxy for IIT



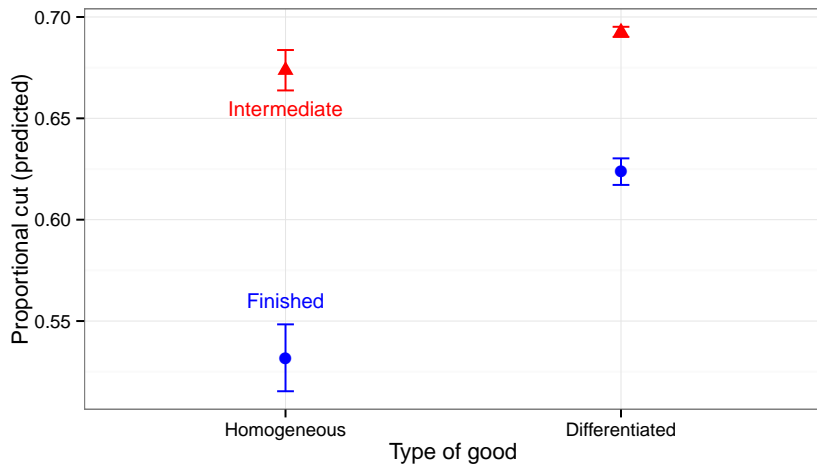


# Differentiated Good as Proxy for IIT

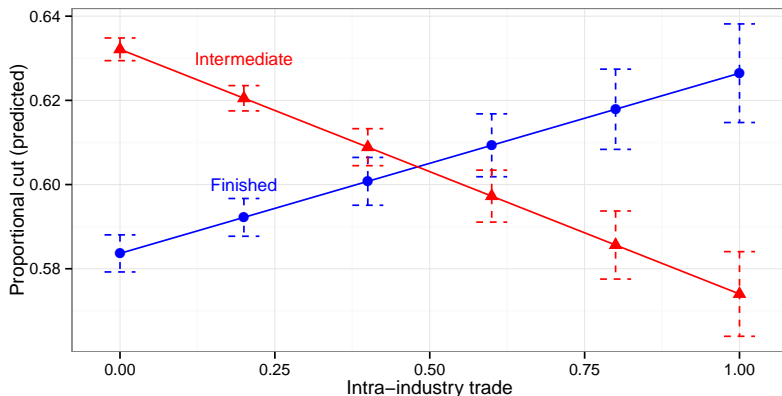
- ▶ Homogeneous versus differentiated goods (Rauch 1999)



# Differentiated Good as Proxy for IIT



## Using BEC as a Proxy for Intermediates



Intermediates = BEC 111, 121, 221, 222, 331, 322, 442 and 553.

## Using Share of Intermediates

