Optimal Licensing Contracts and Market Competition

Tian Xia  
Department of Agricultural Economics  
Kansas State University  
tianxia@ksu.edu

Zhengfei Guan  
Food and Resource Economics Department  
University of Florida  
guanz@ufl.edu

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Optimal Licensing Contracts and Market Competition

Tian Xia¹ and Zhengfei Guan²
¹ Department of Agricultural Economics, Kansas State University ² Food and Resource Economics Department, University of Florida

Introduction

1. Florida strawberry industry has been facing serious challenges from Mexican competition.
   - Strawberry is an important horticultural commodity in the U.S. with a total production value of 2.5 billion (NASS-USDA, 2013).
   - Florida is the largest winter strawberry producer. Mexico has the same production window with Florida but much lower production cost, mainly due to its lower labor costs.
   - To compete effectively in U.S. market, the Florida Strawberry Growers Association (FSGA) has been actively collaborating with the strawberry breeding program at the University of Florida (UF) to develop new varieties. New variety development is key to differentiating Florida strawberries from imported products.
   - However, new varieties such as Florida Festival were widely adopted in Florida and sold back to the U.S. market competing with Florida growers. Also, intellectual property rights (IPR) protection in Mexico is often not strictly enforced.

2. Licensing strategy for newest varieties and market competition.
   - The Florida strawberry industry now considers a licensing strategy for its newest varieties. Under this new strategy, UF/FSGA offer limited licenses to a few Mexican competitors.
   - Limited licensing to a few Mexican companies/growers supposedly provides these licensees with an incentive to monitor the violation of IPR while keeping the acreage below a target level, so that it won’t hurt Florida growers.
   - However, the optimal licensing contractual mechanisms of this strategy are unknown.

Objectives

- Develop a simple conceptual model and conducts a simulation based on industry data to analyze the mechanisms of the licensing contracts offered to a few selected Mexican companies/growers that are optimal for
  - the Florida strawberry industry and the University of Florida breeding program or
  - total social welfare.
- Examine how factors affect the mechanisms of the optimal limited licensing to selected foreign competitors.

The Model

- Florida and Mexican strawberries compete in the U.S. market. Mexican growers have a cost advantage. UF/FSGA have developed a new strawberry variety, which is available to all Florida growers.
- UF/FSGA decide the optimal licensing contracts offered to a few selected Mexican growers. The UF/FSGA set the type and number of licensees, the contract clause on monitoring the violation of IPR, plant and fruit royalty/fee, licensed acreage, and volume sold back to the U.S.
- Two scenarios of the objective of UF/FSGA are considered:
  - The first one is to maximize the sum of the profits of Florida strawberries and total royalties received by UF/FSGA.
  - The second one is to maximize the total welfare of U.S. consumers, producers and the UF (IPR owner).
- The selected Mexican growers decide whether they accept the licensing contract and, if they do, how much they will produce and sell to the U.S. and how much effort they will put to monitor the violation of IPR in Mexico. Other Mexican growers produce a traditional variety with lower quality.

Results

- Only a few large Mexican growers should be selected to offer the licenses. A small number of licensees can guarantee each of them gains adequate profit from growing and selling the new variety so that they are willing to follow the terms of contracts and UF/FSGA can still limit the total amount of strawberries sold back to the U.S.
- An Mexican licensee should be allowed to receive the majority of the fine/compensation paid by violators of IPR of the new variety if the licensee finds the violation. This condition can significantly help UF/FSGA protect the IPR of their variety in Mexico and improve the profits of Florida strawberries.
- Not only the total acreage but also the amount of strawberries sold back to the U.S need to be specified clearly in the licensing contracts. The amount limit of Mexican strawberries sold back to the U.S. specified in all licensing contracts is decreasing in the quality difference between the new variety and the traditional variety.

Conclusions

- Strawberry is a major U.S. horticultural commodity and the U.S. strawberry industry faces multiple challenges including Mexican competition, labor shortages, and various government regulations.
- Optimal limited licensing to selected Mexican growers can help Florida strawberry industry protect the intellectual property rights of new varieties and improve its competitiveness and profits in U.S. market.
- This analysis on the mechanisms of the optimal limited licensing to selected foreign competitors when they have a cost advantage and IPR protection is often not strictly enforced in the foreign country can improve the profession’s understanding on this issue.

Table 1: Strawberry Production in Florida, California, and the United States, 2010-2015 (in million pounds)

<table>
<thead>
<tr>
<th>Year</th>
<th>Florida</th>
<th>California</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1,200</td>
<td>1,000</td>
<td>2,300</td>
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<tr>
<td>2011</td>
<td>1,250</td>
<td>1,050</td>
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<tr>
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<td>1,100</td>
<td>2,400</td>
</tr>
<tr>
<td>2013</td>
<td>1,350</td>
<td>1,150</td>
<td>2,450</td>
</tr>
<tr>
<td>2014</td>
<td>1,400</td>
<td>1,200</td>
<td>2,500</td>
</tr>
</tbody>
</table>

Table 2: Mexican Strawberry Exports to the United States, 2010-2015 (in million pounds)

<table>
<thead>
<tr>
<th>Year</th>
<th>California</th>
<th>Florida</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>500</td>
<td>200</td>
</tr>
<tr>
<td>2011</td>
<td>550</td>
<td>250</td>
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