The Journal of the Economics of Ageing 7 (2016) 69–86

Contents lists available at ScienceDirect

The Journal of the Economics of Ageing

journal homepage: www.elsevier.com/locate/jeoa

Full length article

Flexibility at a cost – Should governments stimulate tertiary education for adults? ☆

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ARTICLE INFO

Article history:
Available online 3 March 2016

Keywords:
Adult education
Human capital
Earnings

ABSTRACT

Most OECD countries experience high unemployment rates and declining growth in higher educational attainment. An often suggested government policy is therefore to allocate resources towards formal schooling for adults. However, returns on such investments are uncertain and the foregone earnings are potentially large. We use Swedish population register data from 1982 to 2011 to estimate average long run earnings returns on higher education for 29- to 55-year-olds who enrolled 1992–1993. We find substantial positive estimates, but these only fully emerge after approximately ten years. Nevertheless, calculations indicate that the benefits for society exceed the costs also under fairly pessimistic assumptions. Also, the estimated returns in this study are more than twice the size compared with earlier studies of Swedish adults who enrolled AE at the upper secondary level.

Introduction

The increase in educational attainment across OECD countries is slowing down, with the current generation predicted to just barely surpass the educational attainment of the preceding generation, while in the US this rate is actually decreasing (Goldin and Katz, 2008; OECD, 2012). As it is widely believed that education is a key factor for economic growth, upgrading one's skills during later stages of the working life may become more important. Neumark et al. (2011) project that, in the coming decade, adults aged 30–54 in the US will represent 20–25 percent of the influx of workers with at least a bachelor's degree. Although the optimal timing of some educational investments may indeed occur rather late in life, e.g., to mitigate negative effects of unforeseen changes in employment prospects, it is also true that individuals' adult schooling intentions could face formidable obstacles due to opportunity costs and/or credit constraints. For this reason, the OECD and the EU have long encouraged governments to stimulate adult education to adjust workers' skills to technical changes (OECD, 1998, 2001; EU, 2000, 2001). Relatedly, Pissarides (2011) recommends regular education for adults as a counter-cyclical public employment policy tool because the opportunity costs of education decrease during economic downturns.[1] However, there are few countries where such policies have been applied on a large scale, and the research in economics on formal adult education is quite limited.

The aim of this paper is to assess the long-term effects of post-secondary adult education on earnings. We use Swedish population register data on education and annual earnings from 1982 to 2011 to analyze a sample of first-time enrollees aged 29–55 when registering for higher education in 1992–1993. Average treatment effect on the treated (ATT) is estimated using propensity score matching based on data that are unusually rich in detail and with a difference-in-differences set-up that accounts for individual time invariant (fixed) unobserved characteristics correlated with earnings. With regard to time varying unobserved characteristics, we estimate models under different assumptions and check the stability of the results. To this end, we exploit information for the years prior to education on earnings dynamics, transitions in the labor

☆ The authors wish to thank seminar participants at the Institute for Social Research, SOFI, Stockholm University, and participants at the workshop Human Capital and Aging at Harvard School of Public Health. The financial support of The Swedish Research Council through the Ageing and Living Condition (ALC) program and the Bank of Sweden Tercentenary Foundation is gratefully acknowledged.

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[1] A recession may also hamper or delay the returns on the investments (Kahn, 2010; Oreopoulos et al., 2012).

http://dx.doi.org/10.1016/j.jeoa.2016.01.001
2212-828X/

force status and changes in social security payments related to unemployment, sick-leave, social welfare, early retirement and parental leave. To check for potential ability bias, our models are re-estimated for individuals aged 29–37 (41 for males) adding measures of grade point averages from school and, for males, military enlistment test scores on cognitive and non-cognitive skills. The main implications of our results are robust. Overall, due to potential endogeneity in course lengths, our analyses focus on estimates of ATT where treatment is defined as assignment to treatment.

Earlier studies of adults in education (henceforth, AE) have primarily been concerned with community college enrollees in the US aged below 30. A reference point for these articles is Kane and Rouse (1995) who, for individuals of typical ages when attending education, found a year of completed studies at a community college to yield wage returns of approximately 5 percent for males and between 6 and 9 percent for females. The estimates were relatively similar for annual earnings. Light (1995) and Monks (1997) analyze individuals returning to college after a few years of work experience. Both studies find that wage gains from education decline with the age of completion, but results in Light (1995) and Leigh and Gill (1997) indicate that the wage returns became similar to those of the younger graduates about five years after completion.

For education among older individuals, Jacobson et al. (2003, 2005a, 2005b) study workers aged 25–59 who were laid-off between 1990 and 1994 in Washington State, 15 percent of whom registered at community colleges. Individual fixed effects estimates of quarterly earnings from 1987 to 2000 indicate that a year of studies increased earnings by 7–9 percent for males and by 10–13 percent for females. The benefits appear sufficient to cover the total costs, although the calculations are sensitive to assumptions regarding the foregone production value. Jepsen et al. (2014) report results for students completing community college certificates, diplomas or associate degrees in Kentucky. The comparison group consists of enrollees who did not accomplish the respective awards (approximately 70 percent). The reported returns for diplomas and associate degrees imply estimates that, when compared with Jacobson et al., are similar in size or considerably higher. With regard to European data, there are several Swedish studies of low-skilled adults in upper secondary education who are ineligible for higher education at the outset. Stenberg and Westerlund (2008) find a payoff of between 15 and 20 percent for the long-term unemployed, but the size of the effect was inflated by the low average earnings of the sample. For a broadly defined sample, aged 24–43 at the time of first registration in AE, Stenberg (2011) reported a 2.3 and 5.1 percent payoff on annual earnings of one year of completed studies for males and females, respectively. Calculations indicate that the benefits just about cover the total costs to society. Stenberg et al. (2014) study an older sample, aged 42–55, and find no earnings effects for males but positive effects for females, although insufficient to cover costs to society.[2] Thus, while these studies question the rationale for governments to stimulate AE, at least based on pecuniary arguments, the US-based studies have reported more beneficial effects. There are several potential explanations. First, returns on AE may be higher in the US due to a wider dispersion of wages and/or skills (e.g., IALS 2000; Harjes 2007). Second, the institutional set-up in Sweden encourages AE participation, potentially attracting individuals with lower expected returns on average. Third, the skill levels of the participants in the respective studies differed. Evidence of job polarization from both US and Europe suggests that the demand for medium-skilled workers to perform routine tasks has decreased. This implies lower returns to education for low-skilled workers upgrading to medium-skilled status compared with making the transition from medium- to high-skilled.[3] To the best of our knowledge, Hällsten (2012) is the only previous study to analyze European data on older individuals investing in tertiary level education. For a sample of Swedish workers 30 years or older between 1985 and 2003, conditioned on degree completion and on stable employment after treatment, the estimated returns were around 2 percent per year of studies on log income (including social insurance transfers from parental leave and sick leave). The present study differs from Hällsten (2012) in several respects. First, the samples studied are restricted by two pre-treatment conditions as all individuals in our samples are eligible for tertiary level schooling, and that no-one has been registered in education in 15 years prior to 1992. Second, treatment is defined as enrollment, which means treated include all older students in tertiary level education without conditioning on graduation. Third; our outcome variable is labor earnings measured (differenced) in absolute terms. This allows us to retain the full samples of treated except if outcomes are missing. Fourth; since labor earnings are not directly affected by social insurance transfers, we may assess the social returns by providing estimates which proxy the effects on productivity as well as opportunity costs in terms of foregone earnings.

The contributions of this paper are the estimation of the long-term earnings ATT of post-secondary education for middle aged and older adults. We also assess economic benefits and costs from the perspective of society (GDP). In summary, the results imply that the identification of positive returns requires a follow-up period of at least ten years after enrollment. Our preferred estimates imply positive effects on gross wage earnings of approximately 5.5 percent for males and 10 percent for females. It is difficult to compare the percentages reported with estimates from the returns to schooling literature because of relatively high drop-out rates and the fact that the estimates are partly driven by low earners increasing their employment hours. Back-of-the-envelope calculations indicate that the benefits for society exceed the costs even under pessimistic assumptions. The paper is organized as follows. Section "Theoretical consideration" contains a discussion on enrollment in AE and explains why estimates conditioned on specific amounts of completed AE are problematic. Section "Institutional background, data and sample" contains a description of the institutional framework for AE in Sweden, of the data used and of the sample we study. The empirical model and issues regarding the identification of causality are outlined in Section "Empirical model and estimation". The results are presented in Section "Results" and set in relation to costs in Section "The costs and benefits to society". A summary and discussion concludes the paper.

Theoretical consideration

Who enrolls and why

Individuals are assumed to enroll in education if the expected net benefits are positive, either because AE increases future labor market options or because a consumption motive with primarily

[2] In Sweden, both policy debate and research have been focused on low-skilled individuals for whom municipalities are by law obligated to offer adult education (Albrecht et al., 2009; Stenberg, 2011). Schwerdt et al. (2012) analyze individuals aged 20 to 60 in Switzerland who were subject to a randomly distributed voucher system. Participants completed, on average, 42 h of courses with no significant effects on average labor market outcomes one year later.

[3] On US data, see Autor et al. (2003) and Autor et al. (2008); on data from the UK and Europe, see Goos and Manning (2007), Goos et al. (2009), Spitz-Oener (2006), Dustmann et al. (2009).