The Role of Social Media and Expert Reviews in the Market for High-End Goods: An Example From The Market for High-End Wines

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Keywords
social media, expert reviews, high-end goods, signal extraction, structural vector autoregression

Research Question
Do expert reviews affect prices due to their true evaluation of quality or due to the other ways that they come to impact a product’s supply and demand?

Methods
We use the panel structural VAR method developed in Pedroni (2013) in order to decompose the signal contained in the reviews of a well-known expert into its component parts.

Results
Our results point to the likelihood that expert reviews influence the market primarily due to the publicity effect that accompanies such reviews rather than due to their quality signal.

Abstract
The impact of expert reviews on market price has been a perennial favorite subject of study for wine and other high-end consumer goods. With such studies, there is often a temptation to attribute the impact of an expert review entirely to the reputation of the reviewer. Depending on one’s view of the nature of expert reviews, this can lead to the impression that market price in the world of wine and other so-called luxury goods is highly influenced by the proclamations of a handful of expert reviewers. By contrast, in this paper, we argue that the information from expert reviews constitutes a component of a broader signal extraction problem undertaken by consumers of such goods, and that it is important not to conflate the quality signal component of the expert
reviewer with the purely reputational effect of the reviewer, which is independent of the quality signal.

The markets for high-end wines from Bordeaux and California represent leading examples of the phenomenon of potentially large influences from expert reviews. Furthermore, the recent growth of the social media forum CellarTracker.com provides an interesting opportunity to track a dimension of the consumer evaluation of wines that can be used to help inform and interpret market data on price movements. Toward this end, we have constructed a fairly unique large-scale time series panel of amateur wine reviews obtained from CellarTracker.com, which we pair with similarly dimensioned panels of retail and auction prices for the corresponding wines. We use this data in conjunction with the recently developed panel structural vector autoregressive methods of Pedroni (2013) to then decompose the signal contained in the reviews of a well-known expert, Robert Parker, into its component parts. To give some further background on our modeling approach and how we accomplish the decomposition of expert reviews into component parts, it is worth elaborating on how we view the signal extraction problem and how it relates to the interaction between professional and amateur social media based reviews. In particular, we consider that when evaluating a product's quality, consumers make use of a blend of their own evaluations and those of expert reviewers. When a high-end product has attributes that are not homogeneous, and that are difficult to know prior to its consumption, expert reviews can have a potentially large impact on the individual consumer's evaluation of quality.

Furthermore, it is worth noting that the wines of Bordeaux and California do not merely represent leading examples of this phenomenon, they also present rich and interesting signal extraction problems. In contrast to some luxury goods, the quality of a given bottle of wine is not fixed, but rather evolves over time. Moreover, the quality does not simply depreciate or appreciate over time, but rather tends to be non-monotonic, rising for a period before falling. Expert reviewers render opinions on quality not simply as a static notion, but in large part as a forecast of how the wine is expected to evolve.

Confounding the signal extraction problem is the fact that it is not altogether clear what expert reviewers intend as the comparison benchmark. Clearly a higher rating on a wine is not intended to convey that the wine is superior in quality to a lesser rated wine in some absolute sense, since the rating is presumably conditional on a number of unknown factors, including perhaps the category of wine, the vintage, the price of the wine, or perhaps even the reviewer's prior expectation of the specific bottling of wine. The expert reviews, in turn, impact the consumer's evaluation of the quality of wine as part of the signal extraction, and both, in turn, impact the evolution of market price. In short, the relationship between quality, evaluation of quality and price are intertwined in a dynamic and complex manner.

This aspect of complex, unknown, interdependent dynamics falls squarely in the realm of what structural vector autoregression (VAR) analysis is intended to address in the time series literature. However, the fruitful interpretation of VAR analysis typically requires structure. For this, some of the special aspects of social media reviews for wine offer attractive features that can be exploited for the purposes of structural analysis. For instance, in contrast to other products that are reviewed via social media, wine, once released, is exogenous in its quality evolution with respect to reviews. Whereas a restaurant might adjust its quality in response to social media reviews, wine, once produced and released, does not.

In particular, the social media CellarTracker.com consists of a few hundred thousand users, who are predominantly highly informed wine consumers, tracking tens of millions of bottles of wines, evaluated in about 3.8 million tasting notes. The network's popularity within the wine community makes it a natural choice for empirically tracking the opinions of informed wine consumers. Furthermore, for high-end wines, the number of amateur reviews can be fairly large, and therefore difficult to manipulate by any one reviewer. The complete review history of each reviewer is easily available on CellarTracker. In principle, this allows one to easily discount reviews that were posted by individuals who have posted only a small number of anomalous reviews. (Although in practice, at least anecdotally, this type of manipulation does not appear to occur much.)
In this context, structural VAR analysis can aid in more nuanced decomposition of the quality signal from expert reviews and their impact on the market. However, in order to exploit the time series information from a large panel of 63 high-end wines from Bordeaux and California, one must recognize that the complex, unknown interdependent dynamics are likely to vary considerably among the wines. Simply pooling the dynamics as if they were identical across wines leads to a well-known problem of inconsistent estimation and inference, and is not an option. Furthermore, the vintage effects create commonalities among the wines of the same vintage, which must be accommodated for valid inference. The panel structural VAR method developed in Pedroni (2013) has been designed specifically to address such issues, which typically arise in time series panels, and it is on the basis of this methodology that we exploit the information in our data set. In particular, preliminary results appear promising, and point to the likelihood that expert reviews influence the market primarily due to the publicity effect that accompanies such reviews rather than due to their quality signal. Specifically, price responds weakly to the quality component that we derive from expert reviews, but strongly to the remaining reputational component. Moreover, we also find that, in the case of some wines, CellarTracker quantitative ratings can decrease in response to favorable Parker reviews. In these cases, there seems to be a negative effect from the reputational component part of the Parker review that can outweigh the positive effect of the favorable potential underlying quality signal. This result has the potential to further our understanding of how consumers rate conditional on both price and quality expectations in the arena of high-end goods.

More generally, the methods in this paper allow us to evaluate the role of expert reviews and social media in the market for high-end goods. This paper joins a vast literature covering quality perception, reputation, prices, and other foundational issues in the sphere of microeconomics. In particular, this research contributes to a growing field of economics that uses online data in order to better understand the concept of quality, which previously has been restricted primarily to the realm of theoretical microeconomic papers. This work also addresses concepts popularized by modern sociological and computer science research such as herd behavior and the general problem of preference construction when other consumers’ preferences as well as those of experts are visible to the individual.