How Selection in Education and Labour Market Flexibility Affect Labour Market Outcomes

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Basic idea of this paper (1)

- Employers cannot assess skills directly and rely on educational credentials to allocate newcomers to jobs.
- Productivity in the job is dependent on ‘true’ skills and mismatches lead to productivity losses.
- Educational differentiation and reliability of educational credentials both affect proper matching and hence the productivity.
Basic idea of this paper (2)

- Education does not produce a homogeneous good: within a given level there is still substantial variation in quality.
- This is a problem as underperformance of one person is not compensated by overperformance by another.
- The extent to which variation and mismatches affect productivity is framed by the flexibility of jobs and labour markets to adjust initial misallocation.
Basic idea of this paper (3)

- Problem: no good empirical data about the selection process in education or about how mismatches affect productivity.
- Use of simulation model to show effects.
- Post-verification with empirical data from IALS and PIAAC.
- Result: flexibility of jobs and reliability of credentials both important; differentiation does not matter that much.
Skills and productivity in a Human Capital world
Skills and productivity in a job match world
Productivity and mismatches
Model Assumptions (1)

- One type of skills $S$ that affects productivity (mean = 100 and s.d.=15).
- Limited number of educational levels (2-5).
- Diploma granted on basis of test that measures skill $S$ with reliability $R$ (range 0.5 – 1.0).
- Work is organised in job levels that equal the number of educational levels.
- Allocation to jobs solely based on educational level.
Model Assumptions (2)

- Within jobs productivity $P$ is a logistic growth function of skills $S$ (S-shape).
- Productivity within a job is optimal for the average expected graduate.
- Different flexibility scenario’s indicating the sensitivity of the productivity to proper matching.
- With infinite tracks and $R=1.0$, productivity will be optimal: $E(P)=100$ and s.d.$=15$. 
Simulation

• Number of tracks: 2-5.
• Reliability: R=1.0; 0.9; 0.8; 0.7; 0.6; 0.5.
• 4 different flexibility scenario’s.
• Need some parameters for the logistic growth function:

\[ f(x) = \frac{C/k}{1 + \exp(ax-x)/bk} \]

• Based on empirical observations and field experiments (Hamburg and Van der Velden, 2015).
Flexibility scenarios
Productivity and skills for 5 job levels

Productivity and job level
(scenario "Inflexible")

Skills

Productivity

Job level 1
Job level 2
Job level 3
Job level 4
Job level 5

Selection in education and labour market flexibility, PIAAC Conference, Mannheim 5-7 April 2017
Scenario 1: very inflexible

- 2 tracks
- 3 tracks
- 4 tracks
- 5 tracks

Productivity vs. reliability for different track numbers.

Selection in education and labour market flexibility, PIAAC Conference, Mannheim 5-7 April 2017
Scenario 4: very flexible

Productivity

Reliability

R = 1.0, R = 0.9, R = 0.8, R = 0.7, R = 0.6, R = 0.5

2 tracks, 3 tracks, 4 tracks, 5 tracks
Interim conclusions (1)

- Productivity differences strongly related with flexibility (around 19 points or 1.2 s.d. difference between highest and lowest flexibility scenario).
- Productivity differences also strongly related with reliability of selection regime (around 13 points or 0.9 1 s.d. difference between R=0.9 and R=0.6).
Interim conclusions (2)

- Distinguishing 3 instead of 2 levels increases productivity with only 3 points (0.2 s.d.).
- Distinguishing more than 3 levels can even decrease productivity if not combined with a very high reliability (R \geq 0.70).
Empirical verification (1)

- IALS and PIAAC.
- 50 observations in 29 countries.
- Average of prose, document and quantitative literacy (IALS) and Numeracy (PIAAC).
- Selection of male employees.
- Total years of schooling.
- Income.
Empirical verification (2)

- Potential productivity loss: correlation between Skills and Income.
- Reliability of educational selection regime: correlation between Skills and Years of schooling.
- Number of tracks: % higher educated 16-65
- Flexibility: Employment Protection Legislation (EPL) for regular and temporary employment.
## Results multivariate analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Sig.</th>
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</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>0.395</td>
<td>0.045</td>
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<tr>
<td>% higher educated</td>
<td>-0.003</td>
<td>0.000</td>
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<tr>
<td>EPL Regular</td>
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<td>Nobservations</td>
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<td>Ncountries</td>
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<tr>
<td>adj. R Square</td>
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</table>
Conclusions (1)

- If employers use educational credentials to allocate graduates to jobs and if jobs are not flexible, then malfunctioning of the selection process will lead to productivity losses.
- This can in theory be improved by further track differentiation or by improving the reliability of track placement.
- Further differentiation has a marginal impact and is only useful at reliability levels of 0.70 or higher.
Conclusions (2)

- Under most conditions distinguishing more than three tracks is not useful.
- Improving reliability does have a strong effect on improving productivity.
- Note: This reliability is not only related to the reliability of tests, but also to selection on proper skills (validity): vocational degrees may be more valid.
Conclusions (3)

• The effects of the selection regime can be strengthened or offset by the effects of job and labour market flexibility.
• If productivity is rigidly dependent on job characteristics, this will cause high losses even when the selection regime is reliable.
• Apart from improving the reliability of the selection regime it is important to make the jobs (or labour markets) more flexible so that they fit the job occupant’s skills.