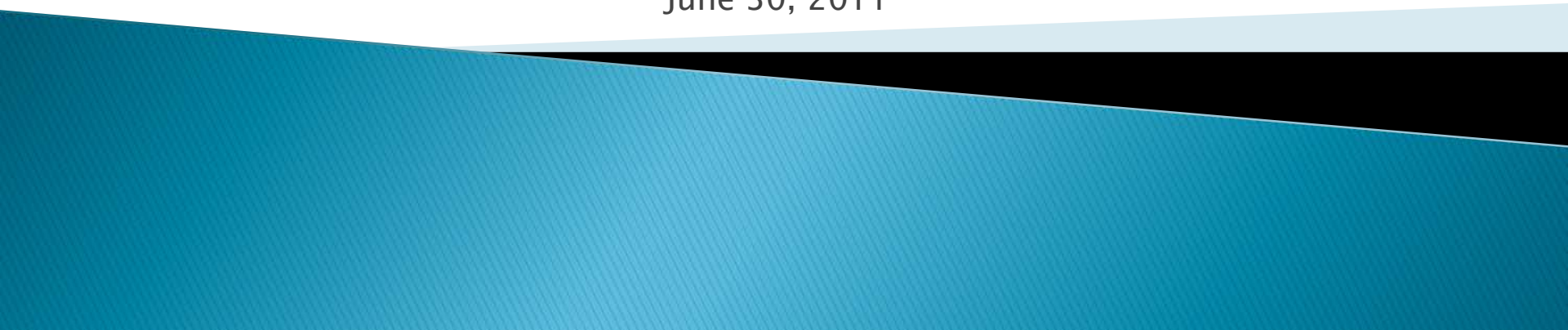


# An Investigation into Trade Biases in Agriculture

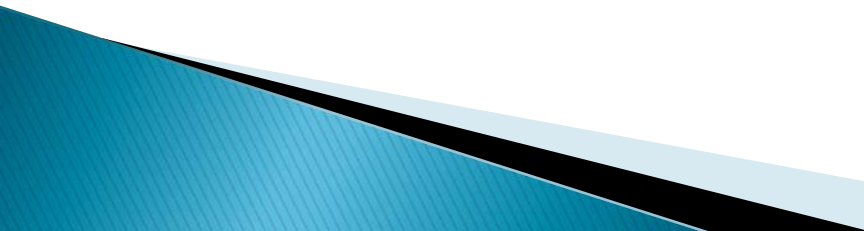
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Banff, Alberta  
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# Introduction

- ▶ Limao & Panagariya (2007)
    - Recent example of modification to “Protection for Sale” (G&H, 1994)
    - Attempt to explain anti-trade bias
  - ▶ Introduces motive of reducing inequality among sectors
  - ▶ We want to assess the validity of this model empirically
- 

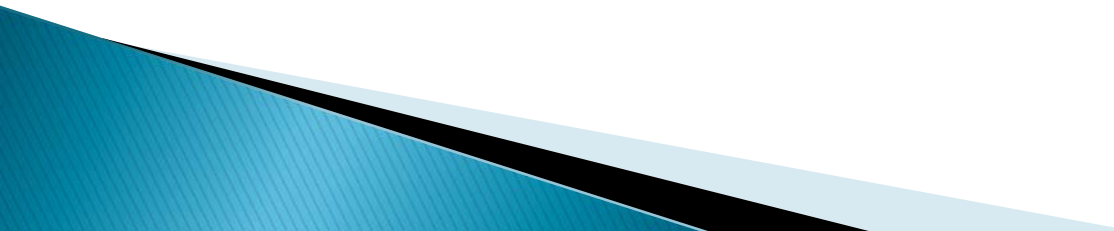
# Background

- ▶ Grossman & Helpman (1994)
  - Models effects of political weights
  - More weight for industries which spend more on lobbying
- ▶ Touchstone article upon which much of recent research on political economy of trade has been based

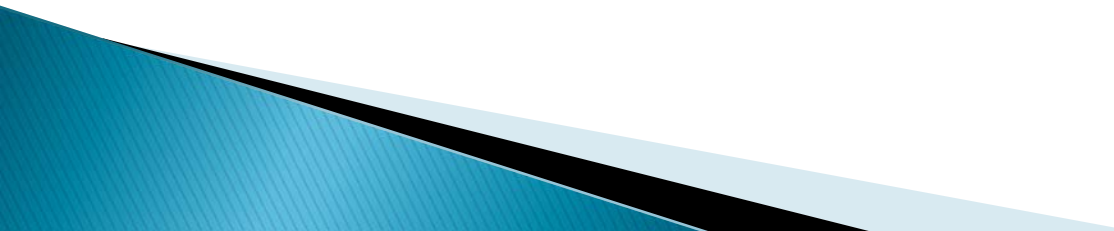
# Background (Cont'd)

- ▶ Levy (1999) suggests G&H predicts pro-trade bias
  - Contrary to observed trade policies in agriculture
- ▶ Political weight is based on level of lobbying
  - Greater income share means more lobbyist spending
  - Exporters predicted to have greater income share in G&H framework
    - Want pro-trade bias

# The L&P Model

- ▶ Limao and Panagariya (2007)
    - Political weight not based solely on lobbyist spending
    - Weight based on motive to reduce/eliminate income inequality between sectors
    - Import-competing sector predicted to have smaller income share (more often)
    - Government protects import-competing sector to reduce inequality
- 

# What L&P model suggests

- ▶ Direction of support is dependent upon what type of policy will reduce inequality
  - ▶ More one-sided support when inequality is greater
  - ▶ Anti-trade bias when import-competing goods have lower income share
  - ▶ Pro-trade bias when exporting goods have lower income share
- 

# Empirical Application

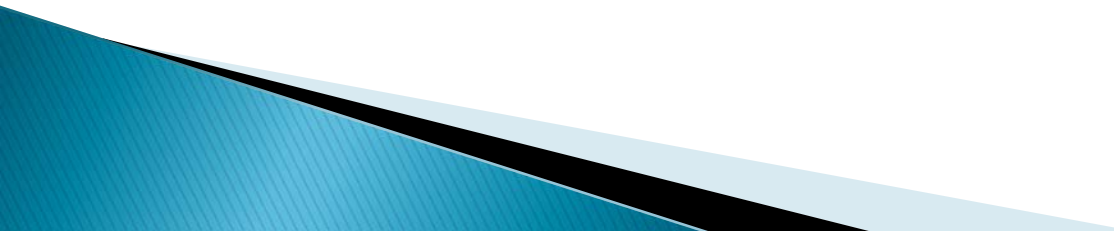
- ▶ Estimate reduced form model
  - Structural model requires many unobservable variables and elasticities
  - Use of panel data allows for control of unobservables
- ▶ Will test correlation between sectoral income inequality and trade bias
- ▶ Agricultural data will be used
  - Tend to observe higher levels of support in agriculture
- ▶ Two sectors are import-competing and exporting
  - Based on trade status as defined in World Bank database

# Econometric Model

$$TB_{it} = \alpha_0 + \alpha_1 Ineq_{it} \cdot MSmall_{it} + \alpha_2 Ineq_{it} \cdot XSmall_{it} + \beta X_{it} + \varepsilon_{it}$$

- ▶  $TB$  : level of trade bias
- ▶  $Ineq$ : level of inequality between sectors
- ▶  $MSmall$ ,  $XSmall$ : Dummies for which sector has smaller income share
- ▶  $X$ : Control variables

# Data

- ▶ Core data including TB, inequality, production values, WRI from World Bank database
    - *Distortions to Agricultural Incentives*
  - ▶ Over 70 countries, 6 continents
  - ▶ Data ranges back as far as mid-1950s
- 

# Estimation

- ▶ Starting with static, fixed effects panel model
- ▶ Inequality, many control variables lagged with 5 year moving average
  - Endogeneity concerns
- ▶ Dynamic model
  - System GMM
    - Arellano–Bover (1995)/Blundell–Bond (1998)

# Trade Bias

- ▶ Measures amount of assistance (NRA) to export goods relative to import goods

$$TB_{it} = \left[ \left( \frac{1 + NRA_{X_{it}}}{1 + NRA_{M_{it}}} \right) - 1 \right]$$

- ▶ NRAs are weighted averages of assistance to each covered product
- ▶ Capture support through border price controls, direct producer support, and support to inputs
- ▶ Positive when exports are more heavily supported and vice versa

# Inequality

- ▶ Measure of relative production value of exporting and import-competing goods, normalized by overall production value

$$INEQ_{it} = \frac{X_{it} - M_{it}}{Val_{it}}$$

- ▶ Greater gap = greater inequality
- ▶ Positive if import-competing goods smaller, vice versa
- ▶ Normalized to control for variability of ag production, and to give a rate of inequality

## Summary Statistics

- ▶ Show negative trade bias, positive inequality, on average
  - In line with notions behind the model

# Coefficient Hypotheses

Variable	Expected Sign
Lagged Trade Bias	Positive
Inequality when Import-Competing Sector Smaller	Negative
Inequality when Exporting Sector Smaller	Negative
Welfare Reduction Index	Ambiguous
Signatory to WTO/GATT	Ambiguous
Herfindahl Index – Import-Competing Sector	Negative
Herfindahl Index – Exporting Sector	Positive
Share of World Imports	Negative
Share of World Exports	Positive
Signatory to PTAs	Ambiguous, Likely Positive
Urbanization	Ambiguous
Time Trend	Positive

# Static Model Results

Note: \* denotes significance  
at 10% level,  
\*\* denote significance  
at 5% level

Variable	Coefficients (Standard Errors)
Inequality, M smaller, Developing	-0.164* (0.089)
Inequality, X smaller, Developing	-0.196 (0.120)
Inequality, M smaller, Developed	0.538** (0.204)
Inequality, X smaller, Developed	-0.067 (0.102)
WRI	-0.000 (0.001)
WTO/GATT	-0.094** (0.035)
Herfindahl, Import-Competing	0.138 (0.094)
Herfindahl, Exporting	-0.063 (0.059)
Import Share	3.740** (1.171)
Export Share	-1.412 (1.059)
CAP	-0.118** (0.035)
NAFTA	-0.080 (0.049)
MERCOSUR	0.151** (0.070)
ANDEAN	0.035 (0.065)
ASEAN	-0.097** (0.048)
Year	0.001* (0.001)
Urbanization	0.000 (0.002)
Constant	-0.209 (0.130)

# Static Results (Cont'd)

Variable	Result
<b>Inequality, M smaller, Developing</b>	-, Weakly Significant
<b>Inequality, X smaller, Developing</b>	-, Insignificant
<b>Inequality, M smaller, Developed</b>	+, Significant
<b>Inequality, X smaller, Developed</b>	-, Insignificant
<b>WRI</b>	-, Insignificant
<b>WTO/GATT</b>	-, Significant
<b>Herf., M Sector</b>	+, Insignificant
<b>Herf., X Sector</b>	-, Insignificant

Variable	Result
<b>Import Share</b>	+, Significant
<b>Export Share</b>	-, Insignificant
<b>CAP</b>	-, Significant
<b>NAFTA</b>	-, Insignificant
<b>MERCOSUR</b>	+, Significant
<b>ANDEAN</b>	+, Insignificant
<b>ASEAN</b>	-, Significant
<b>Urbanization</b>	+, Insignificant
<b>Year</b>	+, Weakly Significant

# Dynamic Model Results

Note: \* denotes significance  
at 10% level,  
\*\* denote significance  
at 5% level

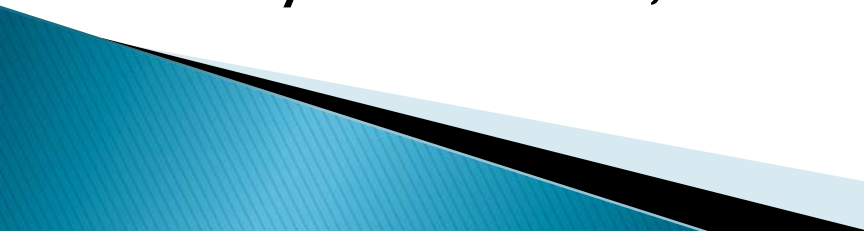
Variable	Coefficients (Standard Errors)
Lagged Trade Bias	0.427** (0.080)
Inequality, M smaller, Developing	-0.200** (0.073)
Inequality, X smaller, Developing	-0.245** (0.091)
Inequality, M smaller, Developed	0.276** (0.106)
Inequality, X smaller, Developed	-0.140* (0.072)
WRI	-0.000 (0.000)
WTO/GATT	-0.045 (0.042)
Herfindahl, Import-Competing	0.217** (0.089)
Herfindahl, Exporting	-0.148** (0.059)
Import Share	0.365 (0.485)
Export Share	-0.053 (0.402)
CAP	0.017 (0.042)
NAFTA	-0.090* (0.046)
MERCOSUR	0.197** (0.095)
ANDEAN	0.015 (0.093)
ASEAN	-0.117 (0.105)
Year	0.001 (0.001)
Urbanization	0.001 (0.001)
Constant	-0.177 (0.120)

# Dynamic Results (Cont'd)

Variable	Result
Lagged Trade Bias	+, Significant
Inequality, M smaller, Developing	-, Significant
Inequality, X smaller, Developing	-, Significant
Inequality, M smaller, Developed	+, Significant
Inequality, X smaller, Developed	-, Weakly Significant
WRI	-, Insignificant
WTO/GATT	-, Insignificant
Herf., M Sector	+, Significant
Herf., X Sector	-, Significant

Variable	Result
Import Share	+, Insignificant
Export Share	-, Insignificant
CAP	+, Insignificant
NAFTA	-, Weakly Significant
MERCOSUR	+, Significant
ANDEAN	+, Insignificant
ASEAN	-, Insignificant
Urbanization	+, Insignificant
Year	+, Insignificant

# Conclusion

- ▶ Want to empirically assess L&P's work
  - ▶ Test hypothesis that inequality level is negatively correlated with trade bias
  - ▶ Using World Bank panel dataset corresponding to over 70 countries, dating back in some cases to the mid-1950s
  - ▶ Static results provide mixed empirical support for L&P's theory
  - ▶ Dynamic results strengthen significance of key variables, but follow similar pattern
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# Acknowledgements

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