1. Abstract

We estimate the impact of educational mismatch directly on firm productivity, by considering three working environments: skills of the workforce, technology and uncertainty of the economic context. To our knowledge, this has never been done before.

Findings tend to show that over-education has a positive impact on firm productivity while under-education reduces it.

Focusing on working environments, the impact of over-education on firm productivity appears to be stronger (i) when the workforce is high-skilled, (ii) when the firm is highly technological and (iii) when the firm evolves in an uncertain economic environment.

2. Methodology

\[
\ln VA_{CAPITA,t} = \beta_0 + \beta_1 (\ln VA_{CAPITA,1} - 1) + \beta_2 \left( \frac{1}{m_{j,t}} \sum_{i=1}^{m_{j,t}} \tilde{EQ}_{i,j,t} \right) + \beta_3 \left( \frac{1}{m_{j,t}} \sum_{i=1}^{m_{j,t}} \text{OVER}_{i,j,t} \right) + \beta_4 \left( \frac{1}{m_{j,t}} \sum_{i=1}^{m_{j,t}} \text{UNDER}_{i,j,t} \right) + \beta_5 (X_{j,t}) + \epsilon_{t,j} 
\]

Working environment indicators:
- Skills → Education and Ability
- Technology → HT/KIS Nomenclature
- Uncertainty → Bankruptcy rate

Estimators used:
- OLS – FE – GMM for the global specification
- GMM for working environments

3. Data

Combination of two Belgian data sets (1999-2006):
- SES: General information on firms (sector, # workers, …) on workers (age, education, …)
- SBS: Financial information on firms (VA, …)

Unbalanced panel of 8082 observations from 2829 firms

4. Global results

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Value-added per worker (ln)</th>
<th>GMM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagged value-added per worker</td>
<td>0.819***</td>
<td>0.514***</td>
</tr>
<tr>
<td>(0.018)</td>
<td>(0.051)</td>
<td></td>
</tr>
<tr>
<td>Required education</td>
<td>0.018**</td>
<td>0.027***</td>
</tr>
<tr>
<td>(0.004)</td>
<td>(0.009)</td>
<td></td>
</tr>
<tr>
<td>Over-education</td>
<td>0.014***</td>
<td>0.034***</td>
</tr>
<tr>
<td>(0.005)</td>
<td>(0.011)</td>
<td></td>
</tr>
<tr>
<td>Under-education</td>
<td>0.009**</td>
<td>0.016*</td>
</tr>
<tr>
<td>(0.004)</td>
<td>(0.008)</td>
<td></td>
</tr>
<tr>
<td>Number of observations</td>
<td>8082</td>
<td>8082</td>
</tr>
<tr>
<td>Number of firms</td>
<td>2829</td>
<td>2829</td>
</tr>
</tbody>
</table>

([**,**,*]: significant at 1%, 5% and 10% respectively; Std. deviations in brackets)

5. Interaction with working environments (GMM)

Stronger impact of over-education on firm productivity in case of:
- High skilled workforces
- High tech firms
- More uncertain environments

Skills of the workforce

Technology

Economic uncertainty