Third Country Effects of Price Discrimination: The Case of the Canadian Wheat Board

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Introduction

• There are a variety of criticisms of exporting STEs ranging from hidden subsidies to abuse of market power
• Market power in product market involves reducing sales to extract higher prices but this is not typically the case in grain markets
• However, 3\textsuperscript{rd} degree price discrimination allows for the exercise of market power with inelastic market taxed with higher prices while elastic markets face lower prices
• GATT Article XVII allows price discrimination if the “practice is done for commercial reasons and to meet market conditions in the export market”

Are Competing Exporters worse or better off under STE price discrimination? Under what conditions?
Background

Necessary Conditions for Price Discrimination

- Some degree of market power
  - sufficient product differentiation creates market power
- Segmented markets to prevent arbitrage
  - home mkt. sanctuary ; transport costs
- Different demand elasticities

Alternative Approaches to Model Price Discrimination

- Measure price differences and use observed prices and quantities to determine the model parameters which would satisfy a discriminating monopolist’s profit maximizing rule (Alston and Gray 2000) and then eliminate behaviour
  - Reasonability of elasticities?
- Create/calibrate a competitive model and then introduce price discrimination
  - Imperfect competition in international grains markets?
Simulation Model

Synthetic linear model

- Three separate wheat markets (Cdn., US, Other)
- Armington assumption to derive own and cross price demand elasticities
  - Five Importers and two domestic markets make up demand
- Linear supplies are function of domestic wheat prices
- Calibrated as a competitive model with 2001/02 IGC data for prices and quantities
  - Prices in destination markets are linked to FOB price by transport costs

Price discrimination is introduced for Cdn. wheat market

(S.1) \( \sum MR = MC \) and equate MR across markets
(S.2) Equate MR’s \textit{but} \( P_{\text{supply}} = P_{\text{pooled}} \)
(S.3) Equate MR’s & \( P_{\text{supply}} = P_{\text{pooled}} \) \textit{but} \( P_{\text{C}} - P_{\text{US}} < 30 \)
## Results - Prices

<table>
<thead>
<tr>
<th></th>
<th>Base Case</th>
<th>Price Discrimination</th>
<th>Price Discrimination</th>
<th>Price Discrimination</th>
<th>Σ MR = MC</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Prices</td>
<td>Pooling</td>
<td>Pooling/N.A.</td>
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<td>Prices</td>
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<td>($US/mt)</td>
<td>($US/mt)</td>
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<td><strong>Canadian Market</strong></td>
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<td>Demand</td>
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<td>Philippines</td>
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<td>Supply</td>
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<td>165</td>
<td>156</td>
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<td><strong>US Market</strong></td>
<td>128</td>
<td>126</td>
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<td><strong>Other Exporter</strong></td>
<td>135</td>
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<td>140</td>
<td>141</td>
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</table>
Results – Canadian Sales

**Base Case**
- Canada: 7,566
- ROW: 7,310
- USA: 1,650
- Philippines: 738
- Mexico: 1,158
- Iran: 1,532

**PD and Pooling**
- Total: 22,500
- Japan: 767
- Canada: 4,805
- USA: 1,416
- Philippines: 813
- Mexico: 1,176
- ROW: 8,529

**PD and Pooling w Arbitrage**
- Total: 21,686
- Japan: 706
- Canada: 7,585
- USA: 1,689
- Philippines: 686
- Mexico: 986
- ROW: 6,722

**Pure PD**
- Total: 17,972
- Japan: 708
- Canada: 4,365
- USA: 1,165
- Philippines: 694
- Mexico: 998
- ROW: 6,780
## Results - Welfare

<table>
<thead>
<tr>
<th></th>
<th>Price Discrimination Pooling</th>
<th>Price Discrimination Pooling/N.A. Arbitrage</th>
<th>Price Discrimination $\Sigma MR = MC$</th>
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<tr>
<td><strong>Canadian Market</strong></td>
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<tr>
<td>• Change in consumer surplus</td>
<td>-437</td>
<td>47</td>
<td>-494</td>
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<tr>
<td>• Change in producer surplus</td>
<td>224</td>
<td>120</td>
<td>61*</td>
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<tr>
<td>• Change in total surplus</td>
<td>-214</td>
<td>59</td>
<td>-435</td>
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<tr>
<td><strong>US Market</strong></td>
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<td></td>
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<tr>
<td>• Change in consumer surplus</td>
<td></td>
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<tr>
<td>US wheat</td>
<td>257</td>
<td>-234</td>
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<tr>
<td>Canadian wheat</td>
<td>-16</td>
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<td>-48</td>
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<tr>
<td>• Change in producer surplus</td>
<td>-105</td>
<td>15</td>
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<tr>
<td>• Change in total surplus</td>
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<td>480</td>
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<td><strong>Other Aggregate Exporter</strong></td>
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<td></td>
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<tr>
<td>• Change in producer surplus</td>
<td>-550</td>
<td>-449</td>
<td>-538</td>
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</tbody>
</table>
The Effect on the USA is larger than for the other exporter

- When US market becomes more elastic CWB directs more sales to that market and this ↓ PS
- More elastic markets in ROW create more opportunities for both traders when CWB price discriminates
- Significant amount of other exporters’ sales are to elastic markets so more negative impacts are expected for this trade … but small impacts
Conclusions

Price discrimination does not necessarily put competing exporters at a disadvantage … we found the impacts were small over a reasonable range of elasticities

- US exporters are more sensitive
  - Range of impacts + and –, less than $|5\%|$ |  
- Other exporters are worse off but by less than 1%

Given this study’s results it would be difficult to write a set of WTO STEs disciplines with respect to the use of price discrimination

- Since competitors can be better or worse off … rules are unlikely to only discipline negative outcomes