Investment in human capital

- Assessing the efficiency of public spending on education –

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I. Why is it essential to look at spending on education?
Rationale for public intervention

❖ **Market failures**

- *Human capital spill-overs*: benefits from education accrue not only to the people making the investment, leading to systematic under-investment in education

- *Capital market imperfections*: Education can be costly and financing it through the private capital market tends to be difficult (info asymmetries, human capital cannot be collateralised), which tends to create unequal access to education

→ Public intervention can address these market failures e.g. by public provision of education, by funding education systems and/or by providing student loans

❖ **Income distribution and equal opportunities**

- providing equal access to education (as a matter of societal fairness)

- Re-distributional aspects (education helps to compress the income distribution)
II. Where does Europe stand in terms of education? – some stylized facts –
Educational performance in Europe

Regarding **quantity**, educational attainment in EU28 has increased over time, but remains fairly heterogeneous across Member States.

In terms of education **quality** (i.e. building up cognitive skills, measured by PISA scores), Europe is just in the midfield rather than a leading world region.

With a view at **inclusiveness**, in 2016, the share of young people neither currently employed, in training or in education (NEET) was close to 20% (with Greece, Italy and Spain scoring highest and Denmark and Sweden displaying the lowest NEET rates).

The figures refer to population age 25–29. Source: ETSAT

The figures refer to population aged 30–34 with tertiary education (ISCED 5–8). Source: ETSAT

Source: OECD (2015)
Stylized facts (II)

- Public funding is the key source of spending on education in Europe in particular in primary and secondary education. In tertiary education the situation is more contrasted (e.g. in Hungary, Portugal and the U.K. private funding is relatively important)

- Public spending on education has been about stable during the years of crisis although it makes overall only a rather small share of the total government expenditures (ca. 10% in EA and EU28)

- Spending on secondary education is overall the largest spending block, followed by primary and then tertiary education
III. Efficiency of public spending on education: – an empirical analysis –
Estimation of 'efficient frontiers'

- Identifying Input~Output pairs of an education production function, i.e. estimating efficient boundaries (best practice) >> benchmarking
  - **Input:** public spending on education (normalized, lagged)
  - **Outputs:** (1) *quantity* (tertiary education attainment of 25-34 year-olds); (2) *quality* (Pisa scores); (3) *inclusion* due to education (NEET rates, 25-29 year-olds)

- Efficiency scores are obtained by measuring the distance of the observed to the hypothetically achievable output (production frontier)

- We apply two approaches to estimate efficiency of public spending (both using Stochastic Frontier Analysis):
  - **Country-specific frontiers:** education systems are assumed as country-specific and often not easily changeable (MSs are benchmarked with a view at their individual national education systems' capacity / specificities, and over time)
  - **EU common frontier:** Cross-country comparisons and benchmarking vis-à-vis best-performing MSs (assumption: common technology and flexible education systems which hypothetically allow reaching a common frontier)
Country-specific frontiers
(...i.e. taking time invariant country specificities into account...)

**Tertiary educational attainment (quantity):**
- Significant improvements in efficiency since 2002 in most Member States
- Example: Malta - tertiary educational attainment increased from 9% to 31%

**PISA (science) scores (quality):**
- Decreasing efficiency in about a third of the Member States
- However, PT and RO have drastically improved efficiency

**NEET rates (inclusiveness):**
- Decreasing efficiency in about two thirds of the MSs; strong decline in CY and EL (effect of the economic crisis...?)
- However, RO has drastically improved efficiency

→ Good news in terms of quantity, but with a view at quality and inclusion remains room for improvement...
**EU common efficiency frontier**

**Tertiary educational attainment (quantity):**
- IE and LT performing best
- NL, SE and UK close to the frontier
- DE, IT, MT and RO far away from EU-common frontier

**PISA science scores (quality):**
- EE and FI performing best
- DE, NL and UK close to the frontier
- CY and RO furthest from the frontier

**NEET rates (inclusiveness):**
- NL and SE performing best
- AT, DE and DK close to the frontier; together with LU and UK
- EL and IT furthest from the frontier

→ The NL and the UK are doing comparably well in all 3 dimensions, while other MSs perform well in just 2 and yet others appear to be quite distanced from the common-EU frontier in all 3 dimensions.
IV. Main messages
Empirical findings

- Educational attainment in the EU has increased in Europe over the past 20 years, while in terms of quality Europe remained globally only in the midfield. In terms of inclusion, a high share of the young adults are still not integrated (NEET rates ca. 20% on average in EA and EU).

- Public spending is positively linked with educational output (along the three analysed dimensions quantity, quality and inclusion)

- Analysis assuming country-specific efficiency frontiers suggests that efficiency in terms of educational attainment has greatly improved over time in all countries while in terms of quality and inclusion efficiency a mixed picture emerges (in some MS efficiency even declined)

- Analysis assuming an EU common efficiency frontier suggests that some countries achieve relatively high efficiency in all dimensions (e.g. NL, UK); others strike a favorable balance in two out of three dimensions (e.g. DE, SE); others perform less well on all three observed dimensions (e.g. BG, RO, IT)
Policy messages

- **Spending on education is a genuine and decisive public investment** (since expected returns are high and may materialize over a long period). Note, however, that it is not captured in official statistics as an 'investment'!

- **Education policies are expected to deliver a multiple-dividend for society** (driving economic and productivity growth, innovativeness of society, resilience of workforce, remedy to fight poverty, flatten income distribution, etc.)

- **Reinforcing human capital formation is not necessarily about spending more public money on education rather than spending it more efficiently.** Room for improvement remains esp. with a view at 'quality' and 'inclusion'. Rethinking the national education policy might be needed in order to allow systematically higher performance, which may imply structural reforms.

- **How to spend smartly and efficiently on human capital will in any case be country specific.** Sectoral spending reviews on education are instrumental in assessing and improving country-specific policies (esp. with a view at identifying and removing inefficiencies and/or achieve savings).
THANK YOU!