Does living close to vineyards increase the willingness-to-pay for organic and local wines?

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Context

Organic agriculture is booming in Europe and is being strongly encouraged by public policies.

The location of organic agriculture is not of central interest in orienting public policies.

Organic agriculture produces both global and local externalities that need to be disentangled.

Do consumers’ preferences about organic agriculture depend on their relative location?
General Principles

Using wine: organic certification and producing places are known by the labels of bottles (AOC).

Using a lab experiments to elicit the WTP some bottles of wine: common unit measure

Informations about differential agricultural practices are sequentially revealed, to determine the relative WTP of the marginal externalities
Lab experiment

The lab experiment takes place in June 2013 at Dijon, about 5 km from the Burgundy vineyards

11 sessions (1h) of 10 participants that earn €20

The sample of participants was randomly selected based on the quota method but oversampling in communes with vineyards
3 distance variables

Log of Declared Distance

0.58

0.61

Log of Verified Distance

0.72

Log of Marsannay Distance
The 4 proposed wines

A bottle of each wine is placed in front of the participants that can freely observe and touch it.

<table>
<thead>
<tr>
<th>CODE</th>
<th>AOC</th>
<th>ATTRIBUTES</th>
<th>PRICE (€)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSN</td>
<td>Marsannay</td>
<td>Regular</td>
<td>9</td>
</tr>
<tr>
<td>MRSB</td>
<td>Marsannay</td>
<td>Organic</td>
<td>10.5</td>
</tr>
<tr>
<td>VCQN</td>
<td>Vacqueyras</td>
<td>Regular</td>
<td>13</td>
</tr>
<tr>
<td>VCQB</td>
<td>Vacqueyras</td>
<td>Organic</td>
<td>14</td>
</tr>
</tbody>
</table>
The BDM revelation mechanism

An example at the beginning of the experiment:

"What is the maximum price you are willing to pay for this Mars™?" Write down $p$ on a paper.

We draw a random price $b$ from a box, and say:

- If $p \leq b$, you cannot buy and keep € 20
- If $p > b$, you have opportunity to buy at $b$

Purchase is not compulsory, even if $p > b$.

Bidding true maximum WTP is a dominant strategy for expected utility maximizers.
Sequential information

The experiments are structured in 5 rounds with different information levels (said and written):

<table>
<thead>
<tr>
<th>Round</th>
<th>Info type</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Only prior information</td>
<td>NA</td>
</tr>
<tr>
<td>2</td>
<td>General about organic</td>
<td>NA</td>
</tr>
<tr>
<td>3</td>
<td>Regular GHG emissions</td>
<td>global</td>
</tr>
<tr>
<td>4</td>
<td>Pesticides and health</td>
<td>local</td>
</tr>
<tr>
<td>5</td>
<td>Increase Water bill</td>
<td>local (pecunary)</td>
</tr>
</tbody>
</table>

At each round, WTP for the 4 wines were asked
WTP in levels

INFO : 1: Benchmark

INFO : 2: General

INFO : 3: Greenhouse

INFO : 4: Health

INFO : 5: Water Bill

WILLINGNESS−TO−PAY (EUROS)

WINE TYPE

VCQN
MRSN
VCQB
MRSB
Econometric analysis

The sample consists of $N = 111$ participants of whom we asked for $K = 4$ WTP corresponding to $J = 5$ different levels of information.

We have a pooled sample of 2,220 observations.

$$\text{WTP}_{ijk} = \alpha + X_i \beta + \eta_k + \theta_j + \varepsilon_{ijk}$$

Fixed effects with robust M-regression (iterated weighted least squares) and clustered std errors
Specifications

We estimate 3 types of specifications

- Models of global organic premium
- Models of local organic premium
- Models of WTP in levels

With the 3 different distances variables and with and without control variables: income, age, consumption habits, risk aversion, etc.
## Models of Global premiums

<table>
<thead>
<tr>
<th></th>
<th>(DP)</th>
<th>(D1)</th>
<th>(D2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Perceived Distance</strong></td>
<td>$$-0.177^{***}$$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.055)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Computed Distance 1</strong></td>
<td></td>
<td>$$-0.159^{**}$$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.074)</td>
<td></td>
</tr>
<tr>
<td><strong>Computed Distance 2</strong></td>
<td></td>
<td></td>
<td>$$-0.170^{**}$$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.079)</td>
</tr>
<tr>
<td><strong>INFO2: General</strong></td>
<td>$$0.245^{***}$$</td>
<td>$$0.236^{***}$$</td>
<td>$$0.234^{***}$$</td>
</tr>
<tr>
<td></td>
<td>(0.062)</td>
<td>(0.064)</td>
<td>(0.064)</td>
</tr>
<tr>
<td><strong>INFO3: Greenhouse</strong></td>
<td>$$0.535^{***}$$</td>
<td>$$0.542^{***}$$</td>
<td>$$0.540^{***}$$</td>
</tr>
<tr>
<td></td>
<td>(0.077)</td>
<td>(0.080)</td>
<td>(0.081)</td>
</tr>
<tr>
<td><strong>INFO4: Health</strong></td>
<td>$$0.748^{***}$$</td>
<td>$$0.754^{***}$$</td>
<td>$$0.756^{***}$$</td>
</tr>
<tr>
<td></td>
<td>(0.096)</td>
<td>(0.102)</td>
<td>(0.102)</td>
</tr>
<tr>
<td><strong>INFO5: Water Bill</strong></td>
<td>$$0.798^{***}$$</td>
<td>$$0.808^{***}$$</td>
<td>$$0.808^{***}$$</td>
</tr>
<tr>
<td></td>
<td>(0.100)</td>
<td>(0.105)</td>
<td>(0.105)</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>555</td>
<td>555</td>
<td>555</td>
</tr>
<tr>
<td><strong>Adjusted R^2</strong></td>
<td>0.169</td>
<td>0.132</td>
<td>0.132</td>
</tr>
</tbody>
</table>
## Models of Local premiums

<table>
<thead>
<tr>
<th></th>
<th>(DP)</th>
<th>(D1)</th>
<th>(D2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Distance</td>
<td>$-0.199^{***}$</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.056)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computed Distance 1</td>
<td></td>
<td>$-0.096$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.076)</td>
<td></td>
</tr>
<tr>
<td>Computed Distance 2</td>
<td></td>
<td></td>
<td>$-0.106$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.085)</td>
</tr>
<tr>
<td>INFO2: General</td>
<td>$0.266^{***}$</td>
<td>$0.262^{***}$</td>
<td>$0.258^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.070)</td>
<td>(0.069)</td>
<td>(0.068)</td>
</tr>
<tr>
<td>INFO3: Greenhouse</td>
<td>$0.530^{***}$</td>
<td>$0.530^{***}$</td>
<td>$0.527^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.077)</td>
<td>(0.077)</td>
<td>(0.076)</td>
</tr>
<tr>
<td>INFO4: Health</td>
<td>$0.768^{***}$</td>
<td>$0.766^{***}$</td>
<td>$0.764^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.105)</td>
<td>(0.106)</td>
<td>(0.105)</td>
</tr>
<tr>
<td>INFO5: Water Bill</td>
<td>$0.851^{***}$</td>
<td>$0.853^{***}$</td>
<td>$0.850^{***}$</td>
</tr>
<tr>
<td></td>
<td>(0.107)</td>
<td>(0.108)</td>
<td>(0.107)</td>
</tr>
<tr>
<td>Observations</td>
<td>555</td>
<td>555</td>
<td>555</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.114</td>
<td>0.080</td>
<td>0.078</td>
</tr>
</tbody>
</table>
# Models of WTP in level

<table>
<thead>
<tr>
<th></th>
<th>(DP)</th>
<th>(D1)</th>
<th>(D2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (!≠!)</td>
<td>0.106</td>
<td>0.389**</td>
<td>0.216</td>
</tr>
<tr>
<td></td>
<td>(0.149)</td>
<td>(0.167)</td>
<td>(0.206)</td>
</tr>
<tr>
<td>WINEMRSN</td>
<td>0.822***</td>
<td>0.823***</td>
<td>0.823***</td>
</tr>
<tr>
<td></td>
<td>(0.158)</td>
<td>(0.158)</td>
<td>(0.158)</td>
</tr>
<tr>
<td>WINEVCQSB</td>
<td>1.434***</td>
<td>1.433***</td>
<td>1.432***</td>
</tr>
<tr>
<td></td>
<td>(0.124)</td>
<td>(0.125)</td>
<td>(0.124)</td>
</tr>
<tr>
<td>WINEMRSB</td>
<td>2.356***</td>
<td>2.354***</td>
<td>2.356***</td>
</tr>
<tr>
<td></td>
<td>(0.177)</td>
<td>(0.177)</td>
<td>(0.177)</td>
</tr>
<tr>
<td>INFO2: General</td>
<td>−0.070</td>
<td>−0.069</td>
<td>−0.070</td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.066)</td>
<td>(0.066)</td>
</tr>
<tr>
<td>INFO3: Greenhouse</td>
<td>−0.183**</td>
<td>−0.184**</td>
<td>−0.184**</td>
</tr>
<tr>
<td></td>
<td>(0.072)</td>
<td>(0.072)</td>
<td>(0.073)</td>
</tr>
<tr>
<td>INFO4: Health</td>
<td>−0.386***</td>
<td>−0.386***</td>
<td>−0.387***</td>
</tr>
<tr>
<td></td>
<td>(0.083)</td>
<td>(0.082)</td>
<td>(0.083)</td>
</tr>
<tr>
<td>INFO5: Water Bill</td>
<td>−0.408***</td>
<td>−0.406***</td>
<td>−0.407***</td>
</tr>
<tr>
<td></td>
<td>(0.085)</td>
<td>(0.084)</td>
<td>(0.085)</td>
</tr>
<tr>
<td>Observations</td>
<td>2,220</td>
<td>2,220</td>
<td>2,220</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.265</td>
<td>0.275</td>
<td>0.266</td>
</tr>
</tbody>
</table>
MARGINAL EFFECT OF DISTANCE ON LOCAL PREMIUM

(EURO BY KILOMETER)

-0.3 -0.2 -0.1 0.0 0.1

1. BENCHMARK
2. GENERAL
3. GREENHOUSE
4. HEALTH
5. WATER BILL

Declared Distance
Computed Distance 1
Computed Distance 2
<table>
<thead>
<tr>
<th></th>
<th>Info campaign</th>
<th>Tax $t^*$</th>
<th>Mandat.Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elicited WTP:</strong></td>
<td></td>
<td>$t^*$ = 1.01</td>
<td></td>
</tr>
<tr>
<td>without weights</td>
<td>48.93</td>
<td>15.88</td>
<td>8.08</td>
</tr>
<tr>
<td>with weights</td>
<td>46.29</td>
<td>15.20</td>
<td>10.85</td>
</tr>
<tr>
<td><strong>WTP from OLS:</strong></td>
<td></td>
<td>$t^*$ = 0.63</td>
<td></td>
</tr>
<tr>
<td>without weights</td>
<td>41.08</td>
<td>40.22</td>
<td>40.22</td>
</tr>
<tr>
<td>with weights</td>
<td>36.95</td>
<td>36.18</td>
<td>36.18</td>
</tr>
<tr>
<td><strong>WTP from (M4)</strong></td>
<td></td>
<td>$t^*$ = 0.89</td>
<td></td>
</tr>
<tr>
<td>without weights</td>
<td>8.05</td>
<td>8.05</td>
<td>7.60</td>
</tr>
<tr>
<td>with weights</td>
<td>7.08</td>
<td>7.08</td>
<td>6.67</td>
</tr>
<tr>
<td><strong>WTP from (M5)</strong></td>
<td></td>
<td>$t^*$ = 0.83</td>
<td></td>
</tr>
<tr>
<td>without weights</td>
<td>7.92</td>
<td>7.92</td>
<td>7.27</td>
</tr>
<tr>
<td>with weights</td>
<td>6.57</td>
<td>6.57</td>
<td>5.97</td>
</tr>
<tr>
<td><strong>WTP from (M6)</strong></td>
<td></td>
<td>$t^*$ = 0.73</td>
<td></td>
</tr>
<tr>
<td>without weights</td>
<td>7.79</td>
<td>7.79</td>
<td>7.43</td>
</tr>
<tr>
<td>with weights</td>
<td>6.68</td>
<td>6.68</td>
<td>6.25</td>
</tr>
</tbody>
</table>
Positive premiums for organic and local wines, WTP in levels increasing with distance. Why?

Positive premiums for people that leave close but not differentiated between global and local organic. Holistic preferences or declarative bias?

Relative economic equivalence of policy instrument when outliers are taken into account.
Buying organic as a differentiate contribution to the quality of the environment? No, one price.

Spatial differentiated public incitations, spatial configuration of organic agriculture

The absence of differentiated contributions as the Achille’s heels of “responsible consumption”? 