

# Prices as Quality Signals: Evidence from the German Wine Market

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## Abstract

On many markets sellers of a product are better informed about the good's quality than buyer resulting in the well known 'lemon problem' (Akerlof, 1970). Since it is impossible for many consumers to distinguish high quality from low quality both goods sell for the same price. A growing body of literature has shown that the lemon problem is an important issue for experience and credence goods for which quality cannot be ascertained before consumption.<sup>1</sup> Food items and environmentally friendly products are one of the most investigated goods within this category (e.g., Karl and Orwat, 1999; McCluskey, 2000, 2003).

However, as shown first by Spence (1974), producers can signal quality. High quality can be signaled by offering warranties (Spence, 1977; Grossmann, 1980), by advertising (Milgrom and Roberts, 1986), or by reputation (Shapiro, 1983). Theoretical models of prices as quality signals were first developed by Farrell (1980), Wolinsky (1983) and especially by Milgrom and Roberts (1986), Tirole (1988) and Bagwell and Riordan (1991).

As shown by Farrell (1980, Chapter 2), it is the presence of informed buyers that attracts high-quality producers and thereby establishes the price as a quality signal to uninformed buyers. On the one hand, firms that signal high quality with prices that are above the full-information level will gain sales from uninformed customers who believe the signal. On the other hand, they will also lose sales from informed customers. Bagwell and Riordan (1991) argue that high-quality producers can credibly signal the quality of a new product with premiums above the full information profit-maximizing price as long as low-quality producers cannot mimic this strategy. This conclusion is based on the assumption that a loss of customers hurts low-quality more than it does high-quality consumers.

Over time, as information about the good proliferates into the market and the fraction of uninformed customers falls, the price loses its function as quality signal to uninformed buyers and approximates the full information price. Thus, the 'quality premium' disappears.

On the empirical side, numerous authors examined the correlation between quality and price across a large variety of consumer goods (e.g., Riesz, 1978; Geistfeld, 1982; Hjorth-Andersen, 1984; Gerstner, 1985). The typical findings are that, although most correlations are positive, there is a large variance in quality-price correlations with some coefficients even being negative.

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<sup>1</sup> The quality of an experience good, such as wine, cannot be judged before consumption (Nelson, 1970). The quality of credence goods, such as services from automobile mechanics or dentists, cannot be accurately evaluated even a certain time after consumption (Darby and Karni, 1973).

The lack of consideration of marginal costs and market form is a major issue of most of these analyses leading to a potentially large omitted variable bias. Clearly, in order to correctly assess the signal function and the subsequent information induced decline of the price, the ideal data set includes information on marginal production costs as well as on the information level of each consumer group.

One of the few studies that do not have to deal with these issues is Ashenfelter et al. (1995) who examine the price development of Bordeaux *grands crus* wine vintages. First, the authors calculate a “full-information price” as a function of temperature and precipitation and show that directly after the release of the wine auction prices start up substantially higher than the respective full-information price. However, as more information about the wines’ quality becomes available (Bordeaux *grands crus* are very tannic upon release and need to mature for five to eight years in order to be drinkable), auction prices steadily move towards the full-information equilibrium.

Our paper is inspired by the theoretical analysis of Bagwell and Riordan (1991) and will explore the role of the wine price as a quality signal conditional of wine quality and on consumer information. Similar to Ashenfelter et al. (1995), we refer to the wine market. In particular, we compare the prices of identical wines on two different markets. On one market, wines are tasted before purchase and buyers are (almost) fully informed whole sellers. The other market is the retail market where prices are set by producers. Here, most buyers do not taste the wines before purchase and only a certain fraction of all buyers are informed.

When analyzing the price difference between the two samples we find strong support for the Bagwell-Riordan model. The price signal varies proportional to the wine’s quality. In addition, the price premium falls when the fraction of informed buyers increases.

