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Who likes it "sparkling"? An empirical analysis of Prosecco consumers' profile

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Abstract

The purpose of the study is to understand the profile (if any) of the typical Prosecco wine consumer, for both Controlled Denomination of Origin (CDO) and Controlled and Guaranteed Denomination of Origin (CGDO) types, with a twofold objective. First, the study aims at contributing to the economics literature dealing with opening the "black box of preferences" and understanding consumers' behavior. Second, more practically, the study aims to advise producers on the design of more targeted industrial strategies and policies. Using Homescan data collected from large-scale retail trade transactions in the period 2009-2011, we adopt a probit model and test a set of simple relationships between the probability that Prosecco (in both Geographical Indications) is purchased and selected consumers' socio-economic characteristics and product attributes. The results allow us to draft a profile of the typical consumer of Prosecco. The Prosecco CDO consumer lives in the North of Italy, is wealthy, relatively young, lives in a small (2-3 people) household and reacts to price changes. In addition to the latter feature, the typical Prosecco CGDO consumer has a preference for selected brands and extra-dry wine taste. Marginal effects are computed and predict that a 1% increase in Prosecco CDO price will decrease the probability that a consumer purchases the product by 0.36%. In addition, a 1% increase in Prosecco CGDO price will decrease the probability that a consumer purchases the product by 0.26%. The different sensitivity to price changes is corroborated by the fact that Prosecco CGDO consumers express a preference for the product characteristics (brand and taste) and might be more "loyal to the product" than Prosecco CDO purchasers. Further research will broaden the scale of analysis and adopt multinomial probit models in order to simultaneously assess the profile of different consumers for other types of sparkling wines, including Champagne and Franciacorta.

Background

Prosecco is an Italian sparkling or semi-sparkling[a] white wine, made mainly from "Glera" grapes, and is currently the wine with the fastest growing demand worldwide[b]. Although the name is derived from that of the Italian village of Prosecco near Trieste, where the grape may have originated, Prosecco is mostly produced in the Veneto region, mainly in Treviso province. Although Glera has been cultivated around the Conegliano and Valdobbiadene hills since the 18th century, Prosecco's success has only begun in the last decades, since its mass production as sparkling and semi-sparkling wine. There are now more than 25,000 ha of Glera vineyards, and more than 350 million bottles are produced annually[c]. Prosecco is now universally recognized as a high quality sparkling wine[d], and exported all over the world, especially to the USA,

Germany and the United Kingdom[e]. This sparkling white wine, rich in freshness, flavors, and with a low alcohol content, is strongly liked by consumers and sales are continuously increasing both in Italy and worldwide. In addition, the Prosecco production method is relatively inexpensive[f] if compared to those products that are "perceived" as substitutes by consumers of sparkling white wines, spanning from Franciacorta to Cava, to Trento, and even, for particular demand segments, *Champagne*.

Prosecco wine can be differentiated into Prosecco Controlled Denomination of Origin (CDO), and the Prosecco Controlled and Guaranteed Denomination of Origin (CGDO), depending on the geographical area where the grapes are cultivated. It is worth noting that both CDO and CGDO wines come under the European DOP classification (Protected Designation of Origin), so outside Italy are hypothetically of the same quality level. The reasons for the presence of two similar products on the market are to be found in the production regulation change that took place a few years ago. In 2009, the strong demand for Prosecco wine led to a need to increase supply, attained with a new regulation that allows the expansion of the Prosecco Area. In fact, the historical area of production, formerly Prosecco CDO area, gained the CGDO qualification, the more prestigious appellation among all Italian Geographical Indications (GI). The CGDO, in comparison with the CDO, has a stricter production protocol, and the quality of each batch is compulsorily checked by a tasting commission before being commercialized. At the same time, an extended Prosecco CDO Area that included two regions and seven provinces was created, leading to a fast expansion of Glera cultivated surface[g] (nowadays the CDO Prosecco is the biggest Italian wine GI[h]). Consequently, in the period 2010–2013 there was a 35% increase in Prosecco supply, with an equal increase in demand.

As Prosecco demand grows several questions arise, with both theoretical and practical implications. Who buys this wine? Is it possible to tackle the profile of a typical consumer or, in more technical terms, is it possible to elicit the preferences structure of those who purchase the wine? Is there any difference between Prosecco CDO and CGDO consumers? Gaining insights into this issue can contribute to the economic literature debate on preferences' assessment and consumer behavior. We know from the theory that the preference structure of consumers drives the choice, but we know little on the ways consumers form their preferences and orient consumption. In addition, the study aims to be more than just an intellectual exercise, since it can provide insights to Prosecco producers for industrial and pricing strategies. In this perspective, using Homescan data, collected from *Large-Scale Retail Trade* (LSRT) transactions in Italy in the period 2009–2011 we adopt a probit model and test a set of simple relationships between the probability that Prosecco (in both Geographical Indications) is purchased and selected consumers' socio-economic characteristics and product attributes. Homescan data are collected and provided by A.C. Nielsen. Homescan data are very informative since contain information on both product characteristics and consumers' information[i].

This paper is organized as follows: Section 2 describes the research motivations and provides a survey of the economic literature on consumers' behavior and preferences' assessment in the wine sector; section 3 describes the Homescan data used in this research and provides selected descriptive statistics and background information. Section 4 explains the modeling strategy and comments on the estimation results. Section 5 gives the conclusions.

Rationale and literature survey

Neoclassical economics suggests that individuals choose according to self-interest and constraints. As (Andreoni and Miller 2008; page) 15 highlight "At its weakest, self-interest only means that choices conform to some underlying preference ordering that is complete, reflexive and transitive, and, hence, some utility function can be used to describe behavior". Individual preferences represent a dimension of choice and are formed and ordered according to criteria that, though not disputed in the way they are ordered and differ across individuals (Stigler and Becker 1977), are studied by economists who are committed to opening up the "black box of preferences" (Arrow, 1951). If it is true that "the individual may order all social states by whatever standards he deems relevant" (Arrow 1951, p. 17), it is very difficult to empirically assess those preferences, for whatever good. In this perspective, a suggestion for preferences' elicitation comes from (Andreoni and Miller 2008; page 15): "… the assumption of self- interest does not tell us what variables are in that utility function. What does? Our methodology is that people themselves, through their actions, will do so". The challenging task aimed at understanding and eliciting preferences is applied, in this study, to the consumption of the Prosecco wine. Following Andreoni and Miller (2008), we study the Prosecco consumers' behavior in order to assess and elicit their preference structure for the good, and more in particular, in order to profile the "typical" (if any) Prosecco consumer's socio-economic characteristics.

The economic literature has addressed the study of wine consumers' preferences and behavior by making use of elicitation methodologies based on both "stated" and "revealed" preference methods. In the research stream of "stated" preference studies, Gil and Sánchez (1997) used a conjoint designed experiment to examine and compare wine attribute preferences within and between two different Spanish regions. They evaluated the importance of three attributes: price, region of origin and grape vintage year, finding origin to be the most important attribute, but with relevant differences in consumer behavior between regions, in particular in terms of price sensitivity. Similar results were found by Mtimet and Albisu (2006), and Veale and Quester (2009). Mtimet and Albisu assessed Spanish Denominations of Origin (DO) wine consumer behavior through a choice experiment technique. They estimated willingness to pay based on four attributes: DO, price, wine aging and grape variety. Their results showed the DO and wine aging to be the most important in the consumer buying decision, although with some differences between frequent and occasional consumers. Veale and Quester (2009) found price and origin to be the most important attributes influencing consumer quality perceptions. Lockshin et al. (2006) used a discrete choice experiment to show how relative purchase rates change as brand, region, price and any award are changed. In addition, they found a price-quality effect, where demand increases as price increases, then drops after a certain point. Thiene et al. (2013) explored the effect of inclusion of answers to attitudinal questions in a latent class regression model of stated willingness to pay (WTP) for Prosecco. They found a reasonable pattern of differences in WTP for Prosecco according to DO and the emergence of important ancillary indicators of taste differences for specialty wines. Somogyi et al. (2011) assessed the underlying motivations of Chinese wine consumption through quantitative focus groups, with participants divided into groups based on age and gender. Their main findings were that Chinese wine consumers are influenced by face and status. In addition, the notion of

wine consumption for health-related purposes was uncovered and a linkage found with traditional Chinese medicine. Among the other variables examined in the understanding of wine consumption habits and consumer preference we can highlight type of aging (Pérez-Magariño et al. 2011), alcohol strength (Saliba et al., 2013), color and style (Bruwer and Buller, 2012), reputation (Caracciolo et al., 2013), country of origin (Balestrini and Gamble, 2006; Bruwer and Buller, 2012; Di Vita et al., 2014), type of bottle closure (Marin et al., 2007). sustainability logos (Ginon et al., 2014) and gender (Bruwer et al., 2011).

In the literature on revealed preference methods, as applied to wine consumption issues, Ashenfelter (2008) used hedonic analysis for estimating consumers' implicit prices, e.g. valuation of the wine characteristics and quality attributes. The author gathered auction data on Bordeaux wines, and along with weather data, used this to predict the prices and quality of the wine. Nerlove (1995) used data from the Swedish state-importer of alcohol. He estimated hedonic price functions and the own-price demand elasticity for wine in Sweden, arguing that the state importation of wines resulted in completely elastic, parallel supply of wines. In particular, implicit prices for quality attributes are determined not from a regression of variety price on a vector of quality attributes, but rather from a regression of quantity sold (adjusted for weeks of availability) on price and quality attributes. Such a reduced form is justified by the assumption that prices and attribute contents can be taken as exogenous to the Swedish consumers, who are highly sensitive to price. Estimates of the implicit valuations of quality attributes are shown to differ greatly from those obtained from the more usual hedonic regression with price as the dependent variable. Combris et al. (1997) applied the hedonic price technique to Bordeaux wine. In the hedonic function, the authors included not only the objective characteristics appearing on the bottle label but also the sensory characteristics of the wine. Their data came from an experimental study in which juries evaluated and graded a sample of Bordeaux wines. The estimation of the hedonic price equation showed that the market price is essentially determined by the objective characteristics. The estimation of a jury grade equation showed that quality, unlike market price, is essentially determined by the sensory characteristics.

Considering the application of revealed preference methods for assessment of consumers' behavior and preferences specifically in the Italian wine sector, the following papers can be highlighted. Torrisi et al. (2006) used a linear almost ideal system to provide price and expenditure elasticities of Italian red table wine demand, finding a tendency to substitution across brands and a degree of competition among leading brands. Stasi et al. (2011) adopted quadratic almost ideal demand on a four equation system (QUAIDS) for estimating demand and elasticities (own-price and substitution) in order to test this hypothesis and verify the importance of DO in consumers' choice of wine. Estimates proved the existence of a differentiation effect of GIs (geographical indications) in terms of magnitude of elasticities and substitution effects. GIs corresponding to higher quality generate lower price sensitiveness and product substitution than wine without GIs. Controlled Origin Denomination (DOC) wine demand results are price sensitive and substitute for wines of different GIs. Controlled and Guaranteed Origin Denomination (DOCG) is the most profitable GIs. In fact, because of its inelastic demand, DOCG price could potentially be increased, to a certain extent, without any significant effect on volumes consumed. Cembalo et al. (2014) estimated a demand system

(censored QUAIDS), using a statistically representative panel of 6,773 Italian households, to see to what extent, if any, substitution occurs in home consumption of basic wines, which is the main channel of distribution of inexpensive wines in Italy. The authors highlight the importance of packaging, such as a carton as an alternative to glass, in driving the preferences for cheap wines.

The present paper follows the literature on preference elicitation and understanding in wine markets. It is an attempt to understand consumers' behavior (and underlying preferences that drive choice) in the Italian Prosecco market. Differently from Thiene et al. (2013), the paper adopts a revealed preference method based on the empirical analysis of Homescan data[j] in order to understand what affects the choice to consume different types of Prosecco and what socio-economic and product characteristics determine the preferences for Prosecco. Specifically, we adopted a choice model derived in a random utility maximization model (RUM) framework, in which decision makers are assumed to be utility maximizers. The theoretical framework is based on Lancaster approach, asserting that a good per se does not give utility to the consumer. A good has a set of characteristics, and these characteristics may give rise to utility. In addition, Lancaster generalized that goods can posses multiple characteristics which can be shared by multiple goods separately (Lancaster, 1966). Following Lancaster, a consumer will choose the bundle of attributes of the goods that maximizes his/her utility to a budget constraint. Empirically, the relationship between products attributes/sociological variables and consumer preferences is formally investigated through a probit regression based on the RUM theory (Mc Fadden 2001). The empirical strategy differs from the above selected market valuation literature, because we do not model a hedonic price or a demand function, but attempt to elicit preferences by looking at a dichotomous behavior: the binary choice to purchase (or not) a certain type of Prosecco and the variables that affect the choice to purchase. The paper is a contribution to the attempt to understand consumers' behavior and the "*black box of preferences*" in the Prosecco market.

Methods

Data and empirical strategy

Data are provided by A.C. Nielsen. They are gathered from the wine purchase records, covering the period from January 2009 to December 2011, collected by A.C. Nielsen through scanner transactions in Italy, recorded by Homescan panelists at home[k]. The data cover 246,860 wine purchases, distributed over three years, made by 9,534 households and refer to 9,811 wine products sold in the LSRT. In particular, in this study we have downscaled the original large dataset by removing all transactions that did not refer to Prosecco wine. This means that we have downscaled the dataset to a total of 4,960 observations. The Prosecco dataset contains information about the selling price and purchased quantities, format and packaging[l], organoleptic characteristics[m] of the wines, geographical origin[n], brand[o], type of outlet[p] and location. The dataset also contains information about the panelists' socio-economic characteristics spanning from income, location, type of family and number of household members[q]. Table 1 describes the variables and summarizes the descriptive statistics of selected variables. The table contains three pieces of information: a) variables related to product characteristics; b) variables related to product marketing and c) variables related to consumers' socio-

Table 1 Descriptive statistics

Variable	Description	Mean (% frequency)	Std. Dev	Min	Max
Price	Price of Prosecco per liter (€)	7.02	2.36	0.2	25
Quantity	Liter of Prosecco purchased per person	1.02	1.33	0.4	22.5
Format	Prosecco j's bottle content in liters	0.75	0.07	0.2	1.5
Type	Brut	11%			
	Extra dry	37%			
	Dry	20%			
	Sweet	1%			
	Other	31%			
Denomination	CDO	65%			
	CGDO	23%			
	IGT	12%	*Produced before 2010*		
Seller type	Discount	9%			
	Hypermarket	45%			
	Supermarket	41%			
	Other	5%			
Household income	Low income	18%	*<535 € per capita per month*		
	Medium-low income	25%	*535 – 908 € per capita per month*		
	Medium-high income	32%	*908 – 1389 € per capita per month*		
	High income	25%	*>1389 € per capita per month*		
Household members	1 member	9.2%			
	2 members	30.1%			
	3 members	29.6%			
	4 members	24.4%			
	5+ members	6.6%			
Family organization	Pre families	2.8%			
	New families	10.8%			
	Established families	13.0%			
	Maturing families	11.9%			
	Post families	24.5%			
	Older couples	32.6%			
	Older singles	4.4%			
Consumers' age	<34 years	4.9%			
	35 – 44 years	24.2%			
	45 – 54 years	33.1%			
	55-54 years	21.9%			
	>65 years	15.9%			

Source: own elaboration from A.C. Nielsen Homescan data.

economic characteristics. In particular, selected descriptive statistics highlight that the wine is mainly purchased by people with a household income above average (32%); there is also relevant participation for households with an income both high (25%) and below average (25%), while purchases fall for those with low income (18%).

Table 2 Observations distribution over time

	Total	Prosecco CDO	Prosecco CGDO	CDO/CDOG ratio
2009	84,089	1,556	267	5.82
		(1.85%)	(0.32%)	
2010	82,935	1,640	270	6.07
		(1.98%)	(0.33%)	
2011	79,836	1,764	361	4.88
		(2.21%)	(0.45%)	

Source: own elaboration from A.C. Nielsen Homescan data.

In order to contextualize the study, we provide some information on the wine markets in Italy, looking at price and sales trends. Table 2 shows the relationship between the complete dataset transactions and those referred to Prosecco. It can be highlighted that whilst total wine purchases have decreased from 84,089 to 79,836, the purchase of Prosecco has risen from 1,556 to 1,764 for CDO type, and from 267 to 361 for CGDO, with an increase of the Prosecco share on total wine sales of 0.36% and 0.13%, respectively. In 2011 Prosecco represents 2.66% of the total wine sales made in the LSRT.

Table 3 reports a comparison among wine prices in the period 2009–2011. In 2011, the difference in unitary price between the two types of Prosecco was 1.07 €/L, while in 2009 and 2010 it was 2.22 and 2.96 €/L, respectively. Differently from other wines, Prosecco has experienced an inverse trend, showing an overall price increase of 21.4%. However, the price differential between Prosecco CDO and the average price of other sparkling wines, decreased from 4.24 €/L in 2009 to 1.01 €/L in 2011. The increase in the average price of Prosecco might depend on a different pricing strategy, aiming to equalize prices of Prosecco with the price of direct competitors like Asti and Franciacorta. In order to corroborate this interpretation, it is worth noting that the price of CGDO Prosecco, sold at a price similar to the Asti and Franciacorta prices, decreases by 7.2%. It is also interesting to note that in 2013 we can identify two different and well defined price clusters: one for sparkling wines, spanning from 6.06 to 7.24 €/L, and another for still and semi-sparkling wines, which spans from 2.26 to 2.91 €/L.

Table 3 price trends in LSRT (€/L)

	Average '09-'11	2009	2010	2011	Δ '09/'11
Prosecco	5.50	5.15	5.00	6.25	21.4%
CDO	5.16	4.72	4.60	6.06	28.4%
CGDO	7.38	7.68	7.42	7.13	−7.2%
Franciacorta	9.08	10.02	10.48	7.24	−27.7%
Asti	8.15	9.19	8.61	6.85	−25.5%
Lambrusco	3.57	4.05	3.84	2.91	−28.1%
Still red	3.94	4.50	4.36	2.95	−34.4%
Still white	3.38	3.68	3.58	2.93	−20.4%
Still rosè	3.11	3.57	3.43	2.26	−36.7%

Source: own elaboration from A.C. Nielsen Homescan data.

Table 4 Sales distribution of Prosecco and wine in the LSRT

	Prosecco	Wine
Discount	7.41%	11.03%
Hypermarket	47.57%	38.45%
Supermarket	39.71%	42.43%
LS	0.82%	2.23%
Free Service	0.67%	1.20%
Others	3.82%	4.66%

Source: own elaboration from A.C. Nielsen Homescan data.

Finally, Table 4 shows how sales are distributed, within the different LSRT channels, for Prosecco and other wine types.

Empirical strategy and estimation results

We wonder what spurs the consumer to choose a bottle of Prosecco CDO or Prosecco CGDO, and what types of product attributes and consumers' socio-economic characteristics affect that choice. We model the choice of purchasing Prosecco CDO (Prosecco CGDO) as a dichotomous choice. Each consumer is confronted with the (binary) choice to buy or not to buy the selected Prosecco type. The choice, is in turn, affected by a set of product characteristics and consumers' socio-economic characteristics. In

Table 5 Selected ML estimates. Probit Model

Explanatory Variables	(1) Consumption of Prosecco CDO	(2) Consumption of Prosecco CGDO
High Income	0.02*	-
Low Income	−0.19**	-
Pre Families	0.27	-
New Families	0.21*	0.31***
Maturing Families	−0.14	-
Post Families	0.36***	-
Older Couples	−0.05*	-
(Log)Price	−0.30***	−1.06***
(Log)Quantity	0.44***	0.91***
Age 35-44	0.25*	0.28*
Age 45-54	−0.29*	-
One household member	−0.45***	-
Two household members	0.20***	-
Three household members	−0.34*	-
Discount Market	−1.15***	-
Hypermarket	0.23***	0.24*
Carpené Malvolti	-	3.41***
La Gioiosa	-	1.59***
Extra-dry	-	0.34***
Constant	−0.38	−3.58*
R-squared	0.45	0.51

*** = 1% statistically significant; ** = 5% statistically significant; * = 10% statistically significant.

order to model such a dichotomous choice behavior, a linear regression model is generally inappropriate because this implies that the variance of the error term is not constant but dependent upon the explanatory variables and model parameters (see Veerbek 2000). To overcome the problems with a linear model, there is a class of binary choice models (or univariate dichotomous models), designed to model the choice between two discrete alternatives. A (general) relationship of this type can be modeled as follows:

$$P\{y_i = 1|x_i\} = G(x_i, \beta) \quad (1)$$

for some functions G(.). Equation (1) says that the probability of having $y_i = 1$ (the purchase of Prosecco CDO and CGDO) depends on the vector x_i, containing characteristics and variables that positively or negatively affect that probability[r]. The probit model described in Equation (1) is then estimated by maximum likelihood. We estimate, therefore, a set of simple relationships between the probability that Prosecco (CDO or CGDO) is purchased and some explanatory variables, including socio-economic characteristics of the consumers (e.g. age, household type, income level) and product characteristics (e.g. price, brand, type etc.). Selected results are reported in Table 3, 4 and 5, column one for Prosecco CDO and column two for Prosecco CGDO.

The probability that consumers buy Prosecco CDO positively depends on several explanatory variables, for instance the fact that consumers belong to "post families"; are aged between 35–45, earn a high income and live in a small (two people) household. In addition, the probability that the consumers buy Prosecco CDO is positively affected by the purchase of the product at a hypermarket. On the contrary, the probability that the consumers buy Prosecco CDO, negatively depends on the fact that consumers belong to maturing families and/or older couples; are aged between 45–54; belong to a segment of low income earners and live in households composed of three members or more. If the purchase of the product is done at a discount market and the product price increases the probability of purchasing Prosecco CDO decreases.

For the Prosecco CGDO, the probability that consumers buy the product positively depends on several indicators, for instance, the fact that consumers belong to "new families" and are aged between 35–45 and that the purchase of the product is made at a hypermarket. For this type of Prosecco, brands matter and the probability that the product is extra-dry and branded Carpené Malvolti and La Gioiosa positively affects the purchase. The probability that the consumers buy Prosecco CGDO negatively depends on the increase of the product price.

If the description of the results is straightforward and follows the reading of the econometric estimates, their interpretation appears to be more challenging. Our results suggest that Prosecco is a product preferred by young, probably DINKs (double income, no kids) consumers, living in small households. The *Charmat* method confers a very light and fresh flavor to the wine, much appreciated by young people. The consumption characteristics of Prosecco CDO are very versatile, since the use of this wine spans from informal family and friends' gatherings to consumption at restaurants/pubs, to more formal occasions. What is preferred seems to be the possibility of an easy consumption: light wine, fresh flavor at low price. At the same time, the consumers react to price changes (price changes of a product that is not too costly), since

an increase in the product price, as in the case of every normal good, negatively affects the probability of purchasing the product. There seems to be an apparent "paradox" in the interpretation of the empirical estimates, since young DINKs, earning high income, are reactive to price fluctuations and purchase the product at hypermarkets, probably when shopping for other commodities of day-to-day use. The apparent puzzle might be solved by considering a wider consumption bundle and the propensity to purchase a wider set of different products by these kinds of consumers. Therefore, when purchasing Prosecco, the high income young consumer has a strong revealed preference for the product, expressed in the purchase itself. At the same time, the consumer reacts to price changes. Therefore we can assess that he is maximizing his utility given a budget constraint which is not binding in strictly monetary terms but in terms of relative prices. These results are in line with the findings of Thiene et al. (2013), where Prosecco price changes induced almost 50% of a sample of consumers to reconsider their purchasing choice.

The characteristic of Prosecco as a wine "that aggregates socially" (since it is typically consumed at parties, bars and restaurants, for dinners and aperitifs) supports our empirical findings. In fact, the probability that the wine is purchased is negative in the case that the consumer belongs to maturing families and older couples. On the contrary, the probability is positive when consumers are young and living in small households. This is probably due to the fact that the socio-economic characteristics that negatively affect the purchase of Prosecco are related to traditional wine consumption paths. Older couples, indeed, more usually have a set of habits that include drinking still wine with their meals and conducting a quieter lifestyle. Younger consumers, on the contrary, are social creatures who enjoy the company of other people whilst drinking a fresh, light wine at a relatively low price. The socializing characteristics of Prosecco wine are appreciated beyond the original geographical area. In fact, northwestern Italy, traditionally characterized by a tasting preference towards strong ripened red wines, is nowadays the main Prosecco consumption pole. This is a clear sign of a change in consumers' taste.

The characteristics like brand and organoleptic attributes are appreciated only by Prosecco CGDO consumers. This is not surprising since the CGDO wineries are most prestigious, date back to the middle of the 20^{th} century, and create a strong reputation associated to Prosecco wine year by year. In addition, if the CGDO wineries specialize in Prosecco production, the CDO ones produce a wide range of wines (still red, rosè and white, wine from dried grapes, etc.) and their name is generally less associated to Prosecco wine. The fact that the CGDO consumer pays more attention to organoleptic attributes could be due to his superior knowledge about Prosecco. It is likely that people willing to pay more and who choose historical Prosecco wineries have a better knowledge about Prosecco characteristics, and consequently prefer the organoleptic attributes reported on the label.

Finally, the interpretation of the results might suggest concrete indications for the design of the industrial policy of the Prosecco producer. It is important to highlight that the variables related to product differentiation (spanning from brand, to organoleptic, to bottle format) present estimated coefficients that are not statistically significant. Prosecco CDO is fresh, cheap and with a low alcohol content. These characteristics render the young DINKs the ideal consumers for this product. The main suggestion, therefore,

is to use a simple pricing strategy. In fact we can corroborate this industrial policy suggestion by looking at the price trends of Prosecco with respect to other sparkling wines that could be considered substitutes for this product. As shown in section 3, the Prosecco price has increased over the studied period in order to align with the prices of the main substitutes. The competitive advantage of Prosecco relies in the fact that the *Charmat* method is relative cheaper with respect to the *Champenoise*, with which the other main Italian sparkling dry wines are produced. This represents an important insight for industrial policy since producers have to be very careful in their pricing strategy in order to avoid generating (marginal) losses of market shares. In particular, we can compute marginal effects and predict that a 1% increase in the Prosecco CDO price will decrease the probability that a consumer buys the product by 0.36%. In addition, a 1% increase in the Prosecco CGDO price will decrease the probability that a consumer buys the product by 0.26%. The different sensitivity to price changes is corroborated by the fact that Prosecco CGDO consumers express a preference for the product characteristics (brand and taste) and might be more loyal to the product than Prosecco CDO purchasers. The choice of the trade channel also impacts the pricing strategy. The LSRT can sell large stock of products at relatively low prices. This means that, especially for the smallest Prosecco wineries, it could be more convenient to look at other sales channels (e.g. *HoReCa*). This strategy seems to be already partially implemented by the firms, and is assessed in our data sample since only five brands (out of a total of 95) have sold almost 50% of the Prosecco[s].

Conclusions

Who likes it sparkling? A wealthy, relatively young Northern Italian, who lives in a small household. He/she buys Prosecco at a hypermarket and reacts to price changes at different rates: a 1% increase in the Prosecco CDO price will decrease the probability that he/she buys the product by 0.36%. In addition, a 1% increase in the Prosecco CGDO price will decrease the probability that he/she buys the product by 0.26%. He/she can choose among 95 brands, but the probability that he/she buys Prosecco CGDO increases if the brand is Carpené Malvolti or La Gioiosa. In addition he/she enjoys the extra-dry taste of the CGDO type. He/she is less interested in the brand nor in the taste when purchasing Prosecco CDO. On the contrary, those who do not like sparkling wine belong to maturing families and/or older couples, are aged between 45–54, belong to a segment of low income earners and live in a household composed of three members or more. The preference structure of Prosecco consumers is captured by the definition of the profile. A profiled consumer, characterized by selected socio-economic attributes prefers the product and selected characteristics of the product (selected brand, extra dry). The "black box of preferences" is (partially, within the limitation of the dataset), opened to show who has preference for what.

These are the bulk of the results derived from the present study that allowed us to highlight the profile of the Prosecco purchaser, therefore, to capture the latent preference structure for the product and the selected characteristics of the product. However, the results open a set of theoretical and empirical questions that remain unanswered for further research. First, if we were able to target who likes sparkling wine, we may be able to understand why they like it. *De gustubus disputandum non est* (Stiegler and

Becker, 1974), however, it is instructive and interesting to understand why a certain consumer profile is associated to the consumption pattern of a particular product. It is interesting to understand whether preferences are formed endogenously (depending on the personal, intimate nature of the individual/consumer) or if they are affected exogenously, with external (socio-economic and cultural) changes. In this perspective, for instance, consumers' preferences for wine in the last years have evolved towards lighter and fresher products, with lower alcohol content and easier to drink. An important, further research question aims at understanding whether this evidence is due to an exogenous effect on preferences' structures or is the result of an endogenous change in consumers' preferences. In order to address those points, further research will also aim at exploring different empirical strategies in order to simultaneously assess the profile of different consumers for different types of other wines, including champagnes and other sparkling wines.

Endnotes

[a]Still Prosecco has a very low incidence on total production.

[b]Unindustria convention, 29th October 2013.

[c]Data collected from "Rapporto di Distretto 2013", available at www.prosecco.it and from the "Bollettino del Consorzio di Tutela della Denominazione di Origine Controllata Prosecco", April 2014.

[d]Kinssies, Richard (July 10, 2002). "On Wine: Prosecco sparkle on their own terms". Seattle Post-Intelligencer. Retrieved 2008-12-29.

[e]CIRVE, 29th November 2013 – Presentation at Unindustria convention: USA, Germany and UK account together for more than 62% of total Prosecco imports.

[f]Sparkling and semi-sparkling Prosecco is produced with the *Charmat* method, an alternative method to the more "famous" *Champenoise* procedure for producing sparkling wines. The procedure presents economies of scale and allows the producers to market the product at low (average) prices.

[g]Source: Agenzia Veneta per i Pagamenti in Agricoltura (AVePA), 2014.

[h]The Prosecco Controlled Denomination of Origin (CDO), lies in an area that includes nine administrative provinces, and more than 600 municipalities, while the Prosecco Controlled and Guaranteed Denomination of Origin (CGDO) is produced in an area that includes 15 municipalities all in Treviso province.

[i]The Homescan panels are demographically representative of the household population and therefore the purchasing behavior of the panel can be grossed up to represent that of all households. Each household is equipped with a small handheld terminal through which details of all purchases are entered - product, quantity, price and outlet. This information, along with the date of purchase, is linked with demographic details of the household and the household purchasing history.

[j]Outside the wine sector, Homescan data have also been used to estimate brand level price elasticities and price response elasticities (Cotterill, 1994), change in household purchasing habits due to business cycle fluctuation (Cotti et al., 2014), the influence of selected demographic variables associated with purchase of organic milk (Alviola and Capps, 2010), the effect of taxes on sales (Harding et al., 2012) and the causes of price difference across households (Abe and Shiotani, 2014).

Table 6 Definition of socio-economic variables

Household affluence	Four groups of Households have been considered defined according to ranking of "revenue per consumption unit", proposed by OECD and calculated with the following:
	$Per\ capita\ income = \frac{Net\ Household\ Income}{1+0,7 * (household\ size - number\ of\ children - 1) + 0,5 * number\ of\ children}$
	Breakouts: (i) low affluence, 20%; (ii) below-average affluence 30%; (iii) above average affluence 30%; (iv) high affluence, 20%.
Types of families	**Pre Families:**
	– i) Households with one member under 35 years old.
	– ii) Household with 2 or more members with the housewife aged under 35 years, and with no children under 18 years of age.
	New Families:
	– Households with children under 6 years of age only.
	Maturing Families:
	– Households with children aged 0–17 years, and not all aged less than 6 years, or all aged above 10 years (i.e. not in categories 2 or 4).
	Established Families:
	– Households with children aged 11–17 only.
	Post Families:
	– i) Households with one member aged between 35 and 54 years.
	– ii) Household with 2 or more members, with the housewife aged between 35 and 54 years, and with no children under 18 years of age.
	Older Couples:
	– Household with 2 or more members, with the housewife aged 55+, and with no children under 18 years of age.
	Older Singles:
	– Households with one member aged 55+ years.

[k]Selected consumers have an agreement with A.C. Nielsen and record their purchases at home, with a special device procured by Nielsen. In this way, Nielsen can form a consistent database where the products, the characteristics of the products and the socio-economic characteristics are constantly recorded. Nielsen sells the database to whoever is willing to buy it.

[l]Glass, bag in box, plastic etc.

[m]Color, sugar content, aging etc.

[n]CGDO, CDO, GTI, without any IG.

[o]Overall 2,914 brands were collected in the dataset.

[p]Supermarket, Hypermarket, Discounts, LS, other.

[q]See Table 6

[r]The function G(.) should take on values in the interval (0, 1) only. Attention can be restricted to the function G(xi, β) = F(x'i, β). As F(.) also has to be 0 and 1, F(.) can be chosen as some distributional function. A common choice is the normal standard distribution function, leading to the probit model (see Verbeek).

[s]The Prosecco market has several peculiar features. First of all, at wholesale level, production is characterized by very low concentration of supply, due to the presence of many small-medium wineries with a small market share[s]. At retail level, however, the marketing strategy allows a few large brands to be leaders in the LSRT segment[s]. Other competitors generally choose different retail trade scales, preferring to market their

products through the *HoReCa* channel, or through specialized and selected wine shops. This can be explained by the fact that LSRT channel requires high supply potential at a relatively low price, and big companies can thus benefit from economies of scale and higher stock capacity. Instead, medium and small companies mainly try to allocate their products in the channels that allow a better unitary profit.

Competing interests
The authors declare that they have no competing interests.

Authors' contributions
Authors are equally responsible of every paragraph of the paper. All authors read and approved the final manuscript.

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