

How green is your 'Grüner'? Millennial wine consumers' preferences and willingness-to-pay for eco-labeled wine

Wie grün ist dein 'Grüner'? Die Zahlungsbereitschaft junger Erwachsener für Nachhaltigkeitslabel bei Wein

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Summary

Young adults are a promising consumer segment for the wine industry. Not only are their preferences important drivers of future consumption patterns, they already influence current retail wine sales. However, insights into young Austrian wine consumers are sparse. Neither have studies looked into their preferences for wine attributes, nor has their affinity to organic, sustainable, and carbon neutral wine been studied. Thus, this research conducts a discrete choice experiment with visual shelf simulations to assess how young adults value and trade off wine attributes for a bottle of Austrian 'Grüner Veltliner'. Multinomial logit model estimates are further used to estimate their willingness-to-pay for organic, sustainable, and carbon neutral production claims.

Keywords: wine choice, young adults, eco-labels

Zusammenfassung

Junge Erwachsene sind eine wichtige Zielgruppe für die Weinwirtschaft, denn welche Weine sie bevorzugen, entscheidet bereits jetzt über den Verkaufserfolg oder -misserfolg eines Weines mit. Bisher ist allerdings nur wenig über das Weinkaufverhalten junger Erwachsener in Österreich bekannt. Weder hat man sich intensiv mit ihren Weinpräferenzen auseinandergesetzt, noch ist ihre Zahlungsbereitschaft für biologisch, nachhaltig oder CO₂-neutral produzierten

Wein bekannt. Vorliegende Studie schließt diese Lücke und untersucht mittels diskreten Auswahlexperimenten, wie sich unterschiedliche Weinattribute auf die Kaufwahrscheinlichkeit einer Flasche ‚Grüner Veltliner‘ auswirken. Es wird zunächst ein Multinomiales Logitmodell geschätzt, und anschließend die Mehrzahlungsbereitschaft junger Erwachsener für biologisch, nachhaltig und CO₂-neutral zertifizierten Wein ermittelt.

Schlagnvorte: Weinkaufverhalten, junge Erwachsene, Öko-Labels

1. Introduction

One of the most promising consumer segments for the wine industry is that of young adults (THACH and OLSEN, 2006); also referred to as Millennial generation or Generation Y consumers by LANCASTER and STILLMAN (2002). Internationally, wine marketers are aware of the impact young adults have on retail wine sales. While growth in wine sale in the U.S. is attributed to the raised popularity of wine among young adults (THACH and OLSEN, 2006; GILLESPIE, 2010); negative wine consumption trends in traditional wine producing countries such as France, Spain, and Italy are potentially linked to the low familiarity with wine among young adults from these countries (THACH and D’HAUTEVILLE, 2008; MUELLER et al., 2011).

Having grown up jointly with the rise of green labeling initiatives, young adults are among the most environmentally and socially aware consumers, so that these additional ‘green’ product cues could play an important role in their wine choices (THACH and OLSEN, 2006). Especially as growing concerns about environmentally friendly food production are likely to cause spillover effects to the wine sector. Wine economists have intensively used discrete choice analysis to study how consumers trade-off and value wine attributes, and recently, studies have also turned to consumers’ valuations of organic, environmental, or social claims for wine (MUELLER-LOOSE and REMAUD, 2013; POMARICI and VECCHIO, 2014).

A rich body of literature on the average wine consumer exists, and research has also looked into young adults motivations for drinking wine (THACH and OLSEN, 2006); into how their wine consumption and information search behaviour deviates from older wine consumers (FOUNTAIN and LAMB, 2011; ATKIN and THACH, 2012); and has compared

their consumer preferences between countries (MUELLER et al., 2011; MAGISTRIS et al., 2011). Recently, Millennial consumers' purchase intentions for socially responsible wine were also assessed (POMARICI and VECCHIO, 2014).

However, insights into Austrian Millennial consumers are sparse. Neither have studies looked specifically into the affinity of Austrian young adult wine consumers to organic, sustainable, and carbon neutral wine, nor has their willingness-to-pay (WTP) for such claims been estimated. Thus, the objective of this study is twofold: first, to shed light on Austrian young adults' preferences for wine attributes; and second, to analyse whether or not young adults are willing to pay price premiums for eco-labeled wine.

2. Young adults and wine choice

One of the most promising consumer segments for the wine industry is that of young adults. In fact, demographic segmentation based on generational cohorts is among the most recently advocated segmentation methods in the wine industry.

Young adults report that the major reason for them to drink wine is its taste. Moreover, they search for good value for money, and appreciate reasonable priced, inexpensive, but good quality wines (THACH and OLSEN, 2006). Compared to older generations, they rely less on region of origin cues (HALL et al., 2004), spend less money on wine, and are usually lower in perceived wine knowledge (ATKIN and THACH, 2012; MAGISTRIS et al., 2011). Hence, insecure consumers such as young adults use awards and medals won to a greater degree than older generations when selecting a bottle of wine. Moreover, they rely more on recommendations from friends, family, or store personnel (MAGISTRIS et al., 2011; ATKIN and THACH, 2012). Considering sensory preferences across nations, MUELLER et al. (2011) showed that young adults prefer white and rosé wines to astringent reds. BRUWER et al. (2011) found significant differences in the preferences for dry and sweet wines by gender and age for Australians. They report that younger consumers of both sexes seem to be inclined to sweeter wines. However, far more females, compared to males, preferred a bottle of sweet to dry wine. Finally, it has to be noted that research studying the impact of organic or other environmental claims on young adults' wine

choice is sparse. THACH and OLSEN (2006) suggest that it would be advisable for wineries that engage in 'green' production practices to promote this to young adults; and POMARICI and VECCHIO (2014) could report price premiums for social and environmental claims.

3. Data and method

3.1 Choice experiment design

The experiment controlled for the most common grape variety in Austria, 'Grüner Veltliner'. The final selection of wine attributes and levels is presented in table 1.

The production process of a wine was highlighted by adding eco-labels to the choice alternatives: The EU organic label was used for organic wine, which is already well established in the Austrian market. No additional sustainability label exists for Austrian wine so far, although the introduction of a sustainability claim is currently being considered (VOGL et al., 2013). Thus, labels for the sustainable and carbon neutral claim were designed by the author and included in the study.

Tab. 1: Wine attributes and levels used in the choice experiment

Attribute	Type	Levels
Bottle Style	<i>Qualitative</i>	Bordeaux_green, Bordeaux_white, Burgundy_lightgreen, Burgundy_darkgreen
Region of Origin	<i>Qualitative</i>	Austria, Weinland, Wachau, Weinviertel
Price	<i>Continuous</i>	€ 2.90, € 5.90, € 8.90, €11.90
Production Method	<i>Qualitative</i>	conventional, organic, sustainable, carbon neutral
Residual Sugar	<i>Qualitative</i>	dry, medium dry, medium sweet, sweet
Award	<i>Qualitative</i>	none, 90/100 Falstaff points
Discount	<i>Qualitative</i>	none, on sale (-25 % sales discount)

Source: OWN CLASSIFICATION

3.2 Experimental design and choice setting

The experimental design was created in R (R CORE TEAM, 2012) using the package **support.CEs** (AIZAKI, 2012). An unlabeled experimental design in 32 choice sets was applied, which was further divided into eight sub-blocks to reduce the burden placed on the individual.

Respondents were asked to recall the following situation: *"Please imagine: You are standing in front of a wine shelf in a supermarket and you are looking for a bottle of white wine to bring to a casual dinner with friends. Your friends have asked you explicitly to bring a bottle of 'Grüner Veltliner'."* They were then provided with four bottle alternatives per turn and asked to select the wine they would actually choose to buy. An opt-out alternative was offered to account for the fact that consumers could always decide against a purchase.

3.3 Questionnaire design and consumer segmentation

To allow for consumer segmentation, data on young adults' past purchasing behaviour, their wine involvement levels, and subjective wine knowledge were collected. **Subjective wine knowledge** refers to a consumer's familiarity, experience, or expertise with wine (ALBA and HUTCHINSON, 1987); and was measured based on a three item scale as applied by PIENIAK et al. (2010). **Brand decision involvement** shows how interested a person is in selecting the "right" bottle of wine, and was measured based on a four item scale translated from LOCKSHIN et al. (1997). Constructs were computed as the average across the scale items, and the sample was split into three sub-samples based on respondents' mean scores following PERROUTY et al. (2006). Accordingly, the "Expert" or "High involved" groups are composed of the top 40% of respondents. The "Novice" and "Low involved" groups correspond to the 40% of the lowest mean scores.

3.4 The survey technique and consumer sample

Respondents were approached randomly in December 2012 and January 2013 at universities in Vienna, and were asked to participate in a survey on their wine purchasing behaviour. Participants qualified by having purchased at least one bottle of wine in the last 12 months. 180 students entered the final dataset (46% male; 54% female). The sample includes respondents from 18 to 35 years of age, and is skewed towards consumers below 25 years of age. This sample is not meant to be a reasonable representation of the average young adult wine consumer in Austria, but represents young adults pursuing higher education. Given the exploratory nature of the analysis, the results

provided here should be considered as a starting point for future analysis.

3.5 The Multinomial Logit Model and WTP estimates

The multinomial logit (MNL) model is described as follows in (1):

$$\text{Prob}_{iq} = \frac{\exp(V_{iq})}{\sum_{j=1, \dots, i, \dots, J} \exp(V_{jq}); \quad j=1, \dots, i, \dots, J \quad i \neq j} \quad (1)$$

where the probability of individual q choosing wine i over all available wines J is calculated by taking the exponential of the observed utility for wine i and dividing it by the sum of the exponential over all other wines J including wine i (HENSHER et al., 2005).

For this study, the **utility function** for the effect of wine attributes and interacted respondents' characteristics on the observable part of utility (V_{iq}) is specified as a linear additive function shown in (2):

$$V_{iq} = \text{ASC}_i + \sum_{n=1}^N \beta_n X_{ni} + \sum_{n=1}^N \beta_n X_{ni} \text{IC}_q \quad (2)$$

ASC_i refers to an alternative specific constant, showing the utility from purchasing a bottle of wine compared to the opt-out alternative. β_n are the utility weights for the attribute levels associated with each wine attribute level (X_{ni}). The effect of individual characteristics is shown by interacting selected attribute levels with individual characteristics (IC_q). Finally, marginal WTP measures are then calculated as the ratio of two utility parameter estimates (HENSHER et al., 2005). Accordingly, average WTP across the sampled individuals for a particular attribute level is given by (3):

$$\text{WTP} = - \left(\frac{\beta_{\text{attribute level}}}{\beta_{\text{price}}} \right) \quad (3)$$

4. Results and discussion

4.1 Multinomial Logit Model estimates

MNL estimates are presented in table 2. The presented model specification correctly predicted 40% of respondents' wine choices, representing a significant improvement compared to selection by chance (i.e. 20%).

As expected, the price coefficient is negative. Thus, on average higher prices reduced the probability of a wine being chosen. This is in line with others reporting on the price-sensitivity of young adults (THACH and OLSEN, 2006). Nevertheless, interaction terms showed mitigating

effects of individual characteristics on price sensitivity. First, individuals who are used to purchasing wine at specialty retailers (wineries, Wein & CO shops, "Vinotheken"), male respondents, and individuals higher in brand decision involvement were relatively more likely to spend more on a wine compared to the sample average.

All eco-labels showed significant and positive utility estimates, indicating that young adults value environmental claims for wine positively. Among the studied claims, organic wine received the highest implicit valuation by young consumers. In addition, individuals who had bought organic wine before were not only more likely to purchase organic wine again, they were also more likely to purchase wine at higher price points.

Only the well-known specific wine-growing region Wachau resulted in a higher choice probability. This is in line with LOCKSHIN et al. (2006) who showed that well-known regions contribute positively to purchase probabilities. However, this positive effect cancelled out for young adults low in decision involvement. The emerging wine region Weinviertel increased the purchasing probability for students coming from provinces close to the Weinviertel.

Young adults were more likely to choose wines that either had received an award or were offered at special sales discounts. However, subjective wine knowledge mitigates this positive effect. "Experts" gained less utility from awards and sales discounts than the sample average. This goes well with findings by ATKIN and THACH (2012), suggesting that insecure consumers use awards to a greater degree.

Semi-dry wines received the highest utility values on average, while semi-sweet and sweet wines received significant negative valuations. This supports BRUWER et al. (2011), who report an affinity for moderately sweeter wines among younger consumers. Similar to BRUWER et al. (2011) a preference for sweeter wines was discovered for female wine consumers. Moreover, wine novices seemed to be more inclined to sweeter wine styles.

Tab. 2: Multinomial Logit Model results

	coef	se(coef)	z	Pr(< z)	
ASC	0.800	0.258	3.100	1.937E-03	**
Bord_white	-0.225	0.172	-1.307	1.912E-01	

Burg_lightgreen	0.014	0.135	0.105	9.164E-01	
Burg_darkgreen	-0.389	0.187	-2.074	3.811E-02	*
Weinland	0.115	0.141	0.816	4.147E-01	
Weinviertel	-0.249	0.171	-1.454	1.459E-01	
Wachau	0.353	0.163	2.169	3.012E-02	*
award	0.619	0.125	4.937	7.950E-07	***
discount	0.600	0.126	4.779	1.760E-06	***
semi-dry	0.350	0.140	2.504	1.227E-02	*
semi-sweet	-0.576	0.219	-2.633	8.459E-03	**
sweet	-0.988	0.236	-4.184	2.870E-05	***
organic	0.415	0.180	2.304	2.122E-02	*
sustainable	0.385	0.151	2.553	1.068E-02	*
carbon neutral	0.383	0.153	2.498	1.249E-02	*
price	-0.268	0.032	-8.503	<2E-16	***
Bord_white:MALE	0.558	0.220	2.533	1.131E-02	*
Burg_darkgreen:BDI_HIGH	0.520	0.226	2.298	2.155E-02	*
Weinviertel:NOE	0.634	0.228	2.774	5.533E-03	**
Wachau:BDI_LOW	-0.381	0.225	-1.698	8.958E-02	.
award:EXPERT	-0.374	0.182	-2.058	3.958E-02	*
discount:EXPERT	-0.405	0.182	-2.229	2.584E-02	*
semi-sweet:FEMALE	0.607	0.236	2.569	1.019E-02	*
sweet:FEMALE	0.675	0.254	2.653	7.969E-03	**
semi-sweet:NOVICE	0.618	0.234	2.641	8.268E-03	**
sweet:NOVICE	0.918	0.253	3.630	2.840E-04	***
organic:BUY_ORGANIC	0.365	0.213	1.713	8.665E-02	.
price:SPECIALTY	0.095	0.037	2.604	9.209E-03	**
price:MALE	0.085	0.026	3.272	1.070E-03	**
price:BDI_HIGH	0.087	0.026	3.299	9.710E-04	***
price:BUY_ORGANIC	0.073	0.026	2.808	4.982E-03	**
price:INC>500	0.043	0.025	1.741	8.165E-02	.

Notes: 687 observations of each main-effects level. Variables are dummy coded.

BDI: Brand Decision Involvement; NOE: respondents from provinces near the Weinviertel region;
EXPERT/NOVICE: high/low in subjective wine knowledge; BUY_ORGANIC: had bought organic wine before;
SPECIALTY: respondents buy wine most frequently in specialty stores; INC: incomes exceeding € 500.

Source: OWN CALCULATION

4.2 Willingness-to-pay estimates for eco-labels

Marginal WTP estimates reveal that young adults are willing to pay price premiums for eco-labels. The organic claim received the highest valuation, and on average, young adults were willing to pay € 1.55 more for wine labeled organic compared to a conventionally produced one. Little difference was found in the valuation of sustainable and carbon neutral wines. Holding all else constant, young adults were willing to pay € 1.44 more for sustainable and € 1.43 more for carbon neutral labeled wine.

In a study by MUELLER-LOOSE and REMAUD (2013), organic claims too resulted in the highest WTP estimates when compared to any other environmental claim. Their WTP measures for organic wine (France – € 2.04; Germany – € 1.69) are well in line with estimates of the present study. However, their low estimates for other environmental responsibility claims, and the even negative valuations of carbon neutral claims could not be reproduced for the present sample of young adults. On the contrary, all claims were positively valued and hardly any difference was found between their WTP for organic, sustainable, and carbon neutral wines.

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