Economics of Education Review 28 (2009) 672–681

Contents lists available at ScienceDirect

Economics of Education Review

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

Labour market effects of the polytechnic education reform: The Finnish experience

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ARTICLE INFO

Article history:
Received 26 June 2007
Accepted 19 February 2009

JEL classification:
I21
I23

Keywords:
Vocational education
Polytechnic education
School reform
Return to education

ABSTRACT

This paper evaluates the labour market effects of the introduction of the polytechnic education system in Finland. The polytechnic reform gradually transformed former vocational colleges into polytechnics. Since the timing of the reform differed across schools, we can compare the performance of polytechnic graduates to the performance of vocational college graduates controlling for both the year and the school effects. The results are somewhat sensitive to how the selectivity issues are treated but generally suggest that both the earnings and the employment levels of post-reform graduates are higher in the field of business and administration. The effects are much smaller and usually insignificant in other fields.

1. Introduction

This paper evaluates the labour market effects of the introduction of the polytechnic education system in Finland that took place in the 1990s. The polytechnics constitute a new non-university sector in Finnish higher education and they were established side-by-side with the existing universities.

Important non-university higher education sectors exist in most OECD countries. Typically these programmes offer a wide spectrum of vocational education that qualify for specific occupation or prepare for a profession. A distinguishing feature compared to the universities is that the studies are more practically oriented thus fulfilling specific needs of local economies (Kyvik, 2004). In some countries these institutions have a long history. *Fachhochschulen* in Germany were created in the 1960s. Also UK had a large polytechnic sector between 1965 and 1992 (Pratt, 1997). In the US a quarter of post-secondary college students enrolled community colleges already in 1970 (Gill & Leigh, 2000). In other countries non-university higher education sector has expanded more recently. The Dutch *Hogescholen* were created out of secondary schools in 1986 (OECD, 2005) and University Colleges in Norway by merging a large number of vocationally oriented colleges in 1994 (Kyvik, 2002).

The polytechnic reforms have aimed to improve the vocational skills of graduates. The overall success of these reforms should therefore be evaluated by assessing their effects on the labour market outcomes. Still many existing evaluations focus on the issues related to implementation, organization of new institutions and their status or cost-efficiency (e.g. Kyvik, 2002) or the graduates' own views about their placement in the labour market (Böckerman, 2007; Stenström, 2006). In an extensive assessment of the Finnish polytechnic reform by the OECD (2003) the only result regarding the labour market outcomes is that 3.7%

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doi:10.1016/j.econedurev.2009.02.004

of the polytechnic graduates were unemployed one year after graduation in 1998. Whether this number should be considered to be 'low' or 'high' naturally depends on the yardstick that is used in the comparison.

Cross-section estimates that compare the outcomes of polytechnic graduates to the labour market outcomes of graduates from other levels of education exist in several countries. Results from a European-wide survey are reported by Schomburg and Teichler (2006). The effects of non-university higher education on wages are also often reported either by allocating the students a standard length of education or by treating non-university higher education as a separate category of education (e.g. Kane & Rouse, 1995). While these studies produce information on the labour market value of non-university higher education they are not focused on the effects of specific reforms of education systems. As in all studies on the effects of education, selectivity issues are often a major problem in these studies.

We evaluate the effects of the polytechnic reform by comparing polytechnic graduates' earnings and employment levels to those who have obtained vocational college degrees in the pre-reform system. The gradual implementation of the reform offers a quasi-experimental setting where we can control for both the year and the school fixed effects.

Our paper is related to the studies that attempt to identify the causal effects of schooling using variation in local schooling opportunities as instruments. An early example is Card (1995), who uses the distance to a college as an instrument for education. He shows that otherwise identical men who live close to a college have significantly higher education and earnings than other men. Assuming that proximity to a college has no direct effects on earnings, spatial variation in education and earnings due to differential access to college education can be used to purge the return to education estimates from the endogeneity bias.

Several more recent papers have used the changes in schooling opportunities to identify the returns to schooling. For example, Margo and Finegan (1996) exploit the cross-state and cross-time variation in compulsory schooling laws. Harmon and Walker (1995) utilise the change in the minimum school-leaving age as a source of exogenous variation in educational attainment in the UK. Meghir and Palme (2005) estimate the effect of comprehensive school reform on educational attainment and earnings in Sweden, exploiting variation in the timing of the reform across regions. Maurin and McNally (2007) analyse the effects of a natural experiment in which there was a widening access to the more academic track in Northern Ireland. While many of these studies measure the effects of years of education there is nothing fundamentally different in measuring the effects of discrete changes in school systems such as upgrading vocational colleges into polytechnics.

One of the main differences between our study and the studies based on compulsory school reforms is that the polytechnic reform affects much older students that are much more likely to move in order to attend a particular polytechnic programme. Hence, the selectivity problems are potentially more severe in our case. In addition to controlling for the permanent differences across schools, we deal with the selectivity issues by (i) controlling for a wide range of observable characteristics of graduates including the grades that the vocational colleges and polytechnic schools used in their admission decisions, (ii) estimating the effects of polytechnic reform using data aggregated to the school-level avoiding the selectivity into different programmes within schools, and (iii) implementing an instrumental variable estimator that exploits the exogenous variation in the local supply of polytechnic education.

The structure of the paper is as follows: Section 2 provides a description of the Finnish education system and the polytechnic education reform. Section 3 explains our empirical approach. Section 4 introduces the data. Section 5 reports the results and the last section concludes.

2. The Finnish education system and the polytechnic reform

2.1. The Finnish education system

Finnish children begin school at the age of seven. Compulsory comprehensive schooling lasts for nine years.[1] After comprehensive schooling roughly 50% of the pupils continue in the upper secondary school, which lasts for three years and ends with a matriculation examination. About 45% enter various vocational schools and vocational colleges whose courses last for two to three years. Hence, 95% of the pupils from comprehensive schools continue immediately in secondary-level education.

Vocational schools and colleges were a diverse group of schools at the beginning of 1990s. The entry requirements and the length of education varied between schools. Some took most students directly from comprehensive schools and provided them with two or three years of vocational education. In some vocational colleges most students had completed upper secondary schooling before entering vocational college. For example, a business degree from a vocational college typically required three years of schooling after comprehensive school or two years of schooling after upper secondary school. An engineering degree from a technical college required that the students had either a vocational school degree or an upper secondary school certificate before entering. Education at technical college typically took four years to complete. At nursing school most students had completed their upper secondary schooling before entering, and the vocational college courses lasted for around three years.

As a result of the polytechnic education reform, the higher education system comprises two parallel sectors, which are universities and vocationally oriented polytechnics. A major difference is that polytechnic schools are not engaged in academic research like universities.

Education is free at all levels. State-financed student aid and subsidized loans make it possible to pursue education, irrespective of the family's financial circumstances. Good employment prospects for graduates have kept the demand

[1] An English language overview of the Finnish education system can be found from the country background report for the OECD thematic review of tertiary education in Finland (Ministry of Education, 2005).