Introduction

- The wine consumption in Brazil has sharply grown in the last two decades.

- An important part of this consumption is coming from imported wine, mostly from Argentina and Chile, economic partners of Brazil.

- Data from 1995 to 2012, show that the importation increased at the rate of 10.7% per year, on average.

- In 1995, the importation of wine was US$ 58.7 million and ended up in 2012 to US$ 298.6 million.

Outline

- Introduction
- Objectives
- Data and Econometric Framework
- Results
- Concluding Remarks

Introduction

- 115 million of bottles a year

- 80% are for wine until 8 U.S dollars
  - Willing to pay more???

- 73% are imported wines

- 85% are red wines
Introduction

➢ Recent data, 2008/09, are showing that families are spending on alcoholic beverage around BRL7.30 (US$3.80) per month, on average.

➢ Most is on beer, about BRL5.35 (US$2.79) per month, followed by wine, about BRL1.10 (US$ 0.57), and has been increasing ever since.

➢ These figures either from demand or supply suggest that wine, imported or domestic, has become a very important product among the consumption of alcoholic beverages and deserves further investigation.

Wine production

Source: http://historiasdeumasommeliere.blogspot.com.br/
Wine consumption (L per capita/month)

POP: 200 million

Central (7%)
North and Northeast (36%)
Southeast (42%)
South (14%)

Source: POFs

Alcohol consumption (L per capita by income class)

Source: POFs

Wine importation 2012 (million liters)

Source: POFs
Wine importation (million liters)

- **10.7% per year**
- **TOTAL 1997**: 24 million liters
- **TOTAL 2012**: 78 million liters

### Taxes and Tariffs

**Domestic Wine**

1) IPI – 30%
2) ICMS – 23%
3) Confins – 7.6%
4) PIS – 1.65%
5) Others – 1.50%

Total: 63.84%

**Imported Wine**

1) IPI – 30%
2) ICMS – 23%
3) Confins – 7.6%
4) PIS – 1.65%
5) Others – 1.50%
6) Tariff – 23%

Total: 83.84%

### Objectives

- The main objective of this paper is to analyze the consumption of wine in the Brazilian market and its recent changes in supply and demand.

- To our best knowledge, the market dynamics of the wine consumption in Brazil has not been well documented in the literature.
Objectives

Our major hypothesis is that the recent rise in the family income, promoted by the stabilization plan in 1994, improvements of standard of living and cash transfer programs, are substantially driving up the domestic consumption in all levels of income.

On the other hand, there is also another important effect caused by the valuation of national currency that is lessening the prices of imported wine and becoming the domestic wine less competitive.

Econometric Strategy

The empirical strategy is based on the estimation of an Almost Ideal Demand System (AIDS) and Vector Autoregressive (VAR) models.

The paper is divided in two steps:

First is to analyze the domestic demand on consumption of wine against other beverages since 1995;

And the second is to investigate the influence of the exchange rate, prices, income on the importation of wines.

Data

Household Budget Surveys – (POF) for 1995/96, 2002/03 and 2008/09, and executed by Brazilian Geography and Statistical Institute (IBGE)

The POF covers a wide range of topics — household composition, health, education, income and expenditures — and compiles the data at the national level.

As POF de 95/96, POF 02/03 e POF 08/09 interviewed 16.013, 6.673 e 8.575 households, respectively

The International Trade Secretary (SECEX), IBGE, Central Bank.

SECEX covers data about all traded products for Brazil, including wine. The main variables include value and volume of importation and exportation, origin and destination, country and economic block.

AIDS MODEL

The AIDS demand function is specified as:

\[ w_i = \alpha_i + \sum_{j=1}^{n} \gamma_{ij} \log p_j + \beta_i \log(X / P) \]

Where \(w_i\) is share of the ith good, \(p_j\) is the price of the jth good, \(\alpha_i, \gamma_{ij}\) and \(\beta_i\) are parameters to be estimated and finally, the total expenditure (\(X\)) is given by

\[ X = \sum_{i=1}^{n} p_i q_i \]

with \(q_i\) is the quantity demanded for the ith good and the price index (\(P\)) is given by

\[ \log P = \alpha_0 + \sum_{j=1}^{n} \beta_j \log p_j + \frac{1}{2} \sum_{j=1}^{n} \sum_{k=1}^{n} \gamma_{jk} \log p_j \log p_k \]

in the nonlinear AIDS model. However, it can be specified as a linear price index (Stone Index) given by

\[ \log P = \sum_{i=1}^{n} w_i \ln p_i \]

that gives to linear approximate AIDS (LA-AIDS) model.
AIDS MODEL

The previous functional form can be applied the following restrictions in the parameters like homogeneity and symmetry for all i and they are showed as:

$$\sum_{i=1}^{n} \alpha_i = 1, \quad \sum_{i=1}^{n} \beta_i = 0, \quad \sum_{i=1}^{n} \gamma_{ij} = 0 \quad \text{and} \quad \gamma_{ii} = \gamma_{ii}$$

The formulas to calculate the elasticities are:

- Own price elasticity: $$\varepsilon_w = 1 + \frac{\beta_w}{w_i} - \gamma_i$$
- Cross price elasticity: $$\varepsilon_{ij} = \frac{\beta_{ij}}{w_i} - \gamma_{ij}$$
- Income elasticity: $$\varepsilon_i = 1 + \frac{\gamma_i}{w_i}$$

VAR MODEL

The structural VAR model system for Brazilian wine importation has four variables: exchange rate (R$/US$), income, importation prices and importation quantity. The period cover January 1995 to January 2013. These data entered in the VAR model as logarithms and in differences as indicated by the Elliott, Rothenberg e Stock (1996), DF-GLS test.

The following system was considered:

$$A_0x_t = \alpha + \sum_{i=1}^{p} A_i x_{t-i} + \varepsilon_t$$

where: $$A_0 \ (4 \times 4)$$ is a contemporaneous relation matrix, $$x_t$$ is the endogenous variables and the vector $$\varepsilon_t \ (4 \times 1)$$, are the non correlated errors.

$$x_t = [E_t, N_t, P_t, Q_t]$$

and

$$A_0 = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ a_{31} & a_{32} & 1 & a_{34} \\ a_{41} & a_{42} & a_{43} & 1 \end{bmatrix}$$

where: $$E$$ is the exchange rate, $$N$$ is the income, $$P$$ is the importation prices for wine and $$Q$$ is the importation quantum.

When there is cointegration between variables an error correction term is introduced in the model:

$$x_t = A_0^{-1} \alpha + \sum_{i=1}^{p} A_0^{-1} A_i x_{t-i} + A_0^{-1} \varepsilon_t$$

or,

$$x_t = \beta_0 + \sum_{i=1}^{p} \beta_1 x_{t-1} + \varepsilon_t$$

In stability conditions:

$$x_t = \mu + \sum_{i=0}^{\infty} \phi_i \varepsilon_{t-i}$$

Results
The results show that 33% of the quantity can be explained by the income changes.

The results show that a shock on income has a positive impact in the wine importation, as expected.
- A shock on income has a final impact 8.5 times greater in quantity.

Exchange rate impact negatively the quantity.
- A shock on the exchange rate has an impact -2.0 times in quantity.
Concluding Remarks

- Wine Prices seem to have less impact on consumption than prices of other alcoholic beverages.
- Changes on income have more impact on consumption of wine than other beverages.
- A major part of the imported wine (60%) was not explained by income, exchange rate and prices of product.
  - It strongly suggests that there are other determinants from demand side.

Limitations and Research Agenda

- Quality of wine was not considered, which might be an important component for the market as well.
  - Prices matters for the choice, but Chilean and Argentina wines have contributed to improve the knowledge of consumers, the benefit-cost ratio.
- Impact of tariffs. Very recently, more tariffs and a quality control label were imposed on imported wines.
- The role of exchange rate should matter, we believe.
- How to incorporate the demand factors into the VAR models.

Gracias

from Taiwan (APPC 2010)