

Education $\stackrel{?}{=}$ Growth

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Human Capital

Human capital = one type of capital, among other types

Requires investment : time input (opportunity cost) and money

Hoping for a return in the future

Return for individual (private return) \neq return for society (social return)



Map

- Education and individual performance (micro)
 - Effect on wage
 - Effect on employment
 - The role of public policies
- Education and social performance (macro)
 - Exogenous Growth
 - Endogenous Growth and Externalities
 - Growth and the Quality of Education
- Conclusion : Which Incentives to Improve Quality ?

Individual Performance : wages

Δ^+ wage if +1 year of schooling

Anvers	5.40%	Namur + Lux	4.90%	Bruxelles	5.20%
Limbourg	4.10%	Hainaut	5.60%		
Flandre Or.	5.20%	Liège	6.20%	Belgium	5.20%
Flandre Occ.	4.50%	Brabant Wal.	5.50%	Spain	8.10%
Brabant Fl.	4.10%			Italy	6.10%

Conclusion : relatively low, quite homogeneous across provinces

Source : De la Croix et Vandenberghe (2004), using households survey

Individual Performance : employment

Δ^+ proba. having job if +1 year of schooling

Anvers	1.49%	Namur + Lux	4.14%	Bruxelles	1.93%
Limbourg	0.95%	Hainaut	6.19%		
Flandre Or.	1.03%	Liège	7.47%	Belgium	1.85%
Flandre Occ.	0.84%	Brabant Wal.	1.38%		
Brabant Fl.	2.08%				

Conclusion : strong disparities. Very important effect in Liège, Hainaut

Individual Performance : total return

Private rate of return of investment in education

Anvers	8.67%	Namur + Lux	7.52%	Bruxelles	8.49%
Limbourg	6.07%	Hainaut	13.06%		
Flandre Or.	7.84%	Liège	14.11%	Belgium	8.64%
Flandre Occ.	6.75%	Brabant Wal.	8.80%	Stocks	6.50%
Brabant Fl.	7.57%			Bonds	1.90%

Compared to other assets, human capital has a high return

Individual Performance : policies (1)

Removal of unemployment benefits

increases the private return of education by 1.5% for Belgium but by 6.4% and 4.7% in Liège and Hainaut

→ trade-off between intra-generational equality (unemp. benefits) and social mobility (education) !!

Removal of income tax

does not change return to education

Individual Performance : policies (2)

Removal of public education funding

private return of education drops by 3.6% on average

On the whole, public intervention amounts to an implicit subsidy of 16%. Less for Liège (8%) and Hainaut (11%).

Theory - exogenous growth

Human capital = quality of labor input

Δ^+ human capital \rightarrow Δ^+ GDP

(trivial consequence of the micro effect on wages and employment)

Human capital has no effect on long-term growth, but on long-term level of GDP

Theory - Endogenous growth

Externalities of human capital

- Eases ADOPTION of new technologies,
- Educated people generate new ideas and TECHNICAL PROGRESS is faster,
- Produces TEACHERS of better quality,
- Produces PARENTS of better quality,
- Favors quality of INSTITUTIONS.

As a consequence, growth can be self-sustained thanks to human capital accumulation

The growth rate of GDP may depend on the level of human capital

Tests of the link between human capital and GDP (1)

Empirical literature is full of confusion

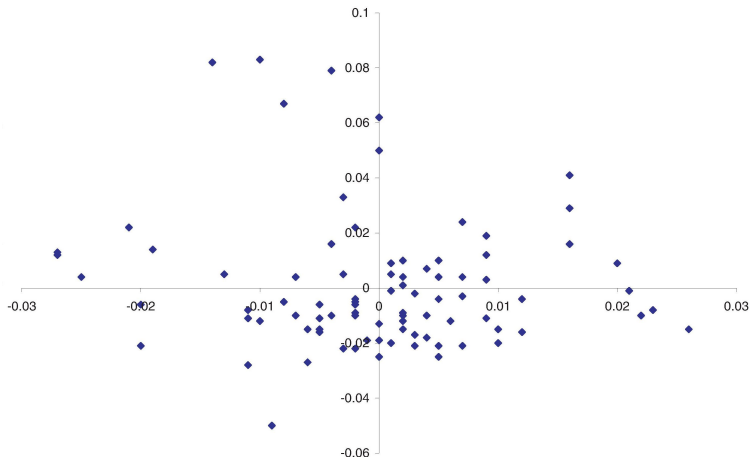
Measures human capital by average education level

Results are non robust \equiv conclusions change depending on the method used and the variables considered

Delgado et al. (2011) summarize the diverging conclusions of 14 empirical studies

Tests of the link between human capital and GDP (2)

Typical example : Growth of GDP per worker (x) vs growth of human capital (y), 1960-1985 - Pritchett (2001)



Easterly

Striking example : Africa

Huge educational effort since 1960

Very low growth of GDP over 1960-2000

Explanation of Easterly :

It is not enough to send children to school in order to accumulate human capital, one needs adequate incentives

Incentives for students (return of education), for parents, for schools, for teachers

Recent Literature

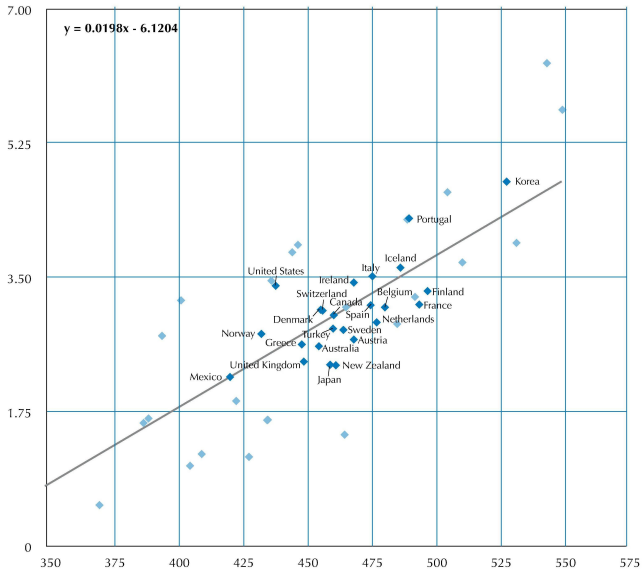
It is not the quantity of education (=enrolment) which matters for growth, but quality

There is a very strong correlation between tests scores 1964-2003 (x) and growth of GDP per capita 1960-2000 (y)

International Tests in maths and sciences \approx cognitive skills

Robust result

Recent Literature - figure



Conclusion for Belgium

Bad news for Communauté Française (CF)

Big gap in PISA tests between Flanders and CF

Penalizes the growth of CF by $\approx 1\%$ per year

(A gain of 100 points PISA is estimated to increase growth by 1.74% per year)

Even a small lag in growth rates has huge effects on GDP levels after a decade or two

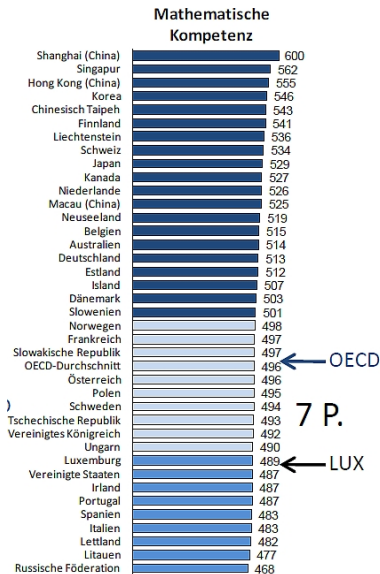
Question : what about incentives in CF ?

Conclusion for Luxemburg

Luxemburg is not doing well in Pisa math tests

Stable over the last three runs

Should be a priority for the future



Conclusion

Large consensus in the literature concerning the private return of education

Education → individual productivity → wage and employment

To promote growth, one needs apparently to do more : enhance the quality of education, in particular in math and sciences

Production function of education (school) is subject to controversy

- Weak effect of spending, and of teacher to student ratio (at least in developed countries)
- Strong effect of teachers quality and of school autonomy (Hanushek)
- + think “incentives”