

GAPs Economic Modeling

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Introduction

Economic and Trade Component

- Objective: To analyze the economic effects of GAPs implementation in a specific commodity
 - How will GAPs effect producers of different sizes; different regions?
 - What are the potential international trade effects of process standards



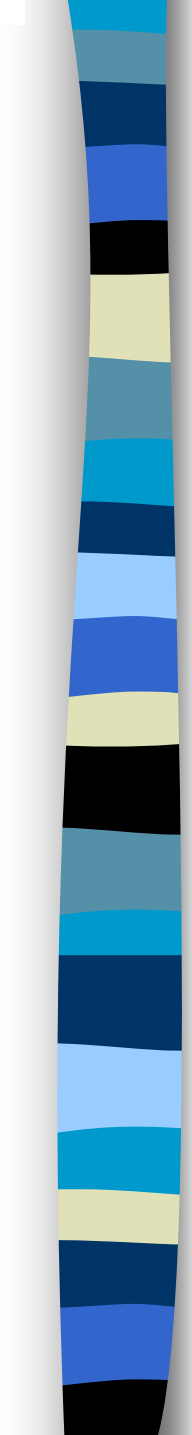
GAPs and Economics

- Changes in food safety practices (mandatory or voluntary) impact producer and/or consumer behavior
- As buying and selling behaviors change there are further implications for competitiveness among firms, industries, and regions



Economic and Trade Component

- *GAPs and Supply*
 - Potential impacts on production costs
- *GAPs and Demand*
 - Consumer demand for safer food supply
 - Expressed through purchasing decisions, or through new relationships between food retailers and suppliers
- *GAPs and Trade*
 - Implications for industry standards and multilateral trade



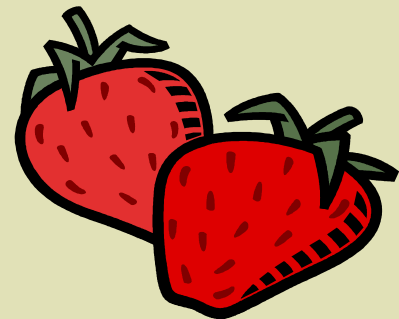
Economic Analysis

■ Spatial Equilibrium Model

- Effects on producer costs and consumer prices-
Potential redistribution of production
- Changing shipper/buyer relationships and standards
- Effects of a food safety "catastrophe" on demand, or, change in consumer preferences for products perceived as fresh

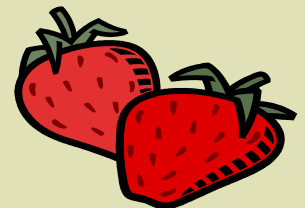
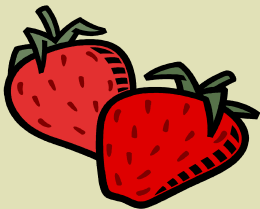
The Commodity-Berries

- Produced in many U.S. regions
- Internationally traded and produced
- Food safety concerns
 - Recent high profile outbreaks of Hepatitis A, *E. coli*, *Cyclospora*
- Popular fruits often consumed with minimal processing



Empirical Analysis: Strawberries

- Key food safety incidents in recent years
 - Michigan, California, Texas
- Widely produced in U.S., but concentrated in a few regions
- Large trade volume within the NAFTA region
 - Primarily supplied by U.S. and Mexico





Empirical Analysis: Strawberries

- Production costs from key U.S. trading regions
 - California, Florida, Mid-Atlantic states, Mid-west states, Mexico, Canada
- *GAPs* Specific to Fresh Strawberries
 - plasticulture vs. straw mulch, irrigation water, worker sanitation
- Associated Food Safety Risks
 - Bacterial, viral, and parasitic pathogens



Empirical Analysis: Strawberries

- Scenario analysis of GAPs adoption
 - Two distinct production “regions” identified
 - Region A - California, Florida, Baja, Mexico
 - Region B - Midwest, Mid-Atlantic, Northeast, Northwest
 - Distinguishing Characteristics
 - Production method (mulch vs. plasticulture)
 - Acreage
 - Primary market served (farm market, u-pick vs. traditional retail)



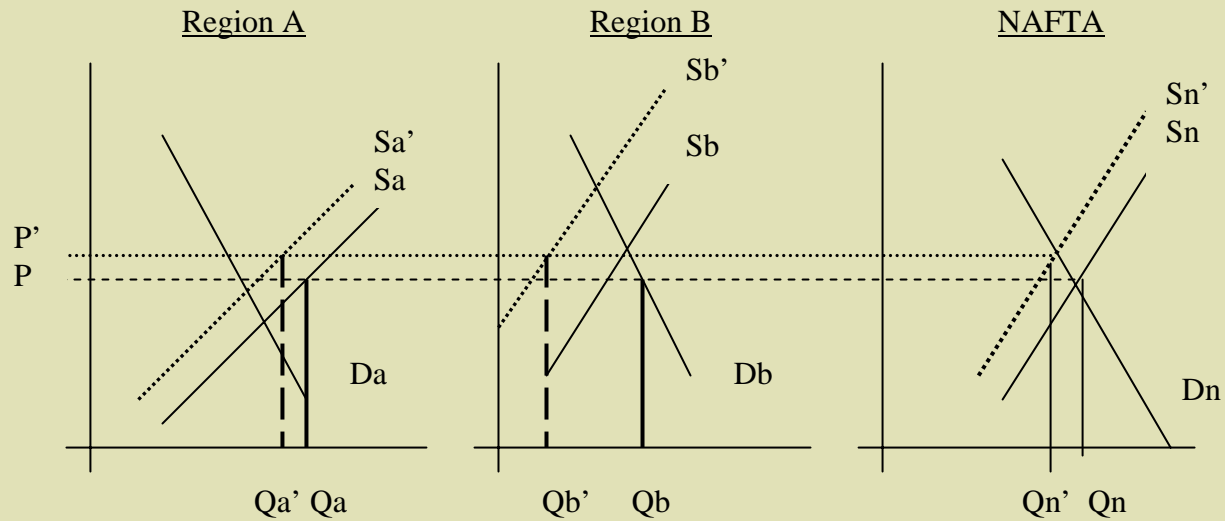
Empirical Analysis : Strawberries

■ Scenario 1

- Strawberry growers in all regions adopt GAPs with no changes in consumer demand
 - Supply in all regions decreases, but more so for smaller growers
 - The cost of adopting GAPs is relatively higher for small growers
 - Price for fresh strawberries in NAFTA increases in the short run
 - Less supply in the short run drives the price of strawberries up in all regions

Empirical Analysis: Strawberries

■ Scenario 1





Empirical Analysis: Strawberries

■ Issues

- Elasticity of supply and demand
 - Magnitude of changes will depend on slope of S and D curve
 - Costs of GAPs adoption?
 - In the long run, demand curves could change as consumers respond to price changes



Empirical Analysis: Strawberries

■ Scenario 2

- Third party certification with proportionately more large firms certified than small firms
- Two markets develop for fresh strawberries
 - Certified and non-certified
- Demand for certified strawberries increases, but decreases for non-certified berries
- Price for certified strawberries increases or stays the same, but for non-certified strawberries, price decreases



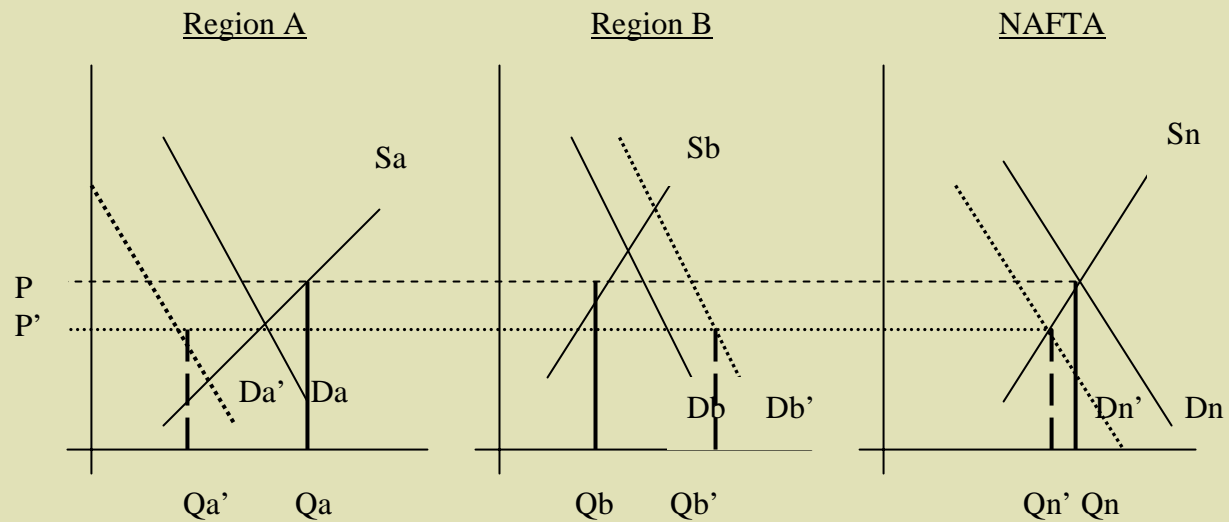
Empirical Analysis: Strawberries

■ Scenario 3

- Food safety "catastrophe" involving fresh strawberries
 - Consumer preferences change
 - Demand for farm-market, u-pick berries increases but demand for retail chain berries decreases
 - Price decreases, but region B sells more strawberries, while region A sells fewer strawberries
- Issues: Nature of consumer response?

Empirical Analysis: Strawberries

■ Scenario 3



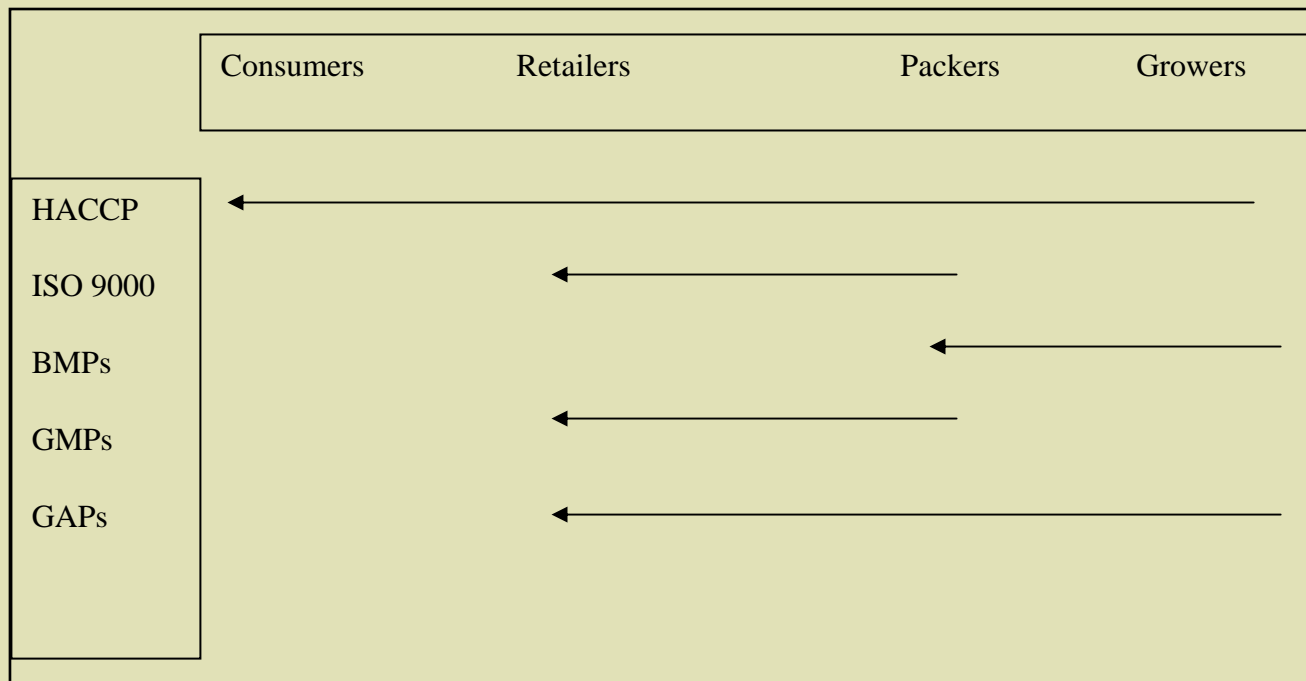


What's Next?

- We have costs of production for some regions, still need more
- We need better understanding of the specific practices adopted by strawberry growers in each region—does it vary by region?
- Experiences with consumer demand or changing preferences in other commodities?

What's Next?

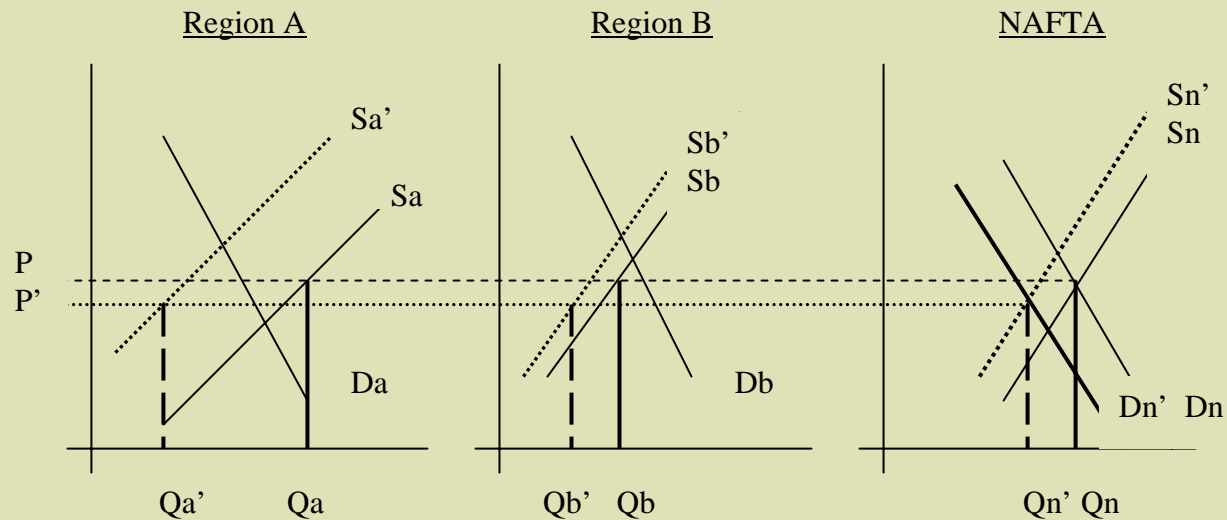
- Reactions?



Empirical Analysis: Strawberries

- Scenario 2
 - Market for non-certified strawberries

Market for Non-Certified Strawberries



Empirical Analysis: Strawberries

Scenario 2, con'td

Market for Certified Strawberries

