Padua 2017 Abstract Submission

Title
About the "constancy" of the wine hedonic coefficients over time

I want to submit an abstract for:
Conference Presentation

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Keywords
wine, price, hedonic function, auction price, VAR.

Research Question
The objective is to test the stability of the main hedonic coefficients over time and to explore the possible source of unsteadiness.

Methods
A VAR is used to test the dependance of the hedonic coefficients monthly time series with their lagged values and the Bordeaux legend index of Livex.

Results
Surprisingly, the most frequent characteristics of the wine hedonic functions are not stable over time : the number of bottles per lot, the Parker score, the liquidity, the age.

Abstract
Since the 1990s, the hedonic literature on wine prices has become very large and diversified, as described in recent reviews of this scientific effort (Orrego et al., 2012; Oczkowski and Doucouliagos, 2014). The hedonic methodology (see Boyle and Kiel 2001, for a review) has been developed in two stages. Assuming a competitive market of heterogeneous goods (with various intensities of attributes) and heterogeneous buyers (with various revenue levels and preferences), the first step aims to compute the implicit prices of each attribute. The second step regresses these implicit prices with buyers' characteristics, eventually by considering different market segments (Zabel and Kiel, 2000; Brasington, 2003), to estimate the buyers' willingness to pay. While the use of this method in the wine market has been criticized [see the debate between Unwin (1999) and Thrane (2004)], its findings are judged to be very relevant in wine marketing (pricing strategy, quality differentiation) and wine finance (hedonic indices for computing returns of wine investment).
However, estimates of implicit prices or price elasticities in literature are so diversified that the observer feels somewhat uncomfortable. From one study to another, wine prices may come from various sources (wine guides, auction houses, wine shops, and restaurants) and places; bundles of attributes may vary in size, according to data availability; functional forms specified for estimating hedonic relations may also differ between research projects; and, overall, in most cases, the implicit prices or price elasticities are computed over a very short period.
Several papers have treated some of these previous limits in the hedonic approach applied to the fine wine market. Most of these methodological issues have been discussed by Thrane (2004) and implemented in some significant articles. Therefore, the question of time effect is always in debate. Short-time hedonic estimations only

output one picture of implicit prices, while very few long-term studies (e.g. Wood and Anderson, 2003; Bicknell et al., 2005; and Cardebat et al., 2016) only include additional time effects to catch the price tendency. However, interactions between time and the willingness to pay each attribute are not considered, and the price elasticities of attributes are supposed to remain constant over time. In other terms, a single implicit price (or elasticity) is estimated over the period for each attribute, while we are not sure of its stability over time.

The objective of this paper is to test precisely the stability of the main hedonic coefficients over time and to explore the possible source of unsteadiness. Overall, expert scores, age, liquidity, quantity of bottles sold, and packing will be studied (some indications concerning winery and vintages will be presented in an annex). A first proposition (P0) concerning the coefficient evolution is its real stability over time. It implies either an enduring consumer preference structure about attributes or a constant weighting of market segments with differentiated preferences. A second proposition (P1) investigates a change of hedonic coefficients over time. These propositions are broken down into two (joint) hypotheses. The first hypothesis (H1a) concerns some possible long-term or structural changes in buyers' preference structure concerning attributes. This entails extended change in price sensitivity to some attributes; for instance, buyers may be more and more sensitive to the rating of a wine expert, as has been the case with Robert Parker. The second hypothesis (H1b) concerns some possible short-run (or cyclical) changes in preference structure. This may happen when price movements (or price cycle) generate changes in the valorization of attributes. For instance, are we as mindful of expert opinions in a boom period of the wine price cycle as we are in a bust period of the wine price cycle? This matter links to behavioral biases in the decision-making of individual investors, which has been extensively explored in behavioral finance (see, for instance, Jain et al., 2015, for a recent literature review). Notably, two biases may be considered here. The first one, termed "Investors' overconfidence," indicates the investors' tendency to overestimate their own abilities and underestimate the external information coming from experts (Fabre et François-Heude, 2009). This overconfidence bias mainly appears for a boom cyclical period. The second bias, termed "representativeness bias," indicates that, overall, individual investors in a bust period tend to adopt either the judgment of experts (Milgram, 1974) or market fundamentals (Razek, 2011). Consequently, valuation of attributes may differ between boom and bust periods. If the two last hypotheses (H1a, H1b) are not rejected, estimated hedonic coefficients are either just one-off short-term information or a long-term mean abstraction, without reality, and produce biased information for marketers and investors.

To this end, we consider a worldwide database of more than 450,000 auction transactions from 2003 to 2014, from which we extract data concerning wine vintage components of the Bordeaux Legend index of Liv-ex (43,114 transactions). Indeed, this index has experienced several boom and bust periods over time. Furthermore, according to a large wine hedonic literature review, we consider the most frequently used characteristics of hedonic functions and the most frequently used functional form for estimating equations (i.e. the mixed log-linear function).

Our methodology consists of running a regression for each monthly sample of data. After eliminating low transaction months (July and August), 103 regressions are computed. The estimated coefficients shape these time series. Then, dependence is tested between these time series of coefficients, their lagged series, and the Bordeaux Legend index of Liv-ex by using the first equation of an unconstrained VAR. Different robustness tests have been developed concerning changes in time frequencies (monthly versus quarterly) and in perimeters of data. For instance, considering that speculation movements might bias our results, Hong Kong auctions and Lafite-Rothschild 2000 transactions have been removed from our initial sample. Then, new hedonic coefficient time series are computed to test the previous results.

Studying the elasticity movements along time establishes a real contribution at different stages. It is firstly the opportunity to appreciate the history of the fine wine market, throughout the evolution of the consumers' sensibility to the fine wine attributes over time. Secondly, we investigate the assumption of a long-term evolution of preference structure of the market demand and a short-term evolution of these preferences, derived from cyclical behavioral biases. Finally, this paper seeks to set out an empirical study for fixing the way to control long- and short-term biases for estimating the hedonic coefficients.

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about attributes or a constant weighting of market segments with differentiated preferences.[1] A second proposition (P1) investigates a change of hedonic coefficients over time. These propositions are broken down into two (joint) hypotheses. The first hypothesis (H1a) concerns some possible long-term or structural changes in buyers' preference structure concerning attributes. This entails extended change in price sensitivity to some attributes; for instance, buyers may be more and more sensitive to the rating of a wine expert, as has been the case with Robert Parker. The second hypothesis (H1b) concerns some possible short-run (or cyclical) changes in preference structure. This may happen when price movements (or price cycle) generate changes in the valorization of attributes. For instance, are we as mindful of expert opinions in a boom period of the wine price cycle as we are in a bust period of the wine price cycle? This matter links to behavioral biases in the decision-making of individual investors, which has been extensively explored in behavioral finance (see, for instance, Jain et al., 2015, for a recent literature review). Notably, two biases may be considered here. The first one, termed "Investors' overconfidence," indicates the investors' tendency to overestimate their own abilities and underestimate the external information coming from experts (Fabre et François-Heude, 2009). This overconfidence bias mainly appears for a boom cyclical period. The second bias, termed "representativeness bias," indicates that, overall, individual investors in a bust period tend to adopt either the judgment of experts (Milgram, 1974) or market fundamentals (Razek, 2011). Consequently, valuation of attributes may differ between boom and bust periods. If the two last hypotheses (H1a, H1b) are not rejected, estimated hedonic coefficients are either just one-off short-term information or a long-term mean abstraction, without reality, and produce biased information for marketers and investors.

To this end, we consider a worldwide database of more than 450,000 auction transactions from 2003 to 2014, from which we extract data concerning wine vintage components of the Bordeaux Legend index of Liv-ex (43,114 transactions). Indeed, this index has experienced several boom and bust periods over time. Furthermore, according to a large wine hedonic literature review, we consider the most frequently used characteristics of hedonic functions and the most frequently used functional form for estimating equations (i.e. the mixed log-linear function).

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[1] Indeed, as we know, auction house or merchant databases do not set up the buyers' identities so that we are not able to control any possible changing in buyer composition over time. Consequently, this reason of stability or change in hedonic coefficients will not be investigated in the rest of this paper.

assumption of a long-term evolution of preference structure of the market demand and a short-term evolution of these preferences, derived from cyclical behavioral biases. Finally, this paper seeks to set out an empirical study for fixing the way to control long- and short-term biases for estimating the hedonic coefficients.