Drivers of revealed comparative advantage in the wine sector

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Outline

- Motivation
- Methodology
- Data
- Results
- Conclusions

Motivation

- Increasing competition at the global wine markets
- New global players
- Limited research on comparative advantage (CA) of wine
  - Anderson (2013), van Rooyen et al. (2010)
- Research aims:
  - Identify the dynamics of CA
  - Convergency of CA
  - Drivers of CA

Measuring comparative advantage 1.

- \[ B = \frac{X_{ij}}{X_{it}} / \frac{X_{nj}}{X_{nt}} \]
  - (Balassa 1965)
  - \( X \) is the export, \( i \) is a country, \( j \) is a commodity, \( t \) is a set of commodities, and \( n \) is a set of countries
  - \( B > 1 \) comparative advantage, \( B < 1 \) comparative disadvantage

- \[ RTA = \frac{X_{ij}}{X_{it}} / \frac{X_{nj}}{X_{nt}} - \frac{M_{ij}}{M_{it}} / \frac{M_{nj}}{M_{nt}} \]
  - (Vollrath 1991)
  - \( M \) is the import
  - \( RTA > 0 \) comparative advantage, \( RTA < 0 \) comparative disadvantage
Measuring comparative advantage 2.

- ARCA = \((X_{ij} / X_{it}) - (X_{nj} / X_{nt})\)
  - Hoen and Oosterhaven (2006)
  - ARCA index ranges between -1 and +1 with 0 demarcation point
- NRCA = \(\frac{E_{ij}}{E} - \frac{(E_i/E) + (E_j/E)}{2}\)
  - Yu et al. (2009)
  - \(E\) denotes total world trade, \(E_{ij}\) describes country i's actual export of commodity j in the world market, \(E_i\) is country i's export of all commodities and \(E_j\) denotes export of commodity j by all countries
  - NRCA index ranges from -1/4 to +1/4 with 0 demarcation point

Empirical approach

- Test the convergence in CA
  - First, and second generation panel unit root tests
  - Rejection of null, stationarity, convergence
- Explain drivers of CA
  - Panel models
    - Heteroscedasticity
    - Autocorrelation
    - Cross sectional dependence
  - Panel corrected standard error (PCSE) model

Empirical model

- \(RCA_{it} = \alpha + \beta_1 \ln(GDP/capita)_{it} + \beta_2 \ln(GDP)_{it} + \beta_3 \text{agricultural employment}_i + \beta_4 \ln(grape\text{land})_{it} + \beta_5 \ln(exchange\text{rate})_{it} + \beta_6 \text{WTO}_t + u_i + \varepsilon_{it}\)

Data

- 38 countries, 2000-2013
- Trade data is based in HS-6 code (2204) WITS
- WDI
  - GDP per capita at PPP at constant 2005 international $
  - GDP at PPP at constant 2005 international $
  - Employment in agriculture in per cent of total employment
  - Exchange rate between the US dollars and local currencies
- FAO
  - harvested grape area
- WTO dummy
Boxplots for ARCA and NRCA indices by country

Panel unit root tests for CA

<table>
<thead>
<tr>
<th></th>
<th>without trend</th>
<th>with trend</th>
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<tbody>
<tr>
<td></td>
<td>IPS</td>
<td>ADF</td>
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<tr>
<td>RCA</td>
<td>0.8277</td>
<td>0.4140</td>
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<tr>
<td>RTA</td>
<td>0.9139</td>
<td>0.7599</td>
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<td>ARCA</td>
<td>0.8099</td>
<td>0.9362</td>
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<td>NRCA</td>
<td>0.7871</td>
<td>0.8142</td>
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Pesaran (2007) panel unit root test for CA

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<tr>
<td></td>
<td>lags</td>
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<tr>
<td>RCA</td>
<td>0.995</td>
<td>0.948</td>
</tr>
<tr>
<td>RTA</td>
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<tr>
<td>ARCA</td>
<td>0.517</td>
<td>0.010</td>
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<td>NRCA</td>
<td>0.917</td>
<td>0.823</td>
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Regression results

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<tr>
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<th>RCA</th>
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<tr>
<td>lnGDP/capita</td>
<td>0.053</td>
<td>-0.390</td>
<td>0.000</td>
<td>0.203***</td>
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<tr>
<td>lnGDP</td>
<td>-2.612***</td>
<td>-2.428***</td>
<td>-0.005***</td>
<td>-0.173***</td>
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<td>agricultural employment</td>
<td>0.414***</td>
<td>0.412***</td>
<td>0.001***</td>
<td>-0.017***</td>
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<tr>
<td>lngrapeland</td>
<td>1.333***</td>
<td>1.335***</td>
<td>0.003***</td>
<td>0.245***</td>
</tr>
<tr>
<td>Inxrate</td>
<td>-0.245*</td>
<td>-0.263**</td>
<td>-0.001**</td>
<td>-0.030***</td>
</tr>
<tr>
<td>WTO membership</td>
<td>12.830***</td>
<td>12.595***</td>
<td>0.027***</td>
<td>-0.063</td>
</tr>
<tr>
<td>constant</td>
<td>41.851*</td>
<td>40.872*</td>
<td>0.081*</td>
<td>0.489</td>
</tr>
<tr>
<td>N</td>
<td>532</td>
<td>532</td>
<td>532</td>
<td>532</td>
</tr>
<tr>
<td>R²</td>
<td>0.237</td>
<td>0.248</td>
<td>0.206</td>
<td>0.185</td>
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Conclusions

- Besides traditional (Italy, France, Spain, Portugal, Greece), and the New World (Argentina, Australia, Chile, New Zealand, South Africa) Georgia and Moldova exhibit CA divergence in comparative advantage at the world markets.
- GDP and exchange rates negatively influence CA.
- Agricultural employment, grape area harvested and WTO memberships have positive impacts on the CA.

Limitations

- Our data do not take into account the quality of wine product.
- Our models assume that wine products across countries are homogenous goods.
- Do not consider further factors on the demand side of wine trade.