Quality, Reputation and the Price of Wine

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**Our agenda**

- Explaining Austrian quality wine prices
  - Very interesting and detailed panel data set
  - Hedonic price analysis
- Short- and long-run effects of quality (reputation) on prices
  - Wine guide reviews (Fallstaff)
- Modelling the link between quality and reputation
- Accounting for endogeneity due to the selection procedure of graded wines
  - Heckman’s approach

**Wine quality and reputation**

- A complex product (experience good)
- Consumers lack perfect information about the true quality
  - Costly to improve their information
  - Hence, third-party (expert) reviews may reduce this gap
    - Risk reduction
- Shapiro (1983): reputation (influenced by prior quality) that drives consumer decisions leads to higher prices
  - Quality has (i) an immediate and (ii) a long-run effect
  - These should be decoupled
  - Neglecting reputation effects might lead to an over-estimated impact of short-run changes in quality

**Concerns about endogeneity**

- Endogeneity is an important feature, even if neglected in many empirical works – Oczkowski (2014)
- Due to measurement error in quality
  - “OLS procedures may seriously distort the statistical significance of attributes” – Oczkowski (2001)
- Due to omitted variables
  - Experts may be wrong in assessing “en primeur” wine quality (unobserved quality) – Dubois and Nauges (2010)
- Caused by the sample selection procedure of the wine guide
  - Non-randomly selected sample
  - 2-step approach
Data

- More than 7,000 single Austrian wines (2004-2007), 488 wineries
  - About 35% of the annual national production of quality wines

- Characteristics:
  - type (red/rose/white)
  - year of harvest
  - grape
  - size of the winery
  - lag between harvest and bottling

- Experts' grades on wines:
  - Falstaff-Wine-Guide (scale 1-100: color, appearance, aroma, bouquet, flavor and finish)

- Reputation of the winery:
  - Scale between 0 and 3, later 5 stars (normalized to 1)

- Selection bias: quality may be endogeneous in the selected sample
  - Basically, the winegrowers decide which wines are selected for grading
  - Only quality wines

Selection process

- Selection process: Winery($w$), Falstaff-Guide($g$)

- Qual$_{iwt,w}$
- X$_{iwt}$
- Select$_{iwt}=1$
- $p_{iwt}$

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Selection process

Winery (w)

Falstaff-Guide (g)

Qual_{w,t,w}

Qual_{w,t,g}

X_{w,t}

P_{w,t}

Select_{w,t}=1

Two-step modelling approach

Wooldridge (2001)

(i): probit (eq. 4)  (ii): 2SLS (eq. 1-3)

(1) \ln(Price_{w,t}) = \alpha_1 Qual_{w,t} + \alpha_2 Rep_{w,t} + X_{w,t,\beta} + IMR_{w,t,\gamma} + \epsilon_{w,t}

(2) Qual_{w,t} = (X_{w,t}, IMR_{w,t}, Z_{w,t})\delta_1 + u_{1,w,t}

(3) Rep_{w,t} = (X_{w,t}, IMR_{w,t}, Z_{w,t})\delta_2 + u_{2,w,t}

(4) Select_{w,t} = 1 \left( (X_{w,t}, Z_{w,t})\delta_3 + u_{3,w,t} > 0 \right)

- Select = 1 if a wine is selected for evaluation
- exogenous variables (summarized in X) incl. fixed effects
- additional instrumental variables Z
- IMR: inverse Mills ratio

Findings (selection)

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<tr>
<td>Average Quality of 2W</td>
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<td>Average Quality of 3W</td>
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Findings (quality and reputation effects on price)

**Effect of quality increase**

- Price increases if winegrowers increase the wine quality for one time period by one quality point.
- Median effects: 7.1%, 1.3%, 0.5%, 0.8%, 0.2%

**Aggregate price effects**

- Price increases if winegrowers succeed in increasing the wine quality permanently by one quality point.
- Median effects: 7.1%, 8.3%, 8.8%, 9.6%, 9.8%

**Conclusions**

- Significant effects of wine-guide reviews on prices
- Sizable cumulative quality effects over time
  - also strong influence of winery reputation (long-run quality effects)
  - winery reputation is determined by prior average quality scores
  - time span between harvest and bottling
- Two-step Heckman approach seems to be justified
  - selection bias (OLS overstates short- and long-run quality effects)
Thanks for your attention!

Literature


Appendix (quality equation)