

Padua 2017 Abstract Submission

Title

Analysis of risk preferences: an application to French winegrowers

I want to submit an abstract for:

Conference Presentation

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Keywords

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Research Question

We analyse here the risk preferences of winegrowers in France with regards to their use of pesticides. We focus on the production risk considering the production technology.

Methods

Our estimates consist of two main steps: A first step, where we estimate the mean and risk production functions, and a second step, where we estimate the risk preferences function.

Results

One interesting feature of this analysis is the consideration of these risk preferences depending on the type of product (bulk, bottled wine or mixed).

Abstract

Despite the increased yields in viticulture resulting from the use of chemical substances to protect the vineyards (from pests and diseases), alerts on their toxicity launched over the past decades by environmental groups and scientists have gradually pushed the French government to take into account environmental and health hazards (Paillotin, 2008). In a context characterized by intense societal pressure to reduce pesticide use in viticulture (notably the Ecophyto and Ecophyto II plans (2008, 2015)), wine growers are strongly encouraged to modify their vineyard-protection processes. Agro-environmental policies have therefore been called upon to influence and define, to a certain extent, wine-growers' behaviour as regards to their pesticide use. These policies are intended to encourage a reduced use of pesticides through a variety of tools such as regulations, information-awareness-persuasion, technological and institutional changes, and contracts or market-based instruments (taxes or subsidies). The question of the wine grower's choice to opt for a phytosanitary treatment or not can be analyzed within the decision-theory framework. The decision to apply plant-protection products (and that of possibly reducing its use) is based upon a certain number of hypotheses regarding the outcome of this decision. This involves maximizing a given criterion (income or utility), identifying possible courses of action and probabilities of associated states of nature. Structural constraints (surface area, location of plots, etc.) and those concerning work organisation on the site can also impact decision choices. To model wine-growers' behaviour patterns, we formulate the classical hypothesis that producers always aim to maximize profit (or expected utility) and will

therefore use pesticides as long as the marginal costs of this usage are lower than the marginal benefits they obtain. Given the fact that there are few viable means to reduce pesticide use in viticulture which do not compromise yield, producers have a limited framework within which they can change their agricultural practices and the risk-of-change question must be analysed in relation to wine-growers' preferences and this risk. Decision support systems are the first means which can be used to decide whether or not to carry out each phytosanitary treatment as they provide information (relating to climatic and epidemiological conditions) on risk probabilities in the case where the treatment is applied or not for the different natural states encountered. Another way to reduce environmental pressure is to minimize the quantities of pesticides released into the environment during treatment (drift), thereby reducing exposure risk and phytosanitary protection costs.

However, the adoption of these alternatives is not without economic risk (loss of agricultural yields and income) for winegrowers. Indeed, they are not always able to evaluate with certainty the potential effects of the use of these innovative practices. The benefits of these practices are not always obvious to producers and their adoption is often very slow (Carpentier et al., 2005). Adoption costs are generally unrecoverable (Carpentier et al., 2005; Ghadim et al., 2005). Understanding the causes of the adoption or not of these aesthetic practices in a context of risk of production in viticulture seems therefore essential. Therefore, the fundamental question at the center of this research is to understand the different factors (in particular risk aversion) that have an impact on the adoption of practices that are economical in terms of chemical inputs in viticulture. Empirical research on farmers' choice in a context of uncertainty, it is intended to estimate producers' preferences toward risk (Kumbhakar, 2002; Kumbhakar and Tveteras, 2003). We analyse here the risk preferences of winegrowers in France with regards to their use of pesticides. We focus on the production risk considering the production technology as proposed by Just and Pope (1978).

Our estimates consist of two main steps: A first step, where we estimate the mean and risk production functions, and a second step, where we estimate the risk preferences function. One interesting feature of this analysis is the consideration of these risk preferences depending on the type of product (bulk, bottled wine or mixed). Our estimates are based on both FADN database (2002-2006) and data from the National cultural practices survey (2006).

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