Economic Growth in the Habsburg Monarchy 1870-1910: Convergence, Catching-up, Confusion

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Conference
Falling Behind and Catching Up
Southeast Europe and East Central Europe in Comparison
Vienna, 23 June 2016
Motivation

- Convergence between countries or regions considered as an empirical regularity

- The example of the EU shows
  - convergence between EU regions (at least until 2008)
    (a pattern also found in the US and Japan - Barro & Sala-i-Martin, 1992)
  - convergence between EU countries (continued)
  - no convergence between regions within a country (European Commission, 2014)

- Arguably some similarity between the EU and the Habsburg Empire: complex state structure incl. various nations, autonomous regional authorities,...(see e.g. Cooper, 2012)
Research Question, Hypothesis & Methodology

- **Research Question**: Is the period 1870-1910 characterised by regional (beta-) convergence between the regions of the Austro-Hungarian Monarchy.

- **Hypothesis**: Poorer regions (with lower capital/output ratio) grew faster

- **Solow model**: neo-classical approach; convergence channel: accumulation of capital (Solow, 1957; MRW, 1992)

- **Variant**: absolute convergence, long term model
  
  \[ growth_r^{1870-1910} = \alpha + \beta \cdot GDPcap_r^{1870} + \varepsilon_r \]  
  
  (see also Good, 1992)

- Models for separate convergence effects for the Austrian regions and the Hungarian regions

  \[ growth_r^{1870-1910} = \alpha + \beta \cdot GDPcap_r^{1870} + \gamma \cdot (GDPcap_r^{1870} \times AUT) + \theta \cdot AUT + \varepsilon_r \]
22 regions for the period 1870-1910 in 1990 Geary-Khamis $
Absolute long-term Convergence (Solow model)

\[ growth_{1870-1910} = 0.03371 \quad (0.005) \]

Source: Good und Ma (1998), own estimates
Convergence in Cisleithania & Transleithania

Source: Good und Ma (1998), own estimates.
The Speed of Convergence (Solow Model)

- The convergence coefficient $\beta$ estimated at -0.0029
- The period $\tau$ required to achieve particular change in income is given by
  \[
  \tau = -\frac{\ln \left( \frac{y_r^*}{y_r^0} \right)}{\beta}
  \]
- With $\beta = -0.0029$, it takes 238 years for a region to reduce the income gap by half!
- Even if there is a statistically significant result, the ‘strength’ of the convergence process is very low
### Confusing Convergence Results

<table>
<thead>
<tr>
<th></th>
<th>Data from Good and Ma (1998)</th>
<th>Data from Schulze (2007)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cross-section</td>
<td>panel (country &amp; time FE)</td>
</tr>
<tr>
<td><strong>Solow model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolute</td>
<td>yes***</td>
<td>no</td>
</tr>
<tr>
<td>conditional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empire wide</td>
<td>yes*** (literacy rate)</td>
<td>yes*** (literacy rate)</td>
</tr>
<tr>
<td>within entities</td>
<td>no</td>
<td>yes ( &gt; for Hungary)</td>
</tr>
<tr>
<td><strong>Schumpeterian model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>absolute</td>
<td>yes***</td>
<td>yes*</td>
</tr>
<tr>
<td>conditional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empire wide</td>
<td>yes** (distance to Vienna)</td>
<td>yes*** (distance to Vienna)</td>
</tr>
<tr>
<td>within entities</td>
<td>no</td>
<td>yes***</td>
</tr>
</tbody>
</table>

**Evidence for convergence?**
Conclusions

- Hungarian regions grew stronger than the Austrian regions
- Evidence for absolute regional convergence within the Dual Monarchy
- Very low rate of convergence
- No evidence for absolute regional convergence within the two entities of the Empire
- Long term convergence pattern within the Habsburg Empire resembles that of the EU
- Robust evidence for conditional convergence (even when differentiating between the two entities) when controlling for unobserved country characteristics.
Thank you for your Attention!
Austria-Hungary is a latecomer with respect to industrialisation

Austrian half moderately backward, Hungarian half extremely backward (Gerschenkron)

Free labour force due to Ground Release Act (Grundentlastung) in (1848)

Elimination of internal tariffs ("Zwischenzölle") in (1850) und creation of a common economic and customs union (1867)

Economic boom period in 1867-1873

Stock market crash 1873
### Conditional Convergence (Schumpeterian model)

<table>
<thead>
<tr>
<th>Dependent variable: 10-year growth rate of GDP per capita</th>
<th>Data source: Good und Ma (1998), own estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specification:</td>
<td>10-year growth rate of GDP per capita</td>
</tr>
<tr>
<td>Convergence test</td>
<td>Good and Ma (A1.MA) absolute</td>
</tr>
<tr>
<td>gap-to-UK</td>
<td>0.0072 * (0.004)</td>
</tr>
<tr>
<td>literacy rate</td>
<td>-0.0034 (0.009)</td>
</tr>
<tr>
<td>gap-to-UK x AUT</td>
<td>no</td>
</tr>
<tr>
<td>Region FE</td>
<td>no</td>
</tr>
<tr>
<td>Time FE</td>
<td>no</td>
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<tr>
<td>F-test</td>
<td>4.12</td>
</tr>
<tr>
<td>R²</td>
<td>0.053</td>
</tr>
<tr>
<td>R²-adj.</td>
<td>0.042</td>
</tr>
<tr>
<td>obs.</td>
<td>88</td>
</tr>
</tbody>
</table>
Convergence at the European Level (1)

- Österreich-Ungarn in der Gruppe der Aufholländer
- Konvergenz nicht idealtypisch
Convergence at the European Level (2)

Anmerkung: Länder gemäß historischen Grenzen.
Source: Bairoch (1976), eigene Berechnungen.

- Industrialisierung in Österreich-Ungarn mit Verzögerung
- Aufholphase beschränkt auf die Periode 1890-1910
- BIP pro Kopf Wachstum: Ö-U: 1,08%/1,10%/1,28%; UK: 0,91% p.a.