Hedonic Pricing Models for Wines from Friuli Venezia Giulia

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The aim of this paper is to evaluate the impact of different characteristics on prices of wine produced in Friuli Venezia Giulia, with a focus on the effects of 2016 Gambero Rosso wine quality awards and of previous awards

Agenda

1. Motivation and Research Question
2. Literature Review
3. Data
4. Estimated Models
5. Results
6. Summary

1. Motivation and Research Question

- Great variety and quality of FVG wines and the importance of the wine sector both in economic and cultural terms for this region
- Hedonic model for wines from FVG on the basis of the most recent and unique data set provided by the national guide *Vini d'Italia 2016*

Research question:

What is the impact of 2016 Gambero Rosso wine quality awards and of previous awards that carry a reputation effect on prices for FVG wines?

2. Literature Review

Benfratello, L., Piacenza, M., and Sacchetto, S. (2009). Taste or Reputation: What Drives Market Prices in the Wine Industry?. *Applied Economics*, 41 (17), 2197-2209.

Landon, S. and Smith, C. E. (1997). The Use of Quality and Reputation Indicators by Consumers: The Case of Bordeaux Wine. *Journal of Consumer Policy*, 20 (3), 289-323.

Landon, S. and Smith, C. E. (1998). Quality Expectations, Reputation, and Price. *Southern Economic Journal*, 64 (3), 628-647.

Marangon, F., Pagani, L., Troiano, S., and Zaccomer, G. P. (2011). Il Prezzo dei vini di qualità del Friuli Venezia Giulia: una prima analisi dei dati di fonte camerale. *Economia Agro Alimentare*, 1/2, 509-514.

Rosen, S. (1974). Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition. *The Journal of Political Economy*, 82 (1), 34-55.

Schamel, G. and Anderson, K. (2003). Wine Quality and Varietal, Regional and Winery Reputations: Hedonic Prices for Australia and New Zealand. *The Economic Record*, 79 (246), 357-369.

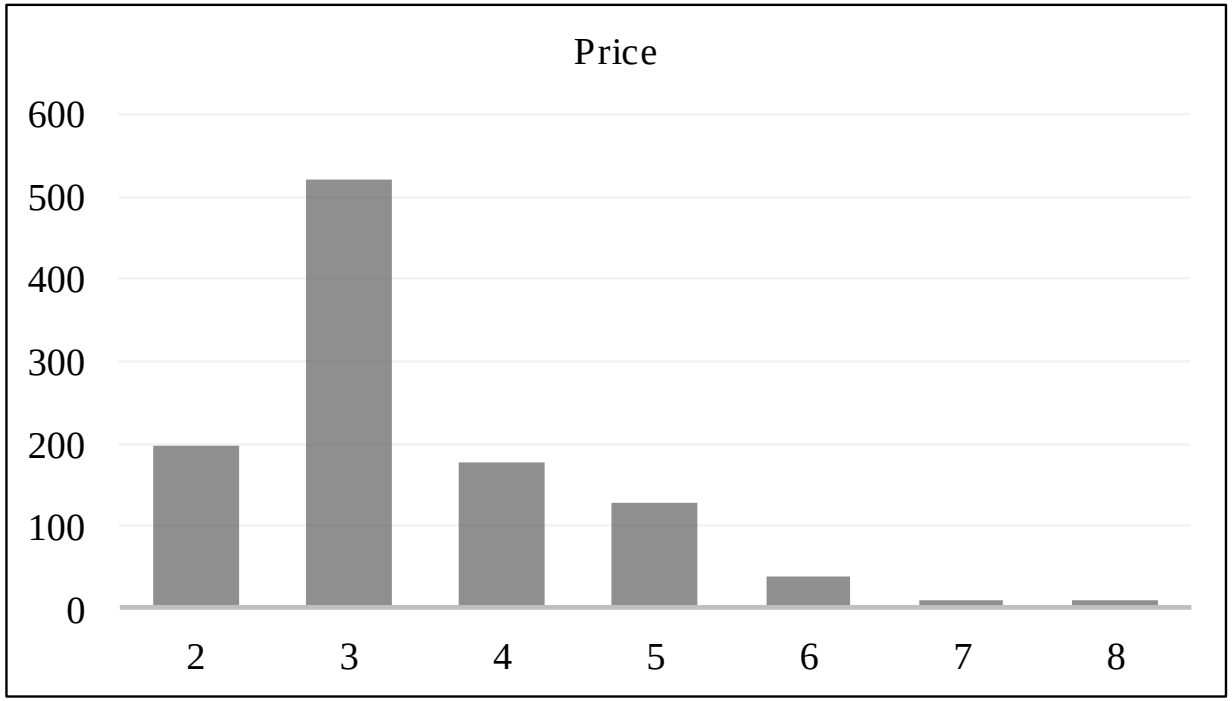
3. Data

- Data set of *Vini d'Italia 2016*:

1078 wines produced in Friuli Venezia Giulia, along with their **price category (1-8)**, award, colour, vintage, producer and province of production. Gambero Rosso guides of 2014 and 2015 are used to retrieve previous awards of the same or higher order (reputation indicators)

3. Data

Graph 1. Frequency of price



Source: Data retrieved from Vini d'Italia 2016 (Gambero Rosso) and own calculations

4. Estimated Models

- Estimated models: **ordered dependent variable models** (logit and probit)

Dependent variable: price category with range from 1 to 8

Explanatory variables: award levels, province of production, the main wine varieties, wine colour, wine age and previous vintage award levels in 2014 and 2015

➡ ***Unique feature***: previous vintage award levels used as reputation indicators, as to assess if the very same wine awarded in 2016 had received an award of the same or higher level also in the two previous years

4. Estimated Model

$$\mathrm{P}(\text{price} = \mathrm{M}|x_i, \beta, \gamma) = F(\gamma_{M+1} - x_i'\beta) - F(\gamma_M - x_i'\beta)$$

$$With\ x_i'\beta = \beta_1 D_{i\ 2\ black\ glasses} + \beta_2 D_{i\ 2\ red\ glasses} + \beta_3 D_{i\ 3\ red\ glasses} +$$

$$+ \beta_4 D_{i\ PN} + \beta_5 D_{i\ TS} + \beta_6 D_{i\ GO} +$$

$$+ \beta_7 D_{i\ Friulano} + \beta_8 D_{i\ Picolit} + \beta_9 D_{i\ Ribolla\ Gialla} + \beta_{10} D_{i\ Malvasia} + \beta_{11} D_{i\ Chardonnay} + \beta_{12} D_{i\ Pinot\ Grigio} + \beta_{13} D_{i\ Sauvignon} +$$

$$+ \beta_{14} D_{i\ White} + \beta_{15} D_{i\ 2014\ award\ level} + \beta_{16} D_{i\ 2015\ award\ level} + \delta Age_i$$

5. Results

- Gambero Rosso wine awards and reputation effects due to previous awards of the same or higher order exhibit significant price premiums
- White wines carry a premium over reds
- Substantial premium associated to the sweet white wine Picolit
- Older vintage wines result to be more expensive
- Sub-regional effects

5. Results

Table 4. Results (ML-Ordered Logit model)

Variable	Parameter	Coefficient	Std. Error	z-statistic	Prob.
Award	2 black glasses	0.847	0.153	5.525	0.000
	2 red glasses	2.139	0.243	8.794	0.000
	3 red glasses	2.502	0.411	6.083	0.000
Province	Pordenone (PN)	-1.762	0.288	-6.113	0.000
	Trieste (TS)	1.511	0.434	3.482	0.001
	Gorizia (GO)	0.654	0.131	4.989	0.000
Wine variety	Friulano	-0.486	0.224	-2.164	0.030
	Picolit	3.829	0.501	7.648	0.000
	Ribolla Gialla	-0.131	0.267	-0.490	0.624
	Malvasia	-0.689	0.320	-2.150	0.032
	Chardonnay	-0.597	0.280	-2.135	0.033
	Pinot Grigio	-0.670	0.239	-2.810	0.005
	Sauvignon	-0.403	0.238	-1.695	0.090
Color	white	0.726	0.199	3.656	0.000
	2014 award level	0.551	0.134	4.126	0.000
	2015 award level	0.496	0.132	3.741	0.000
	age	0.911	0.065	14.076	0.000

Pseudo R-squared	0.213	Akaike info criterion	2.267
LR statistic	649.506	Schwarz criterion	2.373
Prob(LR statistic)	0.000		

Source: own calculations

Table 6. Unstandardized and Y-standardized coefficients (Ordered Logit)

Variable	Parameter	Coefficient	bStdY	c/bStdY
Award	2 black glasses	0.847	0.334	2.539
	2 red glasses	2.139	0.843	2.539
	3 red glasses	2.502	0.985	2.540
Province	Pordenone (PN)	-1.762	-0.694	2.539
	Trieste (TS)	1.511	0.595	2.539
	Gorizia (GO)	0.654	0.258	2.539
Wine variety	Friulano	-0.486	-0.191	2.540
	Picolit	3.829	1.508	2.540
	Ribolla Gialla	-0.131	-0.052	2.540
	Malvasia	-0.689	-0.271	2.540
	Chardonnay	-0.597	-0.235	2.539
	Pinot Grigio	-0.670	-0.264	2.539
	Sauvignon	-0.403	-0.159	2.539
Color	white	0.726	0.286	2.540
	2014 award level	0.551	0.217	2.540
	2015 award level	0.496	0.195	2.540
	age	0.911	0.359	2.539

bStdY=y-standardized coefficient
c/bStdY=estimated standard deviation of y*

Source: own calculations

6. Summary

- Analysis carried out on the data provided by the Gambero Rosso guide *Vini d'Italia 2016* for FVG wines
- Given the ordinal nature of the dependent variable, the logit and probit models are employed for the estimation. Given the slightly higher Pseudo R-squared and the smaller AIC and Schwarz's BIC, the logit model is to be preferred. In order to interpret the coefficients obtained as marginal effects, they are standardized by the st.dev of the dependent variable.
- Results confirm the important role of experts' ratings and of the related reputation effects in determining the wine price

Thanks for your attention