Economics of Education Review 34 (2013) 258–268

Contents lists available at SciVerse ScienceDirect

Economics of Education Review

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

High school dropout and teen childbearing

Dave E. Marcotte [a,b,*]

[a] Department of Public Policy, UMBC, United States
[b] IZA, Germany

ARTICLE INFO

Article history:
Received 19 July 2012
Received in revised form 17 December 2012
Accepted 3 January 2013

JEL classification:
I21

Keywords:
High school dropout
High school exit exams
Teen pregnancy

ABSTRACT

Understanding the relationship between high school dropout and teen childbearing is complicated because both are affected by a variety of difficult to control factors. In this paper, I use panel data on aggregate dropout and fertility rates by age for all fifty states to develop insight by instrumenting for dropout using information on state policies on mandatory high school graduation exams. I then make use of these exit exam instruments in tandem with an instrument used previously in the literature to identify the impact of education on various outcomes: Compulsory schooling laws. Because these instruments operate at different margins, comparing effects provides insight into whether local average treatment effects are informative about average treatment effects relevant for a broader population than those complying with either instrument. The findings suggest that the elasticity of teen pregnancy with respect to high school dropout is 0.082 overall, with larger effects for black teens.

1. Introduction

The relationship between high school dropout and risky adolescent behavior is as substantial in magnitude as it is complex. Researchers from a variety of disciplines have long understood that in addition to its effects on employment and earnings, dropout leads to a number of poor outcomes and associated risky behavior. For example, dropouts are at greater risk for mental health problems (Liem, Lustig, & Dillon, 2010), alcohol use (McCaul, Donaldson, Coladarci, & Davis, 1992), and delinquency (Sweeten, Bushway, & Paternoster, 2009). At the same time, it is clear that risky behavior negatively affects educational achievement and increases risk of dropout (Chatterji & DeSimone, 2005; Cook & Moore, 1993; Roebuck, French, & Dennis, 2004). Because neither high school dropout nor risky adolescent behavior can be controlled by the researcher, all work in this area relies on observational data. Further, because there are myriad theoretical linkages between adolescent risky behavior and education, there are competing explanations for the patterns that are observed. As a result, sorting out causal relationships in this area can be especially hard.

Absent the ability to sort out the structural relationship between poor academic performance and risky behavior, researchers are even at a loss to develop reduced form tests that would permit us to identify plausible and convincing estimates of causal parameters in one direction or the other. In this paper I hope to contribute to the collective understanding of these problems. Specifically, I attempt to add to what is known about the relationship between high school dropout and teen childbearing in two ways. First, I introduce a new instrument to the literature: The implementation of a set of mandatory high school graduation exams in the United States over the past few decades. "Exit exams," as these tests are known, have become more common, and more difficult. These exams are controversial, with opponents claiming they will drive marginal students out of school, and proponents arguing they will align student interests with those of the school and will encourage teachers and principals to provide effort and resources on the students' behalf. I make use of the fact that when states implement these exams, they announce them well in advance to begin with a particular graduating class. So within a state, some students in high school will be required to pass these exams, while students

* Tel.: +1 410 455 1455.
E-mail address: marcotte@umbc.edu.

0272-7757/$ – see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.econedurev.2013.01.002

in the grade above will not. The exposure of some students to new graduation requirements provides a source of variation affecting high school dropout which is plausibly exogenous to other factors shaping risky adolescent sexual behavior.

Second, I then make use of the exit exam instrument in tandem with an instrument used previously in the literature to identify the impact of education on a variety of outcomes: Compulsory schooling laws. Because compulsory schooling laws and high school exit exams operate at different margins, comparing effects estimated off of different instruments provides insight into whether local average treatment effects identified with either instrument are informative about average treatment effects that would be pertinent to a broader population than those complying with the instrument.

In the sections that follow, I first discuss high school dropout and teen childbearing and the empirical and theoretical links between them. I then describe the data and strategy employed here for identifying the relationship between rates of high school dropout rates and teen childbearing. I then summarize empirical findings, and consider the case for and magnitude of a causal relationship between dropout and teenage childbearing.

2. Background

2.1. Previous literature

The positive and substantial relationship between education and earnings is a well-established empirical fact, and fundamental to theoretical foundations of labor economics (see Card, 1999 for a review). So, the consequences of high school dropout on employment and earnings outcomes have been estimated across a variety of settings. Estimates using data the U.S., Canada, and the U.K. are that each year of schooling lost by high school dropouts reduces annual wage earning by 7–10 percent (Angrist & Krueger, 1991; Campoliete, Tony, & Morley, 2010; Oreopoulos, 2007), as well as reducing the likelihood of employment.

The economic consequences of dropout extend beyond direct labor market effects. Young people who forego a year of high school are more likely than comparable peers to have a mental health problem, report poor physical health, have marital problems, live in poverty, and commit crimes or be incarcerated (Bjerk, 2012; Lochner & Moretti, 2004; Oreopoulos, 2007; Oreopoulos & Salvanes, 2011). Further, Lleras-Muney (2005) finds that the impacts of lost school years are long-lasting, affecting age of mortality among older Americans. The persistent and substantial rate of high school dropout in the U.S. makes the importance of research like this to identify the consequences of high school dropout obvious. Each year, approximately 660,000 American students drop out of public high schools.[1]

One consequence of high school dropout that has received limited attention is the potential impact on teen childbearing. There are a number of reasons to expect that adolescents who drop out of high school are at greater risk for unintended pregnancy and teen childbearing. The first is that teens, free from the structured environment of a high school, are more likely to engage in unproductive and even risky behavior. That is, schools have a direct effect on behavior via an incapacitation or incarceration effect on adolescents (Jacob & Lefgren, 2003). Second, by disrupting the development of human capital, dropping out of high school lowers the opportunity cost of teen childbearing. Additionally, education may affect the ability of teens to understand and use information that directly affects health outcomes.[2] For example, education could affect the ability of teens to assess information on the risks of unprotected sex, or how to access or use various forms of contraception (Rosenzweig & Schultz, 1989).

Understanding whether and how education can affect teen childbearing is important because of the substantial and lasting consequences of teen childbearing. The effects of childbearing on teen girls, *per se*, are hard to separate from other factors that shape the propensity to have a child as well as other outcomes. Estimates that rely on basic regression adjusting substantially overstate impacts (Geronimus & Korenman, 1992). Nonetheless, there is some evidence that having a child has negative impacts on later employment outcomes of adolescent girls (Angrist & Evans, 1996) and on later educational decisions (Hoffman, 2008). However, identifying treatment effects by comparing girls giving birth while a teen to those whose first birth was delayed by a miscarriage rather than abstinence, prevention or luck, Hotz, McElroy, and Sanders (2005) find no effects of teen childbearing on later outcomes for teen mothers.

It is clear, however, that there are real and negative effects of being born to a teen mother. Children born to teen mothers fare more poorly in school (Angrist & Lavy, 1996; Manlove, Terry-Humen, Mincieli, & Moore, 2008), and are at greater risk for neglect and contact with the foster care system (Goerge, Harden, & Lee, 2008). Children of teen mothers are also more likely to come into contact with the corrections system: Grogger (2008) estimates that a delay in age at first birth from 16 to just over 20 would reduce the likelihood of a son's incarceration by about 12 percent. Maynard and Hoffman (2008) add up costs like these and estimate that teen childbearing costs U.S. taxpayers about $7.3 billion annually.

Despite the important negative consequences of adolescent childbearing, and the potential role of education in forestalling age at first birth, there has been little work on the question of whether keeping kids in school can help result in fewer births to teenagers. What is known comes from two studies, which reach somewhat different

[1] This estimate based on applying the 4.4 percent total event dropout rate for all high school students reported by the National Center of Education Statistics to total 2007 Fall enrollment of 15 million (NCES, 2010).

[2] Economists have long recognized that education plays a role in increasing efficiency in non-market production (Becker, 1965), and have expanded this to include efficiency in producing health outcomes (Grossman, 1972, 1975) and interpreting and allocating multiple inputs to generate better health outcomes (Kenkel, 1991; Rosenzweig and Schultz, 1982).