Developments in the measurement of publicly funded education productivity in the UK: the ONS perspective

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Structure

- Context
- Overview of the UK education system
  - Main tiers
  - Specific features in the UK
- UKCeMGA education productivity measure
  - Quantity
  - Quality
  - Inputs
- Accuracy and coverage issues
- Future outlook
Overview of UK education (1/4)

• Pre-primary education covers 0 to 4 yr olds
  – Gov’t maintained nurseries / classes within primary schools plus
  – Publicly funded places in Private, Voluntary and Independent (PVI) nurseries

• Provision varies by Eng, Wal, Sco & NI, but at least some public provision from age 3+

• Similar although distinct ‘curricula’ / learning goals in each country
Overview of UK education (2/4)

• Compulsory education covers 5–16 yr olds
• Primary schools teach 5–11 yr olds (note Reception year; also Scotland 5-12 yr olds)
• Secondary schools teach 11(12)–16 year olds; alongside these are:
  – Special schools
  – Pupil Referral Units (PRUs)
  – City Technology Colleges & Academies (England)
• Separate curricula, main exams at age 15-16
Overview of UK education (3/4)

• Further Education (FE) covers students age 16+
• FE comprises
  – School sixth forms (16-18 year olds)
  – General, tertiary, specialist colleges
• Wide range of qualifications / curricula
  – Includes those required for entry to university
• Most funding indirectly from public sector -
  affects National Accounts classification
• Other funding from private sector, EU
Overview of UK education (4/4)

• Higher education (HE) usually covers students age 18+
• Split into undergraduate, postgraduate (research students inc. PhDs)
• Small amount of HE provided at FE institutions
• From 1998, undergraduate student fees introduced in England and Wales
• But complex – country-specific grants/transfers offset personal costs
What does the UKCeMGA include?

- Gov’t funded nurseries & classes in primary
- Publicly funded nursery places at Private, Voluntary and Independent nurseries
- Gov’t funded primary/secondary/special schools
- City Technology Colleges and Academies in England (mainly gov’t funded)
- Publicly funded Further Education for u19s
- Health professional students & trainee teachers
UKCeMGA productivity measure

• Gross multi-factor (MFP) measure:
  – Labour + procurement + capital services
  – Covers total resources used by public sector in production of a given service

• Differs from private sector measures:
  – Gross Value Added MFP measures are common
  – These exclude capital services as based on profits
  – Some crude comparisons made by media as a result
Education productivity diagram

Quantity

adjusted for

Quality

Direct labour measures

plus

Deflated expenditure on other labour, intermediate consumption and capital services

Output

divided by

Input

Productivity
Education quantity

• Raw pupil/student numbers compiled on academic year basis (Sept – July)
• 5-16 yr old (compulsory) pupils adjusted for attendance rates
• Calendar year Laspeyres Cost-Weighted Activity Index (CWAI) formed:
  –administrative current expenditure data obtained for England, Wales, Scotland and Northern Ireland
  –Split by type of education institution
Education quality

- 5-16 yr old pupil attendance quality-adjusted by changes in attainment
- Assumes ↑ attainment > ↑ outcomes
- In Eng, Wal and NI, based on annual change in GCSE/equivalent scores (taken age 15-16)
- In Scotland = annual change in Standard Grade scores (also taken age 15-16)
- Trainee teachers also quality-adjusted—by proportion of final year students who pass
Quality adjustment has a big impact

Quantity versus output: United Kingdom, 1997=100

- Quantity
- Output with new Q adj
- Output with National Accounts Q adj
Education inputs: labour

- Most of labour measured directly
- Teachers and support staff numbers weighted together using detailed salary data
- Teachers also adjusted for actual hours worked
- Central government administration measured indirectly (deflated expenditure)
- Re-estimated on calendar year basis
Education inputs: procurement

• Current price financial year data taken from
  – returns provided by local authorities to central government, by country
  – Internal central government accounts

• Local government and central government deflators compiled:
  – Based on components of consumer and producer price indices
  – Weighted together using detailed expenditure breakdowns from local authority returns

• Re-estimated on calendar year basis
Education inputs: capital services

- More conceptually correct than capital depreciation
- Based on estimates of
  - Depreciation
  - Asset prices
  - Opportunity cost of holding capital
- Estimates are notional but standard National Accounts practice to include annual input from capital
Accuracy issues: quantity (1/4)

- Quantity includes simple measure of attendance
  - Based on number of half-day sessions missed
  - Variations in session numbers (and length) by country/school not yet investigated
- Many UK schools now open 0800 – 1800
  - Called ‘Extended Schools’ in England
  - Covers breakfast clubs & after school clubs
  - Wide range of activities taking place but little data
  - Likely to be some private funding (parents)
Accuracy issues: quality

• Quality measurement is a complex area
• Attainment versus labour market models
• UKCeMGA attainment model
  – UKCeMGA model developed via consultation with education experts
  – Treats education as additive, quality as multiplicative
  – Still subject to development
### UKCeMGA quality model

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- Solution for $Q$ is 2.5% per annum on average
Potential quality developments

• New measure endorsed by independent Quality Assurance panel
• But more aspects of accuracy to investigate:
  – Distributional weights?
  – Lag effects and ‘Key Stage’ data
• Also, input quality
  – Salary weights proxy for skill level
  – But tenure and qualifications data may be available for investigation
Coverage issues: quantity and inputs

- Aim to extend further education to cover all ages (add on measure for over-18s)
- Develop measure of university education – issues of:
  - Teaching hours by course type
  - Fee and subsidy arrangements
  - Publicly funded research activity
  - Overseas campuses owned by UK institutions
- Increase in school leaving age from 16 to 18 in 2015
Coverage issues: quality

- Quality has dimensions beyond attainment
  - Wider outcomes, e.g. ‘Every Child Matters’ in England:
    - Stay Safe
    - Be Healthy
    - Enjoy and Achieve
    - Economic Well-being
    - Make a Positive Contribution
  - Attribution to schools & correlation not yet known
  - Nor are values society ascribes to outcomes
- Further education not yet quality adjusted
Future outlook

• Still development work to be made
• Some finite (coverage), some open-ended (quality)
• But uncertainties exist-
  – New examination system for Scotland
  – Future of exams in England and Wales
  – Definitive quantification of ‘wider outcomes’?
• Next Education Productivity article due December 2009
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