The impact of gurus: Parker grades and *en primeur* wine prices

Héla Hadj Ali[*], Sébastien Lecocq[†], Michael Visser[‡]

January 2005

Abstract

The purpose of this paper is to measure the impact of Robert Parker's oenological grades on Bordeaux wine prices. We study their impact on the so-called *en primeur* wine prices, i.e., the prices established by the château owners when the wines are still extremely young. The Parker grades are usually published in the spring of each year (in *The Wine Advocate*), before the wine prices are established. However, the wine grades attributed in 2003 have been published much later, in the autumn, *after* the determination of the prices. This unusual reversal is exploited to estimate a Parker effect. We find that on average the effect is equal to 2.80 euros per bottle of wine. We also estimate grade-specific effects, and use these estimates to predict what the prices would have been had Parker attended the spring tastings in 2003.

Keywords: Expert opinion, treatment effect, wine price.

JEL codes: C21, D89, L15.

[*]INRA, Chemin de Borde Rouge, Auzeville, BP 27, 31326 Castanet Tolosan, France. Email: hadjali@toulouse.inra.fr.

[†]INRA, 65 boulevard de Brandebourg, 94205 Ivry, France. Email: lecocq@ivry.inra.fr.

[‡]INRA, 48 boulevard Jourdan, 75014 Paris, France. Email: michael.visser@ens.fr.

1 Introduction

The judgment of experts and gurus matters enormously in many types of markets. For instance, in the art markets for books, music, and movies, opinion leaders have an important effect on consumer decisions via their rankings in all sorts of guides and competitions (see Ginsburgh (2003)). Similarly, in auctions of paintings, art experts influence sale prices via the publication of their pre-sale estimates in auction catalogues (see Bauwens and Ginsburgh (2000)). Other markets where expert opinion leaders are very active and influential are sport betting markets (see ...), financial forecasting markets (see Keane and Runkle (1998), Lamont (2002)), the market for restaurants (see ...), etc...

Given the importance of experts and gurus, it seems of interest to be able to precisely measure their impact on market outcomes. The purpose of the paper is to study the effect of Robert Parker's oenological wine grades on Bordeaux wine prices. Robert Parker is widely regarded as the most influential wine expert in the world.[1] His wine reports and numerical grades, published in the bimonthly journal *The Wine Advocate* and in his famous wine books, exercise an enormous power over wine prices. A good grade may cause a wine price to rocket sky-high, while, inversely, a very bad grade may leave a wine practically unsaleable unless its price is adjusted downwards. Parker's power over prices is said to be particularly important[2] for the so-called *en primeur* wines. The prices of these wines, the *en primeur* prices, are established just 6 or 7 months after the harvest, i.e., when the wines are still very young and not yet bottled. The quality of so young wines is hard to judge, which might explain why he has a relatively large influence on *en primeur* prices.

Each spring (since 1994) Robert Parker comes to Bordeaux to evaluate a sample of *en primeur* wines of the latest vintage. He publishes his findings in *The Wine Advocate*, usually in the April issue. The *en primeur* prices are fixed by the château owners in the weeks and months thereafter (the *en primeur* market usually opens at the end of April, and lasts until June), giving them the possibility to incorporate the information contained in the Parker grades. In 2003 things went different because the wine expert did not come in the spring to taste the 2002 vintage. According to Parker himself, the trip was cancelled at the request of his family.[3] The French press however argued that his absence could be explained by the judicial affairs in which one his collaborators was involved at the time (see for example *Libération*, July 1, 2003). Whatever the reasons, it meant that the château owners had to determine their prices *without* knowledge of the grades attributed by Parker. So, as Jancis Robinson put it, "the Bordelais are having to re-learn the art of selling a

[1] One can find many quotes about Robert Parker. Here are some found on the web site http://www.erobertparker.com: "Parker is the most influential wine writer in the world today." (The Los Angeles Times); "Parker is the world's most experienced and trustworthy taster." (Jancis Robinson, another well known wine taster and critic); "The man with the paragon palate... For countless wine lovers Robert Parker's tastes are infallible." (Time Magazine).

[2] See the wine survey "The Globe in a Glass" published in *The Economist*, December 1999, pp. 97-115.

[3] Early in 2003, his wife and daughter preferred the trip to be postponed in view of the threat of a war in Iraq.

whole vintage, 2002, without his help".[4]

We use this unusual reversal to estimate a Parker effect on *en primeur* prices.[5] Adopting the counterfactual framework introduced by Rubin (1974), this effect is defined as the average treatment effect on the treated. It measures the mean effect of the attribution of Parker grades for those wines that were actually graded. This commonly-used evaluation parameter is identified under a "parallel trend" assumption. Roughly speaking, this assumption states that, had Parker not graded any wine in two subsequent years (which is of course a hypothetical situation), the price evolution over the two years would have been the same for all wines. Under the parallel trend assumption, the treatment effect can be estimated by a difference-in-differences type estimator. Using data on *en primeur* prices from 2002 and 2003, we find an estimate of the Parker effect equal to 2.80 euros per bottle of wine. Estimates by appellation show that the treatment effect is the largest for wines from Pomerol, which is quite interesting since these are precisely the wines that Robert Parker appreciates the most. Using data on the grades assigned in 2002, we also estimate grade-specific treatment effects, and show that they steeply increase with the level of grading. Finally we exploit the fact that the grades eventually attributed by Parker to the 2002 vintage (he came to Bordeaux in September 2003) are also observed in our data. Under the hypothesis that these marks have the same interpretation as the ones assigned in the spring (we will explain that this is a plausible hypothesis), we use the autumn grades to predict what the prices would have been had Parker attended the spring tastings in 2003.

The next section describes the data set, Section 3 gives the definition of the Parker effect, explains how it can be estimated, and presents the empirical results. Section 4 concludes.

2 Data

Our data set combines two sources of information: the 2002 and 2003 *en primeur* prices for approximately 250 wines obtained from a Bordeaux wine broker, and Parker grades extracted from *The Wine Advocate*. Section 2.1 gives a short description of the Bordeaux *en primeur* market and explains how the wine prices are defined, Section 2.2 outlines how Robert Parker evaluates and grades the *en primeur* wines, and Section 2.3 contains a descriptive analysis of the matched data.

2.1 *En primeur* wine prices

The *en primeur* Bordeaux wine market is a kind of forward market where wines are sold as futures. Traditionally the market opens at the end of April and lasts for just two or three months. The

[4] See http://www.jancisrobinson.com/jr7046.htm.

[5] Other papers have looked at the influence of Parker marks as well (see for example Ashenfelter and Jones (2000), Hadj Ali and Nauges (2002), Février et al. (2003), Lecocq et al. (2004)). These papers analyze the marginal effect of Parker grades (i.e., the β-coefficient in the regression of prices on grades). Our paper is different because we focus on the more extreme evaluation parameter "price when wine is graded minus price in the absence of grading".

wines that are traded are those from the latest vintage. Thus the wines traded in for instance the spring of 2002 were from the 2001 harvest. Trading therefore takes place when the wines are still very young and not yet bottled. The payments on this market are made when the sale contracts are signed, and delivery occurs once the wines are bottled, one to two years after the grape harvest. The *en primeur* sales are organized by brokers who act as intermediaries between the château owners and the *négociants* (who in turn sell the wine on to importers, retailers and private consumers). The *en primeur* prices are determined by the château owners themselves, and given these opening prices, the brokers negotiate with potential buyers about quantities, delivery dates, etc... See Hadj Ali (2002) for more details on the *en primeur* market.

The price data come from the archives of one of the largest brokers in Bordeaux. The full sample contains the *en primeur* prices of all the 375 Bordeaux châteaux traded by this broker during the period 1994-2003. This paper only uses the information from 2002 and 2003.[6] Furthermore, we restrict ourselves to the châteaux that were traded in both 2002 and 2003. There are 233 such châteaux. For each of the 233 châteaux in our sample we thus observe the 2002 (2001 vintage) and 2003 (2002 vintage) *en primeur* prices. The prices are in euros per bottle of 75cl. We also observe for each château its appellation group and its rank.

Since the broker that gave us the price data is a large and important firm in Bordeaux, there is good reason to believe that our sample is representative of the population of châteaux active in the *en primeur* market. Evidence for this comes from the fact that the sample covers a large spectrum of châteaux, ranging from the best-known wines such as Ausone, Lafite Rothschild, Latour, Margaux, and Mouton-Rothschild, to less prestigious ones such as Beaulieu, Chantegrive, Fonréaud, Pierdon, etc...

2.2 Parker grades

Each spring, usually late March or early April, Robert Parker comes to the Bordeaux region to taste samples of *en primeur* wines. The wines that are tasted are from the latest vintage, harvested 6 or 7 months earlier. Thus the wines evaluated in say 2002 were from the 2001 vintage. Since the wines are not yet bottled, the samples are extracted from the barrels. The tastings are generally done in peer-group, single-blind conditions. Peer-group tasting means that wines belonging to the same region or appellation are evaluated relatively to each other. Single-blind tasting means that the products are judged without the producer's name being known, which has the advantage that neither the price nor the reputation of the château can affect the grading. The Parker grading system uses a 50-100 point quality scale. Unlike the more mature wines, to which Parker typically assigns single scores (for example 82),[7] he generally gives grade intervals to *en primeur* wines (for example $[88, 90]$). This probably reflects the fact that for Robert Parker there is an extra element of uncertainty in judging the quality of such young wines. The numeral rating of each wine is

[6] See Hadj Ali and Nauges (2002) for an analysis based on the period 1994-2002.

[7] See the wine reports in his famous wine guides.

complemented by a verbal tasting note containing an overall description of the wine. The grade intervals and tasting notes of all the wines that are tasted in the spring are published in *The Wine Advocate*, usually in the April issue. On Parker's web site http://www.erobertparker.com this sort of data is collected for all vintages between 1994 and 2001. Using this site, we could determine which of the 233 châteaux in our sample were evaluated by Parker in the spring of 2002, and for those indeed evaluated we recorded the 2001 vintage grade intervals.

As explained in the introduction, things went different in 2003. Robert Parker did not descend on Bordeaux in the springtime to taste the latest vintage, but only at the end of the summer (between August 30th and September 8th). So the 2002 vintage was tasted about 11 months after the harvest, unlike the earlier vintages which were evaluated roughly 6 months after their conception. According to Robert Parker (see issue 149 of the *The Wine Advocate*), there was not much oenological difference in tasting the 2002s in August/September, as opposed to tasting the other vintages in March/April. This suggests that, *ceteris paribus*, we can attach the same meaning to the grades intervals attributed to the 2002 vintage as the ones assigned to the earlier vintages. The grade intervals for the 2002 vintage were published in the October issue of *The Wine Advocate* (issue 149), and these data can also be found on Parker's web site. We again consulted the web site, this time to check which of the 233 wines were evaluated in the late summer of 2003, and extracted the relevant 2002 vintage grade intervals.

2.3 Descriptive statistics

Table 1 shows how the 233 wines in our data are ranked and from which appellation they originate. Note that about half of the Bordeaux appellations are represented in our sample (there are 25 different appellations in the sample, while there are roughly 50 of them in the Bordeaux wine region; see Combris, Lecocq and Visser (1997)). Note also that there is much diversity in the ranking of the wines: about 28% of the châteaux are ranked according to the famous 1855 classification (1er Cru Classé, 2ème Cru Classé,..., 5ème Cru Classé), 14% of the châteaux are classified as Cru Bourgeois, 40% of the châteaux are not classified at all, etc...

Table 1 about here

Table 2 gives some simple descriptive statistics for the *en primeur* prices and the Parker appreciations. To make the 2002 and 2003 prices comparable, we have divided the latter prices by 1.019, where 1.9% is the evolution of the consumer price index over that period (source INSEE: http://www.insee.fr). Also, all grade intervals have been replaced by their midpoints (for example, the interval $[94, 98]$ is replaced by the midpoint 96).[8]

[8]There is not much variation in the observed width intervals. In 91% of the cases the width of the grade interval is either 1 or 2 points, in 8% of the cases the width equals 3 points, and in 1% of the cases it is either 4 (1 case) or 11 points (1 case).

Table 2. *En primeur* prices and Parker grades

	# of obs.	Mean	Std. dev.	Min	Max
			2001 vintage		
Grade	158	88.52	2.42	82.5	97
Price	233	19.01	17.86	4	125
			2002 vintage		
Grade	121	89.40	2.19	86	96.5
Price	233	15.65	13.23	3.93	98.14

Notes: The grades correspond to the midpoints of the grade intervals.

The prices are per bottle of 75cl, in 2002-euros.

The price statistics are based on all 233 observations in our sample. The grade statistics for the 2001 vintage are based on the 158 wines (in our sample) that were evaluated by Robert Parker in the spring of 2002, while those for the 2002 vintage are based on the 121 wines tasted in the late summer of 2003. As the table shows, the wines from the 2002 vintage received grades that are on average only slightly higher than those received by the wines from the 2001 vintage. Apparently, both vintages were deemed of similar quality. The two vintages differ however markedly in their prices. On average, the 2001 vintage is priced more than 3 euros higher than the 2002 vintage; the variance of the price for the 2001 vintage is also much higher than the one for the 2002 vintage.

Recall that in 2002 the prices (2001 vintage) were established after publication of the Parker grades, while in 2003 the prices (2002 vintage) were determined before the grades were revealed. We expect therefore that the correlation between grades and prices is stronger for the 2001 vintage than for the 2002 vintage. This is indeed the case. We find that Spearman's correlation coefficient equals 0.74 for the 2001 vintage and 0.64 for the 2002 vintage.[9]

3 Estimating the Parker effect

In this section we give the precise definition of the Parker effect, explain how it can be estimated, and present the empirical estimates. The Parker effect will be defined by adopting the counterfactual framework pioneered by Rubin (1974). Let $D_i(t)$ be the treatment status indicator for observation i, for $i = 1, ..., N$, in year t, for $t = 2002, 2003$. Thus $D_i(t) = 1$ if wine i is graded in year t, and $D_i(t) = 0$ otherwise. Note that since Robert Parker did not grade the 2002 vintage in the spring of 2003, we have $D_i(2003) = 0$ for all i. Let $P_{i0}(t)$ represent the price for wine i in case it is not graded in year t (wine i in the control group at t), and let $P_{i1}(t)$ be the price in case the wine is graded (wine i in the treatment group at t). Finally, let $P_i(t)$ be the realized price, i.e., $P_i(t) = D_i(t)P_{i1}(t) + (1 - D_i(t))P_{i0}(t)$. Note that $P_i(2003) = P_{i0}(2003)$ for all i. We assume that the treatment of observation i does not affect the outcomes of other observations. In the treatment

[9]The Pearson's correlation coefficients are 0.64 for the 2001 vintage and 0.62 for the 2002 vintage.

literature this assumption is known as the Stable Unit Treatment Value Assumption (see Rubin (1980)). SUTVA is practically always made in empirical evaluation studies (one exception that we are aware of is Heckman, Lochner and Taber (1998)). We shall do likewise but acknowledge that the assumption may be quite strong in our particular context. Indeed, SUTVA rules out any interference or relationship between observations. SUTVA thus excludes, for instance, that the grading of a particular château influences the wine prices set by other châteaux owners (through general-equilibrium or imitation effects).

A natural definition of the Parker effect for wine i is the difference $P_{i1}(2002) - P_{i0}(2002)$. Since the 2 potential outcomes, $P_{i0}(2002)$ and $P_{i1}(2002)$, cannot both be observed (since in 2002, wine i is either in the control group or in the treatment group), it is impossible to calculate wine-specific Parker effects. This is a fundamental problem in the evaluation of treatments in general. Since it is not possible to determine individual treatment effects, the literature has focussed its attention on estimating average treatment effects, such as the average treatment effect on the treated (see Heckman (1990), Wooldridge (2002, chapter 18), Abadie (2003)). In our context this parameter is

$$ATET \equiv E[P_{i1}(2002) - P_{i0}(2002)|D_i(2002) = 1] \tag{1}$$

which is the expected Parker effect for those wines that were graded in 2002. For what follows, it is useful to give the mean prices and standard errors, for both vintages, according to whether the wines are in the control or treatment group in 2002. This is done in Table 3.

Table 3. Mean prices (standard errors) in control and treatment groups

	Control group ($D(2002) = 0$)	Treatment group ($D(2002) = 1$)
$t = 2002$	12.27 (7.32)	22.22 (20.35)
$t = 2003$	10.80 (5.94)	17.95 (15.01)

The effect (1) is not identified from the data in the sense that it is not possible to construct a sample counterpart for the counterfactual expectation $E[P_{i0}(2002)|D_i(2002) = 1]$. A possible identifying restriction is: $E[P_{i0}(2002)|D_i(2002) = 1] = E[P_{i0}(2002)|D_i(2002) = 0]$. Under this assumption the counterfactual expectation is identified since $E[P_{i0}(2002)|D_i(2002) = 0] = E[P_i(2002)|D_i(2002) = 0]$. The last expectation can be estimated consistently from the data (as Table 3 shows, the estimate is 12.27). The restriction is, however, very strong in our context as Parker is more likely to grade the prestigious high-quality wines than the low-quality wines. In the absence of treatment, the expected wine price is therefore probably higher in the treatment group than in the control group. Indirect evidence for this selectivity bias comes from Table 3, where the estimate of $E[P_{i0}(2003)|D_i(2002) = 1] = E[P_i(2003)|D_i(2002) = 1]$ is shown to be much higher than the estimate of $E[P_{i0}(2003)|D_i(2002) = 0] = E[P_i(2003)|D_i(2002) = 0]$ (17.95 vs 10.80).

Fortunately the $ATET$ is also identified under the following, much weaker, "parallel trend" restriction

$$E[P_{i0}(2002) - P_{i0}(2003)|D_i(2002) = 0] = E[P_{i0}(2002) - P_{i0}(2003)|D_i(2002) = 1] \quad (2)$$

Restriction (2) states that, in the absence of treatment, the expected price-evolution would have been the same for the wines in the control group and the wines in the treatment group. It is essentially the same as the identification restriction considered by Heckman, Ichimura and Todd (1997), and Abadie (2003).[10] Under restriction (2), the $ATET$ can be rewritten as (see Heckman, Ichimura and Todd (1997), and Abadie (2003))

$$ATET = E[P_i(2002) - P_i(2003)|D_i(2002) = 1] - E[P_i(2002) - P_i(2003)|D_i(2002) = 0] \quad (3)$$

An estimate of the $ATET$ can be obtained by replacing the expectations in (3) by the corresponding sample averages given in Table 3.[11] This leads to the estimate $\widehat{ATET} = (22.22 - 17.95) - (12.27 - 10.80) = 2.80$ euros. The standard error of the estimate equals 0.52, so the effect we find is strongly significant. Estimating the $ATET$ by the rank of the wine shows that the Parker effect increases with ranking. For instance, we find a Parker effect of 3.73 (1.08) for the top classified wines[12] versus only 2.18 (0.59) for the remaining less prestigious wines. Table 4 reports the estimates of $ATET$ by appellation. We only give the results for the cases with a sufficient number of observations. The estimates are always positive except for Pessac-Léognan, but for this appellation the effect is not significant. Note that the largest ATET is obtained for Pomerol, which is actually one of the appellations that Robert Parker likes the most.[13]

[10] Although they also consider a framework with two time periods, say $t = 0$ and $t = 1$, the treatment in their model is only administered in period 1 and never in the initial period 0. Thus in their setting $D_i(0) = 0$ for all i, $D_i(1) = 1$ for the treated and $D_i(1) = 0$ for the untreated.

[11] This estimator is sometimes called the "difference-in-differences estimator". This can be seen by considering the regression model $P_i(t) = \delta(t) + \alpha D_i(t) + \eta_i + v_i(t)$, where $\delta(t)$ is a time-specific component, η_i a wine-specific component, and $v_i(t)$ a transitory shock with mean zero at each period. Differencing, and using that $D_i(2003) = 0$ for all i, we get $P_i(2002) - P_i(2003) = \delta + \alpha D_i(2002) + (v_i(2002) - v_i(2003))$, where $\delta = \delta(2002) - \delta(2003)$. Under the assumption that $v_i(2002) - v_i(2003)$ is uncorrelated with $D_i(2002)$, the OLS estimator of α converges to the $ATET$.

[12] The group of wines with the following ranking: 1er Cru Classé, 2ème Cru Classé, 3ème Cru Classé, 4ème Cru Classé, 5ème Cru Classé, 1er Grand Cru Classé A, and 1er Grand Cru Classé B.

[13] All above conclusions remain completely unchanged when the analysis is in logs (i.e., all prices defined in logs instead of levels). For instance, the ATET in logs is 0.057 (0.013).

Table 4. Estimates of ATET by appellation

Appellation	# of obs.	Est. (std. error)
Haut-Médoc	16	0.42 (0.29)
Margaux	24	3.53 (1.72)*
Pauillac	19	6.19 (2.45)*
Pessac-Léognan	26	−0.04 (0.95)
Pomerol	15	8.97 (2.89)*
St-Emilion Grand Cru	51	3.85 (1.27)*
St-Estephe	9	1.32 (0.75)
St-Julien	13	1.36 (0.75)
Sauternes	13	2.78 (0.87)*

Note: *significant at the 5% level.

The ATET is an aggregate and overall measure of the Parker effect as it is the average of grade-specific Parker effects. It is also of interest to study these grade-specific Parker effects. To define these parameters, let $P_{ig}(t)$ now denote the price in year t had wine i been attributed the grade g, and $P_{i0}(t)$ (as before) the price when the wine is not graded. Let $D_i(t) = g$ if wine i has received the grade g, and $D_i(t) = 0$ (as before) in the absence of treatment. The grade-specific Parker effect is defined as the average treatment effect on the treated at level g:

$$ATET(g) \equiv E[P_{ig}(2002) - P_{i0}(2002)|D_i(2002) = g] \tag{4}$$

Under an identifying assumption analogous to (2),[14] the $ATET(g)$ can be rewritten as

$$ATET(g) = E[P_i(2002) - P_i(2003)|D_i(2002) = g] - E[P_i(2002) - P_i(2003)|D_i(2002) = 0] \tag{5}$$

The second expectation can still be estimated by taking the difference of appropriate sample means, and the first expectation can be estimated using kernel estimation methods. We have

$$\widehat{ATET}(g) = \frac{\sum_{i=1}^{N_1} (P_i(2002) - P_i(2003)) K\left(\frac{D_i(2002)-g}{h}\right)}{\sum_{i=1}^{N_1} K\left(\frac{D_i(2002)-g}{h}\right)} - (12.27 - 10.80) \tag{6}$$

where $K(u) = 0.75\,(1-u^2)\,\mathbf{1}_{\{|u|\leq 1\}}$ is the Epanechnikov kernel function, $\mathbf{1}_{\{\cdot\}}$ the indicator function equal to one if the statement between brackets is true and zero otherwise, h the bandwidth parameter, and N_1 the number of observations in the subsample of wines graded in the spring of 2002 (i.e., $N_1 = 158$). The grades $D_i(2002)$, $i = 1, ..., N_1$, are defined as the midpoints of the grade intervals published in *The Wine Advocate*.[15] The value of the bandwidth parameter is chosen according to

[14] The restriction that identifies $ATET(g)$ is $E[P_{i0}(2002) - P_{i0}(2003)|D_i(2002) = 0] = E[P_{i0}(2002) - P_{i0}(2003)|D_i(2002) = g]$.

[15] We have also calculated estimates of $ATET(g)$ by drawing each grade randomly in its corresponding grade interval, but the resulting graphs were very similar to the ones reported below.

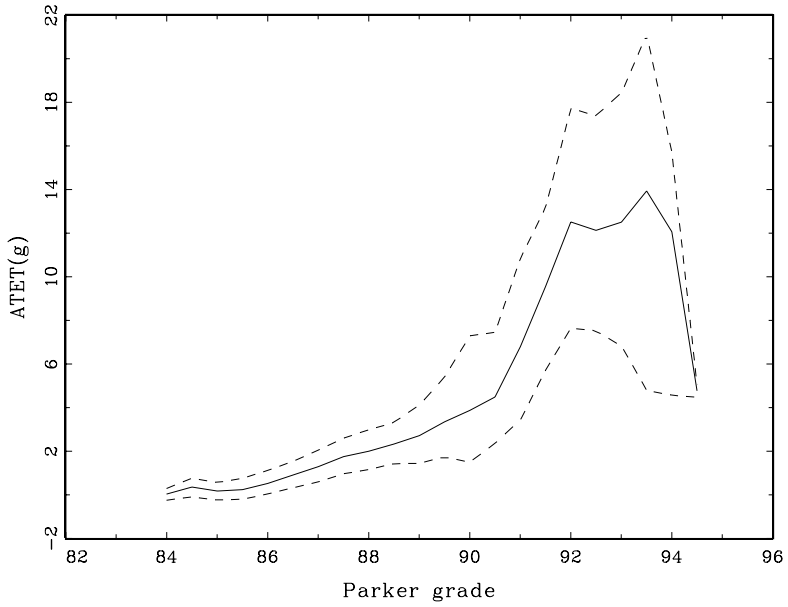

Figure 1: The estimation of $ATET(g)$

Silverman's rule of thumb (see Silverman (1986)): $h = 0.9\ min\left(\sigma, (q_{75} - q_{25})/1.349\right) N_1^{-\frac{1}{5}}$, where σ is the standard deviation of the grades, and q_{25} and q_{75} are the 25th and 75th percentiles. Applying this rule and using that $\sigma = 2.42$, $q_{25} = 86.5$ and $q_{75} = 90$, we find $h = 0.791$. Figure 1 shows the graph of $\widehat{ATET}(g)$ together with the 95% point-wise confidence band (see Härdle (1990)). The estimates of $ATET(g)$ tend to increase with the grade, starting around zero for $g = 84$ and the maximum is around 14 euros for $g = 93.5$. Note that the null hypothesis "$ATET(g) = 0$" is accepted for grades below 86, but is rejected for grades beyond that value.

Our estimates $\widehat{ATET}(g)$ are useful to determine what the wine prices would have been had Parker graded the 2002 vintage in the spring of 2003. For this exercise we use the grades assigned in September 2003 (see Table 2), and assume that these grades coincide with the ones Parker would have given in the spring. We argued in Section 2 that this is a reasonable assumption. Let $g_i, i = 1, ..., 121$, denote the grades attributed in September 2003. The predicted *en primeur* prices in 2003, $\widehat{P}_{i1}(2003)$, can be written as

$$\widehat{P}_{i1}(2003) = P_{i0}(2003) + \widehat{ATET}(g_i), i = 1, ..., 121$$

Figure 2 shows, for all 121 wines actually graded in September 2003, the actual prices $P_{i0}(2003)$ and the predicted prices $\widehat{P}_{i1}(2003)$. The horizontal axis lists the 121 wines ranked according to their actual prices in 2003. Since $\widehat{ATET}(g)$ is either zero or strictly positive, the predicted prices are always equal or above the actual prices in 2003. The difference between the two series of prices is sometimes substantial (up to around 10 euros), and is apparently not related to the actual 2003 price.

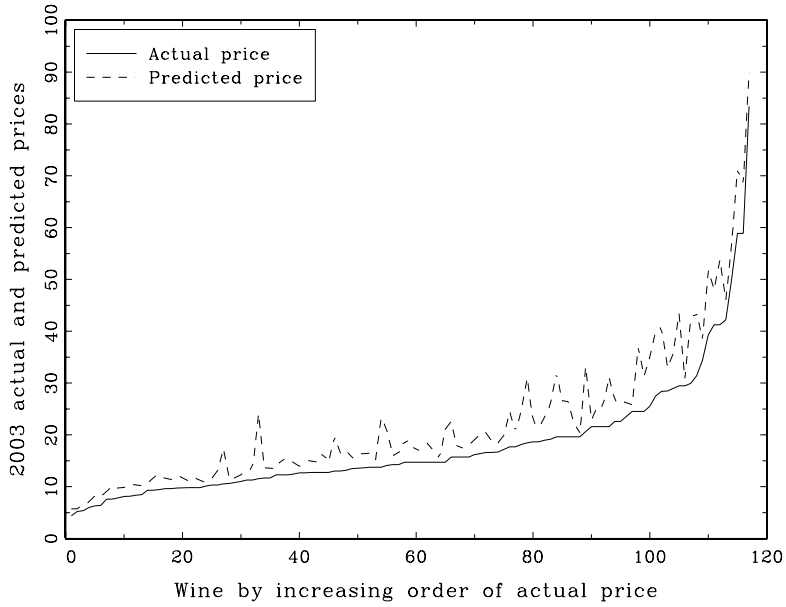

Figure 2: Actual and predicted prices in 2003

4 Conclusion

This paper measures the effect of Robert Parker's oenological grades on *en primeur* wine prices. We exploit the fact that in 2003 the prices were determined before publication of these grades, whereas in all previous years the revelation of the grades preceded the price determination. This unusual reversal allows us to estimate a treatment effect under relatively weak assumptions. Unlike what is stated by Robert Parker ("I doubt that if I had reviewed the wines six months earlier there would have been any change in their pricing, which, by comparison to recent Bordeaux vintages (1995-2000), is extremely low." *The Wine Advocate*, October 2003), we find an overall effect equal to almost 3 euros per bottle of wine. Our estimates of the grade-specific effects show that the impact of the famous wine expert is very important for the highly graded wines. The impact tends to zero for the lowly graded wines, but without actually turning negative.

References

[1] Abadie, A. (2003), "Semiparametric difference-in-difference estimators," Working Paper, Harvard University, forthcoming in *Review of Economic Studies*.

[2] Ashenfelter, O. and G. Jones (2000), "The demand for expert opinion: Bordeaux wine," *Les Cahiers de l'OCVE*, 3, 1-17.

[3] Bauwens, L. and V. Ginsburgh (2000), "Art experts and auctions. Are pre-sale estimates unbiased and fully informative?," *Louvain Economic Review*, 66, 131-144.

[4] Combris, P., S. Lecocq and M. Visser (1997), "Estimation of a hedonic price equation for Bordeaux wine: does quality matter?," *Economic Journal,* 107, 390-402.

[5] Février, P., W. Roos and M. Visser (2003), "The buyer's option in multi-unit ascending auctions: the case of wine auctions at Drouot," Working Paper #2003-03, CREST, forthcoming in *Journal of Economics & Management Strategy*.

[6] Ginsburgh, V. (2003), "Awards, success and aesthetic quality in the arts," *Journal of Economic Perspectives*, 17, 99-111.

[7] Hadj Ali, H. (2002), "La commercialisation des vins *en primeur*," PhD Thesis, University of Toulouse.

[8] Hadj Ali, H. and C. Nauges (2002), "Reputation and quality effects on wine prices: a comparison between *en primeur* and bottled Bordeaux wine," Working Paper, INRA-LEERNA.

[9] Härdle, W. (1990), *Applied Nonparametric Regression*. Cambridge, Massachussets: Cambridge University Press.

[10] Heckman, J.J. (1990), "Varieties of selection bias," *American Economic Review, Papers and Proceedings*, 80, 313-318.

[11] Heckman, J.J., H. Ichimura and P.E. Todd (1997), "Matching as an econometric evaluation estimator: evidence from evaluating a job training programme," *Review of Economic Studies*, 64, 605-654.

[12] Heckman, J.J., L. Lochner and C. Taber (1998), "General-equilibrium treatment effects: a study of tuition policy," *American Economic Review, Papers and Proceedings*, 88, 381-386.

[13] Keane, M. and D. Runkle (1998), "Are financial analysts' forecasts of corporate profits rational?," *Journal of Political Economy*, 106, 768-805.

[14] Lamont, O. (2002), "Macroeconomic forecasts and microeconomic forecasters," *Journal of Economic Behavior and Organization*, 48, 265-280.

[15] Lecocq, S., T. Magnac, M.-C. Pichery and M. Visser (2004), "The impact of information on wine auction prices: results of an experiment," forthcoming in *Annales d'Economie et de Statistique*.

[16] Rubin, D.B. (1974), "Estimating causal effects of treatments in randomized and nonrandomized studies," *Journal of Educational Psychology*, 66, 688-701.

[17] Rubin, D.B. (1980), "Discussion of paper by D. Basu," *Journal of the American Statistical Association*, 75, 591-593.

[18] Silverman, B.W. (1986), *Density Estimation for Statistics and Data Analysis*. London: Chapman and Hall.

[19] Wooldridge, J.M. (2002), *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Massachussets: The MIT Press.

Table 1. Descriptive statistics

Ranking		Appellation	
1er Cru Classé	5.15	Haut-Médoc	6.87
2ème Cru Classé	8.58	Lalande-de-Pomerol	2.58
3ème Cru Classé	4.29	Listrac	1.29
4ème Cru Classé	3.86	Margaux	10.30
5ème Cru Classé	6.44	Médoc	0.43
Cru Bourgeois	14.16	Montagne-St-Emilion	1.72
1er Grand Cru Classé A	0.43	Moulis	1.72
1er Grand Cru Classé B	2.15	Pauillac	8.15
Grand Cru Classé	9.44	Pessac-Léognan	11.16
Cru Classé	6.01	Pomerol	6.44
Cru Non Classé	39.48	1ères Côtes de Blaye	0.86
Appellation		1ères Côtes de Bordeaux	0.43
Barsac	1.29	Puisseguin-St-Emilion	0.86
Bordeaux Blanc	2.15	St-Emilion Grand Cru	21.89
Bordeaux Supérieur	0.43	St-Estephe	3.86
Côtes de Castillon	2.58	St-Georges St-Emilion	0.43
Fronsac	1.29	St-Julien	5.58
Graves Blanc	1.29	Sauternes	5.58
Graves Rouge	0.86		

Note: The descriptive statistics are based on the sample of 233 châteaux and give for each variable the percentage of observations that is equal to one.