

# Quality, Reputation, and the Price of Wine

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**Abstract - Based upon a unique panel data set for 488 wineries over the period 2004 to 2007, a hedonic analysis examines the direct (short-run) as well as indirect (long-run) price effects of product quality in the Austrian market for domestic premium wines.**

## INTRODUCTION

Prices of bottled wine are influenced by two opposing forces: Whereas technological progress in production leads to a decline in real prices particularly of lower quality wines, high quality wines command a substantial (increasing) price premium as consumer incomes in developed economies are growing (and quality is a superior 'good'). As a result, the (quality-related) price spread in this market is large.

The magnitude of the quality mark-up in (wine) prices has been studied extensively both, in theoretical models as well as in empirical research. Assuming that quality of a particular product can only be observed after consumption, Shapiro (1983) shows that reputation serves as the key to producers' economic success. Reputation in his model is determined by the quality of the product consumed in the previous period. Producing high quality products can only be a Nash-equilibrium, if high quality products realize higher market prices.

Reputation and product quality are also closely related in Winfree and McCluskey's (2005) analysis of incentives to produce high quality products in cooperatives. In the spirit of Tirole's (1996) model of collective reputation, the authors assume that firms in a cooperative share a common reputation, which is based on the groups' past average quality. It is shown that individual firms in a cooperative have an incentive to produce lower quality and free ride on the good group reputation. Free-riding becomes more important as the number of firms within the cooperative increases.

In extending Shapiro's (1983) model, Rob and Fishman (2005) focus on the importance of firm size in analyzing the long term dynamics of investment in quality and reputation. They show that these investments can initiate a virtuous circle where reputation becomes more and more important. Large firms with a good reputation for high quality products have a stronger incentive to deliver high quality products in the future too.

In all these models quality is assumed as an 'experience good'. Consumers' current decisions are

based upon the reputation of the firm, which again is determined by past observations on the quality of products delivered. This feed-back mechanism explains the relative stability of individual firms in the 'quality distribution' over time. Further it implies that a firm's investment in quality improvement not only has an immediate and direct positive effect on market prices, but may exert an even stronger (indirect) long-run positive effect via an improvement in the firm's reputation.

The existing empirical literature typically uses cross-sectional data to investigate the impact of perceived quality and reputation on wine prices. Cross-sectional data however ignore the dynamic interaction effect between quality and reputation, i.e. the fact that an increase in reputation is the consequence of delivering high product quality in the past, and thus may underestimate the aggregate effect of product quality on prices.

Based upon a unique panel data set for 488 wineries over the period 2004 until 2007, this paper examines the short- as well as the long-run effects of product quality through a hedonic analysis of the Austrian market for domestic premium wines. Austrian wines clearly distinguish themselves from foreign wines in style, profile and production conditions. In contrast to previous empirical studies, which are often conducted on the basis of a small and/or very specific sample (as in the case of auction markets, for example), the current data set covers a significant part of all relevant Austrian wine producers.

## HEDONIC ANALYSIS OF WINE PRICES

Hedonic price analysis, which has its origins in agricultural economics, aims at measuring the implicit price of a specific product attribute by investigating the relationship between product attributes and prices. Frederick Waugh (1928) published his pioneering paper on quality factors influencing vegetable prices, another classical paper on hedonic price analysis is Rosen (1974). Ashenfelter (1989) applies this method to the wine industry to quantify the impact of specific attributes (like expert-ratings on product quality) on the auction prices of Bordeaux-wines. Different wine markets - Bordeaux and Australia being the most extensively studied markets - have been analysed since then (Oczkowski, 1994; Schamel, 2004). Typically, data on the sensory quality of wines as reported by expert tasters, the reputation of the producers as well as regional characteristics (origin) are included in an econometric analysis. The existing literature suggests that the perceived quality of a wine has a significant and positive

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impact on its price, but that other attributes – such as reputation – are more important. The fact that reputation is endogenous and is determined by high quality produced in the past is ignored in most existing studies.

#### DATA AND METHOD

The sample used in the present paper consists of 7.663 single wines which are produced by 488 of Austria's most prestigious wineries. Our sample covers about 35% of the annual production of quality wines in Austria.

For each wine, numerous characteristics are available, such as the price of the wine per standard bottle, variety, origin/appellation, type (white/red/rose/sweet), as well as size of the winery and information on being organic or product of a cooperative. This information is matched with data on the sensory quality of the specific bottle of wine, which is obtained from consulting the most influential publication on Austrian wine (the annually published Falstaff-Wine-Guide). On average, 4.26 wines from each winery are graded per year; this number however differs substantially between wineries (the maximum number of wines graded for a winery is 26). Experts grade on a scale from 1 to 100 on colour and appearance, aroma and bouquet, as well as flavour and finish. The data set is not representative for the supply of wine in Austria; the average quality of wines in our sample is 89.0 and only wines on the scale between 82 and 100 are included in the publication. Reputation of a winery is classified on a scale from 1 to 3 between 2004 and 2006 and from 1 to 5 in 2007. To avoid the different scaling of this variable to affect our estimation results, we use relative reputation (defined as the level of reputation relative to the maximum level of reputation in that particular year) in the empirical analysis.

All the data were collected by one of the authors (Andreas Huber), a detailed description is available in Huber (2010).

The sample is analyzed by employing OLS and Two-Stage Least Squares estimation methods for each individual year as well as an Error Component Two-Stage Least Square (EC2SLS) method for panel data over the entire period.

#### SUMMARY OF FIRST EMPIRICAL RESULTS

First empirical results estimated for a single year (2007) show that the perceived quality of wines has a significant positive impact on wine prices. An increase in the rating by one index-point leads to a price increase by 15 per cent. Reputation is also valued by customers: producers with the highest reputation obtain a 21% price increase on their wines, *ceteris paribus*.

We further find the origin and variety of the wine as well as the size of the winery to be significantly related to wine prices. Whether or not the wine is produced by a cooperative does not have a significant impact on wine prices.

In a second step, the dynamic (long-run) effects of quality on wine prices will be estimated by taking into account the fact that reputation is endogenous and is determined by the level of quality produced in

the past (using the observations of quality from previous years).

#### SIGNIFICANCE FOR THE MARKET

The results from the present analysis provide useful information on consumers' evaluation of high quality (in the wine market). This information can be valuable for producers of premium wine in Austria in deciding whether and to what extent to invest in quality improvements as well as for policy makers in designing adequate measures to improve the competitiveness of Austrian wines.

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