

# Wine Consumption and Religions: A Research Note

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**Abstract:** The relationship between religions around the world and alcohol consumption is a well-known debated issue since many religions forbid it. However, the specific relationship with wine consumption has never been empirically investigated. For some religions, such as the Catholic religion, wine has a specific place. The purpose of this short communication is to analyze how the role of religions could determine the level of wine consumption in a representative panel of countries. A single equation analysis is based on a cross section of 52 countries for the period 2010–2013. The results give more support to the anticipated relationship between wine consumption and religions and demonstrate that wine consumption in a country is impacted by the dominant religion in the country.

**Keywords:** wine consumption; culture; religion

## 1. Introduction

There is historical evidence that points to the fact that alcoholic drinks feature in many religions. All fermented drinks require a skilled process often attributed to divine intervention [1]. A reference to the different cultures that have developed in the Northern parts of Europe or in the Mediterranean basin shows that many factors, including weather, climate, sociology, and religion, could explain differences in drinking cultures [2].

In the old ages, we find religious myths explaining how wine is attributed to the blood of divine animals [3]. Wine was used for religion ceremonies by Sumerians and Egyptians. Dionysus was the god of grape-harvest, winemaking, and wine for the Greeks, and, similarly, Bacchus was the name adopted by the Romans. In Asian cultures, wine is often associated with spiritual events, such as in Japanese Shinto shrines or in ceremonials honoring the Chinese god of prosperity [4]. (See Charters ([5], Chap. 8) for a review of the links between wine and religious behaviors).

The sacred dimension of wine in religion was given by Christians [6]. In the New Testament, Jesus turned water into wine during a wedding in Cana. Wine plays a symbolic ritual role in the communion as it represents the blood of Jesus Christ. For centuries, Catholic monks have developed and propagated the skills of winemaking and supplied wine for sacraments to priests and churches in all parts of the world.

Judaism also includes wine in ceremonies and holidays (Shabbat, Pesach, sacrificial service), but wine is not associated with blood. In Hinduism, there is no ban on wine, but the monks never drink wine or any alcohol. At the same time, wine is recognized as one of the five elements of the earth. As a result, wine is offered during some religious rituals. However, since alcohol can also be a symbol of excess behavior, excessive drinking is condemned in all religions. Buddhism and Islam condemn alcohol consumption because it is associated to a loss of self-control.

From an historical point of view, the symbolic relation between wine and religion was exported to the American colonies [3,7]. However, alcohol has also been condemned by some religious communities in the United States. During the 1830s, a movement associating drinking behavior as a manifestation of evil developed in some Protestant churches. It became a ban on alcohol and wine consumption through the ratification of the



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18th Amendment in 1919, a period known as the Prohibition. Until 1933, the production, sale, and transportation of alcohol were not authorized with the exception of sacramental or kosher wine for religious services. Religiosity always had an impact on the social acceptability of alcohol consumption at different times in various places [8–10].

According to a Pew Research Center survey conducted in 2015 [11], not all US religious groups exhibit the same behavior, and Catholics are more willing to recognize that they consume more alcohol than Protestants. Young adults who do not associate themselves to any religion are more likely (24%) than both Catholics (17%) and Protestants (15%) to have excessive drinking behaviors. It is also reported that religious affiliation is not the only factor to be considered since demographics, age, gender, and education are also significant factors explaining wine consumption behaviors.

Over the last few decades, alcohol and wine consumption patterns around the world follow a similar trend with increasing internationalization and cultural cross-fertilization [12–14]. Today, consumer preferences for alcoholic beverages are not necessarily driven by local or regional habits or traditions and are more influenced by a wider choice of marketed products. There are some evidences of convergence in national alcohol consumption patterns across the world [15–17].

Although there is an important anthropological and sociological literature on the links between culture and drinking habits [18,19], only a few studies have investigated, from an economic point of view, wine consumption across cultures. Most of the research is either focusing on the problems existing in developed countries [20,21] or on a comparison of Western and Eastern cultures [22,23]. Some more recent papers have debated on social, cultural, or behavioural aspects of drinking practices including wine [24–26]. Agnoli and Outreville [27] investigate how national culture and the sociopolitical environment influence the level of wine consumption across countries and find a negative impact of religion on wine consumption. However, this result displays a contrast with previous results by Holt et al. [28], highlighting a positive relation in the US market between Catholic affiliation and alcohol consumption. To our knowledge, the empirical relationship between wine consumption and religion has never considered a comparison of the different religions in a panel of countries. Starting from these introductory remarks, we would therefore expect that the correlation between wine consumption and the dominant religion in a country is either negative for most of the religions or positive for the Catholic religion.

The paper is organized as follows. Section 2 defines the methodological framework. Section 3 describes the data and discusses the results of the empirical analysis. The paper is concluded in the last section.

## 2. Methodological Framework

There is a large empirical literature on demand analysis for wine, beer, and spirits [29–31]. Most of these studies are based on a single-equation estimation of the parameters that determine the demand for alcoholic beverages [32]; Tsolakis et al. [33]; Angulo et al. [34–36]. In nearly all theoretical and empirical work, demand or consumption is considered within the context of the consumer's lifetime allocation process, maximizing a utility function depending on wealth, the income stream, prices, and the assumed subjective discount rate for current over future consumption. According to Outreville and Desrochers [37], the factors that may explain the behavioral pattern of decision of the consumers could be categorized by demographic or geographic variables (family, location), institutional variables (political and legal) and social and cultural variables (education, religion). In other words, the level of national income can explain peoples' ability to afford products while cultural traits influence peoples' attitudes and behavior.

The influence of religion on wine consumption is a subject that lacks empirical work and findings from different researches. They, instead, apply more generally to alcohol which is quite contradictory, particularly when focusing on the Catholic religion. Wine consumption is considered part of Catholic culture and a symbol during religious ritual [5] and some authors show that, in general, practicing Catholics consume more alcohol than

members of the Muslim or Protestant faith [38–41]. On the contrary, Desmond et al. [42] argue that Catholicism provides a protection mechanism against alcohol consumption. Other authors suggest that the individual's specific religion has no impact on alcohol consumption [43] or that, at best, beliefs or religiosity are more important than the religion itself [44].

The main limited objective of this paper is to investigate how religions may influence wine consumption behavior and demand. Under the utility framework, typically, income elasticities for alcoholic beverages are, but not always, estimated through a single double-log demand equation. At a given year, the level of consumption is equal to:

$$\text{Log (consumption year } t) = \text{log (GDP year } t) + \text{country cultural environment.}$$

In this paper, wine consumption is measured as the natural logarithm for country  $i$  in year  $t$ . Consumption per capita is expected to respond positively to changes in income measured by GDP per Capita. To also control for wine-producing countries, the level of wine production is introduced in the model and is expected to significantly impact wine consumption.

Two other control variables are considered for the analysis. Following Barro and McCleary [45], church attendance and religious beliefs are positively related to education and negatively related to urbanization. The general level of human development or education is generally hypothesized to be positively related to wine consumption [35,46]. Therefore, two variables measuring human development (HDI) and the level of urbanization are also added as control variables.

The final model to be estimated is represented as follows:

$$\text{Log (consumption)} = a \cdot \text{log (GDP)} + b \cdot \text{log (Production)} + c \cdot (\text{Urbanization}) + d \cdot (\text{HDI}) + e \cdot \text{Set of religions} \quad (1)$$

(Christianity, Muslim, Buddhism, Hinduism).

### 3. Data and Empirical Results

Data, published by International Organization of Vine and Wine (IOV), are annual per capita consumption of wine averaged over the period 2010–2013 to avoid single-year-related problems. Production data for each country are also available in OIV statistics. Our sample of 52 countries represents 90% of the world consumption of wine. The human development index (HDI) developed by the United Nations Development Program (UNDP) is a computed value based on the education level. It is available in annual reports of the organization. The urban variable shows the percentage of the urban population and religion shows the percentage of each religion in a country. These variables are available from the World Factbook. ([www.cia.gov/the-world-factbook/countries/](http://www.cia.gov/the-world-factbook/countries/), accessed on 6 September 2021).

The measures of country specific variables are fairly stable over time. For example, data from the World Value Survey, including a study of 65 countries reflecting 75% of the world's population, show that cultural values are not affected by shocks caused by modernization and economic development [47].

The results of the OLS estimation procedure are presented in Table 1 and confirm the positive and significant role of income and local production in the level of consumption. The level of urbanization enters negatively in the relationship and the level of education (HDI) positively, but none of these variables are significant at the 10% level.

**Table 1.** Regression results.

Variable	Coefficient	Std. Error	t-Statistic	
Constant	−5.958	1.643	−3.626	***
LOG (Production)	0.070	0.036	1.938	***
LOG (GDPperCapita)	0.521	0.279	1.869	***
Urbanization	−0.011	0.010	−1.053	
HDI	4.293	3.684	1.165	
Catholic+ Orthodox	0.010	0.006	1.681	**
Protestant	−0.001	0.009	−0.131	
Muslim	−0.004	0.009	−0.483	
Buddhism	−0.025	0.013	−1.913	***
Hinduism	−0.075	0.148	−0.509	
R-squared	0.605			
F-statistic	7.138			

Note: level: \*\*\* <10%, \*\* =10%.

Numerous studies have suggested that Protestants consume less alcohol than other Christians and, in contrast, Catholics do not perceived consumption as problematic [2]. To control for these differences, we enter in the equation a variable for Catholic/Orthodox and a variable for Protestants. The results show a positive and significant sign for the first variable tempered by a negative sign, although not significant for the Protestant variable. These results confirm the results by Holt et al. [28] for the US wine market and other studies on alcohol consumption [48,49].

Among religions that forbid alcohol consumption, Buddhism and Islam people are less likely to consume alcohol [50]. Absolute proscription is not universal across Muslims in all countries [51] but Islam is generally associated with proscriptive norms against the use of any alcohol. This explains the lack of Muslim countries in the sample of wine consuming countries and, by consequence, the low significant level for this variable. On the contrary, the Buddhism variable is negative and significant, as expected. These results are in line with expectations when considering Islamic, Buddhist, and Hindu religions, and with some of the results shown by Stancu [52].

Hinduism is generally accepting a moderate consumption of alcohol use [53] and the norms are similar to the clear proscriptive norms against heavy use in Judaism [54]. Due to the lack of data, the Judaism variable is not available and the Hinduism variable is negative but not significant.

#### 4. Conclusions and Discussion

This short note attempts to explore the socio-cultural factors related to religions behind wine consumption patterns in a representative panel of 52 countries with data averaged over the period 2010–2013.

In many studies, religion is considered as a major factor in the clustering of countries and, although there is an important non-economic literature on culture and drinking, the relationship between wine consumption and different religions has never been empirically investigated. The results give more support to this relationship and demonstrate that wine consumption in a country is significantly affected by the dominant religion in the country.

There are two major limitations to this study that could be examined in future work. The first is related to the empirical analysis. Adding other variables reflecting the cultural behavior is limited by endogeneity and multicollinearity problems. The second is related to systemic differences between countries due to the size of the wine production sector. Having two categories of countries, large producing countries and no or small producing countries in the same sample may create some heterogeneity problems but splitting the sample to provide more meaningful results would result in small sample problems.

Even though these limitations may weaken the significance of the findings, the empirical results are still reasonable and represent a first useful estimation of the influence of religions as cultural factors for wine consumption differences among countries.

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