

Moneti, Maria; Romano, Caterina; Scozzafava, Gabriele; Boncinelli, Fabio; Casini, Leonardo

## Article

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# Wine consumption and sales strategies: The evolution of Mass Retail Trading in Italy

Caterina Contini<sup>a,\*</sup>, Caterina Romano<sup>a</sup>, Gabriele Scozzafava<sup>a</sup>, Fabio Boncinelli<sup>a</sup>, Leonardo Casini<sup>a</sup>

<sup>a</sup>*Dipartimento di Gestione dei Sistemi Agrari, Alimentari e Forestali, Università degli Studi di Firenze, P.le delle Cascine, 18, 50144 Firenze, Italy*

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## Abstract

The recent economic crisis has brought considerable changes also to food consumption: on one hand, many products have recorded consistent absolute declines in demand, while on the other hand, we have witnessed preferences shift towards low-cost foods or, in any event, foods of lower quality standards. In order to study these phenomena and, especially, the strategies firms adopt to confront them, the wine sector constitutes a particularly interesting focus due to its wide supply range and the elevated reactivity to price and income of demand. Our paper intends to take a close look at wine consumptions, focusing on the sales made on the Mass Retail Trading (MRT) channel from 2009 to 2013, and to conduct a thorough analysis of the performances of the single products, in view of pointing out the sector's overall trend, as well as the principal typologies of wine, in terms of their sales results in that period. Applying Latent Class Regression has permitted us to identify six explicative models of performances, demonstrating the effect on sales of the structural characteristics of productions and sales strategies.

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**Keywords:** Wine; Sale strategies; Latent Class Regression

## 1. Introduction

The economic crisis of these past years has hit hard in many product areas, including that of food, which for the first time has recorded reductions in consumption even in nominal terms (Casini et al., 2015; Eurostat, 2014; Lombardi and Verneau, 2013; Pozzolo, 2011). In this scenario, we witness a decline in purchases in terms of both food quantity and quality, and an increase in sales of low-cost products, some of them even imported or, in any event, foods of lower quality standards (Andreyeva et al., 2010; Casini et al., 2014a; Eurostat, 2014; Samoggia et al., 2014). In this regard, a recent study conducted on the crisis' impact in Greece reveals that most households have modified their eating habits. In particular, the study shows that consumers have preferred less expensive products

characterised by prime prices, making their purchases on the occasion of promotional sales, and increasingly more often resorting to large grocery stores, discount stores or similar types of sales channels (Duquenne and Vlontzos, 2014). Likewise, a study conducted in Italy points out that as of 2007, the economic crisis has resulted in the poorer classes to moving away from the Mediterranean diet (Bonaccio et al., 2014). In addition, the Italian National Institute of Statistics' "Study on the consumption of families" points out consistent variations in food spending in the period after 2008, recording a contraction in nominal terms of almost 2% in 2013, with the most significant decrease concerning meat (−3.2%) (Istat, 2013).

On the other hand, a study conducted on the period 2007/2009 in Iceland shows that the economic crisis can have positive effects on eating habits, favouring health-promoting behaviours through the reduction of alcohol consumption and an increase in the consumption of fruit and vegetables (Ásgeirsdóttir et al., 2014).

\*Corresponding author. Tel.: +39 055 2755797; fax: +39 055 361771.

E-mail address: [caterina.contini@unifi.it](mailto:caterina.contini@unifi.it) (C. Contini).

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Alongside price sensitiveness, literature highlights the presence of consumer segments that show greater attention for the product's quality characteristics, choosing foods produced using techniques that respect the environment or are expressions of territorial values (Nomisma, 2014). These differentiated behaviours within the general picture point out a complex system in which consumers orient their choices in a non-homogeneous manner.

In this framework, the wine sector constitutes a particularly interesting focus in order to understand the market dynamics in a phase of economic crisis. As it does not represent an essential good, wine in fact has a demand that is more reactive to changes in price and income. Furthermore, it embraces a much wider range of products both in terms of quality and price (Casini et al., 2014b).

In the wine sector, we witness two apparently opposing phenomena: the increase of mass-produced wine, and the specialisation towards narrow markets, characterised by excellent product quality in terms of importance of terroir, appellation, and geographical identity (Anderson and Nelgen, 2011; Charters, 2006; Hammervoll et al., 2014). In particular, the growing weight of mass-produced wine is documented by the export figures of the European market, which is the principal wine producer (66% of world production in 2011). The overall increase of wine exports from 2010 to 2011 (13%) concerned the sale of bulk wine, especially by the two principal exporters, Spain (+30.7%) and Italy (+8%) (International Organisation of Vine and Wine, 2014). In parallel, the literature shows that narrow markets capable of responding to niches of consumers with differentiated demands for qualitatively better products have gained ground (Toften and Hammervoll, 2010, 2013). These phenomena can be explained by the polarisation of consumers towards opposite behaviours. The principal consumption driver of the first is price, while that of the second is the search for higher quality standards.

These tendencies are also reflected in the sales channels preferred by consumers. In this regard, the retail sales figures of wine in the principal consumer countries show that most purchases are made at large grocery stores and discount stores, where the prices are more competitive than in other shops (Euromonitor, 2009 cited in Pomarici et al., 2012). Many authors affirm that the factors that determine the purchase of wine in supermarkets are represented not only by prices, but also by the wide range of available products, the ease and efficiency of purchase, and the quality of the products (Anchor and Kourilova, 2009; Esbjerg and Bech-Larsen, 2009; Nordfalt, 2009; Ritchie et al., 2010). Studies recently conducted on Mass Retail Trading (MRT) channel sales point out that quality is a decisive factor in choosing wine and that the consumer chooses to purchase quality wines at this type of sales outlet. While in the past, supermarket purchases were associated with light drinkers or little wine-consuming drinkers, the consumer who purchases in this retail environment now presents a better perception of the image of wine (Casini et al., 2006; Crispino et al., 2013; Thomas and Pickering, 2003; Szolnoki and Hoffmann, 2014).

What emerges from this review is that the phenomena manifested in these past years have increased the entropy of a

system like that of the wine sector, which is in itself quite developed, creating a scenario that is not easy to interpret. Our paper thus proposes to reassemble the picture of wine consumptions, referencing the sales made on the mass retail channel in Italy from 2009 to 2013, and to analyse the performances of winegrowing firms with respect to their production and sales strategies.

Following a bibliographical review of the principal factors that influence wine choice, the first part of the paper will illustrate the Latent Class Regression (LCR) methodology used to analyse the principal evolutive models of wine sales in function of product characteristics and sales strategies. The second part will illustrate the case study represented by the sales on the Mass Retail Trading channel in Italy in the period 2009–2013. Following an analysis of the sector's development in terms of volumes, prices, and typology of products sold, we shall describe the application of the LCR methodology and discuss the results as they pertain to the relationship between sales performance and adopted strategies.

## 2. Wine attributes and purchase decisions

Various studies have confronted the theme of wine attributes that influence consumer purchasing behaviour (Goodman et al., 2008; Lockshin et al., 2006). Price constitutes a decisive choice criterion, as well as an important sign of quality (Bredahl, 2004; Jover et al., 2004; Mueller et al., 2010; Rasmussen and Lockshin, 1999). The influence of price on choice is all the more marked for consumers who have a low involvement with wine (Hollebeek et al., 2007). Moreover, several authors report that this attribute can be a strong choice driver independently of the presence of other factors: given a certain situation of consumption, the consumer indeed seems to decide the price bracket for his/her choice even before going to the sales outlet (Jarvis et al., 2003; Mtimet and Albisu, 2006).

The literature reports that there are other elements connected with price that influence the consumer's choice. We are referring, in particular, to promotional activities, which are sales strategies widely diffused especially in Mass Retail Trading. These are implemented by means of defining different systems, such as the presence of particular signs on the label, or of a specific placement of the product on the shelf in order to increase its visibility (Hawkes, 2008). Generally speaking, the purchase of wine during a promotional sale is associated with consumers who have a low involvement with wine, as price is an important purchasing incentive (Ritchie, 2009). Furthermore, the choice of a product on promotional sale is associated with the consumer's loyalty to this very product brand: the consumers most loyal to the brand tend to stock up on their favourite brand during promotional sales and wait for another promotional sale of the brand, at the same sales outlet or at another, to purchase it again (ACNielsen, 2005; Ritchie et al., 2010).

Given the strong tie that exists between wine quality and terroir in the broadest sense of the term, the country of origin constitutes a very important product attribute (Angulo et al., 2000; Jarvis et al., 2003; Lockshin et al., 2006; Tustin and Lockshin, 2001). Numerous authors indeed point out that it is

the principal driver in wine choice (Dean, 2002; Lockshin et al., 2006; Skuras and Vakrou, 2002), and that the presence of the winegrowing region on the label increases the consumer's trust in the overall product quality (Johnson and Bruwer, 2007). Caracciolo et al. (2013) underline the role certification of origin (DOC-DOCG) also plays on the market price of wine in Italy, stressing that this certification can bring about the creation of a collective reputation, and enables a premium price to be captured from consumers.

Grape variety is also a product attribute that influences the consumer's decision to purchase wine. The importance this characteristic has on choice, however, differs according to the territorial context. In fact, in "New World" markets, it seems to replace the country of origin (Resnick, 2008; Schamel and Anderson, 2003), while in Europe, the weight of grape variety seems to be less than that of denomination of origin. In this regard, several authors claim that the greater the consumer's involvement with wine, the greater the importance of denomination (Angulo et al., 2000; Mtimet and Albisu, 2006; Mueller and Szolnoki, 2010). Other attributes connected to the type of wine are colour and whether it is still or sparkling (Onofri et al., 2015; Seghieri et al., 2007).

Brand reputation makes it possible to identify the product via a connection with the producer or with one's own consumption experiences. It is a quality indication, but by itself it may not prove to be a cue strong enough to orientate choice, as information like price or country of origin overrides it (Lockshin, et al., 2006). The same can be said for brand loyalty, which though constituting a shortcut in product choice (Lockshin, et al., 2000), does not prove decisive, as it has been shown that the consumer may change brand so as not to forfeit other characteristics (Jarvis et al., 2003). Moreover, the consumer's behaviour towards a brand is strongly tied to the product's market share, which means he/she is oriented towards wines with higher market shares (Mueller et al., 2010).

Even the bottle format can contribute to guiding choice. Several authors have indeed shown that in the choice of non-premium wines, the packaging also plays an important role (Cembalo et al., 2014). It has recently been shown that the consumer draws useful quality information about the product simply from the weight of the bottle. In this regard, a positive correlation has been pointed out between wine container weight, price, and quality of wine (Piqueras-Fiszman and Spence, 2012).

The studies on consumer loyalty seem to confirm the importance of the attributes mentioned. In particular, they underline that price is the attribute consumers are most loyal to, followed by the region of origin (Jarvis et al., 2007). Other studies have also shown the contribution of format to consumer loyalty. In fact, a research conducted in Italy has pointed out that format can prove to be the attribute with a higher consumer loyalty than price and denomination of origin (Casini et al., 2009).

### 3. Methodology

The analysis of the principal evolutive models of wine sales in function of product characteristics and sales strategies has been conducted by means of a Latent Class Regression (LCR)

model, which is an extension of the standard latent class (LC) cluster analysis. The choice of this methodology derives from the necessity to verify the existence of different models by which firms respond to market stimuli. LCR indeed makes it possible to classify the single products into market segments (latent classes) and, at the same time, to estimate a different parameter of each explicative variable (predictors) for each segment. Such a model can be estimated also taking into account the variables directly observed (covariates) concerning those characteristics that can influence each element's belonging to a given latent class. Membership in each class and the estimate of the parameters in each class are evaluated simultaneously in a single likelihood function. The LC approach offers several advantages over the traditional multivariate methods based on concepts of "distance". The classification criteria do not follow similarity measures, while "the LC approach allows cases to be classified into clusters using model-based posterior membership probabilities estimated by maximum likelihood (ML) methods. This approach also yields ML estimates for misclassification rates. In addition, LC clustering provides various diagnostics such as the BIC statistic, which can be useful in determining the number of clusters" (Magidson and Vermunt, 2002).

In particular, applying the LCR approach makes it possible to bypass the hypothesis of homogeneity across an entire population, which permits estimating the regression model under the assumption that the regression coefficients differ across segments of population. Furthermore, the possibility to combine the use of explicative variables ("predictors") of the dependent variable with covariates potentially influential on the class membership of the observations (socio-demographic variables, etc.) makes it possible to refine class descriptions and improve classification of cases into the appropriate latent classes observed (latent) segments, yielding improved predictions.

Despite the fact that the LC methodology is common in studies on consumer behaviour, its application to the behaviour of firms is still limited (Thiene et al., 2013). As far as the study of performances is concerned, several studies have adopted this approach to classify the performance of firms, but there appear to be no studies that classify specific products in function of their market results. The properties of the LCR model appear particularly important for a case study like the one considered, characterised by a marked heterogeneity in terms of "physical", qualitative, and market characteristics of all the products that make up the totality of wines sold on the MRT channel.

Therefore, we develop an LCR model, which allows us to simultaneously regress potential predictors of performances and classify wines into classes that present similar parameters and share similar product characteristics (colour, certification of origin, etc.).

Formally we estimate a model as follows:

$$f(y_i | z_i^{cov}, z_i^{pred}) = \sum_{x=1}^k P(x | z_i^{cov}) f(y_i | x, z_i^{pred}) \quad (1)$$

Where  $f(y_i | z_i)$  is the probability density for case  $i$ , corresponding to a particular  $y_i$  value given a particular set of covariates,



$z_i^{cov}$ , and a set of predictors,  $z_i^{pred}$ ;  $x$  is the nominal latent variable that defines the  $K$  latent classes.  $P(x|z_i^{cov})$  is the probability of belonging to a certain latent class  $x$ , given the individual's realized  $R$  covariate values  $z_{ir}^{cov}$ .  $f(y_i|x, z_i^{pred})$  is the probability density of  $y_i$  given  $x$  and  $Q$  predictors  $z_{iq}^{pred}$  (see Vermunt and Magidson, 2002).

#### 4. The case study

The results of the study on the consumption of families conducted by the Italian National Institute of Statistics (Istat, 2015a, 2015b) shows that in the 2009–2013 period, the economic crisis had a major impact in Italy. Indeed, we note a decrease in nominal terms of total monthly spending, as well as of food spending alone (Table 1).

As far as the sales results in the different distribution channels are concerned, between 2009 and 2013 the total sales of Mass Retail Trading show a growing trend up through 2012, and then record a drop for the first time in 2013 (Graph 1). The sales recorded in the same period in the small-scale distribution instead present a constant drop, which is accentuated in the last year (Istat, 2015b).

##### 4.1. The evolution of wine consumptions on the MRT channel in Italy

Analysing the evolution of wine sales on the MRT channel was conducted on the basis of IRI infoscan data. The analysis focused wines packaged in glass bottles of 0.75 litre, because they account for the 70% of the total value of sales of MRT and include all products of middle-high quality which better reflect the changes in consumption linked to the economic crisis. Overall, the database contains the information on the sale of 10,990 wines packaged in glass bottles of 0.75 litre, identified by a European Article Number (EAN) code, and sold on the MRT channel in Italy in the period 2009–2013. The IRI infoscan data are representative of the entire universe of the Italian MRT.

In consideration of the sporadic nature of the sale of many of these wines, the analysis has excluded the minor wines, and concentrated on the entirety of the EAN codes that, overall in the period 2009–2013, represented 95% of the total value of MRT sales. We therefore considered only 3877 EAN codes, for a value of annual average sales equal to almost 1 billion euros, corresponding to 1030 producers/distributors. Furthermore, the monthly data sales have been aggregated by quarters in order to be able to analyse the evolution of sales and the other variables without having to take into account the variations tied to seasonality such as civil and religious holidays. The entire database was then reorganised on the basis of 15 quarters, corresponding to the period 01/01/2009–31/12/2013.

The first element to stress in analysing the wine sector in Italy is the number of products on the market, which is unlikely to be found in any other sector. In MRT alone, and in the period considered, approximately 11,000 labels were sold and almost all of them at a price between 3 and 10 euros. It is

Table 1

Average monthly spending of Italian families expressed in nominal values in the 2009–2013 period.

	Total spending (€)	Food spending (€)	Spending for alcoholic and non-alcoholic beverages (€)	Wine spending (€)
2009	2441.77	461.06	41.06	11.66
2010	2453.26	466.59	41.95	11.95
2011	2487.91	477.08	42.60	11.82
2012	2419.27	468.32	43.40	12.01
2013	2359.05	460.72	41.85	11.43

(Source: Istat, 2015a)

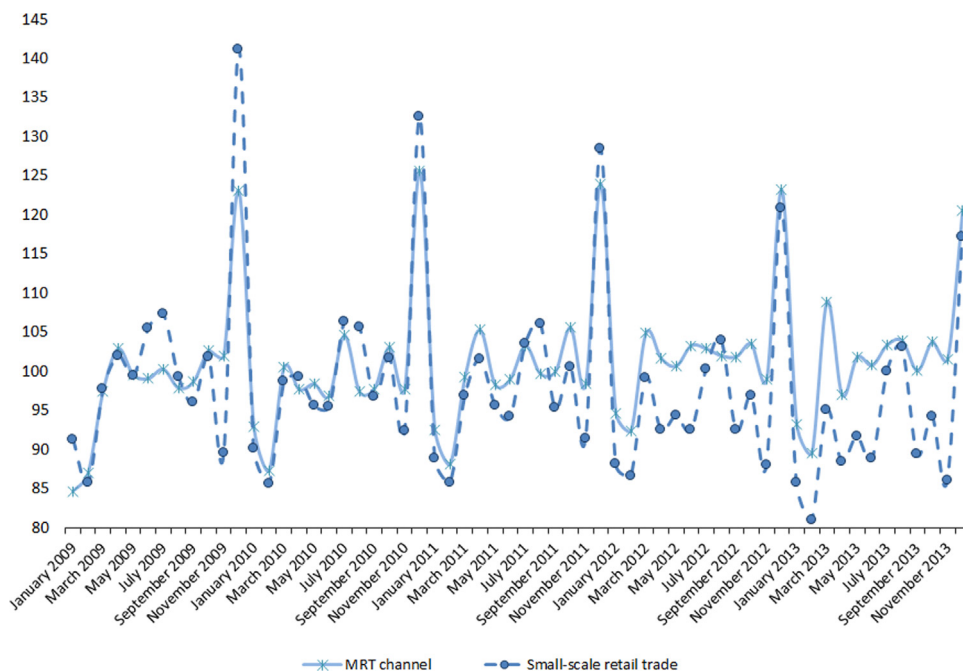
therefore easy to understand that this very broad gamut of products represents a very particular situation, both in terms of sales strategies and consumer behaviour.

Graph 2 shows the overall trend of the economic performances (total value of sales and volumes sold) of the 3877 labels considered in each quarter from 2009 to 2013, and the number of labels in each quarter. It also presents a detailed account of the component of value and volume from promotional sales.

The total value of MRT sales shows a growth trend equal to about 9%, while there is a moderate contraction in terms of volume. Significantly, no decline is recorded for wine sales even in 2013, unlike the overall food sales results on the MRT channel. It is interesting to note how the number of labels grows very significantly in the first period, and then stabilises in the last two years. As far as the value and volume of products on promotional sale are concerned, the trend is instead positive, both in terms of value and volume, which underlines that this type of commercial strategy, which concerns more than 40% of total sales, is becoming increasingly more important in the sector.

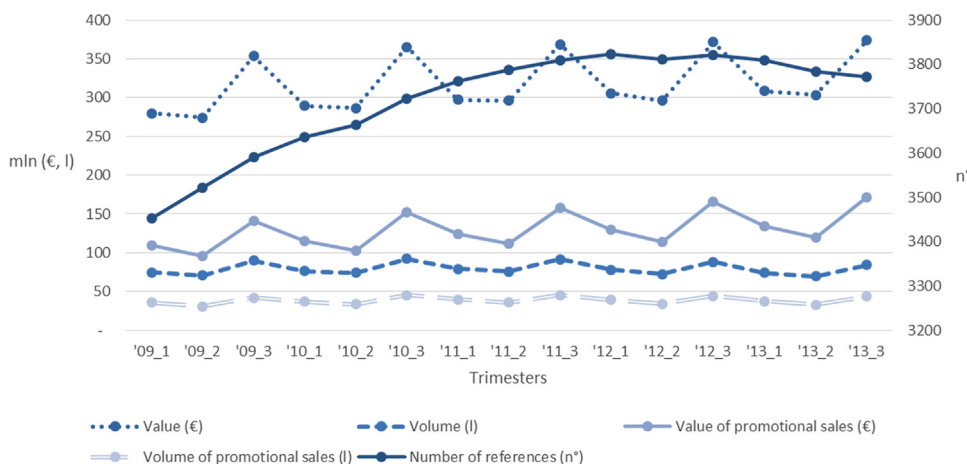
The sinusoidal progression is typical of the demand for this product, which has strong ties with seasonality and end-of-year festivities. The average base price (total value – promotional sales value)/(total volume – promotional sales volume) presents an evident growth in the period of reference (Graph 3). It is interesting to observe that the trends of the base price and of promotional sales show a convergent trend. Though the phenomenon may be the result of different factors, a very important role is indeed played by the growing implementation of the promotional strategy even for products of high quality, which are historically less inclined to adopt this instrument.

The average increase of the base prices is about 15% and shifts from 4.3 euros per bottle to about 5 euros. The increase of the promotional price is instead much more accentuated, reaching +27% (from about 3 euros to about 3.9 euros per bottle). It is interesting to note that while the trend of the base price is homogeneous, that of the promotional prices peaks several times in the third four-month period. The average difference between the base price and the promotional price is about 76%, which is to say that the average promotion applied in MRT coincides with a reduction of the base price by approximately 24%. Parallel to studying the general trend of



Graph 1. Sales value index of regular retail trading – monthly data – base year, 2010=100

(Source: our processing of Istat data).



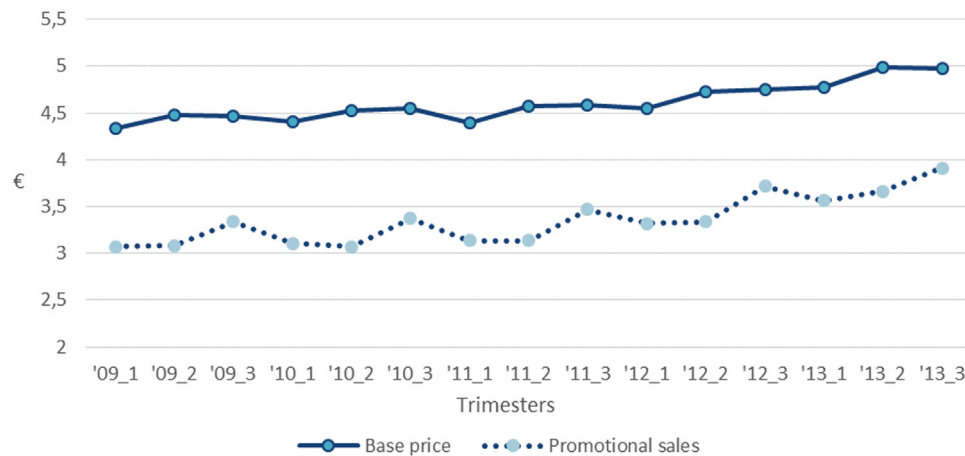
Graph 2. Trend of value and volume (total and promotional) of MRT sales of wines packaged in glass bottles of 0.75 litres, in the period 2009–2013 (quarters). (Source: our processing of Infoscán data).

MRT sales, we have found it useful to also analyse the products' performances concerning several characterising intrinsic elements, such as colour, certification, and other attributes. We have thus observed the existence of possible specific behaviours tied to the particular product characteristics.

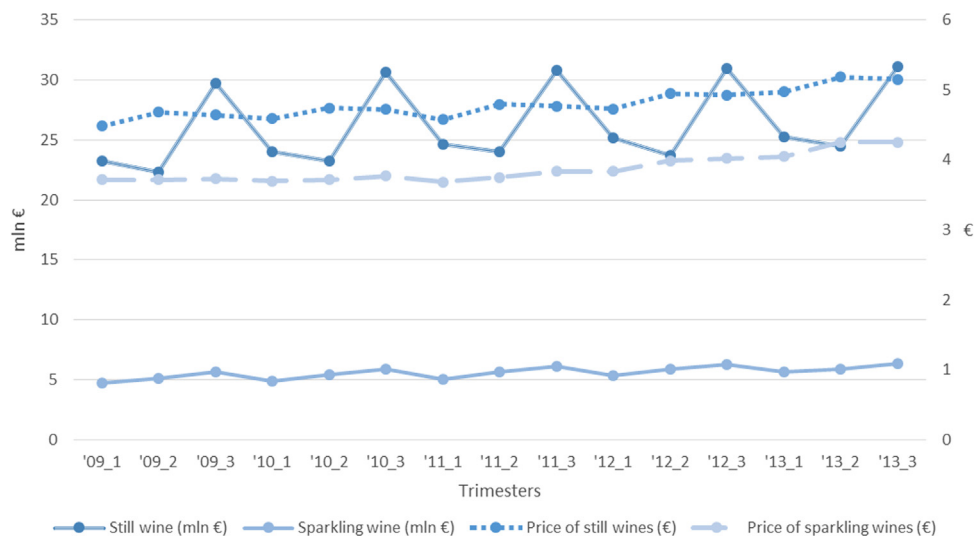
In this regard, and as far as still and sparkling wines are concerned, we note a clear prevalence of still wine over sparkling wine, as shown in [Graph 4](#).

The behaviour of price levels is homogeneous for the two typologies of wine, except for a slightly greater variability in the price of still wine compared to that of sparkling wine from one four-month period to another. For both typologies we can observe a growth trend both in terms of volume and of price. The wines present quite a differentiated trend of sale as far as colour is concerned. Red wine proves to be the most sold even

though in the summer periods, the sales values of red and white wines tend to be the same. Rosé wines instead represent a minimum part of MRT sales revenues. The seasonality of consumption is very evident for both red and white wines. Quite interesting is the almost perfect coincidence of the trend and level of the average prices of white and red wines (4.62 for white wine and 4.65 for red wine). The role of certifications in sales performance can be observed in [Graph 5](#). In particular, the graph shows the trends in wine sales of the three different certifications: IGT (Typical Geographical Indication), DOC (Controlled Designation of Origin), and DOCG (Controlled and Guaranteed Designation of Origin), which characterise wines according to their production areas, as regulated by the Italian directives (Decreto legislativo 61 of 2010) and European directives (Regulation EU no. 1308/2013).



Graph 3. Trend of the base price and promotional sales of wines packaged in glass bottles of 0.75 litres on the MRT channel in the period 2009–2013. (Source: our processing of Infoscán data).



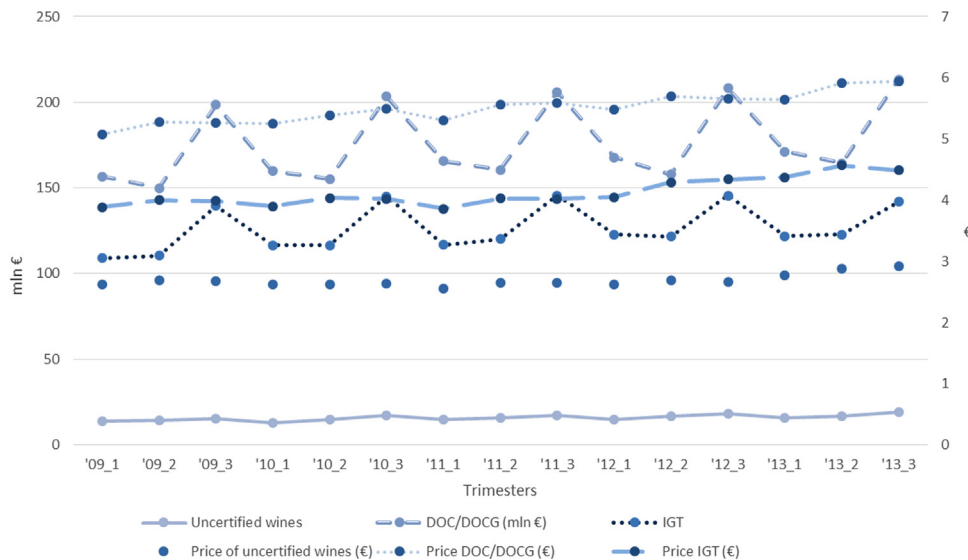
Graph 4. Trend of value and price of MRT sales of sparkling and still wines packaged in glass bottles of 0.75 litres, in the period 2009–2013. (Source: our processing of Infoscán data).

In fact, the IGT denominations as well as the DOC/DOCG denominations record sales quotas much greater than those of wines without certifications. The DOC/DOCG wines are the ones associated with the greater sales value, followed by the IGT wines. In both cases, we observe a marked seasonality of sales, though the latter proves even greater in the case of DOC/DOCG wines. The price trend follows that of the total value of sales, which grows as far as IGT and DOC/DOCG wines are concerned, and is constant and flat for wines without certifications. The average base prices are considerably differentiated and approach approximately 2.9 euros for uncertified wines, 4 euros for IGT wines, and 5.9 euros for DOC/DOCG wines.

From the structural viewpoint, the supply of wine on the MRT channel is very fragmented. The low value assumed by the Herfindahl-Hirschman index (HHI), calculated with respect to the market quota (sales value) of the individual producer indeed shows the existence of an extremely competitive market (Table 2).

The supply is fragmented and the topmost market quota of the producer approaches 5% with an average of 0.10%. The evolution of the HHI values shows, with time, a trend towards an increased supply concentration up to 2012, which remains very fragmented, however. In 2013, we instead witness an inversion of this trend, which takes the HHI concentration index to a lower level than the year before. This fact seems to indicate that in a situation of crisis, the market tends to privilege forms of supply concentration. Among these phenomena, it appears necessary to underline the continuous and growing importance of private labels, whose role on the wine market has traditionally been marginal. They indeed present a positive trend both in terms of their market quota and in terms of the labels offered, passing from 68 in 2009 to 74 in 2013.

Overall, the MRT channel sales data do not seem to describe the trend of a product in a context of economic crisis. The increase of sales values, especially of the format that characterises the higher quality productions and, especially, the increase of the average prices of sales could in fact suggest a



Graph 5. Value and price trends of MRT sales of DOC/DOCG, IGT, and Uncertified wines packaged in glass bottles of 0.75 litres in the period 2009–2013. (Source: our processing of Infoscane data).

Table 2  
Herfindahl-Hirschman concentration index (HHi) in the period 2009–2013

Year	HHi index
2009	129
2010	134
2011	137
2012	145
2013	143

moment of development of the sector. Even analysing the trend of the principal characteristics (colour, still/sparkling, certification of origin) did not point out clear crisis phenomena for any attribute.

Faced with this overall picture of MRT sales, there is a very marked diversification, however, in the results of the single labels (as we shall see further on), and the general opinion of producers is one of a stagnant, if not contracted, internal demand, in addition to growing difficulties in placing products on the internal market. In truth, the constant growth of promotional sales seems to confirm the existence of difficulties for the market. One thus spontaneously wonders how these apparently contrasting realities can coexist. Probably the most likely answer is deducible from two pieces of evidence. On one hand, we witness a shift in demand towards products of higher quality to the detriment of the quantity consumed. On the other hand, we observe a shift among consumers, especially those orientated towards products of the middle-high quality level, towards the more efficient retail channel, which thanks to scale economies and the organisation of the sales system can offer products of good quality at more competitive prices. These two phenomena could explain the increase of value and average price of MRT sales and the contraction of volumes, especially in the typical formats of lower quality products (i.e. those containing more than 0.75 litre, the bags-

in-box or similar typologies), where the traditional purchasers have reduced their consumptions and the new consumers, interested in greater quality, do not compensate for the decline. In the 2009–2013 period, in particular, IRI Infoscane data show a 17% decrease in volumes sold of the lower quality product formats. As for the very diversified sales trends for single products compared to the overall trends of growth for all the attribute levels considered, the explanation could lie simply in the necessity to enrich the picture of information on the characteristics of wines and on the integration of different attributes.

#### 4.2. Applying Latent Class Regression

The LCR model was applied to analyse the sales performances of wine in the 0.75 litre format on the MRT channel in Italy (IRI infoscane database), associating them to the structural characteristics of productions and to the principal sales strategies deducible from the IRI infoscane database.

The trend  $\beta$  was utilised as dependent variable, proxy of the sales performance, and calculated as an angular coefficient of the interpolant of the following linear function:

$$y_i = \alpha_i + \beta_i t \quad \forall t = 1, \dots, 15 \quad (2)$$

and normalised with respect to the annual average value of sales in the period.

where  $y_i$  represents the value of sales of each  $i$ th wine in each of the fifteen four-month periods.

Sales strategies were utilised as explicative variables of performance (predictors) and were identified as the following variables:

(a) average base price of the period, calculated as the weighted average of sale prices except for promotions. It was also considered as a “quality” indicator of the product, because in the vinicultural market, different price segments generally correspond to different quality segments; (b) average of the



discounts applied in the period, expressed as a percentage of the base price; (c) market quota of the producer/bottler, calculated as the total value of producer's/bottler's sales in the period against the overall total. This variable can be considered as representative of the commercial strength of the brand taken as reference; (d) percentage of promotion volumes, calculated as the average of the period. This variable can be considered as representative of how the promotional strategy was used for that specific wine; (e) percentage of sales outlets that carry the product against the total, calculated as the average of the number of sales outlets where the product is sold against the total of sales outlets. This variable is representative of the strategy of diffusion on the national level; (f) availability in sales outlets specialised in wine, calculated as the relationship between the value of wine sales at the sales outlets that carry the product and the value of sales of all the sales outlets that carry wine. In other words, it represents an indicator of the specific wine's availability in shops with high market quotas against the total of the wine category. It can therefore be considered as representative of the sales strategies that target consumers oriented towards purchasing at specialised shops that carry wide product ranges.

The covariates considered were: the wine's certification of origin (DOC/DOCG, IGT, Other), its colour (White, Rosé, and Red), its typology (Still and Sparkling), and the average value of sales in the period reclassified into 4 classes (1 if <€ 100,000; 2 if between € 100,000 and € 500,000; 3 if between € 500,000 and € 1,000,000; 4 if more than 1 million euros).

The LCR model was applied separately to wines with value variations of the annual average sales of less than – 1% per annum and to those with annual average variations of more than 1%. It was thus possible to more clearly define, for each latent class identified, the model best suited to describe the relationships between the explicative variables utilised (predictors) and the performance, as well as the characteristics representative of the wines of each latent class, as shown in Table 3.

## 5. The LCR results

Applying the LCR model has led to the identification of three latent classes for the wines with positive performances, as well as for those with negative performances (Table 4). It is worth noting that for both of the typologies considered, the regression analysis with a single class always gave non-significant results,

both overall and for each variable considered, which stresses the heterogeneity of data and therefore the importance of a detailed analysis capable of highlighting the possible clusters.

For both of the analyses, the 3-class model shows a BIC inversion and high  $R^2$  values (Table 4). The estimated parameters also prove to be very significant for both of the models, as shown respectively in Table 5 and Table 6.

For the wines with a negative trend (1329 bottles, equal to 35% of the total), all the predictors prove significant except for the market quota of the producer (see Wald in Table 5), and also significantly different among the classes (see Wald(=) in Table 5). The covariates prove non-significant except for size in terms of the average sales value. As the variables that refer to the physical characteristics of wine are non-significant, we can conclude that the heterogeneity of the performances is not somehow connected to these. Producing a still or a sparkling wine therefore does not influence the probability of greater or lesser success. This conclusion can be extended to the other elements considered such as certifications and colour. The probability of a different performance will therefore depend on other, more economic and strategic factors of firms. In particular, the three classes that group the wines with a negative trend allow us to sketch the following profiles.

Cluster 1 (320 wines) is the one characterised by the worst performance, with average values of – 6% per annum, and made up mostly of IGT wines. The significant predictors are the average price, the discount applied, and the percentage of promotions in volume. It is interesting to note that this class shows an important negative impact on performance of promotions both in terms of discount percentage and volumes.

Cluster 2 (524 wines) shows a more moderate decline in sales, around – 1%, and high sales of single wines. The significant predictors are discount, the percentage of promotion volumes, and the producer's market quota. The effect of promotional sales in this case too, proves decisive, though with less negative effects on the trend.

Cluster 3 (485 wines) displays variations of sales between – 2% and – 3% per annum, and middle-high sales volumes. The significant predictors are the discount and product diffusion (percentage of shops that carry the wine), both negative with respect to performance and specialisation in distribution with a positive sign.

The three clusters identified for the wines with positive trends (1800 labels) have shown the following characteristics.

Cluster 4 (513 wines) presents the best results in the period, with average annual increases of over 10%. It is characterised by niche wines with low sales volumes, often sparkling white wines, even outside of certifications of origin. The significant predictors are price, quota of promotion volumes, and territorial diffusion. In this case, as in all the clusters with a positive trend, the promotional sale is a widely applied strategy (about 40% of the sold volumes on the average), and determines an increase in quantities capable of more than compensating for the price reductions applied.

Cluster 5 (619 wines) also shows significant increases in sales (an average +4% per annum), though less than the previous cluster. In this case though, we are dealing with wines

Table 3  
Principal descriptive statistics of the variables considered.

Variable	Mean	SD	P25	P75
Trend	0.002	0.020	–0.007	0.011
Base price	6.605	5.654	3.808	7.578
Discounts average	20.405	10.506	14.989	26.223
% of promotion volumes	36.865	22.252	19.423	51.282
Market quota	0.594	1.206	0.029	0.599
% of sales outlets	1.263	2.499	0.319	1.178
Availability at sales outlets	3.458	5.109	0.788	3.823

Table 4  
Summary of latent class cluster models.

Class	LL	BIC(LL)	AIC(LL)	Npar	Class. Err.	R <sup>2</sup>
Wines with average annual decrease in sales value < −1%						
1-Class Regression	3898.73	−7739.92	−7781.45	8	0	0.32
2-Class Regression	4330.91	−8482.01	−8611.81	25	0.66	0.45
3-Class Regression	4450.88	−8599.70	−8817.77	42	1.02	5.83
4-Class Regression	4476.30	−8528.26	−8834.60	59	1.34	6.29
5-Class Regression	4502.55	−8458.49	−8853.10	76	0.16	6.37
6-Class Regression	4528.35	−8387.83	−8870.71	93	0.16	0.63
7-Class Regression	4549.09	−8307.04	−8878.18	110	0.16	6.61
Wines with average annual increase in sales value > 1%						
1-Class Regression	5085.71	−10,111.45	−10,155.41	8	0	0.07
2-Class Regression	5687.63	−11,187.87	−11,325.26	25	0.64	4.73
3-Class Regression	5841.21	−11,367.62	−11,598.43	42	1.11	5.70
4-Class Regression	5890.95	−11,339.66	−11,663.89	59	1.42	6.40
5-Class Regression	5913.78	−11,257.91	−11,675.57	76	0.15	6.60
6-Class Regression	5939.02	−11,180.96	−11,692.05	93	1.96	6.42
7-Class Regression	5965.04	−11,105.57	−11,710.08	110	2.09	6.54

Note: LL=Log-likelihood; BIC(LL)=Bayesian Information Criterion based on the loglikelihood; AIC(LL)=Akaike information criterion based on the log-likelihood; Npar=Number of parameters; Class Err.=Classification errors

Table 5  
Estimates of the negative performance from latent class model. Asterisks (\*) denotes significance at the 5% level.

Performance predictors	Class1	Class2	Class3	Wald	p-value	Wald(=)	p-value	Mean	Std. Dev.
Intercept	−0.035	−0.005	−0.012	428.153	< 0.001	127.884	< 0.001	−0.016	0.012
Base price	0.001*	0.000	0.000	6.861	< 0.001	5.724	0.057	0.000	0.000
Discounts average	−0.029*	−0.003*	−0.013*	19.041	0.000	11.378	0.003	−0.014	0.010
% of promotion volumes	0.011*	0.001*	0.002	6.088	< 0.001	3.096	< 0.001	0.004	0.004
Market quota	0.000	0.000*	0.000	7.048	0.07	0.418	0.810	0.000	0.000
% of sales outlets	0.001	−0.000	−0.001*	3.863	< 0.001	2.657	< 0.001	0.000	0.000
Availability at sales outlets	0.001	0.000	0.000*	8.754	< 0.001	5.461	< 0.001	0.000	0.000
<i>Class membership covariates</i>									
Intercept	−0.531	0.2615	0.269	8.166	< 0.001				
Average value									
1	0.745*	−0.677*	−0.069	81.059	< 0.001				
2	0.035	−0.148*	0.113						
3	−0.163	−0.195	0.358*						
4	−0.619*	1.020*	−0.401						
Certification									
Other	−0.038	−0.003	0.041	7.166	0.13				
DOC+DOCG	−0.109	0.114	−0.005						
IGT	0.147*	−0.112	−0.036						
Colour									
White, 0.75 litre	−0.058	0.110	−0.052	4.980	0.29				
Rosé, 0.75 litre	−0.079	−0.034	0.112						
Red, 0.75 litre	0.136	−0.076	−0.060						
Typology									
Still	−0.004	0.105	−0.101	1.946	0.38				
Sparkling	0.004	−0.105	0.101						

with major annual sales values, which therefore have major impacts on the market. All the predictors are significant for this class. In particular, the predictors that positively influence performance are territorial diffusion, the market quota of the brand, the promotional sales volumes, and the base price, while discounts applied and specialisation in distribution exert a negative action.

Cluster 6 (668 wines) is the one that displays the least significant positive results, reporting sales increases around an annual average of 2%. Most of these are wines with large sales volumes, especially those with denominations of certified origin, and still wines. Only two predictors are significant; the base price and the promotional sales volume both have a positive sign.

Table 6

Estimates of the positive performance from latent class model. Asterisks (\*) denotes significance at the 5% level.

Predictors	Class4	Class5	Class6	Wald	p-value	Wald(=)	p-value	Mean	Std. Dev.
<i>Performance predictors</i>									
Intercept	0.023	0.010	0.005	293.579	< 0.001	82.159	< 0.001	0.012	0.007
Base price	0.000*	0.000*	0.000*	28.053	< 0.001	5.695	0.058	0.000	0.001
Discounts average	−0.001	−0.014*	−0.002	13.117	0.004	8.299	0.016	−0.006	0.058
% of promotion volumes	0.018*	0.012*	0.001	51.844	< 0.001	43.796	< 0.001	0.011	0.007
Market quota	−0.000	0.000	0.000	2.837	0.42	2.832	0.24	0.000	0.000
% of sales outlets	0.004*	0.001*	0.000	36.378	< 0.001	35.533	< 0.001	0.002	0.001
Availability at sales outlets	−0.000	−0.001*	0.000	30.178	< 0.001	26.240	< 0.001	−0.000	0.000
<i>Class membership covariates</i>									
Intercept	−0.690	0.369	0.320	16.250	0.000				
Average value									
1	1.186	−0.435*	−0.751*	103.882	< 0.001				
2	0.654	−0.145*	−0.509						
3	−0.574	0.241*	0.332						
4	−1.267	0.339*	0.928*						
Certification									
Other	0.082	−0.096	0.014	14.402	0.006				
DOC + DOCG	−0.179*	0.028	0.151*						
IGT	0.097	0.068	−0.165*						
Colour									
White, 0.75 litre	0.153*	−0.065	−0.088*	3.74	0.44				
Rosé, 0.75 litre	−0.183	0.063	0.120						
Red, 0.75 litre	0.030	0.002	−0.032						
Typology									
Still	−0.112	−0.042	0.154*	4.175	0.12				
Sparkling	0.112*	0.042	−0.154						

## 6. Discussions and conclusions

The analysis of wine sales on the MRT channel in the period 2007–2013 has permitted us to reconstruct an original evolutionary picture of this sector compared to many other products.

In the first place, the overall tendency of a contraction in food expenditures is not confirmed in MRT wine sales. This phenomenon could be explained with the fact that many consumers choose a more efficient distribution channel that enables savings in terms of price, but in reality, the survey conducted points to a more complex behaviour. First of all, the most economical formats, such as those containing more than 0.75 litre, the bags-in-box or similar typologies, do not show significant increases; in fact, several of these cases record major declines (IRI Infoscan data). The 0.75 litre bottle, typical of better quality wines, instead shows an overall significant increase, though with strong differences among the single products.

Further study is required to explain these trends. For a start, we can hypothesise that many consumers attentive to wine quality have shifted from the small-scale distribution channel to the MRT channel, consequently increasing the sales of quality wines in the 0.75 litre. format. The traditional MRT purchasers of the more economical formats have instead probably begun to privilege wines of better quality, to the prejudice of quantity. This trend could also be explained as related to the health awareness campaigns about the consumption of alcohol, the analysis of which, however, lies outside the

focus of this study. Indeed this theme could represent an important further study aimed at understanding consumer behaviour, considering the strong relation between alcohol consumption and health.

The study thus sought models capable of explaining the strong differences in terms of performance reported among the various wines, even within the same market segments.

Particularly worth noting is the fact that the LCR approach has permitted the identification of 6 specific explicative models of performances, capable of explaining more effectively the relationships between performances and the predictors utilised, compared to adopting a single regression model.

Generally speaking, an overall effect exerted by the various predictors on the performance of the wines sold can be outlined. In fact, the variables of price and promotion volume always have a positive influence on wine performances, accentuating the positivity of good results for firms with positive performances, and attenuating the negative results for the other firms. The discount variable instead always has a negative effect on performances. This means that high discount percentages are always associated with negative performances of wines. The variables of diffusion and specialisation display a peculiar trend, differentiating their effect among the classes. In fact, while the former predictor increases positivity in the case of a product that shows good performances and intensifies negativity in the case of bad performances, specialisation seems to serve as a shock absorber. It indeed attenuates both the negative performances and positive trends. Finally, the

producer's market quota, however significant it may be, displays a positive effect on the performances of wines.

In synthesis, the clusters with negative performances have identified products with sales difficulties that consistently resort to the promotions strategy in order to improve their performances but have not succeeded in compensating the reductions in prices with increases in the volumes sold. The analysis of data shows economical products in most cases, which means that price competition can therefore prove counter-productive, given the difficulty in turning percentage reductions in price into market signals that can determine significant effects in terms of volumes sold. Moreover, excessively low prices can also signal inferior quality and produce the opposite effects on sales. Sales strategies wary of the elasticity of demand with respect to price could therefore prove very useful. For these wines, an important "brand" and a high sales level can be motivations for the less negative result.

As for wines with positive performances, we should stress, first of all, a prevalence of prices higher than those of wines with negative trends. We can thus suppose that these products are positioned on the elastic part of the demand curve and that, for this reason, a reduction in prices implies an increase in total expenditures by consumers.

This study shows that there seems to be no golden rule to obtain good performances based solely on a mix of sales strategies and the principal characteristics of wine. In this sense, our results can constitute a point of departure for further studies that undertake a more thorough analysis of the successful clusters through case studies and other methodologies. This could lead to a better comprehension of the specific strategies that individual firms adopt for these products both in the production and in the commercial phases.

In fact, the need for studies on the best strategies to adopt in the winegrowing market appears essential at a time like the present, in which the sector is extremely dynamic. In particular, an important working guideline in order to maintain and realise an adequate competitiveness in the sector appears to be studies that consider the relation between wine consumption and new food habits (Marinelli et al., 2014; Menghini et al., 2011), such as alcohol consumption outside of meals, the substitution of wine with other alcoholic products, and the growing role of the MRT channel in the wine trade.

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