Bordeaux 2016 Abstract Submission

Title
To make wine, to sell the grapes or to deliver them to the cooperative: determinants of the allocation of the grapes

I want to submit an abstract for:
Conference Presentation

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Keywords
on-farm winemaking, marketing chain, Asti

Research Question
Which are the determinants of the choice of grape-growers to sell their grapes, or to deliver them to cooperatives, or to make wine on the farm

Methods
Probit models and double hurdle model

Results
Expected results (Estimations ongoing): Identification of the determinants of the choice to make wine on the farm, to deliver grapes to a cooperative or to sell them

Abstract
The province of Asti is an important region for Piedmont wine production. More than one third of Piedmont quality wine (including Asti Sparkling wine) comes from there. Its vineyards (mostly lying in Monferrato) are second, as vine bearing area, only to the province of Cuneo (that means Langhe and Roero). According to the 2010 Agricultural Census, there were about 5,700 vine-growing farms in the province, and vineyards covered more than 15,500 hectares.

Like in other countries, there are different chains between vine-growing and wine-making and the farm organization in grape-growing and wine-making is quite heterogeneous in this area. A small part of vine-growers make wine for self-consumption, once a very widespread practise among farmers, even between those non specialised in vine-growing. However, this part is no more recorded in the Agricultural Census and in the
database we use. All other vine growers have three choices: i) they can make wine on the farm from their own grapes, possibly buying grapes from other farmers. ii) They can deliver their grapes to a cooperative of which they are members. iii) They can sell their grapes to industrial winemakers. It can be evaluated that in Asti province about two-thirds of the grapes are processed by the cooperatives and the wine industries, while the rest is processed on the farms.

We are interested in the determinants of these different choices, and in this paper we try to evaluate which variables affect the decision of vine-growers to make wine on their farms rather than selling the grapes to industrial winemakers or to a cooperative winery.

Many different determinants supposedly influence the choice, depending on the variety of grapes to process, on which possibility exist of selling the grapes, and at what price, and on the farm and the household characteristics.

The theoretical framework is as follows. In wine production technology, marginal product of inputs is presumably constant, given the plant. It can be assumed that the quantity of wine processed on the farm \( W \) is positive if the value of wine, less processing costs, exceeds the revenue of the grapes, either delivered to a cooperative or sold to other wineries. Considering separately variable inputs costs and labour costs, we then have:

\[
W > 0 \text{ if:} \\
pw a_1 yg - \sum pxi b_1i yg - w b_2 yg - K/ yg > pgj yg, j = \text{cooperative, industrial winery} (1)
\]

or, dividing by \( yg \):

\[
pw a_1 - pgj - \sum pxi b_1i - w b_2 - K/ (yg) > 0 (2)
\]

where \( pg, pw, \) and \( pxi \) are, respectively, the prices of grape, wine, and 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, \( w \) is the unit cost of labour, and \( K \) are fixed costs of wine-making.

The data on farm, household and personal characteristics that we use are drawn from individual data of the 2010 Agricultural Census. From the Census, we only retain those farms in the Asti Province that grew grapes for wine and that sold wine and/or grapes. We also skip Muscat producers, because this grape variety is necessarily processed with industrial methods (mostly very large autoclaves) not at the reach of ordinary farms, which accordingly sell their grapes to sparkling wine factories (except for rare cases). The Census surveys the share of the marketing channels of the farm products, including the processed products. Hence, we have the information on whether the farm sells any wine, and on whether it sells any grapes, and to whom (including delivering to cooperatives).

For the estimation, we need the price difference at the farm level \( (pwa_1 - pgj) \). Since we do not have the individual observation of these variables, we assume this difference to be a linear function of the average difference in wine and grape price, and of technical, wine-making and marketing skills, proxied by observable personal characteristics of farm operators and of family members, plus a random variation. Wine average prices are those recorded by the Chamber of Commerce. Grape prices are supposedly different when grapes are sold to the industrial wineries or when they are delivered to the cooperatives. For the first case, we use the weekly prices recorded by the Chamber of Commerce during the 2008 and 2009 harvests (just before the Census period) for the most representative grape varieties in Asti province. For the second case we use the prices paid (for the same varieties) to grape-growers by the cooperatives in the province.

Variable inputs unit costs are assumed to linearly depend on observable characteristics of the 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. Farm characteristics comprise grape production, that can affect economies of scale and hence average fixed 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 the operator might earn 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).

We will estimate different statistical models, having as dependent variable the destination choice of the grapes. We also will try to ascertain whether the decision whether to sell the grapes or to make the wine is made conditional on, as a first step, the choice of not adhering to a cooperative.