The Value of Terroir: Hedonic Estimation with Data on Vineyard Sale Prices

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We investigate the factors affecting the value of vineyards using a hedonic-price framework. We are developing a large data set of land-parcel transactions in California, Oregon, and Washington. The observations include transactions for parcels with established vineyards, parcels that are sold for vineyard development, and parcels that are part of a larger sale including wine-making facilities and home sites. In the last case, we have appraisers’ estimates of the share of the total sale price attributable to vineyards. In addition to price information, we have assembled extensive data on parcel attributes: size, slope, aspect, elevation, soil types, rootstock, varietals, location within a designated American Viticultural Area (AVA), and other relevant attributes. The original data sets were developed by agricultural appraisal and lending institutions, and we have augmented them with GIS-based information on selected site characteristics, as discussed below.

Our objective is to estimate a first-stage hedonic function to identify the marginal implicit prices of vineyard characteristics. At present, we have complete data on Oregon transactions, and we are currently working on the development of the California and Washington data sets.

The results of the analysis will allow us to address a variety of interesting questions. First, what are the relative contributions of various parcel characteristics to land values (total sale price)? Which types of sites command the highest rents? What are the degrees of substitutability among attributes? Second, does location within an AVA impart a price premium? AVAs allow wineries to identify the origin of the grapes used in the production of
their wines. If agents in the markets for land and wine have perfect information, the AVA designation should have no effect on vineyard prices because the quality of the parcel for producing wine – the “terroir” – will be captured by the variables measuring site characteristics. If, on the other hand, consumers have incomplete information about individual land parcels, the AVA designation may signal the average quality of vineyards within the AVA. In this case, one would expect the AVA designation to have a significant effect on vineyard prices even if the buyers and sellers of parcels are fully informed. If AVA designations do matter, it will be interesting to see which ones generate the largest premiums and how large the premiums are relative to parcel prices. The experience of Europe – in particular, France -- suggests the potential importance to the market of such government-sanctioned geographic designations.

While the basic modelling approach in our study is standard, we will confront a methodological challenge which, to our knowledge, is new. Within a single vineyard parcel, there is likely to be variation in slope, elevation, aspect, and soil types that has important consequences for wine grape production and, hence, the parcel’s sale price. It is unlikely that simple statistics (means, variances, etc.) can adequately represent the within-parcel heterogeneity of these attributes. We use GIS-based information to develop highly detailed physiographic profiles of each parcel. For example, we define sixteen aspect categories and measure at a 10-meter scale the shares of each parcel found in each. A similar approach is used for slope, elevation, and soil type. These data provide precise measures of within-parcel heterogeneity. We will investigate the extent to which this variation is reflected in market prices.