Bordeaux 2016 Abstract Submission

Title
The fine wine price: product heterogeneity vs heterogeneous agents?

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Conference Presentation

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Keywords
wine price, hedonic function, auction, heterogeneity, heterogeneous agents

Research Question
the aim of this paper is to include agent heterogeneity in the empirical explanation of wine prices in order to reduce the uncertainty on the wine price determination

Methods
Hedonic function and multiplicative heteroscedastic model

Results
So, we conclude that the actor heterogeneity is the new frontier regarding wine hedonic function, but this way may be difficult if the source of buyers’ heterogeneity results of individual bearing.

Abstract
Explaining the price of fine wines is extremely complicated and hazardous due to the very nature of the product. Quality and reputation have been identified as the main drivers of wine prices. However, as noted by Combris et al. (1997, p391): “[…] not all the relevant characteristics of wine are easy to identify and to measure. Although the label on the wine bottle gives important information about the vintage year, the name of the Chateau, the eventual ranking of the wine, etc., this is only part of the story”. Mainly because wine is an experience good then quality cannot be known before consumption. Moreover, quality is largely subjective and is a matter of taste, this fact explaining the lack of consensus among wine experts (Ashton, 2012).
Hedonic regressions have been extensively used in wine economics literature for explaining wine prices (for a
survey of the hedonic method applied to the food sector, see Costanigro et al., 2011, and for a meta-analysis of hedonic regressions in the wine sector see Oczkowski and Doucouliagos, 2014). While reputation is traditionally captured by brand/chateau fixed effect, ranking and Denomination of Origin, only a few studies take into account sensory variables directly in their regressions (Combris et al., 1997, 2000; Benfratello et al. 2009) even if most of the studies consider the grades given by wine experts and especially by Robert Parker, as a proxy for quality. Nonetheless the explanatory power of these regressions rarely exceeds 60%-70% of the wine prices variance. This suggests that some wine price determinants would be omitted in most of these studies.

In particular, beyond quality and reputation another point appears as crucial in the wine price explanation: the heterogeneity. This heterogeneity concerns the product as well as the buyers. The presence of heterogeneous agents in terms of information and expertize on a market is a traditional factor of price dispersion. It allows for strategic behavior from firms in their pricing strategy (i.e. price discrimination). As far as we know, very few papers have analyzed price dispersion on the wine market. Jaeger and Storchmann (2011) studied this source of price dispersion and they found a significant deviation in the law of one price on the US retail wine market. They explained this deviation by the fact that wine markets are search markets where information is costly. Other studies have analyzed the wine price dispersion on the auction market. Ashenfelter (1989) and subsequently, Ginsburgh (1998) first pointed out the price dispersion during a wine auction due to the declining price anomaly. More recently Cardebat et al. (2015) shown, thanks to an extensive database that the law of one price does not perform on the wine auction market and that price dispersion is dramatically high. They argue that product heterogeneity might be a serious candidate for explaining such a wine price dispersion.

The product heterogeneity refers to differences among bottles founded on attributes or properties of them. First, as each alternatives, wine bottles may be differentiated according to their financial properties (Baumol, 1986) often synthetized by their illiquidity degree (Masset et al. 2015, Dimson et al. 2015). Second, findings clearly indicate that quality (or reputation) has a powerful ability to differentiate wine bottles (see Oczkowski and Doucouliagos, 2014). Third, as suggest by Cardebat et al. (2015), the state of preservation of the bottle may impact the price. For instance, two bottles of Chateau Latour 1961 can have different prices because their respective states of preservation (labels, cork, capsule…) are different. So, an extended set of attributes is needed for predicting wine prices, but the time and the cost of the completion of vector-attributes in hedonic function may leads to a weak expository of price variance. More, the high heterogeneity of actors on this market both in terms of expertizes and goals (consumers, investors, and collectors) may imply a differentiated relevance of each attributes in the eye of actors. Hence, significance and value of estimated coefficients associated to attributes in the hedonic function may depend on expertizes and goals composition of buyers. This problem is well known in hedonic literature when we consider bid function in which implicit prices are derived from characteristics of products, preferences and purchasing power being known. In other terms, bid functions have to be estimated on a segmented market on which buyers are homogenous (Brown et Rosen, 1982 ; Brasington, 2003 ; Zabel et Kiel, 2000). Finally, as we ignore this complexity, we know little about the robustness of our hedonic results when we consider the potential effects of heterogeneity concerning buyers and products. Given such market complexity, it seems relevant to explore the taxinomic structure of wine market for better understanding how each category of actors selects attributes in view to categorize and value wine bottle.

Also, the aim of this paper is to include heterogeneity in the empirical explanation of wine prices in order to reduce the uncertainty on the wine price determination and solve the wine price puzzle to reach a better market efficiency. We use a hedonic regression applied to a comprehensive auction prices database. We dispose of 7261 sales of just one 750ml bottle, recorded during 120 auctions in 6 auctions houses between 2012-10 and 2014-03. Our total sample contains 62 wines and 133 vintages (from 1816 to 2011). On one hand, the product heterogeneity is taken into account via the inclusion in the hedonic regression of all the bottle characteristics. Our research strategy is to run the more complete hedonic model including all the traditional hedonic variables and also the variables describing the financial properties, the sales characteristics and the state of preservation of the bottle in order to assess their impact on wine prices. On one hand, assuming that all attributes of good heterogeneity have included in hedonic function and well measured, unexplained part of price variance (about 19%) may be assigned to the heterogeneity of actors. On the other hand, by using a multiplicative heteroscedastic model, we identify the attributes for which the goals and the expertize levels of the actors may differ and lead to a high dispersion of prices. Hence, this step identifies the price dispersion sources (or attributes) arising from actor heterogeneity. Finally, we try to show that the control of actor heterogeneity may
increase the explained variance of prices. Our objective is to test whether heterogeneity results of different individual behaviors or different collective behaviors. But as we know, auction houses do not disclose the identity of their buyers so that we do not dispose of relevant information to run hedonic function on a homogeneous segment of buyers. However, expecting three types of agents (consumers, investors and collectors) with specific and homogenous goals and expertise levels; we have designed three samples of products in which the presence of a category of actors is more probable than the others. The collectors are assumed to be more interested by old wines (more than 40 years following the auction houses classification), the investors are assumed to be more interested by investable wines (e.g. the wines of Bordeaux legend basket of Liv-ex), and the consumers by all but these two first categories. Then, we run the hedonic regression for each subsample. Our results indicate an increase of explained variance of prices in each sub-sample which confirms the existence of different collective behaviors. However, the run of heteroscedastic multiplicative models on these subsamples also indicates the existence of different individual behaviors according to the valuation of wine bottle attributes. So, we conclude that the actor heterogeneity is the new frontier regarding wine hedonic function, but this way may be difficult if the source of buyers’ heterogeneity results of individual bearing.

This paper contributes to the existing literature at different levels. First and foremost, the present study provides the most complete hedonic function in the literature. If this extensive consideration of product heterogeneity offers a very high explanatory, a part of variance still unexplained. This result suggests an effect of actors’ heterogeneity which is very new in wine literature. Second, we identify the attributes that are differently valued by each type of buyers. Delimiting sub-samples of products in which each category of actors (investors, collectors, and consumers) has a preponderant (but not unique) place, we are able to show that a more homogenous market segment permits to better explain the variance of prices. Overall, this contribution provides a key reference to define the relevant components of wine price hedonic function, broadly and by market segment. These findings spur data providers to develop the information on wine product and to specify the origin of buyers for increasing the explanatory of our models.

The framework of this paper is as follows. The first section presents a review of the literature justifying the construction of the three classes of agents. The second section explains the data and presents some descriptive statistics. The third section gives the methodology, the results and some robustness checks. The final section concludes.