

Measuring Education Services as Intangible Social Infrastructure

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The public sector is both a user of intangible capital and a producer of intangible assets such as education and health that have far reaching impacts across the whole economy, Corrado, Haskel and Jona-Lasinio (2015). This paper estimates the value of educational services produced by the public sector. It does so using the lifetime income framework developed by Jorgenson and Fraumeni (1989, 1992), and employed to estimate education output by Christian (2010) and Gu and Wong (2012). The basic model multiplies enrolments in different levels of education by the increment to lifetime income from achieving this level relative to a lower level, taking account of the time it takes to complete the education. We then compare this number to the expenditure by the public sector on education.

In this paper we apply the method to the UK, taking account additionally of two problems with the existing implementations of the method. The first is termed the attribution issue, the fact that relative lifetime incomes across skill groups depend on factors other than education such as experience and on the job training as well as survival and retirement probabilities, all of which depend on education level. We estimate attribution using a number of methods, which use information on earnings soon after graduation to construct an education based lifetime earnings. This adjustment has an additional advantage of basing the calculations on years when the gender wage gap was much reduced, so limiting the downward bias due to the much higher growth in female enrolments, especially in higher education, that is a feature of educational systems in many countries in the past few decades.

The second issue is particularly acute in the UK but is a growing phenomenon in industrial countries, namely, the fact that education services are provided to international students, many of whom leave the host country after completing their studies. Therefore, the education services embodied in these students are not available for productive use in the host country and should be excluded. Since the costs of educating these students is not included in public expenditure, as they typically pay fees that cover or even exceed their education costs, the ratio of output to expenditure is biased if they are not removed.

Preliminary estimates suggest that taking account of attribution leads to about a 10% lower value of investments in education and removing international students lowers it by a further 10%, so neither issue is negligible. The value of educational services was found to be about 1.5 times educational expenditure in 2013 so education gives a high economic return. Nominal education output was relatively flat over the

previous decade while education expenditure rising, suggesting a declining return to education.

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