Does “Organic” Make a Difference in the Wine Industry?

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The economic nature of organic products is becoming increasingly interesting topic these years. In this paper, we undertake the empirical test of the “organic” effect on prices in the wine industry.

Two kinds of “Organic Wine”:

- **Organic Grape Wine**
  - Formal definition of it is “Wine which is made from grapes that have been grown without the use of chemical fertilizers, pesticides, fungicides and herbicides”. Therefore, the raw materials of it are organically grown grapes. One point should be noticed about organic grape wine: it can include added sulfites, a preservative in wines which has strong antimicrobial properties and some antioxidant properties, even though only in extremely small quantities. They serve as important factors for the quality of wine. Consequently, people treat “organic grape wine” as high quality product because of its “green” and stable characteristics. Winery or vineyard in the US can inform consumers about their organic raw materials by getting an organic crop certificate from USDA.

- **Organic Handling Wine**
  - Organic handling wine is also made from organic grapes but is sulfite free. However, even though some people consider wines without preservative as more natural products, eliminating sulfites can reduce the quality of the wine because the wine is not stable and has less aging potential. As a result, if a wine is connected with organic handling, it will be considered as inferior good. Also, similar to organic grape wine, producers of organic handling wine can indicate their organic role by obtaining organic handling certificate from USDA. In this paper, this term has the same meaning as “organic wine”.

**Objective**

Investigate how organic claims affect wine prices and whether organic attributes interact with other product characteristics.

**Theoretical Context**

**Hedonic price model** (Rosen, 1974)

According to this model, the price of wine, \( P \), is assumed to be described by a hedonic price function, \( P = P(z) \), where \( z \) is a vector of attributes. The hedonic price of an additional unit of a particular attribute is determined as the partial derivative of the hedonic price function with respect to that particular attribute. Each consumer chooses an optimal bundle of attributes and all other goods in order to maximize utility subject to a budget constraint. For continuously varying attributes, the chosen bundle will place the consumer so that his or her indifference curve is tangent to the price gradient, \( dP/dz \), for each attribute. Therefore, the marginal willingness to pay for a change in a wine attribute is equal to the derivative of the hedonic price function with respect to that attribute. Finite differences represent marginal willingness to pay for discretely varying attributes.

**Methodology**

**Hedonic model**

**Price**

\[
\text{price} = \beta_0 + \beta_1 \text{Score} + \beta_2 \text{Score}^2 + \beta_3 \text{Aging} + \beta_4 \text{Aging}^2 + \beta_5 \text{Cases} + \beta_6 \text{Region} + \sum \text{Price} + \sum \text{Cases} + \sum \text{Region} + \sum \text{Cases} + \epsilon
\]

**Form of the dependent variable is decided by Rox-Box transformation.**

**Score and Age are standardized to avoid multicollinearity.**

**Region and Variety are dummy coded.**

**Label provides some detailed information about the wine.**

There are three different models need to be estimated: (I)Model using all wines data. This data set includes organic grape wines, organic handling wines and other wines (the whole data set, 12821 obs) (II)Model only including data of organic grape wines (sub-sample 1, 633 obs) (III)Model utilizing data without organic grape wines and organic handling wines (sub-sample 3, 11988 obs)

**Equation 1**

\[
\text{price} = \beta_0 + \beta_1 \text{Score} + \beta_2 \text{Score}^2 + \beta_3 \text{Aging} + \beta_4 \text{Aging}^2 + \beta_5 \text{Cases} + \beta_6 \text{Region} + \sum \text{Price} + \sum \text{Cases} + \sum \text{Region} + \sum \text{Cases} + \epsilon
\]

All three models are estimated via OLS.

**Conclusion**

From interpreting estimation results and computing implicit prices for each factor, we got a deeper understanding about the economic nature of organic grape wines and organic handling wines:

1. Organic grape wines are considered as more quality wines while organic handling wines are treated as inferior products. Moreover, organic grape wine whose label information contains “estate” can claim even more price premium.

2. Comparing organic grape wines (OGW) and wines without any organic attributes (NOG/HW) gives us following conclusions.

   (1) Estate can be treated as an advantage for organic grape wine producers since it causes almost five times of price premium comparing to conventional wines.

   (2) Organic grape is a prior factor in determining wine’s price. If a wine is made from organic grape, it will likely have price premium no matter where it is from and what grape made it.

   (3) Certain regions and variety may not suitable for producing organic grape wines.