The Pricing of Organic Wines

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Market Presence

The Pricing of Organic Wines

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Information on organic wines:

Click here for a list of our top organic wines currently available at a variety of price points!

With organic wines, there are two categories: certified organic and "made with organic grapes." Many grape growers have been embracing organic cultivation of their vineyards; however, not all are certified organic. Making certified organic wines is a difficult and costly three-year process that guarantees the winery’s commitment to environmentally sound methods in the vineyards and in the cellar.

Certified organic wineries do not use any man-made farming products, such as fertilizers or pesticides and nor do they any genetically modified goods. Organic vineyards in the US and Australia do not add any sulfur dioxide during the winemaking process.

If you’re looking for more organic wines, please see our page for wineries that use biodynamic practices.

Lester M.K. Kwong

The Pricing of Organic Wines
Introduction
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Overview
The Puzzle (A Breakdown)
Decision Variables

Lester M.K. Kwong
The Pricing of Organic Wines
Introduction
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Overview
The Puzzle (A Breakdown)
Decision Variables

Lester M.K. Kwong
The Pricing of Organic Wines
Introduction
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

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The Puzzle (A Breakdown)
Decision Variables

The green movement is expanding with increasing speed, and the wine industry is keeping pace. Each year, more wine producers are embracing organic practices, offering consumers a chance to enjoy high-quality wines that are also environmentally friendly. The shift towards organic and biodynamic farming practices has not only increased demand for these wines but has also driven innovation in the industry.

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The Pricing of Organic Wines
BONTERRA SYRAH 2007
Mendocino County,
Made from Organic Grapes
Match this rich and flavourful wine with spare ribs and a robust sauce. At press time, the free sulphur reading was unavailable. Please check our website at vintages.com

TASTING NOTE: Black cherry and milk chocolate aromas and flavors, medium body, fruity. Recommended. (Fred Tasker, The Miami Herald, Sept. 22, 2010)

573709 (D) 750 mL $19.95 🍃 Organic Product

GHOST PINES WINEMAKER’S BLEND MERLOT 2007
Napa & Sonoma Counties (Louis M. Martini Winery)
TASTING NOTE: The name Ghost Pines has always made me think of fall walks through foggy woods with trees disappearing into the mist in the distance. Romantic thoughts are often enhanced by having a great wine to accompany them. This blend of roughly equal parts Napa and Sonoma grapes offers aromas of blueberry, cherry and spice with flavors of rich, juicy berry, coffee, cocoa and a finish of toasty oak. (Chuck Hill, Wines Northwest, Nov. 16, 2010)

135384 (D) 750 mL $19.95 🍃 Featured on the back cover
Empirical Findings

Delmas and Grant (2010) - Price premium puzzle in organic wines
Empirical Findings

- Delmas and Grant (2010) - Price premium puzzle in organic wines
  - Price ↑ 13% - Wines produced using organic grapes.
Empirical Findings

- Delmas and Grant (2010) - Price premium puzzle in organic wines
  - Price ↑ 13% - Wines produced using organic grapes.
  - Price ↓ 20% - Organic wines with an eco-label.
Quality Implications

Choice

Organic Grapes

Organic Wine

Conventional Grapes

Conventional Wine

Quality Assessment

$Q_O > Q_C \Rightarrow P_O > P_C (13\% \text{ Premium})$
Quality Implications

Choice

Organic Grapes → Organic Wine → Quality Assessment → Quality $Q^O$

Conventional Grapes → Conventional Wine → Quality Assessment → Quality $Q^C$

Lester M.K. Kwong
The Pricing of Organic Wines
Quality Implications

Choice

Organic Grapes

Organic Wine

Quality Assessment

Quality $Q^O$

$Q^O > Q^C$

Conventional Grapes

Conventional Wine

Quality $Q^C$
Quality Implications

Choice

\[ \text{Organic Grapes} \downarrow \quad \text{Organic Wine} \]
\[ \text{Conventional Grapes} \downarrow \quad \text{Conventional Wine} \]

Quality Assessment

\[ Q^O > Q^C \quad \Rightarrow \quad P^O > P^C \quad (13\% \text{ Premium}) \]
2003 US AC Nielsen survey (Everage)
- “The reasons consumers purchase organic products”
  - 32% - Organic is healthier
  - 18% - Contain no pesticides
  - 11% - Better quality
  - 3% - Prevent allergic reactions
Introduction
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Overview
The Puzzle (A Breakdown)
Decision Variables

Lester M.K. Kwong
The Pricing of Organic Wines
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Overview
The Puzzle (A Breakdown)
Decision Variables

The Pricing of Organic Wines

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The Pricing of Organic Wines
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The Pricing of Organic Wines

90-93 $62.50
93-95 $127.95
93-95

Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

The Puzzle (A Breakdown)
Decision Variables
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Overview
The Puzzle (A Breakdown)
Decision Variables

Lester M.K. Kwong
The Pricing of Organic Wines

<table>
<thead>
<tr>
<th>Wine</th>
<th>Score</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>90-93</td>
<td>$62.50</td>
</tr>
<tr>
<td>2</td>
<td>93-95</td>
<td>$127.95</td>
</tr>
<tr>
<td>3</td>
<td>93-95</td>
<td>$114.05</td>
</tr>
</tbody>
</table>
A CAREFULLY-TENDED VINEYARD

Château Pontet-Canet is situated in the heart of the Pauillac appellation, south of Château Mouton Rothschild and d’Armailhac. It has the poor gravel soil typical of the greatest vineyards. In fact, the soil has an iron gravel and sand that it is difficult to imagine that anything could grow there at all. The 55 hectares (139 acres) vineyard is predominantly planted with Cabernet Sauvignon, the signature variety for the great wines of Pauillac. The demanding grape is perfectly adapted to Pauillac’s climate and soil. It produces full-bodied, well-structured, long-lived wines famous for their finesse and elegance. In keeping with a longstanding Médoc tradition, it is blended with Merlot and Cabernet Franc, which adds a touch of smoothness and charm. In certain vintages, Petit Verdot can also be counted on to contribute complexity.

Pontet-Canet’s terroir features rocks of Garonne gravel on limestone bedrock. The soil is lean, warm, and well-drained. In order to raise the mood of this terroir, Alain Tesseron instituted a plot-by-plot, vineyard management system. Careful observation year after year has led to an intimate familiarity with practically every vine. The château’s winegrowing philosophy is to intervene as little as possible and as naturally as possible in the vineyard. Only traditional, cultural, and cultivation practices are used. Chemical weed killers are banned in keeping with environmental protection, and priority is given to the vine’s long-term health.

RESPECTING THE VINES

In keeping with this spirit, fertilizers are uniquely organic, and only used on plots that genuinely require extra nutrition. This helps to maintain a good balance and self-regulated low yields, as well as to respect the vines, reflect the terroir, and produce pure, natural wine. Pruning is done with the greatest of care in winter by qualified workers who are paid a fixed monthly salary rather than on a piece-work basis. Each individual vine is considered separately and treated accordingly. All these efforts result in grapes that are evenly distributed, with good ventilation, minimum sun exposure, and improved ripeness.
- Pontet Canet will make no outward sign on the label either of being organic or biodynamic (a more far-reaching form of organic farming that the chateau received Biodyvin certification for in 2006).

“Chateaux who claim to practice organic viticulture without applying for certification are often paying lip service to it simply for marketing reasons,” Jean-Michel Comme, director of Chateau Pontet Canet said.

- Decanter (Jan. 10, 2011)
Introduction
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Overview
The Puzzle (A Breakdown)
Decision Variables

Lester M.K. Kwong
The Pricing of Organic Wines
Lester M.K. Kwong

The Pricing of Organic Wines

Joseph Phelps Vineyards

Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Overview
The Puzzle (A Breakdown)
Decision Variables

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Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Overview
The Puzzle (A Breakdown)
Decision Variables

The Pricing of Organic Wines
Price penalty of approx. 20%!
Is price quality driven for organic wines?
For Wineries…

- Conventional or Organic?
For Wineries…

- Conventional or Organic?
- Why use eco-labels?
For Wineries...

- Conventional or Organic?
- Why use eco-labels?
  A potentially important source of information
THE CLASSICS COLLECTION • OCTOBER 2010

FEATURE PRODUCTS

USA – CALIFORNIA

RED WINE

TABLAS CREEK VINEYARD ESPRIT DE BEAUCASTEL ROUGE 2007
Paso Robles
TASTING NOTE: The profound 2007 Esprit de Beaucastel (a 4,200-case blend of 44% Mourvedre, 29% Grenache, 21% Syrah, and 6% Counoise) boasts a glorious perfume of roasted herbs, Peking duck, soy, blueberries, blackberries, and bouquet garni. This elegant yet powerful, dense, multilayered wine saturates the palate, possesses multiple dimensions, beautiful nuances, and a stunningly long finish that lasts over 40 seconds. It should provide plenty of pleasure over the next 10-15 years. Score: 95-97 (Robert Parker Jr., www.erobertparker.com, Aug. 2009)

735654 [XD] 750 mL $45

DUCKHORN VINEYARDS ESTATE GROWN CABERNET SAUVIGNON 2006
Napa Valley
TASTING NOTE: 21% Merlot; 3% Cabernet Franc. Confident, cassis-like fruit and creamy oak share the stage in the sweet and accessible aromas here, but the wine clearly favors red cherry flavors and Merlot-like plumpness once in the mouth. It is moderately full-bodied and fairly supple in feel, and, even if it finished with nominal tannin, it is already a thoroughly drinkable wine and should achieve peak form in but three to five years. Score: 89 (Connoisseurs’ Guide to California Wines, April 2010)

921361 [DI] 750 mL $89

FROG’S LEAP RUTHERFORD CABERNET SAUVIGNON 2006
Rutherford, Napa Valley
Industry leaders in eco-conscious winemaking, the team at Frog’s Leap use organic fertilizers and encourage cover crops in the vineyard. These measures enhance natural soil health and translate into characterful wines that beautifully express terroir — in this case, Rutherford’s unmistakable complex minerality — and the grape variety’s inherent fruit flavours. Also known simply as “the Rutherford,” this impressive red wine is comprised of 92% Cabernet Sauvignon with 8% Cabernet Franc, and is aged for 2 years in French oak. Look for bright raspberry and currant fruit framed by notions of graphite, mineral and earth.

596064 [XD] 750 mL $95
Introduction
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Overview
The Puzzle (A Breakdown)
Decision Variables

TABLAS CREEK VINEYARD ESPRIT DE BEAUCASTEL BLANC 2008
Paso Robles
TASTING NOTE: Tablas Creek’s flagship white, the 2008 Esprit de Beaucastel Blanc, is a blend of 65% Roussanne, 30% Grenache Blanc, and 5% Picpoul. It offers up sumptuous aromas of orange marmalade, lemon blossom, and white currants along with spice, crushed rock, and subtle earthy notes. This full-bodied, rich, lusciously drinkable wine should drink well for 4-5 years. Score: (90-92) (Robert Parker Jr., www.erobertparker.com, Aug. 2009)

735506 [XD] 750 mL $37

JOSEPH PHELPS INSIGNIA 2006
Napa Valley
TASTING NOTE: The 2006 Insignia (95% Cabernet Sauvignon and 5% Petit Verdot; 16,000 cases produced) is a superb effort in this vintage. Another 30+ year wine, it boasts a dense plum/purple color as well as abundant notes of licorice, black currants, charcoal, black olives, and graphite. Full-bodied, pure, and rich with moderately high tannins, it represents a California version of a Bordeaux from Pauillac or St.-Julien. Anticipated maturity: 2014-2045. Score: 95+ (Robert Parker Jr., www.erobertparker.com, Dec. 2009)

737346 [D] 1500 mL $549

DOMAINE DE LA ROMANÉE-CONTI ÉCHEZEUX GRAND CRU 2007
AC
TASTING NOTE: The Domaine’s 2007 Echezeaux displays ripe red berry and star anise aromas, a tender fruit character, mingled with a hint of mocha and underlain by subtly saline meat stock on a silken palate, and a finish that preserves just enough of a fresh edge to its fruit to stimulate salivation and the desire for the next sip. Here is a 2007 that remains true to the personality it expressed early on in barrel, albeit with flattering textural refinement and a greater sense of purity. It’s small scale, but only in the non-derogatory sense of chamber music (two words I used to describe it and, amusingly, later heard from de Villaine). I imagine this charmer being best enjoyed over the next 5-7 years. Drink: 2010-2017. Score: 90 (David Schildknecht, www.erobertparker.com, June 2010)

723122 [XD] 750 mL $275

Lester M.K. Kwong
The Pricing of Organic Wines
For Wineries...

- Conventional or Organic?
- Why use eco-labels?
  A potentially *important* source of information
- What price to charge?
For Consumers...

- Conventional or Organic?
<table>
<thead>
<tr>
<th>Decision Variables</th>
<th>CONSUMERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional or Organic?</td>
<td></td>
</tr>
<tr>
<td>Higher quality $\Rightarrow$ Higher willingness-to-pay (Price)</td>
<td></td>
</tr>
</tbody>
</table>
For Consumers...

- Conventional or Organic?
- Higher quality $\Rightarrow$ Higher willingness-to-pay (Price)
  But
- Higher price $\not\Rightarrow$ Higher quality
For Consumers...

- Conventional or Organic?
- Higher quality ⇒ Higher willingness-to-pay (Price)
  But
  Higher price $\nRightarrow$ Higher quality

- Can eco-labels be used as a signal of quality to wine consumers?
For Consumers...

- Conventional or Organic?
- Higher quality $\Rightarrow$ Higher willingness-to-pay (Price)
  But
- Higher price $\nRightarrow$ Higher quality

- Can eco-labels be used as a signal of quality to wine consumers?
- What implications does a group of (devoted) organic consumers have on:
  - the pricing equilibrium?
  - the informational role of eco-labels?
Table: Chardonnay production costs in the Sonoma County in 2004

<table>
<thead>
<tr>
<th>Yield (Tons/Acre)</th>
<th>Conventional</th>
<th>Organic</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>$12,964</td>
<td>$14,577</td>
</tr>
<tr>
<td>8</td>
<td>$12,819</td>
<td>$14,422</td>
</tr>
<tr>
<td>7</td>
<td>$12,676</td>
<td>$14,266</td>
</tr>
<tr>
<td>6</td>
<td>$12,531</td>
<td>$14,111</td>
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<tr>
<td>5</td>
<td>$12,386</td>
<td>$13,957</td>
</tr>
<tr>
<td>4</td>
<td>$12,240</td>
<td>$13,803</td>
</tr>
<tr>
<td>3</td>
<td>$12,096</td>
<td>$13,647</td>
</tr>
</tbody>
</table>

Source: UC Cooperative Extension
Consumers must be willing to pay a premium for organic wines.
Equilibrium Requirements

- Consumers must be willing to pay a premium for organic wines.
- There is a critical cost level so that if your costs are above, you use the conventional technology and if below, you use the organic technology.
Equilibrium Requirements

• Consumers must be willing to pay a premium for organic wines.

• There is a critical cost level so that if your costs are above, you use the conventional technology and if below, you use the organic technology.

• If such an equilibrium is to exist, then there must exist some quality level whereby the cost of producing organic wines is falling.
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Costs
Equilibrium Requirements
Construction of a Semi-Pooling Equilibrium
Remarks

This cannot occur. Consumers are not that stupid.

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The Pricing of Organic Wines
This cannot occur. Consumers are not that stupid.
Eco-Labels as a Signal of Quality

Price Competition with Devoted Organic Consumers

Future Direction

Costs

Equilibrium Requirements

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This cannot occur. Consumers are not that stupid.

\[ q_f \]

\[ q^* \]

\[ \bar{q} \]

Organic

Conventional

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The Pricing of Organic Wines
This cannot occur.

Consumers are not that stupid.
This gives us only a necessary condition (not sufficient) in terms of the classes of cost functions permissible that will support such an equilibrium.
Table: Chardonnay production costs in the Sonoma County in 2004

<table>
<thead>
<tr>
<th>Yield (Tons/Acre)</th>
<th>Conventional</th>
<th>Organic</th>
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<td>9</td>
<td>$12,964</td>
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<tr>
<td>3</td>
<td>$12,096</td>
<td>$13,647</td>
<td>$1551</td>
</tr>
</tbody>
</table>

Source: UC Cooperative Extension
1. Construct expectations
   \[ E \{ q \mid Q_c \} \]

2. Examine IC constraints
   \[ E \{ q \mid Q_o \} - c(q) \geq E \{ q \mid Q_c \} \]
   \[ E \{ q \mid Q_c \} \geq E \{ q \mid Q_o \} - c(q) \]

∀ \( q \in Q_o \) → ∀ \( q \in Q_c \)

∴ \( c^* = E \{ q \mid Q_o \} - E \{ q \mid Q_c \} \)

A nontrivial problem to solve especially with nonmonotonic functions.
Introduction
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Costs
Equilibrium Requirements
Construction of a Semi-Pooling Equilibrium
Remarks

1. Construct expectations
\[ E\{q | Q_c\} \]
\[ E\{q | Q_o\} \]

2. Examine IC constraints
\[ E\{q | Q_o\} - c(q) \geq E\{q | Q_c\} \]
\[ E\{q | Q_c\} \leq E\{q | Q_o\} - c(q) \]
\[ \forall \ q \in Q_o \rightarrow \forall \ q \in Q_c \]
\[ \therefore c^* = E\{q | Q_o\} - E\{q | Q_c\} \]

A nontrivial problem to solve especially with nonmonotonic functions.

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The Pricing of Organic Wines
Eco-Labels as a Signal of Quality

Price Competition with Devoted Organic Consumers

Future Direction

Costs
Equilibrium Requirements
Construction of a Semi-Pooling Equilibrium
Remarks

\begin{align*}
    &c(q) \\
    &c^* \\
    &q \\
    &q^* \\
    &\bar{q} \\
\end{align*}

Conventional \quad \text{Organic}

\begin{align*}
    &E\{q|Q_c\} \\
    &E\{q|Q_o\} \\
    &E\{q|Q_o\} - c(q) \geq E\{q|Q_c\} \\
    &E\{q|Q_c\} \geq E\{q|Q_o\} - c(q) \\
    &\forall q \in Q_o \rightarrow \forall q \in Q_c \\
    \therefore c^* = E\{q|Q_o\} - E\{q|Q_c\} \\
\end{align*}

A nontrivial problem to solve especially with nonmonotonic functions.

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The Pricing of Organic Wines
1. Construct expectations

\[ c(q) \]

\[ c^* \]

\[ \mathbb{E}\{ q | Q^c \} \]

\[ \mathbb{E}\{ q | Q^o \} \]

- Conventional
- Organic

\[ q \]

\[ q* \]

\[ \bar{q} \]
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Costs
Equilibrium Requirements
Construction of a Semi-Pooling Equilibrium
Remarks

1. Construct expectations
2. Examine IC constraints

\[ \forall q \in Q^o \rightarrow \mathbb{E}\{q|Q^o\} - c(q) \geq \mathbb{E}\{q|Q^c\} \]

\[ \forall q \in Q^c \rightarrow \mathbb{E}\{q|Q^c\} \geq \mathbb{E}\{q|Q^o\} - c(q) \]
1. Construct expectations

2. Examine IC constraints

\[ \forall q \in Q^o \rightarrow E\{q|Q^o\} - c(q) \geq E\{q|Q^c\} \]

\[ \forall q \in Q^c \rightarrow E\{q|Q^c\} \geq E\{q|Q^o\} - c(q) \]

\[ \therefore c^* = E\{q|Q^o\} - E\{q|Q^c\} \]
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

1. Construct expectations
2. Examine IC constraints

\[ \forall q \in Q^O \rightarrow \mathbb{E}\{q|Q^O\} - c(q) \geq \mathbb{E}\{q|Q^c\} \]

\[ \forall q \in Q^c \rightarrow \mathbb{E}\{q|Q^c\} \geq \mathbb{E}\{q|Q^O\} - c(q) \]

\[ \therefore c^* = \mathbb{E}\{q|Q^O\} - \mathbb{E}\{q|Q^c\} \]

A nontrivial problem to solve especially with nonmonotonic functions.
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers

Future Direction

Costs
Equilibrium Requirements
Construction of a Semi-Pooling Equilibrium
Remarks

\[
E\{q|Q^s\} \quad E\{q|Q^g\}
\]

Conventional \quad Organic

Lester M.K. Kwong
The Pricing of Organic Wines
Conditions for the existence of a semi-pooling equilibrium are characterized.
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A possible *terroir* argument for decreasing costs for going organic in the quality dimension.
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A possible *terroir* argument for decreasing costs for going organic in the quality dimension.

For market transparency, a finer partition of $Q$ is desirable.
Conditions for the existence of a semi-pooling equilibrium are characterized.

A possible *terroir* argument for decreasing costs for going organic in the quality dimension.

For market transparency, a finer partition of $Q$ is desirable.

The desirability of classification systems.
Conditions for the existence of a semi-pooling equilibrium are characterized.

A possible *terroir* argument for decreasing costs for going organic in the quality dimension.

For market transparency, a finer partition of $Q$ is desirable.

The desirability of classification systems.

More information on the cost of growing organically (in relation to quality).
For Consumers...

- Conventional or Organic?
- Higher quality $\Rightarrow$ Higher price
  But
  Higher price $\nRightarrow$ Higher quality

- Can eco-labels be used as a signal of quality to wine consumers?
- What implications does a group of (devoted) organic consumers have on:
  - the pricing equilibrium?
  - the informational role of eco-labels?
Consumer Heterogeneity

Sources of differentiation

1. Relevant product group:
Consumer Heterogeneity

Sources of differentiation

1. Relevant product group:
   Price Driven vs. Organic Only (Devoted Ethical Consumer)
Consumer Heterogeneity

Sources of differentiation

1. Relevant product group:
   Price Driven vs. Organic Only (Devoted Ethical Consumer)

2. Knowledge base:
Consumer Heterogeneity

Sources of differentiation

1. Relevant product group:
   Price Driven vs. Organic Only (Devoted Ethical Consumer)

2. Knowledge base:
   Informed vs. Uninformed
Introduction
Eco-Labels as a Signal of Quality
Price Competition with Devoted Organic Consumers
Future Direction

Consumer Base
The Setup
The Equilibrium
Remarks

Lester M.K. Kwong
The Pricing of Organic Wines
Preferences

Define $u_t^i$ as the willingness-to-pay of a $t$ type buyer consuming an $i$ type product.

$$u_c^m = u_o^m = u_o^o = r > 0 \text{ and } u_c^o = k \leq 0.$$
Consumers’ Purchasing Decision

Price Driven... IF:

1. $p_i < \min\{p_j, r\}$
   ⇒ buy from firm $i$

2. $p_i = p_j \leq r$
   ⇒ buy from firm $i$ or $j$

3. $r < \min\{p_i, p_j\}$

Organic Only

1. Info-rmed - Buy lowest priced organic product (if it exists)
2. Uninfo-rmed - Buy lowest priced organic product with an eco-label (if it exists)
Consumers’ Purchasing Decision

Price Driven... IF:

1. \( p_i < \min\{p_j, r\} \)
   \[ \Rightarrow \text{buy from firm } i \]

2. \( p_i = p_j \leq r \)
   \[ \Rightarrow \text{buy from firm } i \text{ or } j \]

3. \( r < \min\{p_i, p_j\} \)
   \[ \Rightarrow \text{go home empty handed complaining about high prices} \]
Consumers’ Purchasing Decision

Price Driven... IF:

1. $p_i < \min\{p_j, r\}$
   ⇒ buy from firm $i$

2. $p_i = p_j \leq r$
   ⇒ buy from firm $i$ or $j$

3. $r < \min\{p_i, p_j\}$
   ⇒ go home empty handed complaining about high prices

Organic Only

1. Informed - Buy lowest priced organic product (if it exists)
Consumers’ Purchasing Decision

Price Driven... IF:

1. \( p_i < \min\{p_j, r\} \)
   \( \Rightarrow \) buy from firm \( i \)

2. \( p_i = p_j \leq r \)
   \( \Rightarrow \) buy from firm \( i \) or \( j \)

3. \( r < \min\{p_i, p_j\} \)
   \( \Rightarrow \) go home empty handed complaining about high prices

Organic Only

1. Informed - Buy lowest priced organic product (if it exists)

2. Uninformed - Buy lowest priced organic product with an eco-label (if it exists)
Timing

1. Firms simultaneously choose production technology; Conventional or Organic
2. Technological choices are observed by the firms (not by the consumers)
3. Firms simultaneously choose:
   - Eco-Label or not
   - Price
4. Label and Price observed by consumers and purchasing decisions made
5. Markets clear
The strategic role of eco-labels
The strategic role of eco-labels

Irrelevant!

Who cares??
Symmetric Choice

Proposition 1

If both firms choose the same production technology, then the unique equilibrium of the pricing stage is a zero profit outcome.

In these symmetric choice outcomes, nothing distinguishes the two firms. Therefore, standard Bertrand price competition prevails.
Suppose firm 1 is conventional and firm 2 is organic. Fix $p_1 \in (c, r)$. 

$$
\pi_2 = \begin{cases} 
(1 - \alpha)(p_2 - c) & \text{if } p_2 < p_1 \\
0 & \text{if } p_2 = p_1 \\
\alpha \left( \frac{p_2 - c}{2} \right) & \text{if } p_2 > r
\end{cases}
$$
Asymmetric Choice

Suppose firm 1 is conventional and firm 2 is organic. Fix $p_1 \in (c, r)$.

If $p_2 < p_1$ then

$$\pi_2 = (p_2 - c)$$
Asymmetric Choice

Suppose firm 1 is conventional and firm 2 is organic. Fix $p_1 \in (c, r)$.

If $p_2 = p_1$ then

Organic Only

$$\pi_2 = (1 - \alpha)(p_2 - c) + (\alpha/2)(p_2 - c)$$

Mainstreamers

$$= \left(\frac{2 - \alpha}{2}\right)(p_2 - c)$$

$$> \frac{1}{2}$$
Suppose firm 1 is conventional and firm 2 is organic. Fix $p_1 \in (c, r)$.

If $p_2 \in (p_1, r]$ then

$$\pi_2 = (1 - \alpha)(p_2 - c)$$
Asymmetric Choice

Suppose firm 1 is conventional and firm 2 is organic. Fix $p_1 \in (c, r)$.

If $p_2 > r$ then $\pi_2 = 0$
Asymmetric Choice

Suppose firm 1 is conventional and firm 2 is organic. Fix $p_1 \in (c, r)$. 

If $p_2 < p_1$ then 

$$\pi_2 = (p_2 - c)$$

If $p_2 = p_1$ then 

$$\pi_2 = (1 - \alpha)(p_2 - c) + \left(\frac{\alpha}{2}(p_2 - c)\right)$$

Organic Only 

$$\pi_2 = \left(2 - \frac{\alpha}{2}\right)(p_2 - c)$$

Mainstreamers 

$$\pi_2 > \frac{1}{2}$$

If $p_2 \in (p_1, r]$ then 

$$\pi_2 = (1 - \alpha)(p_2 - c)$$

If $p_2 > r$ then 

$$\pi_2 = 0$$

Lowest $p_2$?
Asymmetric Choice

Suppose firm 1 is conventional and firm 2 is organic. Fix $p_1 \in (c, r)$.

Lower $p_2$?
Examine $\pi_2$
Suppose firm 1 is conventional and firm 2 is organic. Fix $p_1 \in (c, r)$.

Lowest $p_2$?
Examine $\pi_2$
Determine $p$
Proposition 2

The set of pure strategy SPNE is summarized by the first period behavioral strategy profile of \((o,c)\) and \((c,o)\).
Equilibrium

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Proposition 3

In the \((c, o)\) subgame, for all \(p \in [p, r]\), \(F_c^*(p) \geq F_o^*(p)\).
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In the \((c, o)\) subgame, for all \(p \in [p, r]\), \(F_c^*(p) \geq F_o^*(p)\).

⇒ first-order stochastic dominance
Equilibrium

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The set of pure strategy SPNE is summarized by the first period behavioral strategy profile of \((o, c)\) and \((c, o)\).

Proposition 3

In the \((c, o)\) subgame, for all \(p \in [p, r]\), \(F^*_c(p) \geq F^*_o(p)\).

\(\Rightarrow\) first-order stochastic dominance \(\Rightarrow \mathbb{E}(p_o) > \mathbb{E}(p_c)\).
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2. Equilibrium avoids the “undesirable” zero profit outcome.
3. Price dispersion equilibrium with, on average, higher prices for organic wines.
4. Consumer informativeness is unimportant in the current setting.
1 Conditions necessary for eco-labels to have a strategic effect.
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   - Introduce naive “conventional only” (i.e., anti-organic) consumers into the problem.

   ![Canadian Organic Consumers (2000)]

   - Once-Twice (31%)
   - Regular (18%)
   - Several Times (22%)
   - (Light Buyers)
   - DK/NA (3%)
   - (Heavy Buyers)
   - Never (26%)

2. In an environment where eco-labels have a strategic effect, the social cost of certification.
Conditions necessary for eco-labels to have a strategic effect.

- Introduce naive “conventional only” (i.e., anti-organic) consumers into the problem.

In an environment where eco-labels have a strategic effect, the social cost of certification.

- Who should be encouraged (on a cost basis) to go organic and who should be deterred.