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Determinants of Argentinean Wine Prices in the U.S. Market

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Abstract

A hedonic price function for Argentinean wines in the U.S market is estimated in order to evaluate the effect of the most important attributes of wine on price. Results show that labeling practices and the choice of the right wine quality attributes are far more influential on price than expert panel opinions or oenological wine improvements such as aging.

Keywords: Hedonic function, percentage impact, marginal price.

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I. Introduction

Argentina is the fifth largest wine producer of the world with an annual production of 15.4 million hectoliters. The country is placed after France (57.4 million hectoliters), Italy (53.0 million hectoliters), Spain (42.9 million hectoliters) and USA (20.1 million hectoliters) (OIV, 2004).

Argentinean wine exports have been growing tremendously over the past decades, from US$ 15.2 million in 1990 to slightly above US$ 300 million in 2005, i.e. 1,900 % growth during that period (INV, 2006). During the same time span total trade grew at a significantly lower rate (251 %) (FAO, 2007), which allows to identify the wine industry as one of the sectors of the economy that contributes the most in positioning Argentina in the global economy. As recognition of the strategic importance of the wine industry for trade, the Argentinean Government established in 2004 the "Plan Estratégico Vitivinícola 2020" (*Wine Strategic Plan 2020)* that aims at increasing the value of exports to the target figure of US$ 2,000 million by the year 2020. The industry is currently exporting to all five continents, but the most important markets for Argentinean wines are the United States of America (US$66.5 million, in 2006), the United Kingdom (US$30.4 million), Canada (US$24.2 million), Brazil (US$24.6 million) and Denmark (US$15.5 million) (Diario del Vino, 2008).

Despite the strategic position of wine in the globalization of the economy of Argentina, no local or international research has been carried out to assess the value attached to Argentinean wine quality attributes in international markets. Indeed, this assessment can significantly contribute to design a marketing strategy for wines of this country and secure the commercial success. This research aims at filling this gap for the most important market for Argentinean wines: the U.S. market. Thus, we estimate a hedonic price function for wine exports to the U.S. in order to gain insight into the implicit marginal valuation of each quality attribute. The selection of quality-relevant attributes is based on the literature review presented in the subsequent section. The methodological framework and the data are explored in section III before the results of the estimations are discussed in section IV. Finally, the last section presents the major conclusions and implications of our research.

II. Literature review

The central idea in hedonic price theory, which goes back to the iconic paper by Rosen[1] (1974), is that goods are valued in the markets for their utility-generating attributes. Hence, goods are thought of as composites from these attributes. Rosen suggests that competitive markets for these attributes define implicit prices for the relevant embodied product attributes, and consumers evaluate these attributes when they do a purchase. The observed market price is then equal to the sum of the implicit prices given to each quality characteristic. The method used in most of the scientific literature is a practical derivation of what Rosen proposed, but not exactly the same. The selection of all relevant quality attributes depends on the composite good in question. The existing literature on wine in general suggests several attributes, which can be grouped into characteristics which are under the control of the winery, and those, which are not, i.e, they are exogeneous factors for each winery.

Among the latter characteristics, the influence of weather as a determinant of wine prices was analyzed by Ashenfelter et al. (1995), Di Vittorio and Ginsburgh (1995) and Wood and Anderson (2002), who identified an important role of weather conditions on the price determination, while Haeger and Storchmann (2006), working specifically with Pinot Noir, concluded that the most important wine price determinants are weather variables, temperature and rainfall specifically. Another possibly important attribute at the group level is the geographic origin, although the existing literature does not convey a uniform picture about the impact of differentiation by origin on the price. On the one hand, Nerlove (1995) found that the origin of wine has no significant influence on price, and Steiner (2004) found a low valuation of French wines with geographical appellation in United Kingdom. On the other hand, several authors found quite different results. Schamel (2000, 2004), Schamel and Anderson (2003) and Troncoso (2006) observed an important influence of the region of origin on price. Schamel and Anderson (2003) added that in Australia the regional reputations have become increasingly differentiated through time. In particular, cool climate regions are preferred to other regions. Steiner (2004)

[1] Rosen was not the first author to work with hedonic regressions but his paper is an important and iconic contribution the theory of hedonic prices.

concluded that the low valuation of French wines with geographical appellation might help to explain the overall decline of France's role in the British wine market.

Since the sensory quality of the wine can only be experienced after purchase in the course of consumption (Schamel and Anderson, 2003), wine is a typical experience good[2]. Hence, reputation is one of the most important channels to help overcoming the informational asymmetry associated with experience goods. Reputation could be affected in two different ways. First, and probably at least partially under the control of the winery, reputation might be conveyed directly through the producer and/or brand name to consumers. In the literature, di Vittorio and Ginsburgh (1995), Schamel (2000), Oczkowski (2001) and Lecocq and Visser (2006) used this approach in the price regressions and found an important influence of this variable on price. Second, reputation rankings assigned by an expert, with respect we assume to be out of the direct control of the winery might play a role. E.g., Lima (2006) working with observations from American tasting events found that the San Francisco Fair appears to be the best predictor of quality with the Dallas Morning News tasting second best. Schamel (2004) concluded that quality awards have a significant and positive price impact.

The positive influence of sensory qualities as judged by experts has been demonstrated by numerous authors, e.g., Nerlove (1995), Di Vittorio and Ginsburgh (1995), Combris et al. (1997), Schamel (2000 and 2004), Schamel and Anderson (2003), Haeger and Storchmann (2006), Lecocq and Visser (2006) and Troncoso (2006). The influence of some experts' ratings on the price is so important that it has inspired a new term: Wine Parkerization. Wine Parkerization refers to the stylization of wines by some wineries to please the taste of the influential wine critic Robert M. Parker Jr. (Wikipedia, 2007). However Combris et al. (1997), Lecocq and Visser (2001, 2006), Haeger and Storchmann (2006), and Troncoso (2006) have found that compared to the objectives characteristics of wine the influence of sensory qualities is relatively less important. Oczkowski (2001) went further and concluded that reputation effects have a significant influence on price while the influence of quality is insignificant.

Among the variables under control of the winery, the quantity supplied is another attribute with potential explanatory power for the price. Di Vittorio and Ginsburgh (1995)

[2] Some quality attributes like organic production etc. could also be viewed as credence goods.

concluded that the price of a standard quantity of wine was negatively related to the quantity sold in the lot, while Lima (2006) found that the increased production of wine of a given quality will tend to lower the price. The impact of the quantity of wine produced is also proxied through the aging variable, because the scarcity of a particular wine increases with the time. The variable aging was generally found to have a positive impact on price (di Vittorio and Ginsburgh, 1995, Wood and Anderson, 2002, Troncoso, 2006). Di Vittorio and Ginsburgh (1995) estimated that aging increased wine prices by about 3.7 % per year of age, while Troncoso (2006) puts the number at 5.6%.

Finally, the impact of the chosen variety has found some attention in the literature. Troncoso (2006) estimated a positive impact of the grape variety on the purchase price while Steiner (2004) could not find a consistent pattern regarding the price impact of French varietal wines in the British market.

III. Data and methodology

The data was obtained from the database of the digital version of the Wine Spectator magazine that contains ratings of thousands of wines from all over the world (Wine Spectator, 2006). The wines from Wine Spectator are blind-tasted by a panel of experts, following a very strict procedure to eliminate any subjective influence. The data was processed using the program R for statistical computing (R Development Core Team, 2006).

All the Argentinean wines were selected as possibly relevant in our context, resulting in 1,602 observations. However, this number was reduced to a final sample size of 1,102 observations, as outliers and observations with missing values were dropped. The sample contains wines from 1977 to 2005. For each observation the database provides the following variables: ‘retail price’, ‘sensory quality rating’, ‘quantity of cases made’, ‘vintage year’, ‘region of origin’, ‘producer name’, ‘special descriptors’ and ‘grape variety’. The ‘score’ is provided as a sensory quality rating in a 100-point scale, according to the assessments made by the panel of experts of Wine. The variable ‘special descriptors’ refers to certain quality categories that appear on the label of a bottle of wine. These descriptors do not follow an internationally accepted classification system, but

each winery uses its own categories, aiming at differentiating its wines from the competition. Four descriptors were identified in the sample, which are, in an ascending order of quality: 'Selección' (Selection), 'Alta' (High), 'Reserva' (Reserve) and 'Gran Reserva' (Gran Reserve). The variable 'producer' was used to identify the 38 main exporter wineries of Argentina, to capture a possible brand loyalty from the part of consumers. The remaining variables are self-explanatory. Prices were all expressed in constant 2005 US dollars per bottle, using the American CPI for food and beverages as deflator (USA Department of Labor, 2007).

Six additional variables were defined based on the information in the database: 'Aging', 'Consignment available on the label', 'Membership to Wines of Argentina', 'Level of regionalization', 'Producer', 'Instrumental 1' and 'Instrumental 2'.

The variable 'aging' was estimated as the difference between the date of releasing the wine to the market and the vintage year. In the price regression, a squared term ('$Aging^2$') was included in order to allow for a non-linear effect of time on price over the wine life period.

Some wine companies include information on the number of cases produced on the labels of their best wines. This information might have two different effects. On the one hand, the quantity of cases produced should be inversely related to price, as higher quantities placed in the market should depress the price. On the other hand, the mere existence of this information on the label might add reputation to a particular wine and, thus increase its price. To capture these effects, the information on the number of cases was used two construct two different variables, 'consignment', which is the actual number, and 'consignment available', which is a binary variable which indicates whether the information was included on the label or not. The first variable is intended to capture the quantity effect while the dummy variable proxies the reputation.

'Wines of Argentina' is a private organization whose objective is the promotion of the generic brand "Wines of Argentina". This organization is involved, jointly with the government, in carrying out the *Wine Strategic Plan 2020* that aims at increasing the presence of Argentinean wine in world markets. Eventually, membership to this organization might enhance the reputation of the companies involved, so a variable ('Club') to capture this possible effect was included in the model.

The producer region is presented in various forms on the label of a bottle. Two sets of dummies variables are related with this aspect. First, the 'region of origin' considers a set of dummies variables including the main wine provinces of Argentina (Mendoza, San Juan and Salta). And second, the variable 'level of regionalization' tries to capture through another set of dummies variables if while the more specific the origin of the wine, more the premium price that it receives. In the most common case, only the province of Argentina where the vineyard is located is mentioned, but there are also cases where the names of the valley and/or the vineyard appear on the label. The latter case occurs when the company believes to have reached a certain status of differentiation in the market and claims (or attempts to claim) a price premium. Thus, the variable 'level of regionalization' was introduced to separate the possible price effect of specifying (or not) the valley, the district, the nearest town and the vineyard's name, on the label.

An overview of the variable definitions in the model is shown in Table 1.

[Table 1 about here]

The hedonic price regression is shown in equation (1). The dependent variable is the price per bottle in the U.S. market and the regressors are defined as outlined above.

$$\ln P_{USA}=\alpha_0+\alpha_1 Score+\alpha_2 Consignment+\alpha_3 ConsignmentA+\alpha_4 Aging+\alpha_5 Aging^2+\alpha_6 Club+\alpha_7 Region+\alpha_8 Level+\alpha_9 Producer+\alpha_{10} Descriptor+\alpha_{11} Variety+\varepsilon \quad (1)$$

Although tasting experts follow a very strict procedure to be as objective as possible, the subjective influence can not be eliminated completely; so it is suspected that the 'score' or sensory quality rating might be measured with error, possibly introducing an endogeneity bias in equation (1). This suspicion could not be rejected when running a Hausman-type regression test[3] (Wooldridge, 2006). To avoid this problem and following Oczkowski (2001), a 2SLS estimation procedure was employed, using three additional variables, 'vintage year', 'instrumental 1' and 'instrumental 2' as instruments (equation 2). The 'instrumental 1' variable was defined as the average score of all the wines of

[3] The regression test was carried out in the following way: First, the independent and the instrumental variables, excepting the variables suspected of endogeneity, were regressed on score. Second, all the independent variables, including score, and the residuals from the first regression were regressed on the natural logarithm of the price. The residuals had a significant effect on price, confirming the endogeneous nature of score. For more information see Wooldridge (2006).

older vintages and of the same vintage, but tasted before the observation under consideration. The latter variable ('instrumental 2') was defined as the average score of all the wines which belong to the same region of the wine in consideration, and that were tasted before this particular wine.

$$Score=\alpha_0 + \alpha_1 Vintage + \alpha_2 Instrumental1 + \alpha_3 Instrumental2 + \alpha_4 Consignment + \alpha_5 ConsignmentA + \alpha_6 Aging + \alpha_7 Aging^2 + \alpha_8 Club + \alpha_9 Region + \alpha_{10} Level + \alpha_{11} Producer + \alpha_{12} Descriptor + \alpha_{13} Variety + \varepsilon \quad (2)$$

The Breusch-Pagan test was carried out to detect heteroskedasticity. To avoid perfect multicollinearity between the dummy variables, a variable had to be omitted in each group of dummy variables[4]. Hence, results should be interpreted as deviations against a bottle of Cabernet Sauvignon with no special descriptors from the province of Mendoza, produced by a vineyard that is member of "Wines of Argentina".

In log-linear functions the coefficient of a continuous variable is a derivative, that multiplied by 100 can be interpreted as the percentage change of the dependent variable due to a small change in the continuous variable (Halvorsen and Palmquist, 1980). In the case of dummy variables, their dichotomous nature impedes the interpretation of the coefficients as derivatives, but the impact can be estimated as proposed by Kennedy (1981). Thus:

$$p_j = \begin{cases} 100\alpha_j & \text{for continuous j} \\ 100\left[\exp\left(\alpha_j - 0.5\sigma^2_{\alpha_j}\right) - 1\right] & \text{for dichotomous j} \end{cases} \quad (2)$$

where:

- p_j: is the percentage impact of the j-th variable on price, and
- α_j: is the estimated coefficient of the j-th variable
- $var(\alpha_j)$: is the variance of the estimated coefficient of the j-th dummy variable.

[4] Thus, all dummy coefficients have to be interpreted against the following references: Cabernet Sauvignon, for 'variety'; Mendoza, for 'region of origin'; with the indication of the province, for 'level of regionalization'; association of the vineyard to "Wines of Argentina", for 'club' and absence of a particular descriptor, for 'special descriptors'.

Expression (2) allows the estimation of the marginal price of each variable. Thus, the marginal price of the j-th continuous and dummy variables, m_j is $m_j = p_j * R$, where R is the price of the reference wine.

IV. Discussion

The sample includes wines priced from US$ 5.13 to US$ 150.05, with an average of US$ 17.24, per 750 ml bottle. Aging ranges from 0 to 24 years, with an average of 2.2 years, and quality scores go from 64 to 96 points, with an average of 83.6. The average consignment was 12,363 cases, with a minimum of 18 cases and a maximum of 250,000 cases.

On average, a bottle of Cabernet Sauvignon with no special descriptors, from the province of Mendoza, produced by the 'reference producer', member of "Wines of Argentina", has an age of about 2.2, a score of 86.8 points and is sold at a retail price of US$ 21.49 (reference wine). The average consignment is of 26,100 cases.

Table 2 shows the regression results based on the 2SLS estimates. Diagnostic testing of the assumptions regarding the residuals indicates heteroskedasticity since the Breusch-Pagan test statistic takes a value of 493.6. Therefore, heteroskedasticity-consistent standard errors (HCSE) are reported in Table 2. The coefficient of determination shows that the variation of the regressors explains the 67.8 % of the variability in logarithmic retail prices. For all coefficients that are statistically different from zero at the 5% level, both the percentage impact and the corresponding standard error of the percentage impact are reported in the last two columns of Table 2.

[Table 2 about here]

The variables with the most important (positive or negative) impact on price are the 'grape variety', the 'level of regionalization', the 'name of the producer', 'aging', and the 'special descriptors'. Quality 'score', 'aging^2', 'consignment' and 'consignment available', although statistically significant, have a relatively minor effect on price. 'Consignment' shows, as expected, a negative relationship with price. Thus, one additional case placed in the market should depress price by 0.0005%, i.e. an increase of

10,000 cases is required to reduce price by 5%. Indeed, this makes sense in the huge American market. On the other hand, the simple fact of reporting the number of cases produced ('Consignment A') in the label is more significant, as it increases price by 9.1 %.

Figure 1 shows how the price of the reference wine changes with age. The reference wine reaches the maximum price (57.1 US$/bottle) with the age of 19 years. This figure clearly shows the quadratic relation the variable 'Aging'.

[Figure 1 about here]

With regard to the region of origin, and the level of regionalization, there is no statistical significant price effect observed by indicating the region of origin, or by the indication of the valley or the nearest town. However, the designation of a district and the designation of a vineyard receive a statistically significant price premium of 13.0 %, and 26.3 %, respectively. These results suggest that the American consumers do not distinguish between provinces in terms of the marginal valuation of Argentinean wine. Furthermore, they attach more value when the wine has a more specific location of origin on the label (i.e. designated vineyard).

Surprisingly, membership to Wines of Argentina is negatively associated to price. This result is contrary to a priori expectations, as the generic promotion of Argentinean wines should have a positive effect on price. However, data collection for this study began in 2005, only a year after the generic promotion of Argentinean wines was launched, which might simply be too early to capture the desired improvements in retail prices. Also, this result might reflect the effort being made by Wines of Argentina's associates to penetrate the American market, where reduced prices for wines of the association's members might serve as an investment into future market opportunities. Such price reductions will naturally not be shared by those firms which are not associated with this organization. Additionally, there might be a free-riding problem in the sense that even non-member firms might benefit from promotion measures which focus on the geographic origin of the wines, Argentina at large. In particular in the early phase of setting up such a generic advertisement system, consumers are unlikely to discriminate

arbitrary Argentinean Wines from those belonging to the label 'Wines of Argentina'. Nevertheless, the lack of positive price effects of the club membership should be analyzed further after allowing some time for the promotion campaign to yield effects.

In general, Table 2 shows that the retail price is quite sensitive to the variety, as practically all varieties exhibit two-digit positive or negative impacts. With the exception of "Tempranillo", for red wines, and "Chardonnay", for whites, varietal wines have negative coefficients; contrariwise, all blends have substantial positive price coefficients. These results are as expected since blending is a process of identifying and combining single varieties in terms of uniqueness and exquisiteness, traits that are presumably appreciated in the sophisticated wine market. It is noteworthy, however, that although blends with Malbec receive substantial price premia, the highest price differentials are attained by blends of Cabernet Sauvignon, combined with Malbec or other varieties. Although Malbec is the emblematic variety of Argentina, in the view of American consumers Argentinean oenologists do a better job when they include Cabernet Sauvignon in their blends.

Table 2 shows that, with one exception, compared with the 'reference producer', the rest of significant Argentinean producers receive price discounts instead of price premia.

Finally, price is also sensitive to special descriptors, as 'Alta' and 'Gran Reserva' receive a price premia of 39.7 % and 37.2 % respectively. However, while these descriptors have an important impact on price, the other two descriptors ('Reserva' and 'Selección') were not significant, which means that we cannot reject the null that these descriptors have no impact on prices. This suggests that the insignificant descriptors have no meaning for the American consumers, or if there is a meaning associated with these two descriptors, consumers are not willing to pay price premia for them. Note also that this variable is correlated to variety, as it is unlikely that a varietal wine will deserve a high-quality descriptor, and a blend a low-quality descriptor.

Table 3 reports the marginal prices for each characteristic. The major lesson to be drawn from the results is that labeling practices and the choice of the right wine quality attribute are far more influential on price than expert panel opinions or oenological wine improvements such as aging. Thus, a good label indicating the consignment (US$1.96),

the vineyard of origin (US$5.65) and description of the quality (US$7.99 for a 'Gran Reserva') of the wine can add as much as US$ 15.6 to the retail price to the reference price of US$21.49 a bottle. On the other hand, producing a good blend can increase the retail price in the range of US$6.64 to 19.68 a bottle, as well as going for varietals can *decrease* price in as much as US$6.16. This contrasts with the US$ 1 to be gained by each additional score point or the US$3.27 for each additional year of aging, over the 86.8 points and the 2.2 years of the reference wine, results difficult (and costly) to achieve.

[Table 3 about here]

V. Conclusions

In this study, the responsiveness of retail prices for Argentinean wines in the US market was analyzed by means of hedonic regression analysis. Our quantitative analysis of Argentinean wine exports to the US has indicated several ways along which better price positioning of Argentinean wines might be possible. Using a dataset compiled from Wine Spectator, we found that criteria like labeling, and choosing specific product characteristics which are immediately visible to the potential buyer, are key variables in the price determination. The impact of special descriptors on the label, however, was only substantial for half of the descriptors. Revision of the other descriptors should be considered since their use by the Argentinean wine industry seems not very well aligned with the internationally accepted descriptors. The retail price is also strongly affected by blends. The analysis suggests that the industry should prefer blends over varietals, especially those that include Malbec and Cabernet Sauvignon.

The finding of a negative impact of being a member in 'Wines of Argentina' was one of the most surprising results. The negative price differential is mainly connected to the fact that the generic advertisement campaign was only implemented in 2005 so that it is maybe too early to see a distinct impact in the target market. Future research will have to show whether this marketing program is helpful. However, due to the limitations of our study, this should not be viewed as a measure of the overall success of the program because this generic advertisement program is intended to increase the market share of Argentinean wine, which we cannot judge on the basis of our data.

Overall, the results of our analysis confirm that objective characteristics have a relatively stronger impact than subjective characteristics. The price of the experience good 'wine from Argentina' seems to be determined much more by the reputation which is conveyed through location, variety, and labeling, than by the score obtained from expert tastings.

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I. Figures and Tables

Table 1: Description of the variables employed in the model

Name	Identification name	Objective	Type of variable
Vintage Year	Vintage	Instrumental variables for the auxiliary regression	Dummy
Instrumental 1			Continuous
Instrumental 2			
Sensory Quality Rating	Score	Determinants of the structural equation	Continuous
Quantity of Cases Made	Consignment		
Consignment Available	Consignment A		Dummy
Aging			Continuous
$Aging^2$			
Membership to Wines of Argentina	Club		Dummy
Region of Origin	Region		
Level of Regionalization	Level		
Producer Name	Producer		
Special Descriptors	Descriptor		
Varieties	Variety		

Table 2: Results of the regression

Variables	Coefficient	Standard Errors	t-ratio	Signif. α=0.05	Percentage Impact (%)	Standard Deviation of Percentage Impact
Constant	-1.116	0.355	-3.1	**		
Score	0.045	0.003	14.2	**	4.5	0.316
Consignment	-0.000005	0.000001	-7.1	**	-0.0005	0.0001
Consignment available	0.091	0.028	3.2	**	9.1	2.828
Aging	0.152	0.020	7.6	**	15.2	2.000
$Aging^2$	-0.004	0.002	-2.0	**	-0.4	0.200
Level of Regionalization						
Valley's name	0.093	0.075	1.2			
District's name	0.124	0.052	2.4	**	13.0	5.870
Town's name	0.059	0.088	0.7			
Vineyard's name	0.235	0.059	4.0	**	26.3	7.464
Membership to Wines of Argentina						
Membership	-0.151	0.065	-2.3	**	-14.2	5.555
Region of Origin						
Salta	0.043	0.092	0.5			
San Juan	-0.138	0.087	-1.6			
Varieties						
Red Varieties						
Malbec	0.004	0.030	0.13			
Merlot	0.053	0.042	1.2			
Syrah	-0.076	0.037	-2.0	**	-7.4	3.464
Bonarda	-0.333	0.096	-3.5	**	-28.7	6.828

Tempranillo	0.198	0.091	2.2	**	21.4	10.971
Sangiovese	-0.128	0.067	-1.9	**	-12.2	5.882
Pinot Noir	0.118	0.088	1.3			
Other Red Varietals	-0.331	0.089	-3.7	**	-28.5	6.385
White Varieties						
Chardonnay	0.075	0.035	2.2	**	7.7	3.731
Sauvignon Blanc	0.043	0.073	0.6			
Torrontés	-0.035	0.054	-0.6			
Viognier	0.018	0.077	0.2			
Other White Varietals	-0.216	0.065	-3.3	**	-19.6	5.205
Blends						
Red Blends						
Only Malbec, Cabernet Sauvignon and Merlot	0.289	0.098	2.9	**	32.9	13.054
Only Malbec and Cabernet Sauvignon	0.277	0.126	2.2	**	30.9	16.386
Only Malbec and Syrah	-0.115	0.084	-1.4			
Only Cabernet Sauvignon and Syrah	-0.026	0.145	-0.2			
Malbec, Cabernet Sauvignon, Merlot and other varieties	0.672	0.210	3.2	**	91.6	39.701
Malbec, Cabernet Sauvignon and other varieties (not Merlot)	0.583	0.103	5.6	**	78.2	18.382
Malbec and other varieties (not Cabernet Sauvignon, Merlot and Syrah)	0.211	0.164	1.3			
Cabernet Sauvignon and other varieties (not Malbec, Merlot and Syrah)	0.631	0.259	2.4	**	81.7	46.332
White Blends						
Blends with Chardonnay (main variety)	-0.048	0.074	-0.6			
Blends with Sauvignon Blanc (main variety)	0.027	0.163	0.2			
Blends with Torrontés (main variety)	-0.035	0.105	-0.3			
Producers						
Producer 1	0.557	0.149	3.7	**	72.6	25.633
Producer 2	-0.205	0.104	-2.0	**	-19.0	8.398
Producer 3	-0.317	0.128	-2.5	**	-27.8	9.241
Producer 4	-0.380	0.085	-4.4	**	-31.9	5.811
Producer 5	-0.185	0.150	-1.2			
Producer 6	-0.213	0.129	-1.6			
Producer 7	-0.622	0.110	-5.7	**	-46.6	5.828
Producer 8	0.074	0.084	0.9			
Producer 9	-0.353	0.082	-4.3	**	-30.0	5.764
Producer 10	-0.379	0.099	-3.8	**	-31.9	6.727

Producer 11	-0.517	0.078	-6.6	**	-40.6	4.636
Producer 12	-0.239	0.084	-2.9	**	-21.5	6.553
Producer 13	-0.582	0.109	-5.3	**	-44.5	6.041
Producer 14	-0.321	0.088	-3.6	**	-27.7	6.369
Producer 15	-0.556	0.077	-7.2	**	-42.8	4.386
Producer 16	-0.374	0.097	-3.8	**	-31.5	6.658
Producer 17	-0.438	0.102	-4.3	**	-35.8	6.530
Producer 18	-0.423	0.114	-3.7	**	-34.9	7.369
Producer 19	-0.456	0.088	-5.2	**	-36.9	5.530
Producer 20	-0.105	0.110	-1.0			
Producer 21	0.207	0.132	1.6			
Producer 22	-0.222	0.130	-1.7			
Producer 23	-0.185	0.096	-1.9			
Producer 24	0.068	0.162	0.4			
Producer 25	-0.357	0.073	-4.9	**	-30.2	5.121
Producer 26	-0.401	0.102	-3.9	**	-33.4	6.808
Producer 27	-0.689	0.133	-5.2	**	-50.2	6.574
Producer 28	-0.169	0.101	-1.7			
Producer 29	-0.295	0.111	-2.7	**	-26.0	8.181
Producer 30	-0.130	0.149	-0.9			
Producer 31	-0.199	0.103	-1.9			
Producer 32	-0.097	0.155	-0.6			
Producer 33	-0.217	0.082	-2.7	**	-19.8	6.556
Producer 34	-0.494	0.096	-5.1	**	-39.3	5.843
Producer 35	0.229	0.163	1.4			
Producer 36	-0.487	0.091	-5.4	**	-38.8	5.530
Producer 37	-0.346	0.082	-4.2	**	-29.5	5.762
Producer 38	-0.667	0.124	-5.4	**	-49.1	6.316
Special Descriptors						
Alta	0.339	0.097	3.5	**	39.7	13.512
Reserva	0.027	0.037	0.7			
Gran Reserva	0.324	0.125	2.6	**	37.2	17.122
Selection	-0.076	0.099	-0.8			
R^2 =	0.678					
RSE =	0.3344					

Figure 1: Evolution of the price/bottle for the reference wine, according the 'Aging' variable

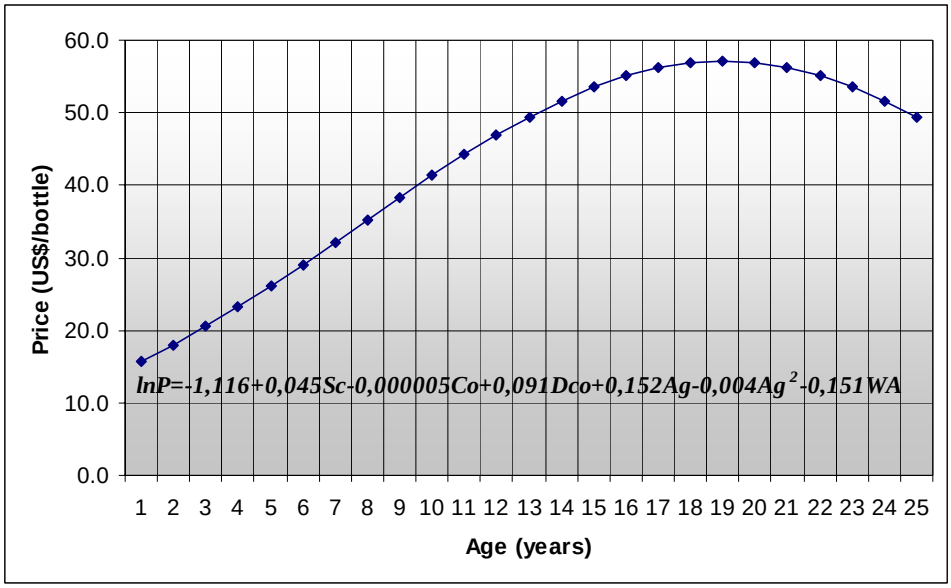

Table 3: Marginal prices for the significant variables in USA

Variables	Marginal price (US$/bottle)
Score	0.97
Consignment	-0.0001
Consignment available	1.96
Aging	3.27
Aging2	-0.09
Level of Regionalization	
District's name	2.80
Vineyard's name	5.65
Membership to Wines of Argentina	
Membership	-3.05
Varieties	
Red Varieties	
Syrah	-1.59
Bonarda	-6.16
Tempranillo	4.60
Sangiovese	-2.62
Other Red Varietals	-6.12
White Varieties	
Chardonnay	1.66
Other White Varietals	-4.21
Blends	
Red Blends	
Only Malbec, Cabernet	7.06

Sauvignon and Merlot	
Only Malbec and Cabernet Sauvignon	6.64
Malbec, Cabernet Sauvignon, Merlot and other varieties	19.68
Malbec, Cabernet Sauvignon and other varieties (not Merlot)	16.80
Cabernet Sauvignon and other varieties (not Malbec, Merlot and Syrah)	17.57
Producers	
Producer 1	15.60
Producer 2	-4.08
Producer 3	-5.97
Producer 4	-6.85
Producer 7	-10.02
Producer 9	-6.44
Producer 10	-6.85
Producer 11	-8.71
Producer 12	-4.63
Producer 13	-9.55
Producer 14	-5.96
Producer 15	-9.20
Producer 16	-6.78
Producer 17	-7.69
Producer 18	-7.50
Producer 19	-7.92
Producer 23	-3.71
Producer 25	-6.49
Producer 26	-7.17
Producer 27	-10.79
Producer 29	-5.59
Producer 31	-3.97
Producer 33	-4.25
Producer 34	-8.44
Producer 36	-8.34
Producer 37	-6.34
Producer 38	-10.55
Special Descriptors	
Alta	8.53
Gran Reserva	7.99