Human Capital Policies as Part of a Growth Strategy

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1. Educational achievement and economic growth
2. The role of spending levels
3. Institutional reforms: Accountability, autonomy and choice
4. The life cycle of human capital policy
Educational Achievement and Economic Growth

Added-variable plot of regression of average annual growth rate of real GDP per capita 1960-2000 on initial level of GDP per capita, initial average years of schooling and average student achievement test scores. Source: Hanushek and Woessmann (JEL 2008).
• Research on determinants of modern economic growth
  – Key: direct measures of cognitive skills
    • Hanushek and Woessmann (JEL 2008; EP 2011)
  → Focus on educational outcomes, not just attainment

• Importance of education also for historical development
  – Catch-up in the Industrial Revolution
    • Becker and Woessmann (QJE 2009); Becker, Hornung and Woessmann (AEJ:Macro 2011)
Research on determinants of economic growth
  - Key: direct measures of cognitive skills
  - Use available estimates of their growth impact to simulate how future GDPs would evolve under school reforms

Gains from improving skills are enormous:
  - Present value of long-run aggregate gains for EU:
    1) €21 trillion for reaching the ET 2020 benchmark of less than 15% low-achievers in basic skills by 2020
    2) €32 trillion for average increase of 25 PISA points
    3) €87 trillion for bringing each nation’s achievement to level of top-performing Finland

→ Focus on educational outcomes, not just attainment
The Cost of Low Educational Achievement in the EU

**Gains** from bringing each nation’s educational achievement to the Finnish level, billion Euro:

Discounted value of future increases in GDP until 2090, expressed in billion Euro (PPP).

Source: Hanushek and Woessmann (CESifoEStud 2012).
What Is the Link between Resources and Outcomes?

Class size and math achievement of EU countries in PISA 2009:

Own depiction based on PISA 2009 data. Regression line of best fit (without three outliers).
What Is the Link between Resources and Outcomes?

• Class size
  • Hanushek and Woessmann (HbEdu 2011); Woessmann and West (EurER 2006); Woessmann (EP 2005); Gundlach, Gmelin and Woessmann (EJ 2001)

→ Need to focus on teacher quality
  – Teacher skills
  – Teacher salaries? Teacher performance pay?
    • Dolton (EP 2011); Woessmann (EEduR 2011)

• Overall spending

• Infrastructure maintenance and equipment

• Public vs. private contributions
  – Financing of compulsory vs. post-compulsory education
  – Financing vs. operation
Incentives

- Best way to use investments efficiently and effectively is to ensure that everyone in the system has incentives to focus on improving student outcomes

**Institutional framework**: provides the incentive schemes that create better student outcomes

- Accountability
- Autonomy
- Choice and competition
External Exams, Autonomy and Student Outcomes

TIMSS math test score (relative to lowest category)

Source: Woessmann (2005); see also Hanushek, Link and Woessmann (NBER 2011).
Funding, Operation and Student Outcomes

PISA math test score (relative to lowest category)

- 0.0
- 33.9
- 36.9
- 70.9

Share of privately operated schools

- 0%
- 50%
- 60%
- 100%

Average share of government funding

- 55%
- 100%

Source: Woessmann et al. (2009); see also West and Woessmann (EJ 2010).
Stylized returns to a Euro spent at different stages of education:

Source: Woessmann (ITAX 2008), extending Cunha, Heckman et al. (HbEedu 2006).
Educational Expenditure per Student (relative to GDP per capita)

Source: Own depiction based on data from OECD Education at a Glance.
Effect of family background on student achievement

Raising pre-primary enrolment from 60 to 100%
Raising pre-primary duration by 1 year
Tracking 4 years later

Source: Schuetz, Ursprung and Woessmann (Kyklos 2008).
Tracking and Inequality

PIRLS (Primary school)  PISA 2003 (Secondary school)

Source: Hanushek and Woessmann (EJ 2006).
PIRLS (Primary school) PISA 2003 (Secondary school)

Change:
1. Germany 0.71
2. Greece 0.30
3. Czech Rep. 0.25
4. Italy 0.22
5. Sweden 0.21
6. Latvia 0.12
7. Netherlands 0.11
8. France 0.09
9. Russian Fed. 0.08
10. Hungary 0.04
11. Iceland -0.07
12. Slovak Rep. -0.08
13. Hong Kong -0.13
14. Norway -0.14
15. United States -0.27
16. Canada -0.32
17. New Zealand -0.50
18. Turkey -0.63

- Early tracking
- No early tracking

Source: Hanushek and Woessmann (EJ 2006).
Employment probabilities by age and education type:

General vs. Vocational Education over the Life Cycle

IALS data for “apprenticeship” countries. Source: Hanushek, Woessmann and Zhang (NBER 2011).
Higher education:
- Combine fees with income-contingent loans

Adult education and training:
- Government intervention to stimulate job-related training?
  - Direct subsidies, individual learning accounts, vouchers, income tax deductions
  - But: crowds out private investment – used by those who would participate anyways, rather than those most in need
    - Schwerdt, Messer, Woessmann and Wolter (JPubE forthc.) on Swiss adult education vouchers; Hidalgo, Oosterbeek and Webbink (2011) on training vouchers in the Netherlands; Abramovsky et al. (JLE 2011) on UK Employer Training Pilots
  
- The Swiss field experiment on adult education vouchers:
  - No significant average effects on earnings, employment, subsequent educ.
  - Low-education individuals most likely to profit, but least likely to use voucher
  - Crowds out firm-financed training
  - Doubts on effectiveness of untargeted voucher programs

→ Inefficiency of subsidising training of employees
1. Improved educational achievement crucial for **growth**

2. Higher **spending** alone does not ensure better outcomes
   - Need to focus on teacher quality

3. **Institutional reforms**
   - Accountability, autonomy and choice
   - Output-oriented reforms properly designed to each stage: State ensures accountability and funding for inclusive education and uses choice and competition to deliver best results

4. **Life cycle** of human capital policy
   - Invest early in the life cycle – in particular, public investments
   - Vocational skills facilitate labor-market entry, but hinder at older age
   - Inefficiencies in subsidising adult education and training