Investment in human capital at the local level. Absorption and impact of Cohesion Policy funds in municipalities

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PRELIMINARY, WORK IN PROGRESS!!!
Context

• Cohesion policy aims at closing the gap between the leading and lagging regions

• Cohesion policy is a large scale intervention, Poland is a large beneficiary

• Human capital is recognized as a major growth factor at national, regional, and local level (Lucas 1988, Del Bo, Lesage&Fischer 2008 Florio&Manzi 2010).

• Spending CP funds on human capital may be more effective than spending on anything else (Rodrigues-Pose&Fratesi 2004; Konopczyński 2014). Fertile soil hypothesis (Chesire & Magrini 2000;Ederveen et al. 2006)
Goal

• To understand and the effect of spending CP funds on human capital on the local development in Poland

• Q1: Who absorbed the funds? Most needing municipalities, or the smartest ones?

• Q2: Did spending contribute to the economic development?

• Q3: Do we observe convergence as a result of investment in human capital?
Basic numbers

• Local level analysis (NTS-5), covering 2007-2015
• Poland has 2478 NTS-5 units (municipalities)
• EU Cohesion Policy transfer to Poland in 2007-2013: EUR 67.3 billion
• Programme for Human Capital: EUR 10 billion
• The EU funded municipal spending on human capital: circa EUR 17.9 billion
Operationalization of investment in human capital at the local level

- Defining human capital using chapters in the national budget classification
- Identifying and aggregating all expenditures in selected chapters which were funded by Cohesion Policy (dedicated code)
- Recognizing the territorial range of each project
- Counting individual participants from each municipality
- Estimating municipal shares in the projects based on participants’ place of residence
- Dissagregation of funding to municipal level

Approximation of investment in human capital at the local level

Municipal budget reports 2007-2015

PEFS database of projects funded within the Human Capital Programme (POKL 2007-2013)

POKL
Using POKL versus municipal budget approach. Pros and cons.

• POKL is dedicated to human capital development.
• Unlike MB approach POKL covers projects in which municipal administration is not a direct beneficiary.
• Human capital investments are done also outside POKL.
• The two approaches are difficult to integrate. Parallel analyses.
Operationalization of local development

- Income oriented: own revenues of local government per capita
- Labour market oriented: local unemployment rate
- Mobility oriented: change in population
Method

• Three measures of development as explanatory variables, and then as dependent variables
• Cross-section OLS (2007-2015) with clustered SE
• Panel regressions (3-year intervals) with clustered SE
• Distinct regional panel regressions (tbd)
Who got the funds (1)

Local government expenditures (equal count)

POKL (equal count)
Who got the funds (2)

\[ y_{i,t/t-1} = \beta_0 + \beta_1 r_{i,t-1} + \beta_2 l_{i,t-1} + \beta_3 m_{i,t-1} + \beta_4 \text{type}_i + \beta_{5-20} v_i + \epsilon_i \]

\( y_i \) – local spending on human capital (CP funded) per capita
\( r_i \) – municipal own revenues per capita
\( l_i \) – local unemployment rate
\( m_i \) – population change (percentage change in 1999-2006)
\( \text{type}_i \) – dummy indicating municipalities in metropolitan areas
\( v_i \) – regional dummies
Who got the funds (3)

<table>
<thead>
<tr>
<th></th>
<th>Municipal investment in HC within CP</th>
<th>POKL funds spent on municipal territory</th>
<th>Municipal spending within CP unrelated to HC</th>
</tr>
</thead>
<tbody>
<tr>
<td>log_income_t0</td>
<td>-0.0716</td>
<td>0.0606</td>
<td>0.120</td>
</tr>
<tr>
<td></td>
<td>(-1.87)</td>
<td>(1.95)</td>
<td>(1.11)</td>
</tr>
<tr>
<td>log_population_t0</td>
<td>-0.108***</td>
<td>-0.00631</td>
<td>-0.123**</td>
</tr>
<tr>
<td></td>
<td>(-3.91)</td>
<td>(-0.63)</td>
<td>(-2.24)</td>
</tr>
<tr>
<td>unemp_rate_t0</td>
<td>1.442**</td>
<td>3.048***</td>
<td>-1.245</td>
</tr>
<tr>
<td></td>
<td>(3.17)</td>
<td>(9.12)</td>
<td>(-1.08)</td>
</tr>
<tr>
<td>d_population_t-1</td>
<td>-1.170***</td>
<td>-0.171</td>
<td>-3.990***</td>
</tr>
<tr>
<td></td>
<td>(-4.90)</td>
<td>(-0.85)</td>
<td>(-4.23)</td>
</tr>
<tr>
<td>metropolitan area</td>
<td>-0.194**</td>
<td>-0.0535</td>
<td>0.0193</td>
</tr>
<tr>
<td></td>
<td>(-2.90)</td>
<td>(-1.07)</td>
<td>(0.17)</td>
</tr>
<tr>
<td>_cons</td>
<td>7.348***</td>
<td>6.344***</td>
<td>6.321***</td>
</tr>
<tr>
<td></td>
<td>(18.04)</td>
<td>(32.68)</td>
<td>(9.63)</td>
</tr>
<tr>
<td>N</td>
<td>2477</td>
<td>2475</td>
<td>2477</td>
</tr>
<tr>
<td>R²</td>
<td>0.180</td>
<td>0.250</td>
<td>0.075</td>
</tr>
</tbody>
</table>

* p<0.10, ** p<0.05, *** p<0.01
How did spending on human capital affect income, unemployment, and migration?

\[ \begin{aligned}
\Delta r_{i,t/t-1} &= \alpha_0 + \alpha_1 \Delta r_{i,t-1} \\
\Delta l_{i,t/t-1} &= \alpha_0 + \alpha_1 \Delta l_{i,t-1} \\
\Delta m_{i,t/t-1} &= \alpha_0 + \alpha_1 \Delta m_{i,t-1}
\end{aligned} \]

Where:

- \( y_i \) – local per capita spending on human capital (CP funded)/POKL spending
- \( r_i \) – municipal own revenues per capita
- \( l_i \) – local unemployment rate
- \( m_i \) – population change
- \( \text{type}_i \) – dummy indicating municipalities in metropolitan areas
- \( v_i \) – regional dummies
- \( \omega_i \) – municipal fixed effects

OLS (Fixed effects) 3-year panel
Summary of the results: OLS regressions

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<th>Local population growth</th>
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<td>Direct effect of spending on HC</td>
<td>(+)***</td>
<td>(+)</td>
<td>(-)***</td>
</tr>
<tr>
<td>Effect in the convergence specification</td>
<td>(+)***</td>
<td>(-)</td>
<td>(-)</td>
</tr>
</tbody>
</table>

**Municipal spending only**

**POKL only**

| Direct effect of spending on HC | (-) | (+)*** | (-)*** |
| Effect in the convergence specification | (-) | (-) | (-)*** |

Municipalities are converging with respect to all measures of development but migration.

* p<0.10, ** p<0.05, *** p<0.01
### Summary of the results: panel regressions

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<tr>
<td>Direct effect of spending on HC</td>
<td>(+)</td>
<td>(-)**</td>
<td>(-)</td>
</tr>
<tr>
<td>Effect in the convergence specification</td>
<td>(-)</td>
<td>(-)**</td>
<td>(-)</td>
</tr>
<tr>
<td><strong>POKL only</strong></td>
<td></td>
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Municipalities are converging with respect to all three measures of development, but spending resources on human capital has no effect on the convergence rate.

* p<0.10, ** p<0.05, *** p<0.01
Conclusions (preliminary)

• Spatial patterns of CP absorption are quite different depending on the programme (policy area). Ability play a role

• Investing in human capital within Cohesion Policy has no significant effect on local revenues or migration, and it exerts an adverse effect on local employment (?)

• Nevertheless, municipalities converge with respect to the three measures of development

• Further steps: regional regressions, more control variables at local level, decomposing POKL into policy instruments