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The effects of interrupted enrollment on graduation from college: Racial, income, and ability differences

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Abstract

We present a multiple spells-competing risks model of stopout, dropout, reenrollment, and graduation behavior. We find that students who experience an initial stopout are more likely to experience subsequent stopouts (occurrence dependence) and are less likely to graduate. We also find evidence of the impact of the length of an initial spell on the probability of subsequent events (lagged duration dependence). We simulate the impacts of race, family income, and high school performance on student behavior and show that there are often very large differences between unadjusted rates of student outcomes and adjusted rates. Differences in student performance often ascribed to race are shown to be the result of income, age at entry, and high school performance.

JEL classification: I21

Keywords: Event history modeling; Stopout; Graduation; State dependence; Duration dependence

1. Introduction

Non-continuous or interrupted enrollment (known as ''stopout'' in the higher education literature) virtually assures that a student will not receive a bachelor's degree in four years. In recent years the length of time it takes to complete a bachelor's degree has garnered considerable interest among educational policy makers, the general public, and their legislative agents. Although the average time to a bachelor's degree has long been more than four years at public institutions, much of the increased interest in time to degree is due to the change in the distribution of the costs and benefits of higher education. The burden of paying for college has increasingly fallen on students and their families, as state appropriations to public institutions have fallen (in relative, and in recent years, absolute terms) and tuition rates have been increased to make up for funding shortfalls. A growing differential between high school and college returns also makes increased time to graduation more costly as students delay entry into the work force.

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Stopout not only affects *time* to degree, it may actually inhibit college *completion* (DesJardins, Ahlburg, & McCall, 2002a). To some, the fact that only about one-half of college attendees eventually graduate is widely perceived as a failure—either a failure of the student, the institution, or of the entire educational system. Some states have addressed this "failure" by tying institutional funding to graduation rates (Hebel, 1999). Recently the US Department of Education has indicated a willingness to create a grant program "that would reward colleges for retaining students and graduating them on time" (Burd, 2003, p. A31). Legislators have also commented on this issue. For example, Senator Joseph Lieberman said, "colleges must do a better job of making sure more students finish the schooling they start" (Burd, 2002, p. A25). Lieberman also noted that he would like to see 90 percent of college students earn their degrees within 6 years.

Even though stopout is related to time to degree and degree attainment, there is a dearth of research on how non-continuous enrollment, especially multiple episodes of stopout, affects graduation chances. A National Center for Education Statistics report notes that "Little has been reported, however, on whether or not students actually do return and if so, how successful they are in completing their postsecondary education" (US Department of Education, National Center for Education Statistics, 1998, p. 1). Further, we do not know if stopping out of college differentially impacts student subgroups. To address this gap in our knowledge we investigate how race/ethnicity, academic ability, and family income are related to stopout, and how the occurrence and duration of stopouts affect graduation from college. For these subgroups we are particularly interested in examining how observed aggregate or "unadjusted" rates differ from "adjusted" rates. The former are the rates often produced by institutions and included in reports such as the Integrated Postsecondary Education Data System's (IPEDS) Graduation Rate Survey and the graduation reports produced by the NCAA. Adjusted rates are those produced by statistical models that control for many of the factors related to student departure. Astin (1993) argued that "unadjusted" rates are misleading and adjusted rates may be more informative for policy.

To investigate the interrelationships among enrollment, interruptions in enrollment, and graduation we estimate a multiple-spells competing-risks model of student stopout and graduation that allows us to examine how the *occurrence* and *reoccurrence* of spells of non-continuous enrollment are related to graduation. We also examine how the *duration* of a student's enrollment and stopout spells affect their probability of graduating. Below we detail the specifics of our conceptual and empirical approach.

2. Background on the analytic approach

The study of the occurrence and timing of events (event history modeling) is not new in the social sciences. Event history models are often used in economics to examine unemployment behavior (Choi & Shin, 2002; Flinn & Heckman, 1986; Lancaster & Nickell, 1980; McCall, 1996; Meyer, 1990; Moffitt, 1985), welfare spells (Blank, 1989; Fitzgerald, 1991; Fortin, Lacroix, & Drolet, 2004), labor stoppage and strike duration (Gunderson & Melino, 1990; Kennan, 1985), and the effect of government training programs (Eberwein, Ham, & LaLonde, 1997; Gritz, 1993; Ham & LaLonde, 1996; Ridder, 1986). This modeling technique has also been used in sociology (Rossi, Berk, & Lenihan, 1980), demography (Michael & Tuma, 1985), medical studies (Crowley & Hu, 1977), and political science (Box-Steffensmeier & Jones, 1997) but only recently has been applied to the study of educational processes (DesJardins, Ahlburg, & McCall, 1999, 2002b; DesJardins et al., 2002a; Löfgren and Ohlsson, 1999).

Compared to the cross-sectional designs often used to study student departure, event history modeling is a longitudinal analytic technique that is particularly well suited to study the temporal nature of student academic careers. The technique described below, however, also allows us to assess transitions from one state to the next (e.g., from being enrolled to not enrolled), and to incorporate variables that capture the changing circumstances of students as they proceed through their academic careers. It is important to study student academic careers using longitudinal data and temporal analytic techniques because cross-sectional designs contain no temporal information and therefore they cannot be used to explain how *changes* in independent variables affect *changes* in the outcome of interest (Coleman, 1981). Cross-sectional designs "are only concerned with how *levels* of explanatory variables 'explain' an outcome at a specific point in time" (Blossfeld & Rohwer, 1995, p. 10, emphasis added). There are also other limitations when