

Wine Auctions: More explanations for the declining price anomaly

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Abstract

Extant research has observed a declining price anomaly in a study of wine auctions, also called the afternoon effect: in sequential English auctions of wine, the price reduces. Previously suggested explanations include absentee bidder effect; option effect with non-decreasing absolute risk aversion; decreasing quality effect and the varying size and quantity effect. To this list, we add some economic and behavioural explanations: the diminishing consumer's surplus explanation, the transactions cost of re-trading, the subsequent information explanation and the loss aversion explanation. The list of effects or explanations is sufficiently long to question whether declining prices are an anomaly.

Key words: wine auction; declining price anomaly; afternoon effect; option value

Introduction¹

An important segment of the wine industry is rare and premium wines. These wines are high-price and relatively scarce. They are sought by discriminating consumers as well as investors (Matterson, 2003). Wine investment requires finding accurate information and sources or channels. The normal channels of marketing such wine are producer mailing-lists, cellar-door sales and auctions. Other innovative channels such as introducing wine-denominated shares have been tried, for example by the Australian Wine Exchange, but the attempt did not work owing to insufficient quantity of fine wines to distribute. We are therefore looking at one of the three classical ways of marketing fine and rare wines: through wine auctions. Of course, auctions can also be used for other wines.

The marketing of wine through auctions is important especially for rare and fine wines. In the US alone, sales through auctions represented a \$80 million to \$90 million market during 1999-2000 (Wark, 2001), mainly through the large auction houses, although auctions through internet marketplaces is also emerging. The study of wine auctions and the pricing

resulting from this is therefore an important subject for research for the wine industry. Some research has already been done in this stream and this paper continues reflection in the same field.

Ashenfelter (1989) draws our attention to the declining price anomaly in wine auctions, also termed the afternoon effect. The effect was noted by Ashenfelter in English auctions. In English auctions, the hammer price is the highest bid. This is the sale price if it exceeds the reserve price, which is the price below which the seller is not willing to accept the sale. If the hammer price is greater than the reserve price, the item is sold and the auction house receives commissions from both parties. So, the buyer's price is slightly higher than the hammer price and the seller's price is usually either the second highest bid or a fixed percentage below the hammer price. If the hammer price is lower than reserve price, it is "bought-in". Obviously, high reserve price means more items are bought-in: however, its utility is to thwart rings or cartels of few bidders who would otherwise keep bids low. An auction house may charge a minimum fee based on reserve price to ensure that the reserve price is not maintained at too high a level impairing its ability to generate sales.

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The Declining Price Anomaly

When Ashenfelter studied wine auctions, in which identical lots of wine were sold in a single auction, he assumed that each sale should normally be independent of other sales. As a result, the hammer

price in the second sale could be more or less than that in the first sale, following a random walk. More generally, price in the "n+1" sale should be independent of the price in the "n" sale.

However, he discovered that when identical lots of wine are sold in a single auction, prices are more likely to decline than to increase with later lots. He termed this the declining price effect. He observed that Auction houses are aware of this effect, and modify their behaviour taking this into account. Firstly, they offer small lots first and bigger lots later. The price decline is then disguised as quantity discount. Secondly, the winning bidder is given an option to buy all other lots at same price. This way it is considered that the initial price is bid higher because it also has value of an in-built option: it protects from the risk that we may not be able to buy later. This works as long as there is risk-aversion. Evidence indicates that many buyers do in fact exercise this option, reinforcing the risk factor. (Note: if the buyer were risk neutral, he would exercise the option and then there would be no price decline for the next lots). It also works as long as there is a quantity constraint or buyers are filling in absentee quantity orders (discussed below).

McAfee and Vincent (1993) confirmed the existence of the declining price anomaly. However, they don't base their null hypothesis on the random walk hypothesis but on the hypothesis that normally prices should remain the same in different markets, otherwise there are possibilities for arbitrage by risk neutral traders. That is to say, if people know that the price is going to decrease, they might as well wait and buy in the second market. Therefore, with equal probabilities and expectations, prices in all sequential markets should be the same. We will revert to this a little later.

They indicated that the explanation based on risk premium in the first price would hold if there is non-decreasing absolute risk aversion.

Review of explanations

We review below the explanations offered by different writers for the declining price anomaly. We are not looking at observations like knowledge of the winner's curse, because this would keep prices low even in the sale of the first lot and therefore, on its own, should not lead to further decline in prices. Similarly, we do not cover the collusion cases explained by Klemperer (2002) by applying game theories of cartels. Collusion among bidders in auctions, by itself, merely ensures that price is low even in the first bid and does not explain why it would reduce. Certainly, sequential auctions permit obtaining signals to collude better and also permit the

possibility of punishment if someone cheats in the first round, but all this would depress even the price of the first round. However, we do consider exceptions to this in the next section.

Ginsburgh (1998) reviewed the above explanations and added some others in relation to the declining price anomaly. He studies 4 effects: the option effect, the decreasing quality effect, the varying size and quantity effect and the absentee bidder effect.

The Option effect, as explained above, is the practice of granting an option to let the winner take more lots. So the bidder's price is equal to normal price plus a premium for risk reduction. If the option was infrequently exercised it would not be threatening. Ginsberg found it was exercised in 37% of cases and is therefore a credible threat.

The Decreasing Quality Effect stems from the rule at Christie's to order the sale of lots by decreasing quality. This means later lots will be cheaper.

The Bottle Size and Quantity effects, is broken into two parts. Firstly, large bottles (magnums) are often listed before standard 75-cl ones. Larger bottles are considered better for the wine and are also more rare. For both reasons, collectors pay more and this explains why initial bids are higher. Secondly, later lots have more bottles, so price per bottle falls as the Marginal Utility of the additional bottles would be less than that of the initial bottles. Alternatively, it can be explained that transaction costs of reselling extra bottles increases (if one's needs are for less bottles).

In detailing the Absentee bidder effect, Ginsburgh noted that in 60% of parcels, all the lots are sold to absentees; in 31% the sales are to absentees as well as those present; and in the remaining 9%, the sales are only to those present. When analysing by lots, he found that 82% of winning lots were sold to absentees. This shows that most sales are to absentee bidders. One reason for this phenomena is that wine is a low valued item and so transport cost of attending is high. As a result of all this, the absentee bidder effect comes in to explain why prices decline: firstly, it becomes evident that auctioneer will sell absentee bids in declining value order. As a result, subsequent sales will be at lower prices. Secondly, absentee bidders cannot gather information on feeling or trading sentiment in the room. As a result, they cannot increase or decrease their bids.

We may add to this the work of Branco (1997) who deals with sequential auctions. He finds a synergies or complementarities effect. This seems similar to the option effect. However, we could distinguish the two: the option effect is based on risk, while the synergies effect is based on returns. Branco finds that for those bidders who are present, there could be synergies or complementarities effect. If there are synergies in sequential auctions, people who recognize or value the synergies would be willing to pay higher for the first lot. If they win the first lot, they will then pay lower for the second lot because the second bidder will not pay more than the stand alone value. What we could add is that such synergies could be applied to wine auctions if a buyer wants to acquire all the bottles and drink one bottle a year to determine how the bottle ages. This is one of the expressed reasons for collecting wine, reviewed by Mackenzie (1997), and we must not forget that auctions are usually for rare and fine wines targeted towards collectors.

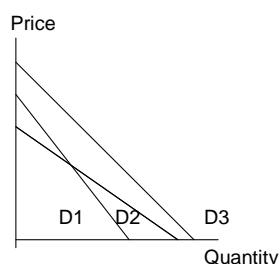
Discussion of Further Explanations

Having reviewed the literature, we would like to propose other additional explanations to the declining price anomaly. At the end of this, one wonders if declining prices should even be considered an anomaly. In fact, we question the Ashenfelter (1989) assumption that auction prices in sequential auction should follow a random walk. This would be valid if new surprise information on fundamentals of the wine were coming to the participants in between each auctioning of lots. This would be the case, for example, if people who bought the first lot, expressed their appreciation or disgust after tasting the first lot, before the second auction took place. This is not the case. Nevertheless, as we have said, we offer additional reasons why prices should normally decline. Our explanations could be termed the declining consumer surplus effect, the transaction

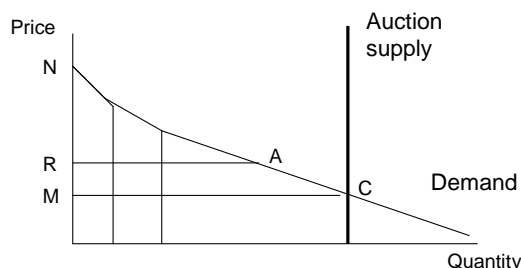
cost of re-trading effect, the subsequent information effect, new collusion formation, and loss aversion effect.

The consumer's surplus effect stems from one of the reasons for selling goods in auctions being that it permits the seller to tap the differential consumer's surplus of different buyers. The consumer's surplus is effectively tapped if the auction price is greater than the market clearing price. As a result, the person with the greatest marginal utility would bid higher. Having bought sufficiently for his needs in the initial auction, in subsequent auctions, his marginal utility would have gone down for incremental quantities. As a result, he would be willing to pay lower for the second lot. The consumer's surplus effect is inherent from the downward sloping demand curve of each individual and the total demand curve being the lateral aggregation of individual demand curves. In the simplified figure below, the graph on the right aggregates the assumed linear demand curves of the three bidders present through a simple lateral summation, kinking at the maximum price N_1 and N_2 . This is then compared to a fixed offer of wine lots (the inelastic supply curve). In the absence of an auction, the market clearing equilibrium between those present at the market would be at C with price M . This would have given a consumer surplus of the area of the area NMC . However, assuming infinitely small lots, and the absence of memory, part of this consumer surplus could be tapped away through auctions, in the absence of a reserve price, or if reserve price is less than the auction clearing price M . For example, consumer 3 would keep offering bids a little above N_1 . Thus, his surplus between N_1 and M would get tapped, but his surplus between N_1 and N_3 would be untapped, except for the infinitesimally small increase above N_1 required to win the bid.

Figure: Consumer surplus effect



Demand curves of 3 individuals



Aggregate demand curve: lateral summation

R= Reserve price

M= Market clearing price of bidders

Surplus can be entirely exploited only if infinitely small quantities sold in each lot and bidders have no memory of previous bidding

If, however, there is a reserve price of R above M (perhaps representative of the non-auction market price or after adjusting the commission of the auctioneer), the auction equilibrium would be at A and only the part of the consumer surplus of area NRA would have been transferred to the seller (ignoring auctioneer's fees). If however, each bidder has a memory of what happened in the previous auction, individual 3 would no longer bid above $N1$, knowing that the others will not bid more than this. Thus, individual 1 can save a part of his consumer surplus, if lot sizes are infinitesimally small. It may be of interest to the auctioneers, therefore to increase the lot sizes of the first lot, to recapture part of the consumer surplus. Note that all cannot be captured because the consumer will pay for the lot based on the average utility of each bottle in the lot (thus the total utility of the lot) and not the marginal utility of the last bottle in the first lot.

One exception or limitation could be if one individual comes in late and misses the auction of, say, the first lot. In such a case, we would have the anomalous situation of the hammer price of the second lot going up. Another complication could come in if the person decides to wait and see for a few rounds before bidding. But if many people adopt this policy, prices could effectively go up and down, but then why would anyone take a risk to wait and incur cost for waiting time? This comes back to the risk aversion explanation of Ashenfelter. In addition, people may be myopic ((Stein, 1989; Thaler et al; 1997) and not

wanting to see what happens in the future. As a result, if they can get what they want at acceptable prices, they may not care about future gains. In fact, the future gains are discounted heavily.

While we're on the topic of wait and see, let's examine also the McAfee and Vincent hypothesis that because of arbitrage, risk neutral traders would expect the same price in two sequential markets. This would be true only if there is perfect competition (similar to the Capital Asset Pricing Theory) or if any one person can buy large quantities and then re-trade them (or sell the extra he didn't need) without transactions costs (similar to the Arbitrage Pricing theory). But as long as there are only a limited number of buyers, and there is some transaction cost of re-trading, after the first person has bought a lot, the total demand decreases. This means that the demand curve shifts to the left at each price. In an auction, the supply curve would be price inelastic above the reserve price, but would also shift left after each sale transacted. To be fair to McAfee and Vincent, they suggest that the cost and other effects of re-trading be included in analysis by future researchers.

The subsequent information effect comes from the fact that the initial round of bidding enables people to be aware of the stage where others dropped out of the bidding process. Assuming that each person bid their maximum (no reason not to, except the wait and see hypothesis discussed earlier), at the end of the first game, the bidders know the limits of the second and

third highest bidders. For simplicity, if we assume that the first bidder is satisfied and withdraws, the second bidder only needs to bid till the maximum of the third bidder's limit, knowing that the third bidder won't exceed this. As a result, the hammer price falls even further between the first and second auctions.

New Collusion formation: Although we excluded Klemperer's analysis of collusion from the zone of our study, because we said that this should depress the price of the first lot too, there is an exception worth considering. When people come to a wine auction, they don't know each other. However, during the process of bidding they get to know each other or, perhaps, recognize bidders met in other auctions. Socialization takes time. Therefore in repeat or sequential auctions, collusion would increase as time passes. To the extent that collusion reduces prices, prices reduce with time.

The loss aversion effect is based on hubris: people dislike losing. The concept is developed in Tversky and Kahneman (1991); van Dijk & van Knippenberg (1998) apply it to wine trading. The concept basically states that people weigh losses more heavily than gains (Kahneman & Tversky, 1979). For example, the prospect of losing \$1000 weighs more heavily than the prospect of gaining \$1000. In fact, a ratio of about 2:1 has been empirically found in several of their experiments (Tversky & Kahneman, 1991). It stems from the fact that people dislike losing. Therefore, it is possible that after seeing the capacities of other bidders in the first round, many people will not bid in the second round for fear and the displeasure of losing. As a result, for the second round, the third bidder may not even bid to his maximum level, knowing that the second bidder can go higher. So, the second bidder will get goods cheaper than he expected. In subsequent rounds, the third bidder would enter the bidding only to test if the needs of the second bidder are satisfied. The loss aversion therefore looks only at the downside element of variance related risk aversion.

Conclusion and Future research:

We have outlined various reasons for the declining price anomaly. Sellers need to find ways to exploit the consumer surplus. This is more important for fine and rare wines because these are higher priced. As a result, the consumer surplus is more important. Moreover, since these are sold in small quantities, transport costs to buyers to reach the wine-cellar or to reach the auction may both be important. These transport costs are eroding the budget allocated to the wine. So, people may prefer supplier mailing lists.

Within the auction channel, marketers need to study auction design. The auction design has to be sensitive to details and context (Klemperer, 2002). To the extent that absentee bidders will always feel that they are being charged the maximum price that they were willing to pay, they may prefer to be present, but then this would cost more. For the absentee bidder, the over-charge for absence therefore needs to be traded off with transport charge. Assuming fixed transport charge, it would be worthwhile to attend wine auctions for those planning to buy large quantities.

There is also the question of whether there is a limit to declining prices: why don't prices continue to fall? The answer may be based on expected reserve price. The sale will not take place if the bid doesn't exceed the reserve price, which is not known. However, bidders have a perceived notion of an expected reserve price, based perhaps on market conditions). So, bidders are careful not to bid too low, because otherwise they lose the transportation costs of attending the auction. After the first bidder's exit, the second bidder's price may or may not be accepted if it falls. Since people are loss averse (don't like to lose opportunity), they may not be willing to take further risks on reducing prices.

Future research within the wine segment could look into such areas as whether the type of auction changes the findings with respect to consumer bidding behaviour. Within the auction structure, a possible area of research is the how expectations on reserve prices are formed, if these are not disclosed to the bidders. Perhaps, with the development of internet auctions, a new kind of consumer is entering into the fray. These mechanisms need to be compared with existing systems. Moreover, it may also be interesting to compare the results of wine auctions to those of other collectors' items.

A possibility for future consumer behaviour research outside the wine segment is that people who go to auctions are addicted to that kind of auction. For example, while visiting auction of personal goods sold by departing Embassy staff in New Delhi, one of the buyers mentioned that it is almost the same people who are present at almost all the auctions, every weekend, at almost all the Embassies. They are continuously searching and taking what they fancy, even if they do not "need" it. Of course, they may be discriminating buyers; but it's a special category of people who visit auctions. Therefore, it may be interesting to observe the sociological and behavioural profile of this class of people in general and those who attend wine auctions in particular to

study whether this has any bearing to the auction bidding game.

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