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A hedonic analysis of retail Italian vinegars

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Abstract

Vinegar's contribution to the Italian wine industry is significant, and Italy is the world's largest exporter of wine vinegar. Nevertheless, the features of the vinegar market have received little scholarly attention, and hedonic price analysis has not yet been applied to vinegar. Thus, through a sample survey of supermarkets, this study makes an initial attempt to investigate the most important features influencing the price of vinegar.

The study reports results of a hedonic price analysis conducted on a vinegar survey that collected information about intrinsic and extrinsic cues, brand, point of sale and merchandising.

Although they influence the vinegar price, bottle size and packaging features appear to mask the effects of other attributes. Modena Balsamic vinegar is a geographical denomination and commands a premium price compared with other vinegars, and vinegar prices decrease as the acidity of the content increases. Brands, bottle features and shelf display significantly affect vinegar price.

Knowledge about factors affecting the vinegar price can help producers make decisions about what vinegars should be produced and how to price them, which will benefit a consistent proportion of wine and grape producers.

Keywords: Vinegar; Hedonic price; Merchandising

1. Introduction

Vinegar is a condiment and preservative that is produced through acetic bacteria activity on dilute solutions of ethyl alcohol from previous yeast fermentations in sugar solution. In Italy, the solutions are mainly wine and apple cider, whereas other countries use solutions from a wide variety of other food products.

In Italy, vinegar is the second most important dressing after olive oil, but its relevance is increasing in the world market, where Italy acts as the largest exporter, followed by Germany (Berry, 2011). Approximately two million hectoliters of vinegar are produced in Italy, and according to data from Federvini (2014), Italian vinegar exports reached 1.08 million hectoliters, corresponding to 237.7 million euros in 2013, with a threefold increase since 2000. Although twenty times less vinegar is exported than wine, vinegar exports are more important than exports of products derived from wine, such as spirits (brandy and grappa) or aromatized wines. Exports are almost equally divided between European Union (EU) and extra-EU countries. The main markets for Italian vinegars are the United States, Germany and France, respectively, where average prices per liter range between 1.7 and 2.1 euros.

Annual Italian vinegar consumption is stabilized at approximately 1.5 liters per capita. Although the vinegar market is mature, the market's value has grown significantly in the last five years because of an increase in the market share of Modena Balsamic vinegar. This vinegar's status as a protected geographical indication (PGI) of origin has played a key role in expanding its international appeal. The vinegar market is driven by a few oligopolistic companies that are well-known brands among Italians. In particular, vinegar sales are concentrated in the following brands: Ponti earns more than half of sales by volume in hypermarkets and supermarkets, followed

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by Cirio, Fini and Monari Federzoni. Private labels are also aggressively priced, and their sales account for approximately 19% of the Italian market (MassMarket, 2010).

These figures and the closeness with the wine industry (apple vinegar has a limited market share compared with wine) reveal the importance of this market and, consequently, the demand for improving understanding of economic and trade aspects of the vinegar industry. This need appears rather critical, given that the vinegar market has received little attention from researchers, who have mostly focused on special vinegars. For instance, Mattia (2004) analyzes the market features, competition, structure and critical management areas of Modena Traditional Balsamic vinegar supply chain, and Radman et al. (2005) examine Zagreb consumers' perceptions and behavior of apple vinegar. However, studies of price issues cannot be found.

The Italian market includes a wide variety of vinegars, which differ according to raw material, geographical origin, production method, packaging features, acidity and other aspects. Although vinegar is not as highly differentiated as wine, it is sold and purchased at prices that range fairly widely (De Bac and Sarcina, 2010; Altroconsumo, 2011). However, no previous studies have analyzed the relationship between market prices and vinegar attributes that affect consumer behavior when buying vinegar.

Therefore, this study aims to analyze the implicit value of vinegar attributes, i.e., to identify the vinegar price structure. How consumers evaluate these attributes has important implications for retailers and for producers' long-term investment decisions. For the former, price information is helpful in supporting purchase decisions and designing marketing campaigns. This goal is accomplished through the estimation of a hedonic price function, where price effects of different attributes are evaluated using data collected in a sample survey conducted on large scale retail (LSR) outlets.

The study is organized as follows. The first section briefly reviews the literature of hedonic price about wine and olive oil and summarizes the main features of the approach. The second section describes the data and the hedonic price methodology. The third section describes outcomes and findings of the model. Final remarks conclude the paper.

2. Literature overview

A preliminary review of previous studies indicates that hedonic price analysis has frequently been applied to beverages and food products, which are characterized by a high level of differentiation. Since the pioneering paper by Waugh (1928), who studied the effect of quality factors (color, size and uniformity of spears) on vegetable price, his method has been applied in many ways to a broad range of agricultural and food products.

Because wine and condiments are similar products to vinegar, a brief review of the hedonic price analyses for these products can be relevant our study about vinegar.

Wine was undoubtedly the most studied product among beverages and food products. Data collection relies mostly on wine guides and less on retail shelf surveys (scanner data and direct observations). Product quality is one of the attributes employed most frequently to determine wine price, and it is either approximated by sensorial cues (Nerlove, 1995; Combris et al., 1997) or jury grade (e.g., Schamel and Anderson, 2003; Oczkowski, 2001). However, results are not always clearly understood. In fact, sensory characteristics are often difficult and costly to identify because they can only be detected through tasting, learning and the use of expert wine guides. Although Landon and Smith (1997) and Lecocq and Visser (2006) demonstrate that wine ratings performed by specialized agencies or magazines affect wine prices, the role or importance of ratings vary by market. For example, San Martin et al. (2008) demonstrated that the scores of Argentinean wines sold in UK market were not very important, but Bentzen and Smith (2008) found that Champagne ratings had considerable impact in the Scandinavian market. Many authors also included objective features such as vintage, variety and chemical attributes (alcoholic content and acidity) as significant factors. In their study on Porto prices, Couto Viana and Rodrigues (2007) emphasized the type and age of wine. Another attribute that wine price studies frequently analyze is the geographical indication (Landon and Smith, 1997; Combris et al., 2000 and Oczkowski, 1994). More recently, Mueller Loose and Szolnoki (2012) emphasized the role of packaging features such as labels and closures. Boatto et al. (2011) demonstrated the impact of retailers' information and was the first study to explore the effect of shelf display on wine price.

Among condiments, only olive oil received attention by Cadima Ribeiro and Freitas Santos (2005) and Karipidis et al. (2005a). The former study, based on olive oil items available on Portuguese outlet chains, found that acidity, organic certification and the addiction of aromas are more relevant attributes than the regions of origin. Karipidis et al. (2005a) analyzed retail price data from two Greek cities (Athens and Thessaloniki) and found that the packaging size, natural features and type of outlet, respectively, are the most important features affecting the olive oil price.

This review of previous studies suggests that some features employed in wine and olive oil hedonic price models can also be applied to a vinegar model. However, wine and olive oil are quite different than vinegar. For example, quality scores do not exist for vinegars, and only one geographic indication exists for vinegar in the Italian supermarket channel. Given that our research is the first of its type, we have drawn only a few broad precedents from the studies described above.

3. Methodology and data

This study was conducted by collecting data about vinegars sold in supermarket chains through a questionnaire and then analyzing data using a hedonic price model. The questionnaire was designed in a basic format to collect information about the outlet (location, type, store brand), the type of vinegar, brand, acidity, bottle features (size, packaging, glass color, back label) as well as merchandising attributes such as shelf display and stock facings for each observation (i.e., each bottle of vinegar).