Entrepreneurship, Population and Growth: a Structural Equation Model

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Presentation prepared for the Conference:
Competitiveness Strategies for the EU Small States
Chambre de Commerce Luxembourg, Kirchberg
19-20 April 2018
Is Small Beautiful? Every EU Separatist Movement

Deutinger, Cieloch and de Usera (2005)
Is Small Beautiful? pro and cons of Size

Pro
- Economies of scale of public goods
- Larger Market size
  - More Skills
  - More Entrepreneurs
  - More Competition
- Resilience to external shocks
  - Higher diversification

Cons
- Congestion costs
- Flexibility and Accountability
  - The lesser the people, the more their individual voices resonate in the corridors of power.
- Heterogeneity of population
  - “Ethnolinguistic”: Mine first
  - “Wealth”: Rich areas prefer being alone

Adapted from Alesina and Spalaore, (2003)
Research question

How much do country size and entrepreneurship matter for economic growth?
Model and data

Model

Structural Equation Model –SEM- (Bollen 1989; Kline 2011) allows estimating simultaneously the *measurement* of entrepreneurship and the *structural* relationship between entrepreneurship, size and economic growth.

Data

Global Entrepreneurship Monitor 2017 are merged with International Monetary Fund and UN population data. The final dataset is made of 54 countries, of which 7 have less than 3.5 million inhabitants.
SEM: Measurement

• The SEM adopt a formative approach to combine several measures of entrepreneurship and construct one entrepreneurship Composite Index for each country (GEM-COIN).

• Measures of entrepreneurship:
  • Nascent independent entrepreneur/s (0-3 months)
  • New independent entrepreneurs (3-42 months)
  • Established independent entrepreneurs (42+ months)
  • Intrapreneural (Entrepreneurial as employee)
SEM: Structural

- **Dependent variable:**
  - GDP growth 2017/2016 (GDP is per capita at purchase power parity).

- **Variables of interest:**
  - Size (population)
  - Entrepreneurship score (GEM-COIN).

- **Control variables:**
  - GDP 2016 level and the stages of economic developments. The stages of economic developments range from 1 for factor driven economies to 5 for innovation driven economies, according to the WEF.
  - GDP growth 2016/2015 (short term fluctuations of GDP)
<table>
<thead>
<tr>
<th>SEM results</th>
<th>(1) GPD growth 2016/17</th>
<th>(2) GPD growth 2016/17</th>
<th>(3) GPD growth 2016/17</th>
<th>(4) GPD growth 2016/17</th>
<th>(5) GPD growth 2016/17</th>
<th>(6) GPD growth 2016/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entre. (GEMCOIN)</td>
<td>0.316**</td>
<td>0.326**</td>
<td>0.321**</td>
<td>0.272**</td>
<td>0.261**</td>
<td>0.270**</td>
</tr>
<tr>
<td></td>
<td>(2.22)</td>
<td>(2.22)</td>
<td>(2.22)</td>
<td>(2.33)</td>
<td>(2.28)</td>
<td>(2.27)</td>
</tr>
<tr>
<td>Pop. 2017</td>
<td>0.266**</td>
<td>0.068</td>
<td>0.278***</td>
<td>0.349</td>
<td>0.349</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.53)</td>
<td>(0.15)</td>
<td>(2.87)</td>
<td>(0.79)</td>
<td>(0.79)</td>
<td></td>
</tr>
<tr>
<td>Ln Pop. 2017</td>
<td>-0.023</td>
<td>(-0.21)</td>
<td>0.199*</td>
<td>(1.70)</td>
<td>(1.70)</td>
<td></td>
</tr>
<tr>
<td>(Pop. 2017)$^2$</td>
<td>.202</td>
<td>(.43)</td>
<td>.274***</td>
<td>(.16)</td>
<td>(-.072)</td>
<td></td>
</tr>
<tr>
<td>Small ($\leq$3.5 mil)</td>
<td>0.274***</td>
<td>0.361***</td>
<td>0.277***</td>
<td>(3.16)</td>
<td>(3.32)</td>
<td>(3.08)</td>
</tr>
<tr>
<td>GPD growth 2015/16</td>
<td>0.527***</td>
<td>0.579***</td>
<td>0.520***</td>
<td>(5.36)</td>
<td>(5.72)</td>
<td>(5.55)</td>
</tr>
<tr>
<td>GPD 2016</td>
<td>-0.313**</td>
<td>-0.338**</td>
<td>-0.318**</td>
<td>-0.419***</td>
<td>-0.405***</td>
<td>-0.419***</td>
</tr>
<tr>
<td></td>
<td>(-2.38)</td>
<td>(-2.37)</td>
<td>(-2.39)</td>
<td>(-3.37)</td>
<td>(-3.11)</td>
<td>(-3.33)</td>
</tr>
<tr>
<td>Dev. Stages</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Observations</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>$r^2$</td>
<td>0.655</td>
<td>0.613</td>
<td>0.656</td>
<td>0.717</td>
<td>0.690</td>
<td>0.717</td>
</tr>
</tbody>
</table>

Standardized beta coefficients; t statistics in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Results

- An increase of one standard deviation entrepreneurship score results, on average, in an increase of 25%-30% in GDP growth.

- Population and growth are more mixed:
  - Population as a continuous variable -> size positive correlates with growth or not statistically significant.
  - When using a dummy for countries (with less than 3.5 million of inhabitants), small countries have 20% more growth than other countries. (Non-linearity, heterogeneity?).
Conclusions

Entrepreneurship matters for the economic growth.

Mix of policies:
- Large countries can decentralize
- Small countries may join economic union

*Principle of subsidiarity* ? Global problem $\rightarrow$ Global solution
Local problem $\rightarrow$ Vocal solution

Future developments:
- Panel data (and causality)
- Non-linearity
- GDP vs. GNP
Govern a great nation as you would cook a small fish - Lao-Tzu -

Thank you

Villmols merci

Merci

Danke Schön

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Guest editor of “The Hidden Drivers of Growth: Standardization, Innovation and Entrepreneurship” at International Journal of Standardization Research (IJSR)