Lausanne 2024 Abstract Submission

Title
Quality Determinants in Wine Production: The Case of Chilean Wineries

I want to submit an abstract for:
Conference Presentation

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Keywords
Wine; Quality; Production; Peer effects; Chile

Research Question
¿What are the determinants of high-quality wine production?

Methods

Results
Our preliminary results indicate that the decision to become a producer of high-quality wine correlates positively with the decision of neighboring wineries.

Abstract
Quality is subjective and therefore difficult to define in wine production. In general, the production of high-quality wines involves the concept of “terroir” that combines wine grape varieties with specific combinations of climate, landscape, and soils, within specific cultural contexts, to produce unique wines (Seguin, 1986). Different strands of literature analyze the determinants of wine quality production. One of them studies the determinants of wine quality production based on climatic variables (Storchmann, 2005; Ashenfelter, 2008). Also, the literature on wine marketing has studied the determinants of consumer choice (Horowitz and Lockshin 2002). Horowitz and Lockshin (2002), analyze wine quality ratings based on a wider variety of variables. However, they
include some endogenous variables on the right hand side of their regressions as price range and winery ratings. While we acknowledge the importance of climatic variables and of studying consumer preferences, in this paper we aim to investigate the determinants of high-quality wine production based on the technology adoption literature (Feder et al., 1985; Conley & Udry, 2010; Foster & Rosenzweig, 2010). This literature indicates that the adoption of a new technology is positively related to wealth, education, and the adoption of the technology by neighbors. Other variables of interest are returns to adoption and location-specific exogenous environmental variables, such as weather and soil.

To meet national and international demand, the Chilean wine industry has had to increase the quality of the wine produced. This involved the adoption of technology that occurred in the 1980s and 1990s (Lima, 2015). For example, the adoption of stainless steel tanks, pneumatic presses, and oak barrels (French and American) (Lima 2015; Mora 2019).

Using cross sectional data from Chilean wineries we created a quality index based on Depetris-Chauvin et al (2023). As Depetris-Chauvin et al (2023), we do not have information on wine quality attributes in our sample. Therefore, as proxies for wine quality attributes, we use some practices that wineries adopt, both in the vineyard and in the winery, to achieve a higher sensory quality for their wines. These practices are: grape thinning, sorting grapes before starting fermentation, average grape density below the sample median, use of French oak barrels in aging, and use of natural cork. Next, we estimate the determinants of this quality index based on variables related to wealth (area or volume produced), education (number of employees with university degrees), the adoption of high-quality production by neighbors (number of wineries producing high-quality in the same valley, quality index with values of 3 or more), a proxy for input costs (number of temporary employees or number of winery equipment), and location variables (most important regions in terms of cultivated area).

To analyze the adoption of high-quality production by wineries, we will adapt Brock and Durlauf’s (2001) model of social interactions. In this model the expected benefits of high-quality winemaking by one winery depend to some extent on the adoption decision of other wineries (a social component). We expect wealth, education, and adoption by neighbors to positively correlate with high-quality wine production.

After estimating an ordinal logistic regression, we find that having neighbors produce high quality wines is positively correlated with the adoption of high-quality production. According to the literature, the neighborhood can be relevant due to several reasons: producers adapt their methods of production and use of technology when they observe that their neighbors have positive outcomes, when they belong to an area that supports them financially or technically, when the technical conditions necessary for adoption are present in a particular location, or when there are positive spatial externalities (Abdulai and Huffman 2005; Conley and Udry, 2010; Schmidtner et al, 2012; Yang et al, 2012). However, identification of the neighborhood effect on individual decisions such as the adoption of agricultural technology, remains a complex matter.

The main problem that we face when attempting to estimate the neighborhood effect is the reflection problem, first pointed out by Manski (1993). The identification of peer effects is an endogenous process that limits the possibility of disentangling the effect of social interaction and that of peer attributes. We will try to address this problem by instrumenting the neighbors, defined as the number of wineries that produce high-quality wines in the same valley, with two possible instruments: the year in which the winery was created and/or the area that was affected by the Agrarian Reform in each commune (geographical unit in Chile). Prior to the 1980s, Chilean government policies focused on protectionism and technological isolation. In the early 1980s, a Spanish winemaker imported technologies such as stainless steel tanks and French oak barrels, transforming the winemaking process. Soon these innovations were followed by Chilean winemakers. In addition, new varieties and new crop management practices were introduced. During the 1990s, Chile gained access to markets in Europe, North America and Asia, and had a value-for-money strategy. Therefore, the date of winery foundation can serve as an instrument for the adoption of the production of high-quality wines by neighbors. The other potential instrument is the area that was affected by the Agrarian Reform in each commune, under the assumption that the areas subject to the Agrarian Reform have a greater number of neighbors. A larger number of neighbors increases the likelihood of following neighbors’ practices.

Our preliminary results indicate that the decision to become a producer of high-quality wine correlates positively with the decision of neighboring wineries. However, when incorporating location variables into the quality regression, the effect of adoption by neighbors loses its significance. This may be an indicator that the mechanisms in which the neighborhood effect is relevant have to do with the technical conditions necessary for adoption that are present in a given location, or where positive spatial externalities exist. Exploring these mechanisms maybe an interesting avenue for this research.
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References


