

# Impacts of Expert Information on Prices for an Experience Good across Product Segments: Tasting Notes and Wine Prices

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## Background

- Wines are experience goods, so consumers rely on their previous experience or expert opinions in buying wine.
- Expert wine consumers are those with professional experience in the wine industry.
  - They define precise qualities about a wine and then make a statement about liking.
- Novice wine consumers have little formal wine-tasting experience and occasionally consume wine for their own enjoyment.
  - They first decide how much they like a wine and then what they like about it



Expert Robert Parker  
vs. the novice consumer



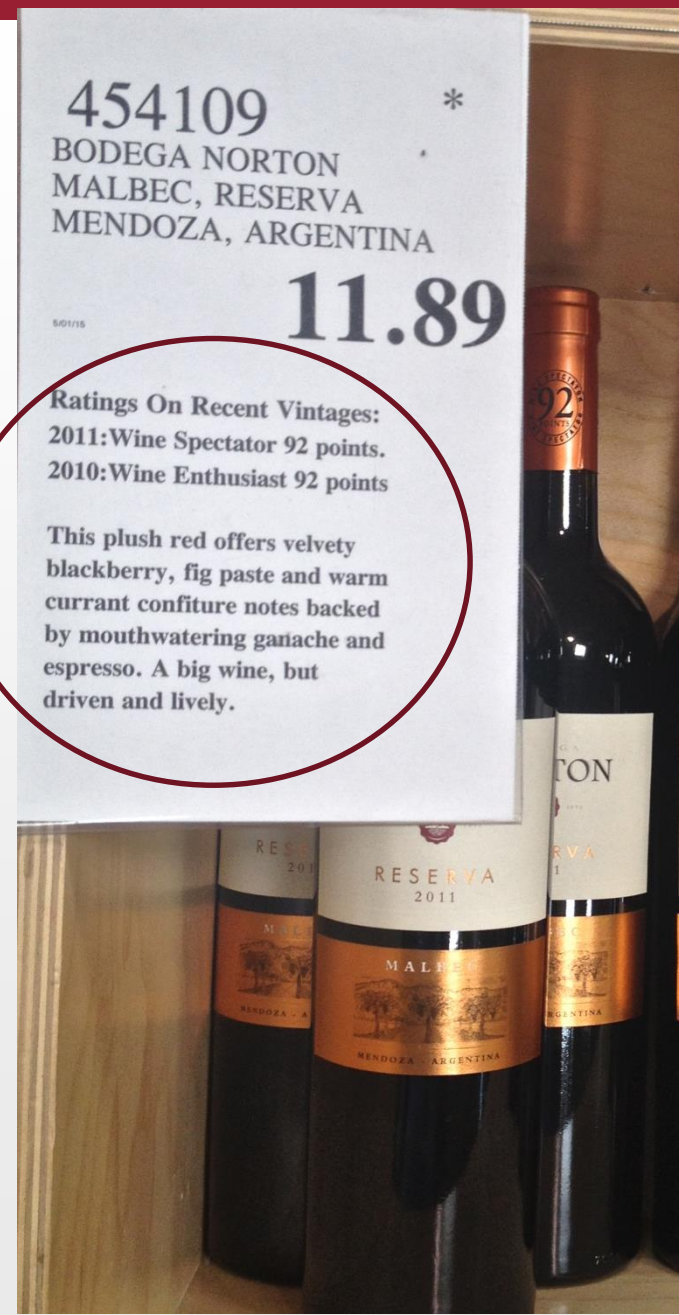
## Factors That May Influence Consumer Wine Selection

- Sensory characteristics
- Quality information, such as expert ratings
- Reputation of wine maker
- Region of production



## Related Literature

- Factors that influence wine prices
  - Sensory characteristics on restaurant wine lists: Durham, et al. (2004)
  - Tasting notes: Ramirez (2010)
  - Expert ratings: Ashton (2012); Hilger et al (2011) (many others)
  - Regions: Costanigro, et al. (2010) (many others)



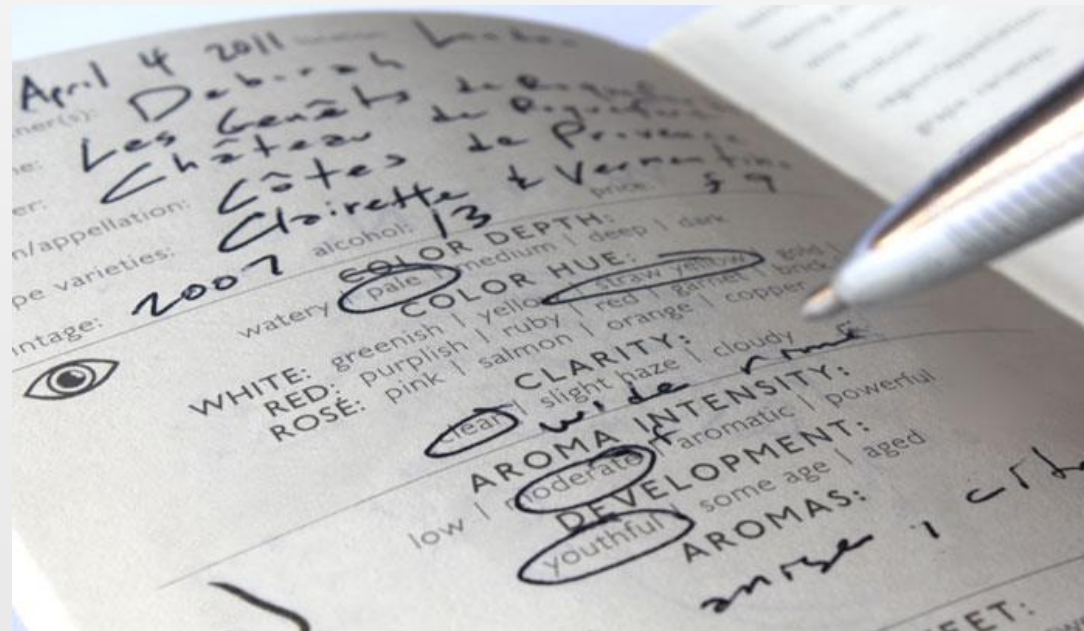
## Different Effects of Expert Information across Product Segments?

- For higher-end products, consumers have the incentive to invest more time in research prior to purchase.
- Thus, expert evaluations should have a greater impact on the price of higher-end segments.
- In the case of wine, expert opinions generally come in two forms: expert blind tasting scores and tasting notes.
- Rating scores are numerical summary information and are low-cost for the consumer to process. In contrast, tasting notes are qualitative and more costly for the consumer to obtain and process.
- We analyze the effects of tasting-note content on wine prices across price categories.



# Objectives

- Estimate the impact of tasting note content on wine prices.
- Evaluate whether the impacts are different across market segments.





## Approach: Hedonic Price Technique

- Allows us to assign values for product characteristics that are not sold separately.
- Hedonic price equations are estimated by regressing product characteristics on prices.
- Market-clearing price  $p(z) = p(z_1, z_2, \dots, z_n)$  is an equilibrium price determined by consumer tastes and production costs.
  - The hedonic price is an equilibrium price; different from demand.
- The partial derivative of the hedonic price function with respect to any of its arguments gives the implicit marginal price of that characteristic.
- It is commonly used to understand differentiated products, such as wine.



# Data

- Seventeen years of observations (1997-2013)
- 6,085 observations red wines from Wine Spectator Magazine (online)
- Indicator variables for 6 most common sensory keywords from the tasting notes: Cherry, Spice, Tannin, Currant, Finish, Berry
- Control variables include:
  - Wine Spectator score
  - Aging before commercialization
  - Number of cases produced
  - Five regions of production
  - Label indicating “reserve”
  - Vintage





## Tasting Note Examples

- Tasting Note 1 (The bottle of 2010 Syrah from the winery Charles Smith located at Columbia Valley with rating 97):
  - Rich, expansive and distinctive, dripping with endlessly deep blackberry, black cherry and pomegranate flavors, with broad hints of mineral, tar and spice that just don't quit as the finish rolls on, unimpeded by tannins. Complex and seductive, this can go on forever. Drink now through 2020. 65 cases made. –HS
- Tasting Note 2 (The bottle of 2008 Syrah from the winery Efeste located at Yakima Valley with rating 95):
  - Focused, sharply defined and beautifully expressive, this packs an enormous range of red berry, pomegranate, tomato leaf and roasted beet flavors into a taut, savory jet of deliciousness. Stylish, balanced and raucous all at the same time. Drink now through 2018. 385 cases made. -HS



## Specification

The hedonic price function is:

$$P_i^\lambda = \alpha_0 + \alpha_1 \textit{Cherry}_i + \alpha_2 \textit{Spice}_i + \alpha_3 \textit{Tannin}_i + \alpha_4 \textit{Currant}_i \\ + \alpha_5 \textit{Finish}_i + \alpha_6 \textit{Berry}_i + \alpha_7 \textit{Controls}_i + \varepsilon_i.$$





# Price Categories

## 4 Categories (chosen using SSE criterion)

Low price ( <b>commercial</b> ) wines	price less than \$13
Lower mid-range ( <b>semi-premium</b> ) wines	price between \$13 and \$21
Higher mid-range ( <b>premium</b> ) wines	price between \$21 and \$40
Fine ( <b>ultra-premium</b> ) wines	price greater than \$40



## Summary Statistics

Variables	Mean	Median	Std. Dev	Minimum	Maximum
Price	30.17	27	17.34	5	185
Rating	88.88	89	2.99	68	98
Aging	3.05	3	0.77	1	7
Cases	5503.91	495	29697.28	17	580000



## Hedonic Model of Wine Prices

Variable	Pooled	Segmented			
Adjusted R <sup>2</sup>	0.61	0.89 <sup>^</sup>			
		Commercial	Semi-premium	Premium	Ultra-premium
Observations	6,085	684	1268	2,818	1,315
Cherry	0.012	-0.132	0.015	-0.084**	0.093
Spice	0.193***	0.053	0.042	0.078*	0.024
Tannin	-0.328***	-0.019	0.024	-0.060*	-0.155**
Currant	0.021	-0.130	0.016	0.039	0.028
Finish	0.016	0.038	0.115***	0.030	0.104
Berry	0.107*	0.082	-0.013	-0.033	0.020
Controls	Yes	Yes	Yes	Yes	Yes

Note: \* p<0.1 \*\* p<0.05 \*\*\* p<0.01

<sup>^</sup> Calculated stacking the segmented datasets in a single (block diagonal) design matrix and estimating the segmented hedonic model all at once, with a single constant.



## Marginal Effect Estimates

Variable	Pooled	Segmented			
Adjusted R <sup>2</sup>	0.61	0.89 <sup>^</sup>			
		Commercial	Semi-premium	Premium	Ultra-premium
Observations	6,085	684	1268	2,818	1,315
Cherry	-0.057	-0.027	-0.043	-0.064	-0.087
Spice	-0.903	-0.436	-0.682	-1.012	-1.378
Tannin	1.531	0.739	1.156	1.716	2.336
Currant	-0.099	-0.048	-0.075	-0.111	-0.151
Finish	-0.073	-0.035	-0.055	-0.081	-0.111
Berry	-0.499	0.241	-0.377	-0.559	-0.761
Controls	Yes	Yes	Yes	Yes	Yes

*Note:* Calculated stacking the segmented datasets in a single (block diagonal) design matrix and estimating the segmented hedonic model all at once, with a single constant.



## Conclusions

- Consumers value differently tasting note contents in different price categories.
- Spice and berry sensory characteristics have a negative significant effect on the price of wines, but the tannin sensory characteristic has a positive significant effect on the price of wines.
- None of the tasting-note variables are statistically significant in commercial wines, and only one tasting-note variable is statistically significant in the semi-premium category.
- Tannin sensory characteristic could increase the values of wines, especially for upper class (premium and ultra-premium) wines.
- A wine producer could benefit from these tasting terms that are specific information compared to a numerical score, which provides summary information, to maximize its profit margin.



**Q & A**

**Thank you!**