Appendix in supplementary data at *ERAE* online - NOT to be published

Appendix A1: Additional material for Section 2 (analytical framework)

A.1.1 Interaction effects between quantity and quality

The interaction effects between quantity and quality will be positive (as described in Section 2) if $\frac{\partial \pi^C / \partial q}{\partial S} > 0$ and $\frac{\partial \pi^C / \partial s}{\partial Q} > 0$. From differentiating (3) with respect to *S*, we get $P_{QS}[1+\lambda(n-1)]\frac{1}{n}Q^C + P_S > 0$ if $\vartheta \equiv \frac{\partial P_S}{\partial Q^C}\frac{Q^C}{P_S} > -\frac{n}{1+\lambda(n-1)}$. Similarly, differentiating (4) with respect to Q^C gives $P_{QS}\omega[1+\sigma(n-1)][1+\lambda(n-1)]\frac{1}{n}Q^C + P_S\omega[1+\sigma(n-1)] > 1$ if $\vartheta \equiv \frac{\partial P_S}{\partial Q^C}\frac{Q^C}{P_S} > -1$. Many standard demand functions satisfy this assumption. For instance, for demand $P(Q,S) = \alpha - \beta Q + S^\gamma$ with $\alpha, \beta, \gamma > 0$, an increase in *S* gives rise to a parallel shift of the demand schedule: $P_{QS} = 0$ (we consider this demand schedule in more detail in the numerical example in the Appendix). For $P(Q,S) = \alpha - \beta\, Q/S$ with $\alpha, \beta > 0$, we have a clock-wise rotation and $\vartheta = \beta\, Q/S^3 > 0$. Assuming $P(Q,S) = Q^\beta S^\gamma$ with $\beta < 0$ and $\gamma > 0$, we get $\vartheta = \beta$. The interaction effect will thus be positive as long as β is not 'too negative' ($\beta > -\frac{n}{1+\lambda(n-1)}$ and $\beta > -1$).

The interaction effects between quantity and quality described in the main body of the text also will change once we allow for an interdependence between quantity and quality in the production technology (i.e. assume that $c_{qs} \neq 0$). Clearly, assuming $c_{qs} > 0$ (or $c_{qs} < 0$) would weaken (strengthen) the positive feed-back effects between quantity and quality for the firm as well as for the cooperative in Section 2.1. The case of $c_{qs} > 0$ seems to be more plausible for the wine industry where, especially in Europe, most of the regulation for quality wines goes through Appellation Controlleès and hence through limits on production per hectare as a way to assure quality. We are thankful to an anonymous referee for suggesting this to us.

A.1.2 Numerical results for a specific (simple) model

To compute the optimum levels of quantity and quality for the firm and the cooperative, we assume the following demand and cost function: $P(Q,S)=\alpha-\beta Q+S^{\gamma}$ with $\alpha,\beta>0$ and $0<\gamma<1$, $c(q,s)=q+s$ and $S=\sum_{n}\omega s$. From this we get: $Q^{F}=\dfrac{\alpha-1+(S^{F})^{\gamma}}{2\beta}$,

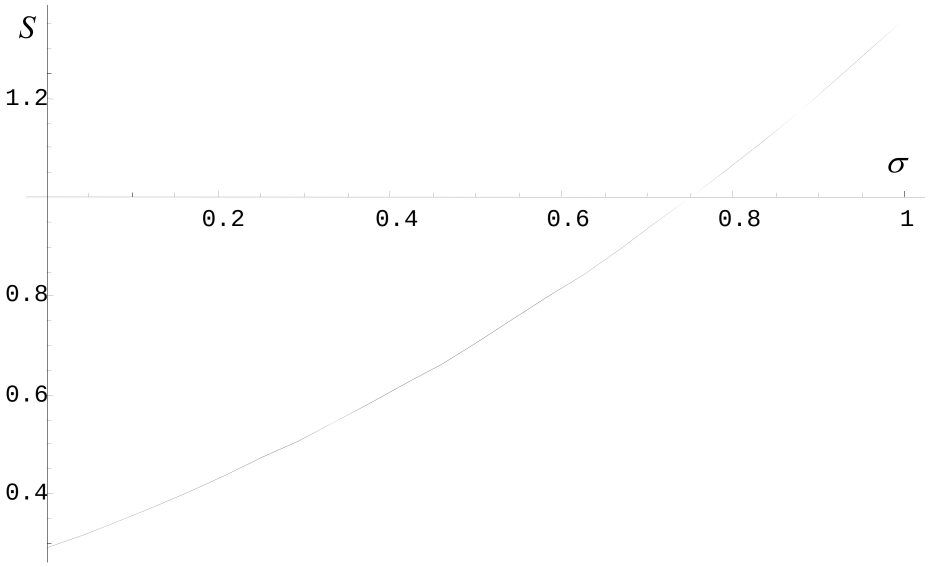
$Q^{C}=\dfrac{\alpha-1+(S^{C})^{\gamma}}{[1+(1+\lambda)\frac{1}{n}]\beta}$, $S^{F}=\left(\dfrac{1}{\omega\gamma Q^{F}}\right)^{\frac{1}{\gamma-1}}$, $S^{C}=\left(\dfrac{n}{\omega\gamma[1+\sigma(n-1)]Q^{C}}\right)^{\frac{1}{\gamma-1}}$. For $\alpha=8,\beta=1,\gamma=\frac{1}{2},n=2$ and $\omega=\frac{1}{n}$, we get $Q^{F}=4$ and $S^{F}=1$. The following Table A-1 provides results for quantity and quality in the cooperative.

Table A-1: Optimal Quantity and Quality in a Cooperative

Parameter Values	Q^{C}	S^{C}
$\lambda=\sigma=1$	4	1
$\lambda=0,\sigma=1$	5.6	1.96
$\lambda=\sigma=0$	5.09	0.41
$\lambda=0,\sigma=1/2$	5.33	1
$\lambda=1,\sigma=1/2$	3.86	0.52
$\lambda=1/2,\sigma=1$	4.67	1.36

Figure A-1 shows the quality provision of the cooperative, facing a linear demand function with $\alpha=8,\beta=1,\gamma=\frac{1}{2},n=2$ and $\omega=\frac{1}{n}$ and $\lambda=\frac{1}{2}$, depending on the degree of quality coordination σ. According to Table A-1, the quality provided by the firm facing this demand function is 1. Figure A-1 illustrates that the quality delivered by the cooperative increases with σ. The cooperative needs a considerable degree of quality coordination ($\sigma > \frac{3}{4}$) to produce a final good of higher quality than the firm.

Figure A-1: Quality decisions of the cooperative depending on the degree of quality coordination



Appendix A2: Additional material for Section 3 (empirical evidence)

A.2.1 Descriptive Statistics

Table A-2: Descriptive Statistics of Variables used in the Empirical Analysis

		Cooperatives N = 186		Non-Cooperatives N = 9,728	
Variable	Symbol	Mean (Std.Dev.)	Minimum Maximum	Mean (Std.Dev.)	Minimum Maximum
Quality (Falstaff-Points)	*QUAL*	88.478 (1.998)	85 98	89.059 (2.052)	83 98
Size (Area under cultivation in ha)	*SIZE*	351.699 (331.913)	4 1,200	33.124 (150.218)	2 3,000
Relative Reputation of the winery	*REP*	0.213 (0.164)	0 0.4	0.335 (0.339)	0 1
Type of Wine:					
White wine	*WHITE*	0.532	0 1	0.629	0 1
Red wine	*RED*	0.446	0 1	0.310	0 1
Sweet wine (‘Süßwein’)	*SWEET*	0.022	0 1	0.053	0 1
Rosè wine	*ROSÈ*	0	0 0	0.008	0 1
Type of Sweet Wine:					
Spaetlese	*SPL*	0	0 0	0.007	0 1
Beerenauslese	*BA*	0.005	0 1	0.009	0 1
Trockenbeerenauslese	*TBA*	0.016	0 1	0.028	0 1
Eiswein	*EW*	0	0 0	0.009	0 1
Variety of Grape:					
Blauburger	*BB*	0	0 0	0.001	0 1
Blaufränkisch	*BF*	0.194	0 1	0.057	0 1
Blauer Portugieser	*BP*	0	0 0	0.000	0 1
Blauer Wildbacher	*BW*	0	0 0	0.001	0 1
Chardonnay	*CH*	0.032	0 1	0.076	0 1

Cabernet Sauvignon	*CS*	0.005	0 1	0.015	0 1
Cuvee Rot	*CUR*	0.151	0 1	0.094	0 1
Cuvee Weiss	*CUW*	0.016	0 1	0.028	0 1
Frühroter Veltliner	*FV*	0	0 0	0.002	0 1
Gemischter Satz	*GEM*	0	0 0	0.007	0 1
Gelber Muskateller	*GM*	0.016	0 1	0.028	0 1
Grüner Veltliner	*GV*	0.237	0 1	0.204	0 1
Merlot	*ME*	0	0 0	0.014	0 1
Muskat Ottonel	*MO*	0.011	0 1	0.004	0 1
Müller Thurgau	*MT*	0	0 0	0.001	0 1
Neuburger	*NB*	0.016	0 1	0.006	0 1
Pinot Gris / Grauburgunder	*PG*	0	0 0	0.014	0 1
Pinot Noir / Blauburgunder	*PN*	0	0 0	0.032	0 1
Rotgipfler	*RG*	0	0 0	0.006	0 1
Riesling	*RI*	0.194	0 1	0.126	0 1
Rose	*ROS*	0	0 0	0.003	0 1
Roter Veltliner	*RV*	0	0 0	0.008	0 1
Sämling 88 / Scheurebe	*SA*	0	0 0	0.005	0 1
Sauvignon Blanc	*SB*	0.005	0 1	0.064	0 1
Schilcher	*SCH*	0	0 0	0.005	0 1
Sankt Laurent	*SL*	0.022	0 1	0.023	0 1
Sortenvielfalt Weiss	*SVW*	0	0 0	0.004	0 1
Syrah	*SY*	0	0 0	0.008	0 1
Traminer	*TR*	0	0 0	0.019	0 1
Weissburgunder / Pinot Blanc	*WB*	0.022	0 1	0.048	0 1
Welschriesling	*WR*	0.005	0 1	0.023	0 1
Zierfandler	*ZF*	0	0 0	0.006	0 1

Zweigelt	*ZW*	0.075	0 1	0.067	0 1
Wine Region:					
Carnuntum	*CA*	0	0 0	0.039	0 1
Wagram	*DO*	0	0 0	0.071	0 1
Kamptal	*KA*	0	0 0	0.090	0 1
Kremstal	*KR*	0.102	0 1	0.084	0 1
Thermenregion	*TH*	0	0 0	0.050	0 1
Traisental	*TT*	0	0 0	0.016	0 1
Wachau	*WA*	0.435	0 1	0.095	0 1
Weinviertel	*WV*	0	0 0	0.100	0 1
Wien	*WI*	0	0 0	0.022	0 1
Neusiedlersee	*NS*	0.086	0 1	0.114	0 1
Neusiedlersee-Hügelland	*NSH*	0.097	0 1	0.094	0 1
Mittelburgenland	*MB*	0.167	0 1	0.066	0 1
Suedburgenland	*SBG*	0.113	0 1	0.020	0 1
Suedoststeiermark	*SOST*	0	0 0	0.025	0 1
Suedsteiermark	*SST*	0	0 0	0.105	0 1
Weststeiermark	*WST*	0	0 0	0.009	0 1

Note: 0.000 denotes that the value is rounded and not exactly zero.

A.2.2 Results from alternative estimation techniques.

The data set comprises hierarchical data, as there are many wineries in one region (no winery is active in more than one region) and each winery produces different wines. We include dummy variables to control for regional effects; winery specific and wine specific effects are captured in the disturbance term. The model can be written as:

$$s_{rfit} = \boldsymbol{X}_{rfit}\boldsymbol{\beta} + \lambda_t + \delta_r + u_{rfit} \text{ with } u_{rfit} = \mu_{rf} + \varphi_{rfi} + \varepsilon_{rfit}$$

The quality s_{rfit} of wine i of winery f in region r at time t is explained by the variables described above. Differences over time are captured by fixed time effects λ_t. We account for differences between 16 wine growing regions by including fixed regional effects (δ_r) whereas random winery (μ_{rf}) and random wine effects (φ_{rfi}) and a remainder error (ε_{rfit}) are included in the disturbances (u_{rfit}). All components of the disturbances (μ_{rf}, φ_{rfi} and ε_{rfit}) are assumed to be independent and identically distributed with mean 0 and variance σ_μ^2, σ_φ^2 and σ_ε^2. $\boldsymbol{\beta}$ is the vector of parameters. This specification is a multi-level model with random intercepts at the wine and at the winery level.[1] Contrary to 'basic' random effects models we allow for correlation of the disturbance term not only within each product over time, but also within each winery. The variance-covariance matrix is characterized by

$$\begin{aligned}\text{cov}(u_{rfit}, u_{rgjs}) &= \sigma_\mu^2 + \sigma_\varphi^2 + \sigma_\varepsilon^2 \text{ for } f = g, i = j, t = s \\ &= \sigma_\mu^2 + \sigma_\varphi^2 \text{ for } f = g, i = j, t \neq s \\ &= \sigma_\mu^2 \text{ for } f = g, i \neq j, t \neq s\end{aligned}$$

The results of different specifications of the multi-level random effects model are reported in columns [1] – [3] in Table A-3.

Despite the fine scaling of the quality measure in our data one might argue that quality indicators are typical examples of discrete and ordered response variables: A wine with a better rating is of higher quality, but the difference between two adjacent quality grades (e.g. between 83 and 84 points vs. between 97 and 100 points) need not be the same. This makes an ordered logit (or an ordered probit) model more appropriate (see e.g. Wooldridge (2001) for an overview). If the quality passes an additional threshold, its evaluation increases by one point. Note that the coefficients of an ordered-logit model are not directly comparable to the parameter estimates discussed above. The results of the ordered-logit model are reported in columns [4] – [6] in Table A-3.

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1 See Hox (2002) for a comprehensive treatment of multi-level analysis.

Table A-3: Results on Multi-Level and Ordered Logit Model (Dependent Variable is Quality of Wine (*QUAL*))

Variables	Symbol	Parameter (t–ratio) [1]	Parameter (t–ratio) [2]	Parameter (t–ratio) [3]	Parameter (t–ratio) [4]	Parameter (t–ratio) [5]	Parameter (t–ratio) [6]
Method		Multilevel	Multilevel	Multilevel	Ordered Logit	Ordered Logit	Ordered Logit
Constant	*CONST*	88.202***	88.197***	87.016***			
		(120.76)	(120.88)	(131.21)			
Size of winery (*1,000)[1]	*SIZE*	–0.454*	–0.283	–0.349**	–0.488**	–0.313	–0.358***
		(–1.62)	(–0.98)	(–1.90)	(–2.09)	(–0.78)	(–3.99)
Cooperative	*COOP*		–0.761**	–0.481**		–0.806***	–0.446**
			(–2.16)	(–2.09)		(–2.35)	(–1.87)
Reputation	*REP*			2.092***			2.777***
				(25.83)			(26.63)
Inverse Mills ratio	λ	–0.958***	–0.957***	–0.463***	–1.346***	–1.333***	–0.186*
		(–6.94)	(–6.96)	(–4.75)	(–8.58)	(–8.55)	(–1.56)
Type of Wine		Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)
Type of Sweet Wine		Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)
Variety of the Grape		Yes (31)	Yes (31)	Yes (31)	Yes (31)	Yes (31)	Yes (31)
Regional Effects		Yes (15)	Yes (15)	Yes (15)	Yes (15)	Yes (15)	Yes (15)
Vintage Effects		Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)	Yes (3)
Clustered resudiuals		No	No	No	Winery	Winery	Winery
σ_μ		0.791	0.787	0.299			
σ_φ		1.169	1.169	1.219			
σ_ε		1.037	1.037	1.041			
Log-Likelihood		–17,463	–17,461	–17,236	–19,137	–19,123	–18,219
Pseudo-R^2					0.061	0.062	0.115
Number of observations	1st stage	23,836	23,836	23,836	23,836	23,836	23,836
	2nd stage	9,850	9,850	9,841	9,850	9,850	9,841

Notes: Parameter estimates on the type and variety of wines, regional and vintage effects are not reported in Table A-3 but are available from the authors upon request. σ_μ denotes the standard deviation of the random winery effects, σ_φ denotes the standard deviation of the random individual (wine) effect and σ_ε denotes the standard deviation of the remainder error. In the first stage probit regression (selection equation) all exogenous variables of the last-stage regressions and winery-fixed effects are included as regressors. Asterisks denote statistical significance in a t-test at 1 per cent (***), 5 per cent (**) or 10 per cent (*) level.

[1] The variable 'size of the winery' (in ha) is divided by 1,000 to facilitate the presentation of the results.

A.2.3 Description of Sample-Selection Model

Wineries are invited to send (usually up to six) wines for grading to the wine guide 'Falstaff' and therefore have a strong incentive to send the wines with the highest quality. While the perception about product quality may differ between the wine guide and the winery, they will probably be correlated leading to a non-randomly selected sample. Wines received by the wine guide are graded and – as long as they achieve a minimum level of quality points – usually published in the magazine. Wines with better product quality therefore also have a higher chance of being evaluated.

To control for this selection-effect in our empirical model, we define a dummy variable (*GRADE*) which is set equal to one if the wine is graded by 'Falstaff' and zero otherwise. Note that *GRADE* = 1 implies that the winery supplies the wine for grading and 'Falstaff' actually decides to publish the result in the wine guide; unfortunately we have no information on the two decisions separately. Table A-4 reports the results of a probit model using *GRADE* as the dependent variable. Column [1] of Table A-4 reports results of a specification including fixed winery effects. In this specification, time invariant explanatory variables like the ownership structure and the size of the winery as well as regional factors have to be excluded. The results of column [2] show that wines from larger wineries are more likely to be graded. The chances for wines produced by cooperatives to be graded are slightly lower than for other wineries, but this difference is not statistically significant.

Based on the results of specification [1][2] we calculate the inverse Mills ratio. Suppose the selection is determined by the equation $GRADE = \begin{cases} 1 \; if \;\; \boldsymbol{X\beta} + \varepsilon \geq 0 \\ 0 \qquad otherwise \end{cases}$, where the vector $\boldsymbol{X}$ is assumed to contain all relevant explanatory variables and $\boldsymbol{\beta}$ is a vector of parameters, then the inverse Mills ratio (λ) is: $\lambda \equiv \dfrac{\phi(\boldsymbol{X\beta})}{\Phi(\boldsymbol{X\beta})}$, where ϕ denotes the standard normal probability density function and Φ is the standard normal cumulative density function, evaluated for each observation at the linear prediction of the probit model (see Wooldridge, 2002). The inverse Mills ratio is included as an additional regressor in the second stage regression reported in Table 1 in the text.

2 Model [1] in Table A-4 is our preferred specification since this model fits the actual data more accurately (as indicated by the value of the log-likelihood statistic).

Table A-4: Results of the Probit-Selection Equation

Variables	Symbol	Parameter (t–ratio) [1]	Parameter (t–ratio) [2]
Method		Probit	Probit
Constant	*CONST*	-1.847^{***}	-1.700^{***}
		(–8.05)	(–9.70)
Size of winery (/1,000)[1]	*SIZE*		0.129^{**}
			(2.01)
Cooperative	*COOP*		-0.100^{*}
			(–1.40)
Type of Wine		Yes (3)	Yes (3)
Type of Sweet Wine		Yes (3)	Yes (3)
Variety of the Grape		Yes (31)	Yes (31)
Regional Effects		No	Yes (15)
Winery Effects		Yes (487)	No
Vintage Effects		Yes (3)	Yes (3)
Log-Likelihood		–13,498	–15,248
Number of Observations		23,836	24,547

Notes: Parameter estimates on the type and variety of wines, regional, winery and vintage effects are not reported in Table A–4 but are available from the authors upon request. Asterisks denote statistical significance in a t-test at 1 per cent (***), 5 per cent (**) or 10 per cent (*) level.

[1] The variable 'size of the winery' (in ha) is divided by 1,000 to facilitate the presentation of the results.

A.2.4 Simultaneous analysis of quantity and quality decisions

Unfortunately, the data set does not include the quantity produced for each individual wine in a winery but only the aggregate quantity of wine produced (Q). The number of observations reduces to 1,952 (observations for 488 wineries for four years). We calculate the average quality of wine ($\overline{S}$) as the unweighted average of all graded wines in this winery. Since observations for individual years are missing for some wineries, the number of observations in the regression reduces to 1,146. Estimation results from a 3SLS simultaneous model are reported in Table A-5.

Table A-5: Results of Three-Stage Least Square (3SLS) Estimation of a Simultaneous Equation Model

Variables	Symbol	Parameter (t–ratio)	Parameter (t–ratio)
Method		3SLS	3SLS

Endogenous Variable		$\overline{S}$	Q
Constant	*CONST*	90.202***	–816.189***
		(124.23)	(–2.33)
Quantity	*Q*	–0.005***	
		(–3.78)	
Quality	$\overline{S}$		14.951***
			(3.79)
Cooperative	*COOP*	–0.720***	–113.095***
		(–2.96)	(–4.41)
Relative Reputation	*REP*	3.976***	
		(25.73)	
Size of Winery (/1,000)[1]	*SIZE*	0.050	47.888**
		(0.23)	(1.85)
Number of different wines	*NUM*		5.088***
			(6.82)
Regional Effects		Yes (15)	Yes (15)
Vintage Effects		Yes (3)	Yes (3)
Log-Likelihood		–7,963	
Number of Observations		1,146	

Notes: Parameter estimates on regional and vintage effects are not reported in Table A-4 but are available from the authors upon request. The endogenous variables in the three-stage least squares (3SLS) estimation (see Zellner and Theil, 1962) are the unweighted average annual quality (of graded wines), total production (in 1,000 bottles) per size of the winery and the relative reputation. The variable *REP* is instrumented by the (unweighted) average and the maximum annual quality of the previous four vintages, size of the winery, number of different wines and dummy variables controlling for regional, vintage and cooperative-specific vintage effects. Asterisks denote statistical significance in a t-test at 1 per cent (***), 5 per cent (**) or 10 per cent (*) level.
[1] The variable 'size of the winery' (in ha) is divided by 1,000 to facilitate the presentation of the results.

After controlling for regional and vintage effects, the average quality of wine sold from cooperatives tends to be significantly lower. The parameter estimate, which is significantly different from zero at the one per cent level, suggests that the average quality grade of all wines produced in a cooperative is 0.72 Falstaff-points below that of non-cooperatives, ceteris paribus. For a given size of the winery (measure in the area under cultivation), we find that producing larger volumes (Q) significantly reduces the average quality of wines. Again, relative reputation, which we instrument with predetermined and exogenous variables, has a positive impact on wine quality.

We further find that the aggregate quantity of wine produced in a winery is positively related to the size of the winery as well as the number of different wines produced. Cooperatives are found to produce significantly less than non-cooperatives, ceteris paribus, which is in contrast to the predictions of the theoretical model. Whether this observation is due to differences in efficiency between different types of wineries or is related to selection effects (members of the cooperative might sell some part of their wine directly to consumers without the cooperative being involved) cannot be answered on the basis of our empirical model but needs to be addressed in future research.

A.2.5 Determinants of Winery Reputation

In order to apply an error component two-stage least squares (EC2SLS) estimator developed by Baltagi (1981) for modelling the quality of wine, the relative reputation of the winery (*REP*) has to be instrumented. We use the lagged average grade of all wines of a winery per vintage with lags up to four years ($\overline{S}_{-1}$ to $\overline{S}_{-4}$), the maximum quality of wines produced in this winery in the previous years (S_{-1}^{MAX} to S_{-4}^{MAX}), the size of the winery (*SIZE*), the ownership status (*COOP*) as well as dummy variables for the type of (sweet) wine, variety of the grape, region as well as vintage. The results of a random-effects model are reported in Table A-6.

Table A-6: Results on Random-Effects Auxiliary Regression (Dependent Variable is Relative Reputation of Wine, *REP*)

Variables	Symbol	Parameter	(t–ratio)
Method		Random Effects	
Constant	*CONST*	–15.005***	(–64.15)
Average quality (at t – 1)	$\overline{S}_{-1}$	0.054***	(19.67)
Average quality (at t – 2)	$\overline{S}_{-2}$	0.027***	(10.38)
Average quality (at t – 3)	$\overline{S}_{-3}$	0.020***	(8.18)
Average quality (at t – 4)	$\overline{S}_{-4}$	0.011***	(4.74)
Maximum quality (at t – 1)	S_{-1}^{MAX}	0.013***	(8.09)
Maximum quality (at t – 2)	S_{-2}^{MAX}	0.014***	(8.48)
Maximum quality (at t – 3)	S_{-3}^{MAX}	0.021***	(13.28)
Maximum quality (at t – 4)	S_{-4}^{MAX}	0.015***	(9.56)
Size of winery (/1,000)[1]	*SIZE*	0.049***	(2.87)
Cooperative	*COOP*	–0.030*	(–1.50)
Inverse Mills ratio	λ	–0.161***	(–16.15)
Type of Wine		Yes (3)	
Type of Sweet Wine		Yes (3)	
Variety of the Grape		Yes (31)	
Regional Effects		Yes (15)	
Vintage Effects		Yes (3)	

σ_φ	0.114
σ_ε	0.098
R^2 (overall)	0.795
Number of observations	7,358

Notes: To estimate the EC2SLS regression reported in column [3] and [4] of Table 1 in the text the within and the between transformed exogenous variables are used as instruments (Baltagi, 2005, p. 113 ff.). The reported regression results include the (not transformed) exogenous variables only to facilitate the interpretation of the coefficients. σ_φ denotes the standard deviation of the random individual (wine) effect and σ_ε denotes the standard deviation of the remainder error.. Asterisks denote statistical significance in a t-test at 1 per cent (***), 5 per cent (**) or 10 per cent (*) level.

[1] The variable 'size of the winery' (in ha) is divided by 1,000 to facilitate the presentation of the results.

The estimation results from Table A-6 suggest that the average quality of wines from previous vintages has a strong positive impact on the reputation of a winery. As expected, this effect diminishes with higher order lags. In addition, we find that the quality of the best wine (the wine with the highest 'Falstaff'-points) further adds to the reputation of the winery (note that the 'Falstaff'-points of the best wine are already included in the average quality of wines). In judging the reputation of a winery, consumers seem to attach particular emphasis to the quality of the best wine of this winery.

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