



Local unemployment and the timing of post-secondary schooling



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ABSTRACT

Using Danish administrative data on all high school graduates from 1984 to 1992, I show that local unemployment has both a short- and a long-run effect on school enrollment and completion. The short-run effect causes students to advance their enrollment, and consequently their completion, of additional schooling. The long-run effect causes students who would otherwise never have enrolled to enroll and complete schooling. The effects are strongest for children of parents with no higher education.

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1. Introduction

Delaying entrance into higher education is a common practice in Europe and North America. Among the Danish 2001 high school graduating cohort, less than one out of five who eventually attended university entered immediately after high school (Foley & Groes, 2012). Almost every second US undergraduate student in 2000 delayed their post-secondary schooling (Horn, Peter, & Rooney, 2002). In this present paper I study how the timing of post-secondary schooling is affected by local labor market conditions at the time of graduation from upper secondary schooling.

A rich empirical literature documents that the demand for education is counter-cyclical (Bedard & Herman, 2008; Card & Lemieux, 2000; Fredriksson, 1997; Pissarides, 1981; Rice, 1999). The opportunity costs of schooling are reduced in recessions, as the chances of finding unskilled employment are lower than in economic good times. Despite a vast

amount of research, there is no evidence on how local labor market conditions affect the individual student's timing of continued schooling. The observed counter-cyclical may be driven either by individuals who postpone their school enrollment in economic good times and return to education in bad times (a temporary effect), or by individuals joining the labor market if job opportunities are good at the time of graduation, and never continuing in post-secondary schooling (a permanent effect).

Denmark makes an excellent case to study the effects of local labor market conditions on post-secondary schooling for at least two reasons: one, all students graduate from high school (i.e. upper-secondary schooling) in the same month, which allows me to record the local labor market conditions at the exact time of relevance. Two, Danish administrative data on the complete Danish population allows me to track the school record for up to ten years after graduation. Using data on all high school graduates from 1984 to 1992, I estimate the effect of local unemployment on enrollment and completion of post-secondary schooling (as measured 10 years after the end of high school). I find that a one percentage point increase in local unskilled unemployment

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increases the probability of continued schooling immediately after high school by 0.5 percentage points, the probability of continued schooling within ten years by 0.3 percentage points, and the probability of completed additional schooling within ten years by 0.3 percentage points. I find that both the short- and long-run effects are driven by children of parents with no college degree. The long-run effect is driven by students who enroll and complete shorter educational programs. There is no long-run effect on college enrollment and completion.

My results show that local business cycles have two effects on continued education after high school. The short-run effect causes students who would normally delay continued schooling to continue earlier (a temporary effect). The long-run effect causes individuals who would otherwise never again enroll in education to enroll and complete additional schooling (a permanent effect).

This paper is organized as follows. Section 2 describes the institutional setting and provides a brief review of existing literature, and Section 3 describes the empirical strategy and the identifying assumptions. Section 4 explains the data, and Section 5 presents the results. Section 6 concludes.

2. Background

2.1. The Danish institutional setting

Compulsory education begins in August of the year that children turn seven and ends after nine years of schooling. After leaving compulsory education, an individual can choose between three-year upper secondary school (high school), vocational training (apprenticeship programs), or the labor market. There are three high school program types: “Academic High School” (STX), “Higher Commercial Examination Programme” (HHX), and “Higher Technical Examination Programme” (HTX). All high school programs give equal access to university education and shorter educational programs (e.g., nursing school, teachers’ college). Almost all Danish educational programs are free, and students older than 18 are eligible for a monthly student grant.

For the analysis I use data on all high school graduates (from all program types). In the main analysis I define any continued education after high school as continued education (that is all educational programs count as continued education, including apprenticeship programs, nursing schools, and college education). I focus on the transition from upper-secondary schooling to post-secondary schooling because the labor market constitutes a real alternative to continued education. That is, high school graduates are typically aged 18–20 years old and allowed to work in any available job. While the transition from compulsory schooling to upper-secondary schooling also constitutes an interesting margin, because it is the individuals’ first educational choice, the labor market for under 18-year olds in Denmark is rather special.

All Danish high school students graduate in June and apply for continued schooling later that month. I can therefore study the effect of labor market conditions on the timing of continued schooling by looking at the unemployment rates in May. The local area is defined as the commuting zone the

student lived in four years prior to graduation. This is to avoid any selection into low unemployment areas.¹

Denmark has two institutional systems for unemployment: unemployment benefits and social assistance. Individuals who are members of an unemployment fund may be eligible for unemployment benefits. Membership of an unemployment fund is voluntary, with eligibility for unemployment benefits depending on previous employment and education. Danish high school graduates rarely satisfy these requirements, because very few have sufficient work experience and therefore are dependent on social assistance. At the time of my sample period, the level of social assistance corresponded to the level of the student grant for individuals below the age of 23.

2.2. A brief review of the literature

A rich literature exists on the link between school enrollment and both national labor market conditions (Dellas & Sakellaris, 2003; Ewing, Beckert, & Ewing, 2010; Fredriksson, 1997; McVicar & Rice, 2001; Pissarides, 1981) and sub-national labor market conditions (Albert, 2000; Barr & Turner, 2013; Bedard & Herman, 2008; Card & Lemieux, 2000; Clark, 2011; Dellas & Sakellaris, 2003; Flannery & O’Donoghue, 2009; Giannelli & Monfardini, 2003; Petrongolo & San Segundo, 2002; Reiling & Strøm, 2015; Rice, 1999; Rivkin, 1995). Table 1 summarizes the main contributions. All studies find that demand for schooling is counter-cyclical, except for Bedard and Herman (2008), who find that men’s enrollment in masters programs is pro-cyclical. Evidence covers Canada, Ireland, Italy, Norway, Spain, Sweden, the United Kingdom, and the United States, and all levels of post-compulsory schooling. The main measure for the business cycle condition is unemployment, although inflation, earnings, growth rates and employment rates have also been used.

Dellas and Sakellaris (2003) find that the cyclicity is similar across gender but not across ethnicity. In contrast, Card and Lemieux (2000); Petrongolo and San Segundo (2002); Pissarides (1981); Rivkin (1995) and Bedard and Herman (2008) find that men react more to business cycle fluctuations than women. Rice (1999) finds that the cyclicity decreases in ability, while Bedard and Herman (2008) find that the cyclicity of postgraduate schooling among men is driven by those with the highest GPA. Rice (1999) finds that the effects are strongest in recessions, but Dellas and Sakellaris (2003) conclude that the cyclicity is symmetric in economic recessions and expansions. Demand for schooling is counter-cyclical from upper secondary schooling (Rice, 1999) through graduate school (Bedard & Herman, 2008).

Compared to these studies, the contribution of this paper is twofold. First, I study the effect of local labor market conditions on the timing of continued schooling. On the one hand Dellas and Sakellaris (2003) observe that the increase in college enrollment in recessions is driven by new high school graduates, indicating the existence of a permanent effect. On the other hand, Barr and Turner (2013) note that the a large

¹ Results are robust to the definition of local area and to when I record the home municipality.

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