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“A Decomposition of EU Wine Demand”

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Motivation

Trade in beverages continues to grow rapidly. The EU is a major producer of wine, but also a major importer of wine. EU wine imports from the US were \$489 million in 2012, and total EU wine imports were \$3.2 billion (World Trade Atlas, 2013).

The EU has experienced a number of structural and financial changes that may affect its demand for wine.

- Demand for wine worldwide has changed as research on the potential health properties, including both costs and benefits, has been publicized.
- The EU now has a number of new members, many of which are middle income countries from Eastern Europe. These countries may have more rapidly rising incomes, leading to greater consumption of goods generally regarded as luxuries (Seale et al., 2003).
- Several EU countries have experienced negative growth as a result of the recent recession., which would result in the reduced consumption of all goods, especially those generally regarded as luxuries.
- Wine may also be considered almost a staple for some EU countries, given their history of wine production and consumption.

This research:

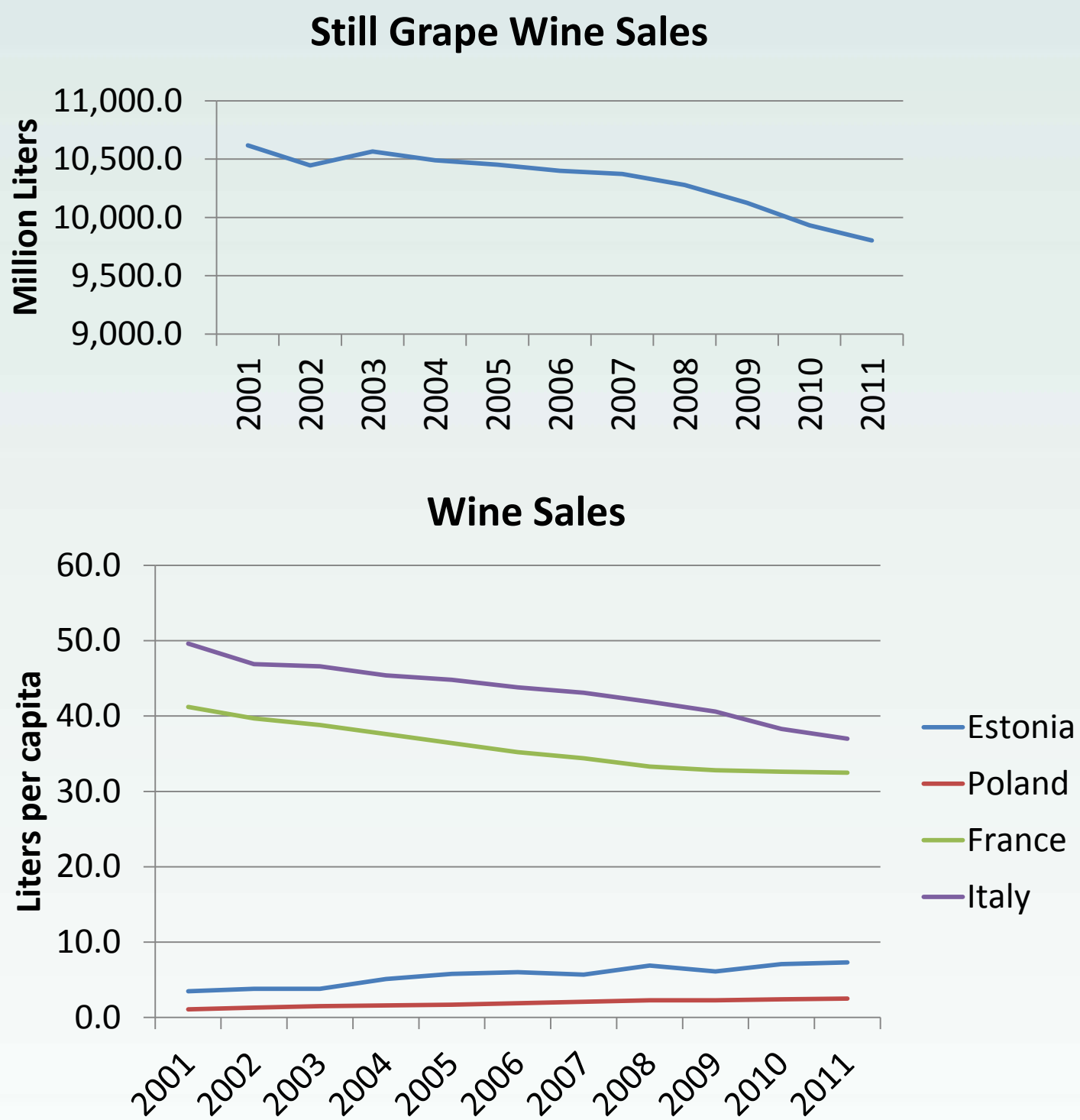
- Calculates income and price elasticities of demand for wine, and attempts to document the significance and magnitude of the effects of the noted trends on demand .
- In particular, the research will attempt to determine whether the EU-27 can be characterized as a single large market, or whether the market can be differentiated based on whether the countries are more recent members, with somewhat lower incomes, whether they have been heavily affected by the recent recession, or whether they are “mature” markets for wine.

Background

Wine consumption in the EU has been declining in quantity terms, with a 4.1 percent decline in per capita consumption between 2001 and 2011.

Yet, this overall trend masks very different results for individual countries. The Eastern European countries that have recently acceded to the EU experienced a 34 percent increase in overall wine consumption, although they constitute less than ten percent of the EU’s total wine market. The Western European countries that made up the EU-15, plus Malta and Cyprus, experienced a 6 percent decline overall.

Declines in Italy, Spain, and France were mostly responsible for the overall declines, while markets like the Netherlands, the UK, Ireland , Sweden, and Finland experienced large increases.



United States Department of Agriculture, Economic Research Service

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A Decomposition of EU Wine Demand

Methodology

- Two models, a simple loglinear model of demand and linear AIDS model were used.
- Quantity per capita and price data for wines, beer, and spirits for the period 1997-2011 were taken from Euromonitor, 2012-2013
- A time trend was incorporated to account for new information about wine.
- Expenditures on beer and alcoholic spirits were considered as potential substitutes for wine. Alcoholic beverage expenditure is the income variable for the LA-AIDS model, while per capita GDP from the IMF stands in for expenditure in the loglinear model.
- Both models were applied to several subsets of the EU countries. These include a) the Eastern European new members vs. the Western European members of the EU-15 (plus Malta and Cyprus); b) the four countries for which 2011 GDP was still below 2008 GDP; and c) the nine countries that had the highest per capita wine consumption in 2001, and countries that had lower wine consumption per capita in that period.
- The loglinear model used simple OLS, while the LA-AIDS model used Seemingly Unrelated Regression with calculated elasticities (See SAS, 2013; Henneberry, 2010; Alston et al., 1994; Mehrara and Ahmadi, 2011).
- Chow tests were applied to the subsets to determine whether these different sub-markets really were characterized by different coefficients.
- We would expect higher income/expenditure elasticities for Eastern European countries, as wine might be more of a luxury good (Seale et al., 2003).
- We would expect higher income elasticities for countries hard hit by the recession, as incomes fall
- We would expect smaller expenditure/income elasticities for mature wine markets, as well as smaller own price elasticities.

Results

Loglinear Model	Full EU	Eastern European Countries	Western European Countries	Persistent Recession	No Persistent Recession	High Wine Consumption	Low Wine Consumption
Own Price Elasticity Wine	-0.670***	-.612***	-0.734***	-0.366*	-0.656***	0.049	-.366***
Cross Price Elasticity Beer	-0.017	0.230	-0.08	1.175*	-0.291**	-0.358***	-0.130
Cross Price Elasticity Spirits	0.370***	0.548**	0.01	-0.052	0.307**	-0.157	-0.247**
Per Capita GDP							
Elasticity	0.728***	0.520*	0.549***	-0.885***	0.928***	0.081	.909***
Year Term Coefficient	-0.028***	-0.038	-0.003	0.044***	-0.033**	0.000	-.017*

LA-AIDS Model	Full EU	Eastern European Countries	Western European Countries	Persistent Recession	No Persistent Recession	High Wine Consumption	Low Wine Consumption
Own Price Elasticity Wine		-1.229	-1.232 ⁴	-0.751	1.549	-1.287	0.238
Cross Price Elasticity Beer		-0.136 ²	-0.576	0.245	-0.838	-0.184 ²	-0.391
Cross Price Elasticity Spirits		0.039	0.424	-0.328	0.740 ³	0.042	-0.271
Expenditure Elasticity		1.325	1.383	0.834	-1.451	1.429	0.149
Year Term Coefficient		0.003	0.002 ¹	0.002 ¹	-0.002 ¹	0.002 ¹	-0.005

¹ Year coefficient was not significant in this sub-sample
² Beer price coefficient was not significant in this subsample

³ Spirits price was not significant in this subsample
⁴ Wine price was not significant in this subsample.

Discussion

- Chow tests of the LA-AIDS models indicate that the Eastern European and Western European sub-samples have different coefficients at the 5 percent confidence level. The same is true of the high wine consumption and low wine consumption countries, and the persistent recession countries vs. the rest. For the loglinear models, all three sets of sub samples have different coefficients at the 1 percent confidence level. Thus we conclude that the EU cannot be characterized as a monolithic market.
- We note that as predicted, expenditure elasticities in the Eastern European countries are much larger than in Western Europe in the LA-AIDS model, but are quite similar in the loglinear model.
- For the countries with the most persistent recession effects, the expenditure elasticities were actually negative in both models.
- The expenditure/income coefficients for high wine consumption countries were markedly lower than those of the low wine consumption countries in both models, and the price elasticities in the high wine consumption countries took the wrong sign. This does suggest that wine is treated as a staple in mature markets.
- We would expect that both beer and spirits would be substitutes for wine
 - However, in the LA-AIDS model, beer was a complement, with the notable exception of the Western European countries . In the loglinear model, beer was a complement in the high wine countries and non-recession countries, a substitute for the recession countries, and not significant in the rest.
 - Spirits were a complement in the high wine consumption countries and the Western European countries, and a substitute in the rest of the groupings in the LA-AIDS model. In the loglinear model, they are complements in the low wine consumption countries, not significant in the high wine consumption or Western European countries, and substitutes in the rest of the subsamples. In both models, spirits therefore, were a substitute for wine in Eastern European countries and not so for the Western European countries
- Time trends were not consistent across the models, or the subsamples, and were not significant in many cases. This may be due to the fact that research on the health effects of wine and alcoholic beverages indicates potential positive and negative health effects.

Conclusions

The results of the model indicate that the EU cannot be considered a monolithic market for wine. Differences in incomes, recession effects, and historic patterns of wine consumption all effect demand parameters.

The basic demand structure outlined here, however, may raise more questions than it answers. In particular, the large variation in substitute and complement status across other alcoholic beverages and subsamples may warrant further investigation, as do the instances in which own-price elasticities of wine take an unexpected sign.

One area in which further research may also be warranted would be the changes in quality of wines purchased. Wine is not a homogeneous good, and as countries experience increases in income or greater access to traded goods, their consumers may begin to purchase wines of higher perceived quality at higher prices, with quantity consumed remaining constant. Accounting for these variations would produce more precise estimates of demand parameters.

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