Restrictions on Farm Practices as Trade Impediments across Nations and States

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Daniel A. Sumner
Director University of California Agricultural Issues Center and Frank Buck, Jr. Distinguished Professor in the Department of Agricultural and Resource Economics, UC Davis
Motivation, Orientation, and Overview

People pay attention to food and farm practices…not new buts seems to have become more intense or at least more public as separation became apparent.

• Governments respond to such attention as a vehicle for attitudes

Cases such as restrictions and subsidies based on farm animal housing, local preference rules, origin labeling and GMOs all reflect such pressures

• Illustrate economic impacts from using national and local regulations on practices to create trade impediments.

{Some of you will notice this is related to concerns about SPS as trade barriers and the requirements to meet section 8e provisions in marketing orders}

Consequences for consumers can be severe, and long run consequences for growth significant.
Antecedents

This presentation is in the broad tradition of two famous books by one of my mentors, Professor D. Gale Johnson.

*Trade and Agriculture: A study of inconsistent Policies* (1950)
*World Agriculture in Disarray* (1973)

Some of the specific policy concerns highlighted by these publications have been partially remedied, in part because of the intellectual efforts of Gale and others. But, there remain policy issues to consider…
Food Process and Practice Regulations Create Protection and Reduce Benefits of Trade Across States and Nations

• Regulations often respond to private non-commercial (NGO) pressures in farm practices. These pressures may turn public interest in food practices into mandatory regulations.

• These pressures go beyond traditional concerns with product-based public goods such as public health or animal and plant diseases.

Often the regulations on practices are less than transparent in their trade restriction implications and in that way are more pernicious than old fashioned tariffs or import quotas.
Why Trade?

• Trade is “natural”, dare we say a part of our genetic nature
• Sentient beings trade, indeed all living organisms trade (recall Darwin was inspired by economists)
• The idea of a “nation state” (or other geographic political grouping) followed trade by a few hundred thousand (or hundred million) years.
• States and Nations must go to great lengths to interrupt trade and cannot really stamp it out (though North Korea does a pretty good job)
• Trade benefits many (not all) those not a party to the trade
• Of course, those who face lower prices for what they sell or higher prices for what they buy often oppose trades among those who benefit directly
• Imports may be more important than exports and growth impacts of global interactions may be most vital
Roadmap

1. Issues of international trade where the WTO broadly governs relationships
   - Recent US leadership shifts, a broad interest in farm practices and natural pressures for protection may cause a renewed trade challenges

2. Trade among US states where the US Constitution and specifically the Commerce Clause broadly governs relationships
   - Recent US politics together with local interests in farm practices and divergence of political outcomes lead to differences in regulations and thus pressures for trade impediments as protection

Can we reduce a move backwards in trade relationships across nations and states?
Attention to “where your food comes from” is a prelude to regulatory proposals that mandate practices

- Recall the (former) first lady of the United States doing photo ops at her garden with local advocates and Walmart
- (One of the few public (policy) statements of the new first lady was to declare that the garden will stay.)
- General presumption about importance to how food is produced.
- Many papers show effects of attention to production process or location on demand: Some of this related to health and safety, but much does not.
- Work on traceability back to the farm by Polio and others, we used data on about olive oil as a culinary choice or healthy food to determine demand growth. Saitone and others on rules about antibiotics affecting consumer welfare
Sustainable agriculture and farm and food practices
(My undergraduate students at Davis)
Location of Farm Source of Food Commodities

Not local as a proxy for some other attribute such as freshness or safety but as an end in itself.

Local meaning something within some boundary which can then become political and regulatory.
Location of Farm Source of Food Commodities is Now Among the Most Discussed Production Practices

• Production origin near where the product is purchased has gained prominence, even when that location conveys no particular positive sensory attributes.

• More traditionally, for some products a specific location of farm production signals sensory attributes of the product that cannot be assessed until sampled.

• Wine is perhaps the most prominent processed food product for which source location of the farm raw material is a signal of some expected consumer-valued attribute.

• However, wine itself is complex and evidently difficult to evaluate sensorially.

• So consumers have traditionally relied on farm production attributes and practices including the location of the grape vineyard
Consider two current government programs

The US has challenged in the WTO a recent British Columbia, Canada regulation that allows local wines to be sold in regular supermarkets, but non-BC wines to be sold only in section separate from the rest of the store. Trade impediment?

Consider a jurisdiction that sets a specific wine tax (where almost all wine is imported). Then the revenues of that tax are used to subsidize local production. (Indiana wine policy is?)

Consider a California pork policy that taxes bacon and uses the receipts to subsidize pigs in California. (A boon to those who ship corn and beans west!)
Markets are Good at Giving Buyers Location Information: When They Express an Interest in the Market

Hedonic regressions holding constant variety, age, and other label information. The right-side column is from a field experiment in which explanators include characteristics of the buyers such as wine experience and knowledge (Gustafson, Lybbert and Sumner, 2016)

<table>
<thead>
<tr>
<th>Location</th>
<th>Coefficient 1 (SE)</th>
<th>Coefficient 2 (SE)</th>
<th>Coefficient 3 (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monterey^c</td>
<td>4.27** (1.15)</td>
<td>3.43** (0.77)</td>
<td>2.97** (0.71)</td>
</tr>
<tr>
<td>Napa Valley</td>
<td>9.87** (0.67)</td>
<td>6.54** (0.79)</td>
<td>5.25** (0.68)</td>
</tr>
<tr>
<td>Napa &amp; Sonoma Sub-AVAs</td>
<td>8.93** (0.66)</td>
<td>5.92** (0.75)</td>
<td>5.19** (0.65)</td>
</tr>
<tr>
<td>North Coast^c</td>
<td>4.38** (1.02)</td>
<td>1.80** (0.65)</td>
<td>1.39** (0.62)</td>
</tr>
<tr>
<td>Oregon/ Washington</td>
<td>6.77** (1.13)</td>
<td>4.47** (1.09)</td>
<td>3.72** (1.08)</td>
</tr>
<tr>
<td>San Luis Obispo^c</td>
<td>5.40** (1.04)</td>
<td>4.35** (0.72)</td>
<td>3.89** (0.77)</td>
</tr>
</tbody>
</table>
Trade barriers that apply across nations

International trade restrictions or impediments are governed mostly by WTO rules

- Essentially a contract or set of promises to keep markets open unless explicit exemptions apply.
- The WTO has no ability to enforce requirements on members
- But if a member is found to be out of compliance with rules, the offended members are authorized to “withdraw concessions” meaning they can take actions that would not otherwise be allowed to reduce member benefits of the offending member.
- An elegant solution to the conundrum that WTO members are sovereign nations

International trade principles and evidence generally support the notion that trade benefits competitive sellers and their prospective customers, but can harm less competitive suppliers (and their input suppliers) in importing markets. The economy as a whole gains from trade in several ways.
WTO Dispute settlement: Encourages Compliance with agreed Rules

- Programs can be challenged citing the Agreement on Agriculture
  - Brazil, Canada: US subsidies (2007)
  - US: China subsidies for corn, wheat and rice (2016)
- Subsidies and Countervailing Measures (SCM)
  - Brazil: US cotton subsidies
- Technical Barriers to Trade (TBT) and the original GATT principles (National Treatment and requirement to use minimally trade distorting measures)
  - Canada, Mexico: Country of Origin Labeling (COOL)
WTO Dispute settlement cases

Cases brought by US: 114 cases, 26 cases in Agriculture
Cases brought against US: 129 cases, 10 cases in Agriculture
Country of Origin Labeling (COOL)

- In 20010, Canada and Mexico claimed that COOL implemented for live cattle and hogs in 2008 and 2009 was inconsistent with WTO TBT agreement and National Treatment
- COOL is applied for lots of products and imported meat, but this case deals with labeling muscle cuts of beef and hogs by origin of animals.
  - Country of Origin Labeling is OK, but the US did not achieve its legitimate goals in the minimally trade distorting way
  - Canada and Mexican hog and cattle industries suffered harm as a result
- Panel agreed with Canada and Mexico on major issues: COOL treated imports less favorably, it did not really achieve its objective
- US lost an appeal and lost again after some program changes in 2012
(Disclosure I was a COOL econometrician for Canada)
EXTRA LEAN GROUND BEEF
PATTY 88%LEAN 12%FAT

PRODUCT OF USA, CANADA, MEXICO, AUSTRALIA
AND NEW ZEALAND - PROCESSED IN USA

USE A MEAT THERMOMETER AND COOK GROUND
BEEF THOROUGHLY, TO A UNIFORM TEMPERATURE.
COOL and the Economics of Segregation and Labels

The steps in the economic logic:

1. Significant costs segregation of animals and meat along the supply chain.
2. The vast majority of slaughtered livestock are domestic origin. Most feeders, processors and retailers use few imports and many operated with no imported livestock.
3. Those that relied on only U.S.-origin livestock faced tiny costs of COOL, because they had no costs of segregation.
4. COOL caused those meat packers that would use any imports to face costs of segregating their imported supplies
5. Firms that used imported livestock must compete for U.S.-origin livestock with those firms that buy and sell U.S.-only livestock and meat derived from them.

6. Almost all the cost of implementing COOL is borne by suppliers of imported livestock in the form of a shift down in the U.S. import demand function.
Spot the Canadian or the Mexican-born steer in this pen.

That’s easy.

Now try half way through the slaughter process
 THAT COULD CAUSE ILLNESS IF THE PRODUCT IS MIS
COOKED IMPROPERLY. FOR YOUR PROTECTION, FOLLOW
HANDLING INSTRUCTIONS.

KEEP RAW MEAT AND
POULTRY SEPARATE
FROM OTHER FOODS.

WASH WORKING SURFACES
(INCLUDING CUTTING BOARDS),
KEEP HOT
UTENSILS, AND HANDS AFTER
TOUCHING RAW MEAT OR POULTRY IMMEDIATELY.

USDA CHOICE BEEF  KC STRIP
BONE IN
BORN, RAISED, AND HARVESTED IN THE U.S.A.

<table>
<thead>
<tr>
<th>Time</th>
<th>Store #</th>
</tr>
</thead>
<tbody>
<tr>
<td>01:01 PM</td>
<td>94</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Net Wt/Ct</th>
<th>Unit Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.95 lb</td>
<td>$12.99/lb</td>
</tr>
</tbody>
</table>
Country-of-Origin: From Cattle Born in Mexico, Raised and Slaughtered in the United States.
Can Demand, Price, COOL Export Supply

U.S. Demand, no COOL

Can Supply

Quantities in Canada
PORK LOIN BONELESS
VACUUM PACKAGED

BORN, RAISED, AND HARVESTED IN THE USA

COOK TO A TEMP OF 145 DEGREES, USING A
MEAT THERMOMETER, FOLLOWED BY A THREE
MINUTE REST.

SELL BY:
11/29/14

UNIT PRICE
$2.19/lb

TOTAL PRICE
$24.62

NET WT
11.24 lb
Hog shipments from Canada
COOL and the Effects on Price and Quantities

• Before and after COOL there was no significant effort by beef and pork marketers to exploit the purported consumer interest in country of origin, even though many other labels (angus, natural, local etc.) have been profitably used for meat cuts.

• Tonsor and Schroeder and co-authors find negative impacts on Canadian prices and export quantities.

• Pouliot and Sumner (Food Policy 2013) found strong and significant negative impacts on the price basis for fed steers from the original COOL measure.

• The WTO panel was provided reams of econometric models and robustness checks documenting strong and statistically significant negative impacts on prices of feeder and fed hogs and cattle shipments to the US and on prices of the affected hogs.

• Simulations were used to show several billion $$ of lost trade revenues and other damages in Mexico and Canada.
The labeling rules imposed added costs for imported hogs, and reduced quantities shipped and price with no evidence of consumer interest.
The U.S. seems to have been just too COOL for WTO Standards
However, consequences of the standards and regulations we have discussed are serious however, especially for low-income consumers and producers
UNIVERSITY STATES – CERTAIN COUNTRY OF ORIGIN LABELLING (COOL) REQUIREMENTS

RECOUROCE TO ARTICLE 22.6 OF THE DSU BY THE UNITED STATES

DECISIONS BY THE ARBITRATOR
Cool kept this Manitoba calf out of the U.S. and suppressed its price in Canada. Most in the U.S. didn’t notice. But the quality of discourse about labels and origin deteriorated.

Consequence has been lower supplies to U.S. feeders, and meat packers employment.

Little awareness by U.S. consumers.

Violations of international rules which the U.S. urged on the rest of the world.

Damage to the U.S. reputation.

Losses for producers and consumers in the United States and damage to trade partners.
The End of COOL?

December 7, 2015:

“Lawmakers continue to push for amended labeling rules for beef, pork and poultry to comply with adverse World Trade Organization rulings, experts say that Monday's authorization of $1 billion in retaliatory tariffs by Canada and Mexico leaves no option but a full repeal. … COOL, rules have been a flash point for controversy both in Geneva and in U.S. federal courts. But with the threat of retaliation now taking full shape, …former U.S. Trade Representative Clayton Yeutter … ‘This pretty much shoots down any alternative legislative proposals other than repeal.’”

Last month, the World Trade Organization (WTO) shot down a country-of-origin labeling rule issued in 2013 that would require labels to say where an animal was born, raised, and slaughtered.
IT’S OFFICIAL
COUNTRY OF ORIGIN LABELING HAS ENDED
HOUSE: 300-121 (PASSED)
SENATE: SLIPPED INTO SPENDING BILL
PRESIDENT: SIGNED INTO LAW

NOW YOU WILL NOT KNOW WHICH COUNTRY
YOUR MEAT COMES FROM
HAPPY HOLIDAYS AMERICA!
Key elements of a model Trump trade agreement
(Released in early March)

1. Rules of Origin Percentages & Loopholes
2. Trade Deficit Reduction
3. Dumping, Diversionary Dumping, and Evasion of AD/CVD Duties
...
15. Country of Origin Labeling
16. Evasion of Antidumping and Countervailing Duties
...
18. Geographical Indications to restrict trade
...
20. Phytosanitary standards
21. Processed foods
22. Stumpage ...

Is COOL Coming back?
Trade barriers that apply across States in the United States

International trade restrictions or impediments are governed mostly by the Commerce Clause of the US Constitution.

Article I, Section 8, Clause 3 of the US Constitution states that the Congress shall have power “To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes.” Moreover, Article I, Section 10 states in part, “No state shall, without the Consent of the Congress, lay any Imposts or Duties on Imports or Exports, except what may be absolutely necessary for executing its inspection Laws…and all such Laws shall be subject to the Revision and Control of the Congress.”

The United States was created the notion that trade across States benefits competitive sellers and their prospective customers, but can harm less competitive suppliers (and their input suppliers) in importing markets. The economy as a whole gains from trade in several ways. The same foundations as the WTO (not by accident).
Of course, there is a long series of federal cases many at the Supreme Court dealing with states that have attempted impediments on imports from suppliers in other states.

Attempts to create regulatory impediments continue --often applied to food and agriculture I argue are likely to intensify.

Naturally court rulings generate mixed signals about State regulations that fall short of direct import tariffs or import quotas.

Turn for now to some detail to the recent controversies over hen housing regulations applied in California and several other states.
A large group including scientists, engineers, MDs, Vets and even an economist from Iowa State, Purdue, Michigan State, UC Davis and elsewhere developed the best farm level data on impacts of hen housing.

• Conducted on one commercial farm, with three housing types

• Three years and two separate flocks:
  • Animal Health and Well-Being
  • Environment
  • Food Safety
  • Worker Health and Safety
  • “Food Affordability”

• The final analysis explored interactions and trade-offs between sustainability areas within each housing system
Important Factors in Purchasing Eggs

- No Hormones
- Cage-Free
- Organic
- Egg Size
- Packaging
- Cost/price
- Local Producer
- Physical Nature of the Egg
## Characteristics of Hen Housing Systems

<table>
<thead>
<tr>
<th>Hens per Cage/Housing Unit</th>
<th>Designed Space per Hen, in²</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Cage</td>
<td>6 to 8</td>
<td>67 to 86</td>
</tr>
<tr>
<td>California Standards</td>
<td>9+</td>
<td>115</td>
</tr>
<tr>
<td>Enriched Colony</td>
<td>60 to 80</td>
<td>116 to 145</td>
</tr>
<tr>
<td>Cage Free, Barn or Aviary</td>
<td>142 per unit</td>
<td>144 to 324</td>
</tr>
<tr>
<td>Free Range</td>
<td>N/A</td>
<td>3,875</td>
</tr>
<tr>
<td>Pasture Raised</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Organic egg are from hens that have access to the outdoors and cannot be raised in “cages.”
## Worker Health & Safety

**KEY:**
- **EC** Enriched Colony (EC)
- **AV** Cage-Free Aviary (AV)
- **CC** Conventional Cage

### Impact Scale
- **-4** Exceptionally Worse
- **-3** Substantially Worse
- **-2** Worse
- **-1** Slightly Worse
- **0** Similar
- **+1** Slightly Better
- **+2** Better
- **+3** Substantially Better
- **+4** Exceptionally Better

<table>
<thead>
<tr>
<th>Impact</th>
<th>Negatively Impacted</th>
<th>Positively Impacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker particulate matter exposure</td>
<td>-</td>
<td>AV</td>
</tr>
<tr>
<td>Worker ammonia exposure</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Worker endotoxin exposure</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Worker lung health</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Find more information at [www2.sustainableeggcoalition.org](http://www2.sustainableeggcoalition.org)
# Animal Health & Well-Being

## Key

- **EC**: Enriched Colony
- **AV**: Cage-Free Aviary
- **CC**: Conventional Cage

<table>
<thead>
<tr>
<th>Impact Scale</th>
<th>Negative Impact</th>
<th>CC</th>
<th>Positive Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-4</td>
<td>-3</td>
<td>-2</td>
</tr>
<tr>
<td>Mortality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannibalism/Aggression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keel Damage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tibia/Humerus Strength</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: [http://www2.sustainableeggcoalition.org/research-results/](http://www2.sustainableeggcoalition.org/research-results/)
## Operating and Capital Costs per Dozen Eggs

<table>
<thead>
<tr>
<th></th>
<th>Conventional</th>
<th>Aviary</th>
<th>Enriched</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feed cost</td>
<td>$0.425</td>
<td>$0.436</td>
<td>$0.417</td>
</tr>
<tr>
<td>Pullet cost</td>
<td>$0.148</td>
<td>$0.221</td>
<td>$0.143</td>
</tr>
<tr>
<td>Labor cost</td>
<td>$0.019</td>
<td>$0.074</td>
<td>$0.056</td>
</tr>
<tr>
<td>Total operating costs</td>
<td>$0.612</td>
<td>$0.751</td>
<td>$0.636</td>
</tr>
<tr>
<td>Capital costs (at 10%)</td>
<td>$0.058</td>
<td>$0.162</td>
<td>$.120</td>
</tr>
<tr>
<td>Sum of capital and variable costs</td>
<td>$0.670</td>
<td>$0.913</td>
<td>$0.756</td>
</tr>
<tr>
<td>Percentage higher costs compared to conventional</td>
<td>--</td>
<td>36%</td>
<td>13%</td>
</tr>
</tbody>
</table>
In 2008, about 2/3 of voters approved Prop 2, a law requiring eggs in California to be produced from hens with room to move their limbs.

- Only a small % of California buyers were willing to pay the extra cost of such eggs.

- Since more space is costly, the obvious implication is that eggs would no longer be produced here, but would be shipped in, as almost half already were.

- Despite TV ads showing ugly chickens and dying cattle by one side, and claiming spiking eggs prices and imports from Mexico by the other side, impacts would have been where chickens were housed, not how.

- Claims about implications of hen housing changes had no factual or analytic basis.
California Egg Proposition
Why would voters ban a product that most buy regularly and could simply shift to the readily available alternative?

- John Bovay and I explore California voter interests and behavior surrounding Prop 2.

  We exploit unique data on voting patterns by precinct linked to census tracts.
  - We find support by those on the political left and those with less information or understanding of farming, less personal economic pressure and less empathy for people.

  - The other (and sound) reason to support Prop 2 was for activist vegans to build a long term strategy of imposing high eggs prices to discourage egg consumption.
California Egg Proposition
Why would voters ban a product that most buy regularly and could avoid if they wanted?

- When I eat eggs from a hen with more space, I save that one hen from confinement (each of us eats an average of one hen’s eggs per year). It thus costs me about $20 per year to save “my” hen. (Assuming I believe she is better cage-free.)
- The California standards cost me the same $20 but “save” 30 million hens.
- But it imposes the $20 each on all other Californian egg buyers as well almost all of whom rejected spending their own $20 for more space for a hen.
- John Bovay and I argue about this. Does a model in which people care about chicken also include that people may care about people?
- Vote for Prop 2 means I care little for fellow humans, very few of whom willingly spent $20 extra on eggs. I ignore the costs imposed on them when I support added space.
- My proposed campaign slogan for the law was:

“Vote Yes, if you care more for chickens than people!”
The Proposition would have Eliminated California Eggs without Little Impact on Consumers or the Hens.

The graph shows the relationship between price and marginal cost, with two lines indicating the marginal cost/supply in California (CA) before and after the proposition. The demand for eggs in the U.S. is also depicted, showing a decrease in price and marginal cost after the elimination of California eggs.
Consequences illustrated never happened

• A 2010 California law (and 2013 regulations) extended the cage restriction to eggs sold in California not just produced there.

• Amendment to Proposition #2 passed as legislation:
  • A shelled egg shall not be sold or contracted for sale for human consumption in California if it is the product of an egg-laying hen that was confined on a farm or place that is not in compliance with animal care standards set forth in the Farm Animal Cruelty Act.

Reversed the economics completely

• Result of the amendment was that the 90% of consumers who buy conventional eggs (and who could choose non-cage) pay more

• Raised costs of competitors to match those imposed on local producers.

This is what actually took effect in January 2015.
## Range of Egg Prices by Housing

<table>
<thead>
<tr>
<th>Hen Housing Type</th>
<th>Price per dozen eggs, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional Cage (Midwest)</td>
<td>$1.00 to $2.00</td>
</tr>
<tr>
<td>California (Half shipped in from Midwest)</td>
<td>$2.00 to $3.00</td>
</tr>
<tr>
<td>Cage Free</td>
<td>$2.50 to $6.00</td>
</tr>
<tr>
<td>Organic</td>
<td>$3.20 to $7.00</td>
</tr>
<tr>
<td>Free Range and Pasture Raised</td>
<td>$7.00 to $9.00+</td>
</tr>
</tbody>
</table>
Econometric Literature on Egg regulations

- A dozen recent papers have considered the econometrics of egg demand and prices across hen housing and related characteristics in a variety of frameworks.
- Several studies assess the California Proposition before it was implemented and before they noticed that its implications were reversed.
- Results find price impacts, but do not notice that “California standards” are not cage free or even enriched colonies.
- Some effort to look at post 2015 data to assess retail prices compared to farm costs.
- What is the result with respect to the “trade barrier” created by applying the new standard to all eggs consumed.
California Share of Layers in the U.S.

Source: NASS, USDA
Factors Affecting on Log of Retail Prices of Eggs
(On-going work with Hamblin Lee)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Log of prices</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposition 2 implemented</td>
<td>-0.106</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Cage-free or organic</td>
<td>0.818</td>
<td>(0.010)</td>
</tr>
<tr>
<td>‘Proposition 2 implemented’ and ‘Cage-free or organic’</td>
<td>-0.00283</td>
<td>(0.020)</td>
</tr>
<tr>
<td>Southwest</td>
<td>0.212</td>
<td>(0.008)</td>
</tr>
<tr>
<td>‘Proposition 2 implemented’ and ‘Southwest’</td>
<td>0.143</td>
<td>(0.016)</td>
</tr>
<tr>
<td>‘Cage-free or organic’ and ‘Southwest’</td>
<td>-0.138</td>
<td>(0.014)</td>
</tr>
<tr>
<td>‘Proposition 2 implemented,’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘Cage-free or organic’ and ‘Southwest’</td>
<td>-0.0788</td>
<td>(0.029)</td>
</tr>
<tr>
<td>Avian flu</td>
<td>0.209</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Observations</td>
<td>24,761</td>
<td></td>
</tr>
<tr>
<td>R-squared</td>
<td>0.765</td>
<td></td>
</tr>
</tbody>
</table>

Note. Dataset is weekly retail price from 2006 to 2016 (AMS, USDA). Estimation results of covariates (dummy variables for egg types, regions, region interactions and month) are omitted.
Proportional Price Difference after Jan 2015 for Conventional Eggs

<table>
<thead>
<tr>
<th>Region</th>
<th>Price</th>
<th>S.E.</th>
</tr>
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<tr>
<td>Midwest</td>
<td>-0.106</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Northeast</td>
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<td>(0.011)</td>
</tr>
<tr>
<td>South Central</td>
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<tr>
<td>Southeast</td>
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</tr>
<tr>
<td>Northwest</td>
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<td>(0.015)</td>
</tr>
<tr>
<td>Southwest</td>
<td>0.037</td>
<td>(0.012)</td>
</tr>
</tbody>
</table>
Layers in California (1,000 birds)

Source: NASS, USDA
Ratio of Layers per capita in California relative to the U.S.

Source: NASS, USDA; U.S. Bureau of Census
The trade impediment does not seem to have saved the industry

- California higher price (retail) is in line with farm cost estimates from Sumner and Matthews
- But decline in eggs production no reverse when the 2010 law passed nor when the 2013 regulations clarified that law
- Maybe stabilized with 2015 implementation
- But maybe it is too late for an industry with many issues
- Commerce Clause challenges not fully played out
Related Food Protection Issues

GMO labeling may be settled with federal pre-emption

• Greenhouse gas rules and cap and trade or regulations in selected States lead to regulation created cost differentials
  • Those seem ripe for “products consumed” regulations

• Why would this be different from eggs

• As EPA does less on water or pesticides, some state will impose more locally
  • Will this lead to state rules on pesticide used on food shipped from one place to the next?

Is the WTO a stronger Free Trade Agreement than the Commerce Clause?
One Bottom Line

• Consumer expression of interest in how food is produced leads to healthy competition in the market for ideas and food products

Pressures from outside the market can lead to regulatory outcomes with little basis in consumer demand

• The “know your food” movement combined with the “local” ethos provides the environment for regulatory trade barriers across states even more than across nations

• Such pressures may increase with reduced federal regulatory pressure and more divergence in regulatory policy regionally in the US

Economists role in helping understand full implications may be ever more important as trade and regulatory economics merge
Thank you