The determinants of the choice on the destination of grapes by wine-growers in Piedmont

Abstract

Piedmont is an important region for Italian wine production: in 2012 it accounted for about 6 percent of total Italian wine production, but for 15 percent of Italian quality wines (DOC and DOCG). According to the 2010 Agricultural Census, there were about 23,000 vine-growing farms in the Region.

A share of wine-making is made on the farms. There are presumably many different components of on-farm wine-making. A part is most likely composed of producers for self-consumption, once a very widespread practise among farmers, even between the ones non specialised in vine-growing, but still rather common: many farmers have small vineyards and produce small amounts of wine for themselves. However, this part is no more recorded in the Agricultural Census data we use. Another part is probably formed by those vine-growers who try to earn more from making wine rather than from selling grapes, although not producing high quality wines; they may also take advantage from the habit of many city dwellers, looking for a "genuine" product, and going and buying wine directly on the farm. Nevertheless, this second component is probably decreasing, due to the consumers' request of a better quality, and due to the diffusion of wine-making co-operatives, that pay grapes higher prices than traditional wine dealers used to do in the past. A third component is the probably increasing part of vine-growers who produce high-quality grapes and valorise them producing their own wine. Indeed, there is a growing trend to production of quality wines: the share of the vine area destined for appellation wines raised from 75 to 88 percent from 2000 to 2010.

Those farmers not producing grapes for self-consumed wine face the choice of the destination of their grapes. They can bring them to a cooperative, they can sell the grapes or they can process them to make wine on the farm. In this paper we investigate the determinants of this choice, evaluating which variables affect the decision of vine-growers to make wine on their farms rather than selling the grapes or bringing them to a cooperative.

The theoretical framework is as follows. In wine production technology, marginal product of inputs is presumably constant, given the plant. In the short run, since fixed costs have no impact on the decision, it can be assumed that the quantity of processed wine (W) is positive if the value of wine, less processing costs, exceeds the value of produced grapes. Considering separately variable inputs costs and labour costs, we then have:

$$W > 0 \quad if:$$

$$p_w a_1 \, y_g - \sum_i p_{xi} b_{1i} \, y_g - w \, b_2 \, y_g > p_{eg} \, y_g \tag{1}$$

or, dividing by y_g: $\quad p_w a_1 - p_{eg} - \sum_i p_{xi} b_{1i} - w \, b_2 > 0 \tag{2}$

where p_{eg} is the price of grape processed off the farm (i.e., the final price received from the cooperative or from the sale of grapes on the market); p_w, and p_{xi} are, respectively, the price of wine and of variable input i; a_1 is the technical transformation coefficient of grape into wine, b_{1i} and b_2 are the technical coefficients of variable input i and of labour, and w is the unit cost of labour. For estimation purposes, the different parts of eqn. (2) can be examined. The price difference at the farm level ($p_w a_1 - p_{eg}$) is assumed to be a linear function of the price difference at the local level, and of technical, wine-making and marketing skills, proxied by observable personal characteristics of farm operators and of family members, plus a random variation. Variable inputs unit costs are assumed to linearly depend on observable characteristics of wine-making farms, with an unobservable random component. Labour costs can depend on the opportunity cost of labour (and, hence, on personal characteristics determining the potential wage) or, in addition to these, on household characteristics, if labour cost is subjective, either because of different utility of on-farm and off-farm labour, or because no off-farm employment opportunity is available.

Data on farm, household and personal characteristics are drawn from individual data of the 2010 Agricultural Census. From the Census, farms growing grapes for wine (23,000) are drawn. Only those farms that sell either wine and/or grapes are retained. The Census surveys the share of the marketing channels of farm products, including processed products. Hence, the dichotomous dependent variable is whether the farm sells any wine. Farm characteristics comprise grape production, that can affect economies of scale and hence average costs for wine-making; and the share of UAA devoted to grapes, as an index of specialisation. Information on operators' characteristics provided by the Agricultural Census includes age, gender, education levels. Dichotomous variables indicate if high school or university were specialised in agriculture and if operators followed agricultural training courses. These variables are assumed to affect wine and grape prices at the farm level, relative to the average prices, since they are proxies for technical and marketing skills of operators. In addition, they also measure the level of human capital, affecting the potential wage that might be earned on the labour market. Farm characteristics, together with household characteristics, might influence subjective labour costs. Hence, choosing variables relating farm and household characteristics is appropriate. The labour burden of household members (the ratio of farm area to household labour resources) is expected to increase the negative utility of work, and to discourage a further use of family labour in wine-making. On the contrary, more mechanisation lightens labour burdens and is expected to have the opposite effect. Further farm variables included are the farm having carried out agro-tourism activities (this increases the possibility to directly sell wine on the farm at good prices), and the farm doing book-keeping and/or using ITC technologies (other proxies for managing skills).

Wine prices data are drawn from the statistics of the Chambers of Commerce of Asti and Cuneo, the two provinces that comprise the largest part of Piedmontese viticulture. Prices for grapes sold by the farmers come from the same source. Grape prices paid by cooperatives to their members have been surveyed directly from many cooperatives in the same provinces.

Since the choice of the destination of grapes to cooperatives is a long-term one (membership of a cooperative puts severe constraints to exit), we consider the choice of on-farm wine-making as the result of a double choice. First, the choice of participating or not to a cooperative; second, conditional on not participating to a cooperative, the choice of making wine or not on the farm. Accordingly, the model will be estimated as a double hurdle model, using as explanatory variables those indicated above.