


ARTICLE

Willingness to pay for female-made wine: Evidence from an online experiment

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Abstract

The wine industry, considered to be male-dominated, has seen a growing share of women winemakers. Using a randomized online experiment, we investigate how the producer's gender influences consumers' willingness to pay for the wine. Gender can be identified either from the first name of the producer or from a gendered group of wine producers. Using a Tobit and a double-hurdle model, our results suggest that consumers' willingness to pay is lower for wine produced by female winemaker groups. This reduction appears to be particularly pronounced when the consumer is male.

Keywords: gender; gendered group; willingness to pay; wine

JEL classifications: D12; J16; Z00

1. Introduction

Physical brand design characteristics, such as logos, font, color, and brand name, can influence consumers' perceptions of brand masculinity and femininity (Lieven et al., 2015). Some wine descriptors used by experts can be classified as feminine or masculine (Masset, Terrier, and Livat, 2023). In the wine industry, the name of the winemaker or the owner of the winery (the *producer* hereafter) can appear on the label, enabling the consumer to infer the producer's gender from the first name (Ackermann and Zimmer, 2021; Cassidy, Kelly, and Sharoni, 1999). Because gender stereotypes might give rise to biased judgments and decisions, transactions on product markets can be affected by such gender recognition. Through a randomized online experiment, this article investigates how the producer's gender might influence consumers' willingness to pay (WTP) for wine.

Industries themselves can be gendered. Collins (2015, p. 416) notes that male-dominated industries "share a history of favoring and privileging men over women." This is the case for construction workers (Denissen, 2010), aeronautical engineers (Wright, 2016), and those who work in the wine industry

(Bryant and Garnham, 2014). By contrast, librarians, flight attendants, nurses, and primary school teachers are deemed female-dominated occupations (Simpson, 2014). However, most of these industries have seen a rising share of women (men) entering male- (female)-dominated industries and occupations. This is the case in the wine industry, where women outnumber men in many viticulture and oenology degree programs, representing up to 60% of a cohort (Escudier, 2014). In a male- (female)-dominated industry, it is unclear how male- or female-produced goods are valued by consumers.

This article analyzes how consumers value wines when they know the gender of the producer. In some respects, wine is a craft and a cultural product (Charters et al., 2022; Marks, 2011). The name of the producer, which can carry information about his/her gender, can be used to differentiate wines. Here, we investigate consumers' WTP for a wine with (1) a gender-neutral label, (2) a label highlighting a male producer, and (3) a label highlighting a female producer. Information about the producer's gender can be provided either through his/her individual name or through a collective in which producers decide to group together. Indeed, female winemakers create gendered groups to provide support and mentoring and to collectively showcase wines made by women (Le Brun, Guétat-Bernard, and Annes, 2019). Santos, Marques, and Ratten (2019) have shown that, in Portugal, some female wine producers capitalize on gender by displaying their names on labels, showing affirmation and self-identification, individually and/or collectively, through coalitions. In this way, the gender of the producer can be seen as a salient dimension of a product that can be used as a means of differentiation.

Our contribution to the literature is twofold. On the one hand, previous research has widely investigated WTP for the characteristics of wine, in particular the corporate social responsibility aspects of wine production, mainly from an environmental perspective (e.g., Lim and Reed, 2020; Sogari, Mora, and Menozzi, 2016). Social aspects of sustainability have been less investigated (the study of fair-trade wines is an exception; see, for instance, Back et al. (2019)). To the best of our knowledge, the valuation of the gender of the wine producer, in particular in the context of a group of female producers, has not been studied so far. On the other hand, women influence the wine industry. Even as a minority in the Champagne industry, women affect the way markets function (Ody-Brasier and Fernandez-Mateo, 2017). Although it is often assumed that wine prestige and reputation require a strong male identity (Chauvin, 2011; Simonnet-Toussaint, 2006), women are gaining authority and recognition in the industry. More empirical evidence is needed because most of the existing research is qualitative (see Livat and Jaffré (2022) for a review). In particular, even if differences between female and male wine judges (Bodington and Malfeito-Ferreira, 2018), as well as the influence of female CEOs (Galbreath, 2015), have been studied, the consumer response remains unknown.

In this article, using a randomized online experiment, we show that the gender of the producer matters in wine valuation. Overall, our results suggest that male consumers express a lower WTP for wines made by a winemaker from a female-only group of producers.

The remainder of the article is organized as follows: The background is provided in Section II; Section III describes our online experiment; Section IV presents our empirical analysis; and Section V is dedicated to the discussion and conclusion.

II. Background

A. Gendered products

According to the self-congruency theory, individuals have a desire for products and brands that reflect their own image or identity, including their gender (Cowart, Fox, and Wilson, 2008; Fugate and Phillips, 2010). Lieven et al. (2015) show that product category perception matters and that congruence between brand and product category masculinity and femininity is associated with positive consumer responses. Neale, Robbie, and Martin (2016) show that masculine consumers prefer masculine brands and react negatively to feminine brands; these authors also describe an asymmetric, incongruent brand rejection because feminine consumers are more accepting of masculine brands. Considering craft beer as male-typed and cupcakes as female-typed product markets, Tak, Correll, and Soule (2019) measure a negative asymmetric bias: products made by women are disadvantaged in male-typed markets, but products made by men are not disadvantaged in female-typed markets.

In the case of books, Weinberg and Kapelner (2018) find evidence that there is an unequal distribution of published books by male and female authors by genre. The authors also found that genres written predominantly by female authors are devaluated and books published by female authors are priced lower than their male counterparts; however, there is less inequality in independent publishing than in traditional publishing. On the opposite side, Kapelner and Weinberg (2019) show that the assessment of quality, interest, and WTP does not vary according to the author's gender, in male- as well as female-dominated genres. However, gender bias also occurs in academia, where the perceived scientific quality of scholarly communications is higher for male authors, with no influence shown by the respondent's gender (Knobloch-Westerwick, Glynn, and Huge, 2013). A similar bias can be associated with female sellers at eBay auctions; Kricheli-Katz and Regev (2016) show that women sellers receive fewer bids and lower final prices than male sellers—with similar characteristics of the same good—even if the price gap varies among product categories. The authors conclude that “people tend to assign a lower value to products when sold by women rather than by men” (Kricheli-Katz and Regev, 2016, p. 7), which is a form of discrimination.

B. Collective claim of gender

Previous research has focused on an individual signature or mention of the producer's name. In the wine industry, some female winemakers team up to create producer groups and use these networks to communicate the features of their wines to consumers, narrated in a feminine, cohesive, and united voice (Santos, Marques, and Ratten, 2019). A study of the Gaillac wine region in Southwest France highlights that traditional male-oriented professional organizations do not address the priorities of women working there (Le Brun, Guétat-Bernard, and Annes, 2019). Moreover, as wine fellowships have traditionally excluded women from wine rituals, female winemakers lack interaction with the governance of the industry, as stressed by Pavel (2012) in the French context. This is in line with several studies analyzing the role of female farmers in North American professional organizations, which show that they are underrepresented, feel isolated, and are not taken seriously (e.g., Sachs et al., 2016). In these

situations, horizontal networks might help women gain and demonstrate their professionalism, a key aspect of women's advancement in the wine industry (Duarte Alonso, Kok, and Galbreath, 2021). As such, as women's numbers grow in the wine industry, they are implicitly incentivized to coalesce and create new networks claiming collectively their identity, including gender identity.

C. Willingness to pay (WTP)

WTP is assessed as the amount of money a consumer is willing to part with to gain an equivalent utility derived from a product (Lusk and Hudson, 2004). There are many empirical strategies to assess the WTP, including those that are incentive-compatible and generate revealed preference data, such as the Vickrey auction (e.g., Vecchio (2013) for an application to wine) and the Becker-DeGroot-Marschak mechanism (see Bazoche et al. (2013) for an application to wine). Others are non-incentive compatible and generate stated preference data—that is, contingent evaluation (e.g., Loureiro (2003) for an application to wine) and discrete choice experiments (Capitello et al., 2021; Train, 2009)—where both the payment of the good as well as its provision are hypothetical. The former, associated with revealed preferences through actual payment, promises higher validity than the latter, which is likely to overstate WTP in hypothetical valuation questions.

However, contingent evaluation remains widely used in wine economics. For instance, Thiene et al. (2013, p. 297) include the following question in their survey: “How much are you willing to pay for a bottle of IGT/CDO Prosecco wine in a restaurant, supermarket, winery, and wine shop?” Lusk (2003) proposes to add “cheap talk” to eliminate the hypothetical bias associated with the stated WTP: a short text that warns individuals about the hypothetical bias phenomenon prior to asking the valuation question. Empirical evidence suggests that cheap talk can be effective in mitigating this bias (Murphy et al., 2005; Silva et al., 2011). This is the strategy we adopt for our online experiment.

III. Online experiment

We designed a 2 x 5 (i.e., 10 wines) between-subject randomized online experiment. We presented two different label designs, that is, traditional and modern, and five sets of information about the producer, including no producer information, which we used as a reference point.





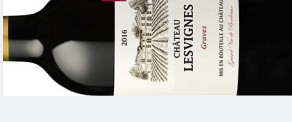
Participants were French-speaking respondents because French is a gendered language. French grammar distinguishes nouns by gender, most of which are associated with a male or female gender tag. Anything that is attached to a noun (pronouns, adjectives, and verbs) will also reflect the assigned gender (DeFranza, Mishra, and Mishra, 2020). For instance, *vigneron* is the French noun for a male winemaker, and *vigneronne* is the feminine variant; the spelling as well as the pronunciation are different. This is why we decided to run the online experiment in France and in the French-speaking part of Belgium (Wallonia). In addition to language, using these two countries enabled us to gather data from a wine-producing country (France) and a non-producing country (Belgium), as well as examine any cultural differences.

The labels used for the experiment contain exactly the same information (winery name, appellation of origin, vintage, and other mandatory information), except for the information related to the winemaker. Two styles of labels were also used (traditional vs. original; see Celhay and Passebois, 2011). Because we use fictitious labels and producer names, our online experiment relies on a kind of deception. If deception appears as standard in the psychology and marketing fields, it is often thought that it should be banned in experimental economics (Cooper, 2014). Indeed, control of the experiment is lost if subjects doubt experimental instructions and material and form their own theories about payoffs. However, Cooper (2014, p. 113) notes that deception can be considered acceptable when the following four rules are met: “(1) The deception does not harm subjects beyond what is typical for an economic experiment without deception. (2) The study would be prohibitively difficult to conduct without deception. (3) Subjects are adequately debriefed after the fact about the presence of deception. (4) The value of the study is sufficiently high to merit the potential costs associated with the use of deception.” Here, rules (1) and (2) are met. The kind of ambiguity used here is found in most wine experiments, as observed by Masset and Raub (2023). Regarding the last rule, Cooper (2014) notes that the value of a study lies in the eye of the beholder. But he also mentions that “most economists would argue that the discrimination studies using deception were sufficiently important [...] that the use of deception was justified” (p. 114). Given that our aim is to analyze if WTP varies with information about the gender of the producer, we believe that deception is necessary to investigate this kind of discrimination. Rule 3 is trickier: given the number of respondents, who remain anonymous in an online setting, it is hard to organize a debrief. A professional panelist who sent out the survey mentioned that those who participate in online studies might use some kind of misinformation and/or ambiguity. On the one hand, study participants have to certify that they are committed to answering spontaneously and independently from previous studies they might have participated in. On the other hand, the participant manages the frequency of survey participation requests to avoid any learning process, generating the belief that experimenters are liars.

Each wine (except the reference points) appears with a sentence indicating who made the wine or whether the producer belonged to a particular producer group, as shown in Table 1. Wines 1 and 6 are the reference points, as no information about the winemaker is provided. Wines 2 and 7 are made by winemaker *Georges Cadieux*, and wines 3 and 8 are made by winemaker *Nathalie Panetier*. Both names come from a randomly generated list. In French, the first names *Georges* and *Nathalie* are, respectively, masculine and feminine. Moreover, their phonetic structure suggests a male versus female personality, respectively, as shown by Wu, Klink, and Guo (2013). On wines 4 and 9, the sticker *Fémivin* refers to a group of female winemakers only. To our knowledge, in France, no such producer group exists for male winemakers. However, *Vignerons Indépendants* is a French winemaking trade association that includes the noun “male winemakers” in its name (*vignerons*), even if it is not dedicated to male winemakers only. We use its sticker on wines 5 and 10 as a reverse of the female winemaker group.


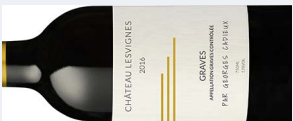

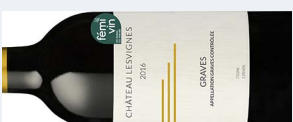

The survey took place from March 25, 2021, to April 2, 2021, under almost unrestricted circumstances (i.e., no strict lockdown due to the COVID-19 pandemic in France and Belgium). Respondents from France and Belgium were randomly drawn

Table 1. 2 x 5 between-subject online experiment, WTP (euros), and perceived quality for each wine (N = 1,351)

	Wine 1 The winemaker is Georges Cadieux.	Wine 2 The winemaker is Nathalie Panetier.	Wine 3 The winemaker is Fémiwin ensures that the wine is made by a female winemaker.	Wine 4 The winemaker is a member of the <i>Vignerons Indépendants</i> association.	Wine 5 The winemaker is a member of the <i>Vignerons Indépendants</i> association.
					
Respondents	142 (10.51%)	134 (9.92%)	136 (10.07%)	138 (10.21%)	126 (9.33%)
Average WTP (std. dev.)	10.04 (10.59)	10.88 (12.31)	9.63 (7.70)	9.14 (11.43)	8.51 (7.68)
Average PQ (std. dev.)	3.74 (0.72)	3.69 (0.79)	3.68 (0.78)	3.76 (0.86)	3.51 (0.75)
Avg willingness to purchase (std. dev.)	3.61 (0.87)	3.48 (0.98)	3.49 (0.97)	3.54 (1.01)	3.41 (0.99)

(Continued)

Table 1. (Continued.)

	Wine 6	Wine 7	Wine 8	Wine 9	Wine 10
	The winemaker is Georges Cadieux.	The winemaker is Georges Cadieux.	The winemaker is Nathalie Panetier.	Fémivin ensures that the wine is made by a female winemaker.	The winemaker is a member of the <i>Vignerons Indépendants</i> association.
					
Respondents	131 (9.70%)	138 (10.21%)	135 (9.99%)	134 (9.92%)	137 (10.14%)
Average WTP (std. dev.)	8.56 (5.89)	9.49 (10.82)	9.88 (13.66)	7.79 (4.88)	8.93 (9.68)
Average PQ (std. dev.)	3.36 (0.79)	3.39 (0.84)	3.47 (0.86)	3.51 (0.92)	3.5 (0.85)
Avg willingness to purchase (std. dev.)	3 (0.99)	3.01 (1.03)	3.09 (1.14)	3.22 (1.14)	3.18 (1.1)

from a panel of consumers selected by the company Respondi, a professional panelist that sends out survey links by email. Respondents are rewarded only if they fully complete the survey with points that are transformed into gift cards usable in several stores. A screening question enables the selecting of respondents who have consumed wine over the last three months. Each respondent was assigned randomly to one of the ten conditions. The final sample consisted of 1,000 French and 500 Belgian respondents, with a distribution among experimental conditions that ranged from 9.33% to 10.51% (see [Table 1](#)). We excluded respondents who preferred not to declare their income, which left us with 1,351 observations.

The survey started with a randomized experiment. Respondents were asked first to assess how they perceive the quality of the wine over a 5-point scale (from 1—poor quality to 5—excellent quality) and if they were willing to purchase the wine using a 5-point Likert scale (from 1—extremely unlikely to purchase to 5—extremely likely to purchase). Then, cheap talk was used right before the valuation question, when respondents were invited to give their WTP, in euros, for the same bottle of wine and to indicate 0 if they were not willing to pay for the wine; 100 euros was the maximum possible amount. Average WTP, perceived quality (PQ), measured on a 5-point scale, and WTP measured on a 5-point Likert scale are shown in [Table 1](#) for each wine. An attention check question was also included in this part of the questionnaire.

Sociodemographics, as well as wine-related characteristics and opinions of respondents, were questioned in the final section of the questionnaire. We know the respondents' wine consumption frequency and if they were used to consuming red wine. Objective wine knowledge was reflected in a score of over 5 points obtained from a set of five questions inspired by Velikova, Howell, and Dodd's (2015) scale. Respondents received 1 point for each correct answer, 0 otherwise. The questions are presented in [Appendix 1](#). The survey also included a question about the perceived quality of Bordeaux wines as a whole as a proxy for the collective reputation of the wine industry (Landon and Smith, 1997, 1998).

Summary statistics of sociodemographic and wine-related characteristics and opinions are presented in [Tables 2](#) and [3](#). The sample is in line with the age and gender proportions of the population of interest (in this case, wine consumers) in the two countries studied (Wine Intelligence, 2022, 2023). We note that the average amount of money usually spent for a bottle of wine is similarly distributed across all conditions (details available from the authors on request).

IV. Empirical analysis

To analyze the effect of the winemaker's gender on the consumer's WTP, we estimated a series of regressions in which the WTP was a function of the presented label, controlling for sociodemographic and wine-related characteristics and opinions of the respondents. Two empirical issues required additional attention. First, WTP is a left- and right-censored variable because respondents declared 0 euros when they were not willing to pay for the bottle of wine, and 100 euros was the maximum amount they could declare. Said differently, our dependent variable has a corner at 0 and, in such cases, the distribution of WTP exhibits a spike at 0 with about 5% of respondents, as

Table 2. Descriptive characteristics of respondents (N = 1,351)

Respondent characteristics	Value	Whole sample		Belgium		France	
		N	%	N	%	N	%
Country of origin	Belgium	442	32.72				
	France	909	67.28				
Gender	Female	596	44.12	167	37.78	429	47.19
	Male	755	55.88	275	62.22	480	52.81
Age	18–24	88	6.51	33	7.47	55	6.05
	25–34	192	14.21	66	14.93	126	13.86
	35–44	238	17.62	74	16.74	164	18.04
	45–54	233	17.25	83	18.78	150	16.50
	55–64	295	21.84	111	25.11	184	20.24
	65–74	242	17.91	64	14.48	178	19.58
	Over 75	63	4.66	11	2.49	52	5.72
Education	Less than high school	197	14.58	59	13.35	138	15.18
	High school	385	28.50	161	36.43	224	24.64
	Some college	46	3.40	24	5.43	22	2.42
	Two-year degree	246	18.21	45	10.18	201	22.11
	Bachelor	243	17.99	85	19.23	158	17.38
	Master and higher	234	17.32	68	15.38	166	18.26
Monthly net income of the household	Less than 1000 euros	50	3.70	9	2.04	41	4.51
	1,001–2,000 euros	309	22.87	116	26.24	193	21.23
	2,001–3,000 euros	359	26.57	124	28.05	235	25.85
	3,001–4,000 euros	327	24.20	84	19.00	243	26.73
	4,001–5,000 euros	186	13.77	65	14.71	121	13.31
	5,001–7,000 euros	85	6.29	29	6.56	56	6.16
	7,001–10,000 euros	24	1.78	10	2.26	14	1.54
	Over 10,000 euros	11	0.81	5	1.13	6	0.66
Children at home	Yes	430	31.83	142	32.13	288	31.68
	No	921	68.17	300	67.87	621	68.32
Number of adults in the household	1	318	23.54	117	26.47	201	22.11
	2	827	61.21	232	52.49	595	65.46
	3	131	9.70	56	12.67	75	8.25
	4	61	4.52	30	6.79	31	3.41
	5 and over	14	1.03	7	1.59	7	0.77

Table 3. Wine characteristics and opinions of respondents (N = 1,351)

Respondent characteristics	Value	Whole sample		Belgium		France	
		N	%	N	%	N	%
Primary wine shopper	Yes = 1	1142	84.53	393	88.91	749	82.40
Wine consumption frequency	2–3 times per year	99	7.33	40	9.05	59	6.49
	Once a month	214	15.84	64	14.48	150	16.50
	2–3 times per month	282	20.87	100	22.62	182	20.02
	Once a week	330	24.43	104	23.53	226	24.86
	More than once a week	294	21.76	100	22.62	194	21.34
	Everyday	132	9.77	34	7.69	98	10.78
Average amount usually spent for a bottle of wine							
	Less than 10 euros	741	54.85	234	52.94	507	55.78
	11–15 euros	403	29.83	116	26.24	287	31.57
	16–20 euros	128	9.47	47	10.63	81	8.91
	21–25 euros	45	3.33	27	6.11	18	1.98
	26–30 euros	17	1.26	9	2.04	8	0.88
	More than 30 euros	17	1.26	9	2.04	8	0.88
Collective reputation	Bordeaux wines are of high quality (yes = 1)	841	62.25	243	54.98	598	65.79
		N	Av. (SD)	N	Av. (SD)	N	Av. (SD)
Level of objective wine knowledge	Score over 5	1,351	2.72 (1.45)	442	2.52 (1.49)	909	2.82 (1.42)

shown in [Figure 1](#). This implies that we should use some censored regression model, like the Tobit-type models.

Second, our sample might include protest responses as well as out-of-market respondents. Indeed, protest responses are identified with respondents who claimed that they were willing to purchase the good but then declared a 0 WTP¹; some other

¹These are called *protest responses* because they are often highlighted in the case of the WTP for the provision of public goods. Respondents might be protesting about the valuation exercise even if they hold positive values for the good. In that case, WTP does not convey correct information on the respondents' preferences, and it is necessary to discriminate between individuals who are not interested in the good and protesters.

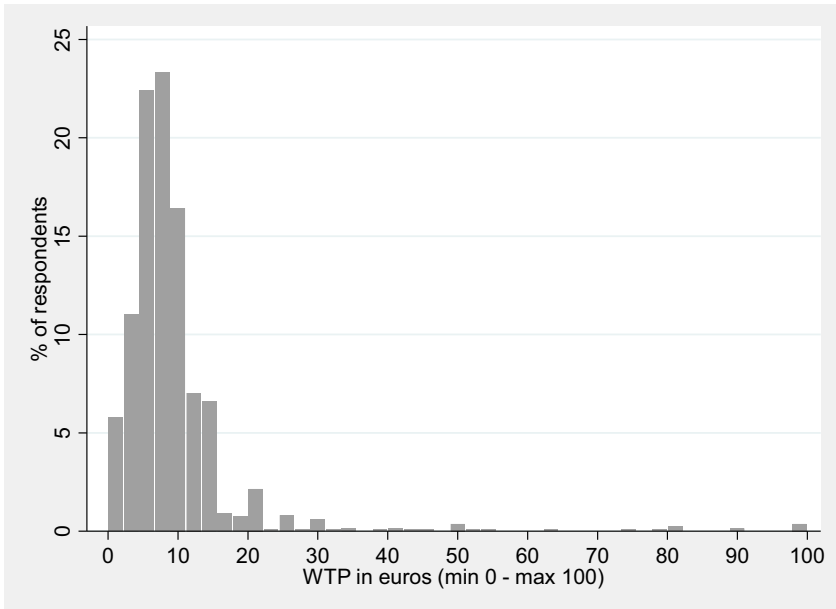


Figure 1. Distribution of WTP (N = 1,351).

respondents opted out of the market, claiming that they were not willing to purchase the good, but some declared a non-0 WTP² (see Figure 2). In that case, a spike-based modeling approach à la Kriström (1997) can be implemented. It uses a hurdle model that combines discrete and continuous parts (Brown and Taylor, 2000), that is, a set of two equations: a discrete component models the participation decision, estimating the probability that a respondent will state a positive WTP, and a continuous component models the contribution decision, with WTP as a dependent variable only for those respondents stating a positive WTP. These two equations can be estimated separately in two stages (Reiser and Shechter, 1999; for an application, see Brown and Taylor, (2000)). Such an empirical strategy excludes respondents willing to purchase the good but only willing to pay 0 because of current circumstances or characteristics. Moreover, it can overestimate the effect because it produces higher values than other models (Bengochea-Moranco, Fuertes-Eugenio, and Del Saz-Salazar, 2005). Along the same vein, another possibility is to estimate a double-hurdle model (Cragg, 1971): the first hurdle refers to the participation decision, the second one to the contribution decision, and both decisions are modeled simultaneously. The double-hurdle model enables distinguishing among respondents declaring a WTP of 0 because they do not want to purchase the good and those for whom current circumstances or characteristics dictate a WTP of 0 but would like to purchase the good, as suggested by Engel

²The sequence of valuation questions can be asked in reversed order, which does not change the empirical methodology (Reiser and Shechter, 1999).

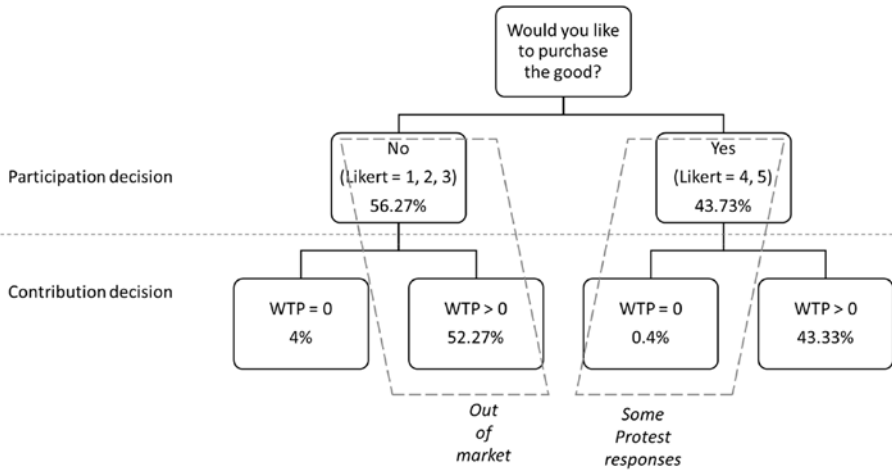


Figure 2. Sequence of valuation questions with percentage of respondents.

and Moffatt (2014). In Figure 2, we present only the second part of the double-hurdle model, that is, the contribution decision, to explain differences in WTP.

Clinch and Murphy (2001) recommend using a range of models to infer WTP. In Table 4, we present robust estimation results using the Tobit and the double-hurdle modeling approaches for two empirical specifications: model 1 includes a dummy variable for each label, and model 2 assesses each label against the gender of the respondent. All specifications include the same set of sociodemographic characteristics of respondents: gender, age, country (France or Belgium), and monthly net household income. They also contain the following wine-related indicators: wine consumption frequency, if the respondent is the primary wine shopper, level of objective wine knowledge, and the average amount of money usually spent on a bottle of wine. We also include a collective reputation indicator and control for the perceived quality of each bottle of wine because it is traditionally a determinant of WTP for wine (e.g., Lunardo and Rickard, 2019) and for the kind of label (traditional vs. modern). In Table 4, we report only the coefficients for the variables of interest. More detailed results are available in Appendix 2.

As expected, the perceived quality of each specific label increased the WTP significantly, and the collective reputation of Bordeaux wines, such as the label's style, did not prove significant. We also got a negative effect from age, from France compared to Belgium, and from the level of objective wine knowledge. Unsurprisingly, the effect of the average amount of money spent on a bottle of wine was positive.

The Tobit estimation of model 1 highlights a price reduction associated with the group of female winemakers (−1.17 euros, significant at 10% only), although it is not significant in the double-hurdle model. When assessed against the gender of the consumer (model 2), our estimation results suggest that male respondents ask for a price reduction when the wine is produced by a female producer group (−1.4 euros with the Tobit model, significant at 10%, almost −3 euros with the double-hurdle model,

Table 4. Estimation results

		Dependent variable: WTP in euros											
		Tobit model				Double-hurdle model							
		Model 1		Model 2		Model 1		Model 2					
	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error	
Perceived quality of the specific label: poor	ref.		ref.		ref.		ref.		ref.		ref.		
Fair	6.502**	(2.917)	6.411**	(2.902)	11.63	(8.739)	11.38	(8.682)					
Good	10.60***	(2.847)	10.48***	(2.836)	24.69**	(10.18)	24.20**	(10.05)					
Very good	12.62***	(2.908)	12.52***	(2.895)	29.85***	(11.13)	29.34***	(10.98)					
Excellent	15.58***	(3.059)	15.48***	(3.053)	33.34***	(11.65)	32.71***	(11.46)					
Neutral label	ref.		ref.		ref.		ref.						
Label with a male winemaker	-0.395	(0.782)			0.982	(1.550)							
Label with a female winemaker	-0.536	(0.703)			-0.0983	(1.383)							
Label with a coalition of female winemakers	-1.175*	(0.659)			-1.897	(1.198)							
Label with a coalition of (male) winemakers	-0.261	(0.671)			-0.641	(1.279)							
Label with a male winemaker × male respondent			-0.0102	(1.001)			1.622	(2.013)					
Label with a female winemaker × male respondent			0.498	(0.924)			0.804	(1.879)					
Label with a coalition of female winemakers × male respondent			-1.379*	(0.763)			-2.991**	(1.400)					

(Continued)

Table 4. (Continued.)

	Dependent variable: WTP in euros							
	Tobit model				Double-hurdle model			
	Model 1		Model 2		Model 1		Model 2	
	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error
Label with a coalition of (male) winemakers × male respondent			-0.417	(0.727)			-1.746	(1.245)
Label with a male winemaker × female respondent			-0.872	(0.982)			0.105	(1.867)
Label with a female winemaker × female respondent			-1.854**	(0.738)			-1.427	(1.344)
Label with a coalition of female winemakers × female respondent			-0.947	(0.827)			-0.568	(1.617)
Label with a coalition of (male) winemakers × female respondent			-0.0317	(0.972)			0.966	(2.427)
Constant	0.394	(3.411)	0.829	(3.414)	-27.47**	(13.75)	-26.85**	(13.58)
Observations	1,351		1,351		1,351		1,351	
F (prob)	7.49	(0.000)	7.01	(0.000)				
Pseudo-R ²	0.06		0.06					
Wald chi ² (prob)					60.35	(0.002)	69.85	(0.000)

Robust standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

significant at 5%). The Tobit estimation of model 2 also highlights that female consumers devalue wines when the name of a female winemaker appears on the label (−1.8 euros, significant at 5%), but this is not confirmed by the double-hurdle model. Here, we get a result in line with the empirical evidence provided by Tak, Correll, and Soule (2019): female products, produced in a male-typed industry, are disadvantaged by male consumers. Our results show that this is the case when women form an all-female producer group. As such, the study respondents react differently to the group of producers than to a single female producer.

V. Discussion and conclusion

Our results suggest that the gender of the winemaker matters in wine valuation. Specifically, the wine industry is still male-dominated, and it seems that collective strategies supporting women are not appreciated by consumers. Interestingly, we do not find any significant difference in the WTP between products made by male and female winemakers when the gender information is communicated through the producer's first name. This can suggest that the winemaker's name is associated with a craftsperson genuinely making the wine. In that case, the name is a means to build authenticity (Maguire, 2018), whatever the gender of the producer, which makes no difference in terms of WTP.

We get different results for a group of female producers only. When a female wine-maker claims to belong to a group of women making wine, consumers, especially male consumers, want a price reduction for the group's wine. Mentoring and networking can help female winemakers address several challenges not considered by traditional professional organizations (Le Brun, Guétat-Bernard, and Annes, 2019). The Women Do Wine group (France), the Diversity in Wine Leadership Forum (North America), the Australian Women in Wine Awards, and the Women in Wine Leadership Symposium (U.S.-based but international) seek to support and mentor women and highlight their role in the wine industry, but these groups of women are new and operate in only a few wine-producing countries (Livat and Jaffré, 2022). We think that they are not well enough known at this time and that there is a lack of familiarity and fluency on the consumers' side, which can produce the desire for a price reduction. Moreover, because they challenge professional institutions and do not align with traditional communication strategies, these groups of female producers can signal much more than information about the producer: they can draw a political statement and aim at lobbying (English, 2022). Hence, belonging to these organizations can be perceived as activism, associated with negative stereotypes (e.g., eccentric and militant; see, for instance, Bashir et al. (2013)), and generate a backlash discourse (Dyer and Hurd, 2018), especially on the male consumer side.

Previous research has shown that, in California, female winemakers are more highly acclaimed by experts proportional to their presence in the field than male winemakers (Gilbert & Gilbert, 2015), suggesting some inverse discrimination. However, transactions on product markets can be affected by biased judgments and decisions. If the quality of wines made by female winemakers does not matter from the experts' point of view, consumers might demand a price reduction, which reflects negative discrimination. This is highlighted by our results in the case of male consumers of products

from female winemaker groups. This specific discrimination might also come from their peers, that is, female consumers, which deserves further research.

The study could be replicated in other countries with a gendered language but a high gender balance, such as the French-speaking part of Switzerland, a country with one of the lowest UN Gender Inequality Index rankings (United Nations, 2022). English-speaking countries, that is, those using a non-gendered language such as the United States, should also be studied. In the same way, a laboratory experiment could be carried out to overcome the hypothetical situation. This would involve a blind tasting of the same wine presented as having been made by a male winemaker on the one hand and a female winemaker on the other. Complementary research could investigate in depth the place and role of women in the wine industry and, more generally, how the growing diversity affects the industry. For example, some field experiments would be helpful to analyze if and how a female wine salesperson compared to a male one influences purchasing behavior in the same wine store. It could be used to study how a female wine tour guide or a female wine steward in a restaurant, compared to a male one, affects customer satisfaction. These questions also make sense for other minorities in the wine industry, for example, people of color, people who are disabled, and LGBTQIA+ people, because the industry is mainly dominated by white people (Ingliš and Ho, 2022).

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Appendix 1

Questions used to measure objective wine knowledge

The order of answers has been randomized. The correct answer appears in bold.

- 1) In your opinion, the term “Merlot” refers to:
 - a) A wine-producing area
 - b) **A red grape variety**
 - c) A red-fruit aroma
 - d) I don’t know
- 2) In your opinion, the term “Sancerre” refers to
 - a) **A wine-producing area**
 - b) A red grape variety
 - c) A white grape variety
 - d) I don’t know
- 3) In your opinion, the term “Chardonnay” refers to
 - a) A vine variety for the production of red wine
 - b) **A vine variety for the production of white wine**
 - c) A wine-producing area
 - d) I don’t know
- 4) Where do you think the Napa Valley wine region is?
 - a) In Italy
 - b) In Argentina
 - c) In England
 - d) **In California**
 - e) In Australia
 - f) In France
 - g) In South Africa
 - h) I don’t know
- 5) Which Latin American country do you think is best known for producing wine from the Malbec grape variety?
 - a) Uruguay
 - b) Chile
 - c) Peru
 - d) **Argentina**
 - e) I don’t know

Appendix 2

Detailed estimation results

	Dependent variable: WTP in euros											
	Tobit model						Double hurdle model					
	Model 1			Model 2			Model 1			Model 2		
	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.
Man (yes=1)	0.345	(0.482)			-0.122	(1.094)						
France (yes=1)	-2.098***	(0.516)	-2.070***	(0.509)	-3.038**	(1.202)	-3.041**	(1.195)				
Age	-0.0654***	(0.0169)	-0.0659***	(0.0170)	-0.0675*	(0.0388)	-0.0670*	(0.0382)				
Household monthly income: Less than 1000 euros	ref.		ref.		ref.		ref.		ref.		ref.	
1001–2000 euros	-0.772	(1.384)	-0.871	(1.379)	2.443	(2.157)	2.246	(2.106)				
2001–3000 euros	-0.109	(1.368)	-0.194	(1.376)	2.422	(2.166)	2.342	(2.146)				
3001–4000 euros	-0.718	(1.336)	-0.836	(1.344)	1.306	(1.912)	1.196	(1.896)				
4001–5000 euros	1.127	(1.478)	1.053	(1.476)	4.297*	(2.264)	4.241*	(2.233)				
5001–7000 euros	1.223	(1.677)	1.168	(1.688)	5.369*	(3.087)	5.398*	(3.064)				
7001–10000 euros	5.676	(3.944)	5.668	(3.932)	5.071	(3.946)	5.030	(3.996)				
More than 10000 euros	3.806	(5.516)	3.609	(5.514)	7.345	(6.803)	7.015	(6.720)				
Primary wine shopper (yes=1)	0.439	(0.733)	0.383	(0.745)	-0.770	(1.334)	-0.803	(1.287)				
Wine consumption frequency: Twice or three times a year	ref.		ref.		ref.		ref.		ref.		ref.	

(Continued)

Table (Continued.)

	Dependent variable: WTP in euros							
	Tobit model				Double hurdle model			
	Model 1		Model 2		Model 1		Model 2	
	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.
Once a month	-0.654	(1.060)	-0.687	(1.059)	1.005	(1.899)	0.956	(1.875)
Twice to three times a month	0.211	(1.115)	0.206	(1.124)	1.016	(1.980)	1.033	(1.979)
Once a week	0.671	(0.965)	0.640	(0.966)	1.044	(1.714)	1.079	(1.703)
More than once a week	1.250	(0.998)	1.227	(0.997)	3.091	(2.121)	3.090	(2.079)
Everyday	0.926	(1.011)	0.892	(1.004)	2.912	(2.074)	2.883	(2.047)
Level of objective wine knowledge	-0.300**	(0.143)	-0.305**	(0.144)	-0.619*	(0.318)	-0.622**	(0.314)
Collective reputation of Bordeaux wines (high quality=1)	-0.200	(0.500)	-0.164	(0.500)	-1.429	(1.181)	-1.369	(1.173)
Average amount spent for a bottle of wine: less than 10 euros	ref.		ref.		ref.		ref.	
11-15 euros	2.544***	(0.353)	2.601***	(0.356)	8.075***	(1.988)	8.176***	(2.011)
16-20 euros	4.983***	(1.064)	4.958***	(1.047)	12.59***	(3.235)	12.51***	(3.161)
21-25 euros	11.48***	(2.482)	11.40***	(2.494)	20.94***	(5.022)	20.75***	(4.958)
26-30 euros	21.09***	(5.729)	21.04***	(5.713)	39.76***	(7.319)	39.58***	(7.325)
More than 30 euros	32.59***	(8.001)	32.38***	(7.987)	41.64***	(10.73)	40.91***	(10.59)
Modern label (yes=1)	-0.312	(0.480)	-0.291	(0.477)	0.142	(1.005)	0.135	(0.995)

(Continued)

Table (Continued.)

	Dependent variable: WTP in euros									
	Tobit model					Double hurdle model				
	Model 1		Model 2			Model 1		Model 2		
	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.
Perceived quality of the specific label: poor	ref.		ref.		ref.		ref.		ref.	
Fair	6.502**	(2.917)	6.411**	(2.902)	11.63	(8.739)	11.38	(8.682)		
Good	10.60***	(2.847)	10.48***	(2.836)	24.69**	(10.118)	24.20**	(10.05)		
Very good	12.62***	(2.908)	12.52***	(2.895)	29.85***	(11.113)	29.34***	(10.98)		
Excellent	15.58***	(3.059)	15.48***	(3.053)	33.34***	(11.65)	32.71***	(11.46)		
Neutral label	ref.		ref.		ref.		ref.			
Label with a male winemaker	-0.395	(0.782)			0.982	(1.550)				
Label with a female winemaker	-0.536	(0.703)			-0.0983	(1.383)				
Label with a coalition of female winemakers	-1.175*	(0.659)			-1.897	(1.198)				
Label with a coalition of (male) winemakers	-0.261	(0.671)			-0.641	(1.279)				
Label with a male winemaker x male respondent			-0.0102	(1.001)			1.622	(2.013)		
Label with a female winemaker x male respondent			0.498	(0.924)			0.804	(1.879)		
Label with a coalition of female winemakers x male respondent			-1.379*	(0.763)			-2.991**	(1.400)		

(Continued)

Table (Continued.)

	Dependent variable: WTP in euros							
	Tobit model				Double hurdle model			
	Model 1		Model 2		Model 1		Model 2	
	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.	Coef.	Std. error.
Label with a coalition of (male) winemakers x male respondent			-0.417	(0.727)			-1.746	(1.245)
Label with a male winemaker x female respondent			-0.872	(0.982)			0.105	(1.867)
Label with a female winemaker x female respondent			-1.854**	(0.738)			-1.427	(1.344)
Label with a coalition of female winemakers x female respondent			-0.947	(0.827)			-0.568	(1.617)
Label with a coalition of (male) winemakers x female respondent			-0.0317	(0.972)			0.966	(2.427)
Constant	0.394	(3.411)	0.829	(3.414)	-27.47**	(13.75)	-26.85**	(13.58)
Observations	1,351		1,351		1,351		1,351	
F (prob)	7.49	(0.000)	7.01	(0.000)				
Pseudo-R2	0.06		0.06					
Wald chi2 (prob)					60.35	(0.002)	69.85	(0.000)

Robust standard errors in parentheses.

***p<0.01, **p<0.05, *p<0.1