Firms and Agricultural Trade Policy: New Evidence from China

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Outline

• Background Motivation
• Project Goals
• Overview of Data and Analysis
• Future Work
Background

• Significant traction of firm heterogeneity in the international economics literature. The ‘new-new trade theory’ (Melitz (2003) and Bernard et al. (2003)) shifts the unit of analysis from industries to firms.
  • Origins of firm-level work: Bernard and Jensen (1995) (US Data); Roberts and Tybout (1997 Columbian Data)

• Melitz (2003) provided first & seminal theoretical paper connecting firm heterogeneity with trade. (See also HMR 2008 at the country level)

• Chaney (2008):
  • Trade costs influence trade flows more on homogeneous products.

• In 2006 IATRC Annual Meeting Theme Day discussed “Firms and International Trade”.
  • Presentations reviewed empirical challenges to standard trade model and development in the theory realm.
  • Gopinath, Sheldon, Echeverria (2007) summarized key insights and implications for agriculture

• An obstacle for empirical analysis--- access to Firm-Level Data.

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Country</th>
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</thead>
</table>
Commissioned Paper Objectives

1. Overview of China’s firm level export and imports in selected agricultural markets characterizing China’s impressive import/export growth

2. Assess firm-level structure of China’s agricultural import and export growth in selected markets:
   - Data covers two important periods
     - 2000-2004/2005 Fulfilling WTO Commitments
     - 2006-2016 Post-Trade Policy Adjustment Period

3. Quantify firm-level intensive and extensive margin adjustments in select case-studies of trade policy events and price and market adjustments
   a) Cereal imports under TRQs
   b) Select SPS issues in China
The Data

Two trips to China Customs in Beijing (Jul 2016 and again in October 2017)
## Data Summary

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Overall Trade</strong></td>
<td>178,696,323</td>
<td>214</td>
<td>7,659</td>
<td>1,236,894</td>
</tr>
<tr>
<td><strong>Ag Trade (Chapter 1-24)</strong></td>
<td>3,112,711</td>
<td>205</td>
<td>1,729</td>
<td>120,209</td>
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<tr>
<td><strong>Cereals (Chapter 10)</strong></td>
<td>25,612</td>
<td>176</td>
<td>54</td>
<td>4,216</td>
</tr>
</tbody>
</table>

**Observe:** Value and Q, Q unit, date, HTS-8 code, customs port of entry, source/destination country, any trans-shipment country, transport mode, ownership type, firm id, firm location, firm name, firm address, etc.
Overview of the Data
Trading Firms are Rare -- Even in China!

Share of Trading Firms over Total Number of Chinese Firms

- Total trading firm share
- Importing firm share
- Exporting firm share

[Diagram showing the share of trading firms from 2000 to 2016, with peaks and troughs over the years.]
China’s Agricultural Imports, Exports and Firms

Chinese Agricultural Imports, Exports and Number of Firms

Trade ($ Bil.)

![Graph showing the trend of China's agricultural imports, exports, and number of firms from 2000 to 2016.](image)

- **Import ($ bil)**
- **Export ($ bil)**
- **Import Firm No.**
- **Export Firm No.**

Firm Count

Year:
- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
## Firm Concentration, All Trade

<table>
<thead>
<tr>
<th>Year</th>
<th>Top 1%</th>
<th>Top 5%</th>
<th>Top 10%</th>
<th>Top 25%</th>
<th>Top 50%</th>
<th>Firm Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>42.25%</td>
<td>67.10%</td>
<td>78.59%</td>
<td>91.87%</td>
<td>98.26%</td>
<td>68,487</td>
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<tr>
<td>2005</td>
<td>50.73%</td>
<td>71.99%</td>
<td>81.42%</td>
<td>92.72%</td>
<td>98.43%</td>
<td>144,030</td>
</tr>
<tr>
<td>2010</td>
<td>50.74%</td>
<td>71.83%</td>
<td>81.33%</td>
<td>92.68%</td>
<td>98.40%</td>
<td>233,758</td>
</tr>
<tr>
<td>2015</td>
<td>50.78%</td>
<td>73.87%</td>
<td>83.23%</td>
<td>93.75%</td>
<td>98.73%</td>
<td>312,395</td>
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</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Top 1%</th>
<th>Top 5%</th>
<th>Top 10%</th>
<th>Top 25%</th>
<th>Top 50%</th>
<th>Firm Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>51.59%</td>
<td>76.02%</td>
<td>85.64%</td>
<td>95.34%</td>
<td>99.20%</td>
<td>67,588</td>
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<tr>
<td>2005</td>
<td>60.74%</td>
<td>82.29%</td>
<td>89.87%</td>
<td>97.03%</td>
<td>99.55%</td>
<td>113,456</td>
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<tr>
<td>2010</td>
<td>64.03%</td>
<td>85.33%</td>
<td>92.14%</td>
<td>97.91%</td>
<td>99.72%</td>
<td>145,492</td>
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<tr>
<td>2015</td>
<td>65.84%</td>
<td>86.89%</td>
<td>93.20%</td>
<td>98.23%</td>
<td>99.75%</td>
<td>176,749</td>
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</table>
## Firm Concentration, Agricultural Trade

### Agricultural Firm Export Concentration

<table>
<thead>
<tr>
<th>Year</th>
<th>Top 1%</th>
<th>Top 5%</th>
<th>Top 10%</th>
<th>Top 25%</th>
<th>Top 50%</th>
<th>Firm Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>30.85%</td>
<td>58.68%</td>
<td>73.13%</td>
<td>90.32%</td>
<td>98.19%</td>
<td>10,976</td>
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<tr>
<td>2005</td>
<td>29.99%</td>
<td>58.28%</td>
<td>73.13%</td>
<td>90.82%</td>
<td>98.37%</td>
<td>17,151</td>
</tr>
<tr>
<td>2010</td>
<td>24.95%</td>
<td>53.60%</td>
<td>69.38%</td>
<td>88.80%</td>
<td>97.88%</td>
<td>18,166</td>
</tr>
<tr>
<td>2015</td>
<td>25.21%</td>
<td>54.14%</td>
<td>70.04%</td>
<td>89.34%</td>
<td>98.07%</td>
<td>18,607</td>
</tr>
</tbody>
</table>

### Agricultural Firm Import Concentration

<table>
<thead>
<tr>
<th>Year</th>
<th>Top 1%</th>
<th>Top 5%</th>
<th>Top 10%</th>
<th>Top 25%</th>
<th>Top 50%</th>
<th>Firm Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>53.46%</td>
<td>79.72%</td>
<td>89.23%</td>
<td>97.25%</td>
<td>99.64%</td>
<td>6,524</td>
</tr>
<tr>
<td>2005</td>
<td>57.30%</td>
<td>82.24%</td>
<td>90.80%</td>
<td>97.71%</td>
<td>99.66%</td>
<td>8,868</td>
</tr>
<tr>
<td>2010</td>
<td>63.43%</td>
<td>86.23%</td>
<td>92.85%</td>
<td>98.17%</td>
<td>99.68%</td>
<td>12,775</td>
</tr>
<tr>
<td>2015</td>
<td>57.74%</td>
<td>83.54%</td>
<td>91.64%</td>
<td>97.92%</td>
<td>99.63%</td>
<td>19,478</td>
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</table>
China’s Grain TRQs
China’s TRQ Corn Imports

Chinese Corn Imports by Ownership Structure (1000 metric tons)

Quota = 7.2 mmt (2004-2018)
In-quota tariff = 1%
Out-of-Quota Tariff = 65%
STE Share = 60%

Note the inverse relationship between $P_d - P_w$ differential and the intensity of State trader corn imports vs. positive relationship between price differentials and private firm imports.
China’s Wheat Imports

Chinese Wheat Imports by Ownership Structure (1000 metric tons)

Quota = 9.6 mmt (2004-2018)
In-quota tariff = 1%
Out-of-Quota Tariff = 65%
STE Share = 90%

Relationship between $P_R - P_W$ differential and the intensity of State vs. private firm imports less clear for wheat
Select SPS Issues
EU tightens MRL on popular post-harvest chemicals used to control skin disorders and scalding in Apples and Pears - to 0.1 ppm. Codex limit = 5 & 10 ppm.

Fresh apples considered as one of EU’s “Dirty Dozen” because of pesticide residue risk.
Conclusions

• The growing ‘firms and trade’ literature has offered limited analyses of the dynamics of agricultural firms – particularly in an emerging economy such as China.

• While the insights generated from the economics literature may also hold for agriculture, given the homogeneous nature of some products (i.e., corn & wheat) within this sector where price competition is tough and product differentiation is minimal, this is not necessarily the case.

• Further, firm-level extensive and intensive margin adjustments have not been examined in China’s evolving agricultural policy environment and the active participation of state-owned and private firms in the marketplace provides interesting new dimensions.

• Working with firm-level data, as opposed to countries & industries, has the potential to uncover exciting new insights and implications for agricultural trade policy.

• The overall goal of this commissioned paper is to bring new insights and serve as an important stepping stone to future research.
THANK YOU!