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Doing it twice, getting it right? The effects of grade retention and course repetition in higher education

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ABSTRACT

Many students who enter college are insufficiently prepared to follow a demanding college-level curriculum. Thus, higher education institutions often require low-performing students to repeat failed courses, a full term, or even a full year. This paper is the first to investigate the effects of such a "(grade) retention" policy on student performance in higher education. We study a setting where first-year undergraduates who fall short of a pre-defined performance requirement have to repeat all first-year courses before they can proceed to the second year. To determine the causal effect of retention and repetition on student performance, we apply a sharp regression discontinuity design to administrative data from a Swiss university. Based on a sample of 5000 students, we find that grade retention increases dropout probabilities after the first year by about 10 percentage points. Repetition of a full year persistently boosts grade point averages by about 0.5 standard deviations, but does not affect study pace and major choices.

1. Introduction

Many students enter college without the skills that are necessary to follow a demanding college-level curriculum.[1] To help these students succeed, higher education institutions implement different types of policies. These policies fall broadly into two categories, "remedial education" and "(grade) retention". Remedial education denotes the repetition of below-college-level courses; students are placed into remedial courses based on a screening test before they start their college coursework. By contrast, (grade) retention refers to the mandatory repetition of college-level courses, a full term, or even a full year; students are retained based on insufficient performance during college.[2] While the causal effects of remedial education have been comprehensively studied by Bettinger and Long (2009), with overall positive results,[3] little is known about the effectiveness of grade retention to persistently boost students' performance in higher education.[4]

Grade retention is a controversial policy, both because of its unknown effects on student performance in higher education, because of its monetary costs for educational institutions, and because retention may cause delays in students' labor market entry. While positive effects on student outcomes may arise because of learning gains and a better match between students' knowledge and the level of teaching, negative effects can occur because of

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[1] See Bettinger and Long (2009) for a discussion.

[2] These policies are widely implemented. For example: Course repetition exists at California Community Colleges, the University of California at Berkeley, the Massachusetts Institute of Technology, Harvard University, Northwestern University, New York University. Repetition of a full semester exists at Princeton University. Retention of a full year occurs at the Federal Institute of Technology in Zurich, the University of St. Gallen (both Switzerland), and Queen Mary University of London. Institutions have idiosyncratic rules for retention, and for how repeated courses count towards grade point averages. Unfortunately, we are not able to provide a comprehensive overview over retention policies around the world, because of a lack of data.

[3] See also Melguizo, Bos, and Prather (2011) for a review.

[4] Remedial education and grade retention may be appropriate in different contexts. Placement in remedial courses requires a screening of students when they enter college. By contrast, retention policies do not require such a screening, and may therefore be appropriate in contexts where universities cannot screen admitted students.

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stigmatization by instructors or fellow students, a decrease in self-confidence, and slow adjustment to a new classroom or cohort (c.f. Manacorda, 2012). Furthermore, retained students spend additional time in higher education, and thus forego labor income during this period. Finally, retention imposes high monetary costs on institutions: Public post-secondary institutions in OECD countries spend on average 9000 USD annually per student on core educational services like instruction (OECD, 2014).

The main obstacle to the identification of retention effects is (self-)selection into retention and course repetition. Students often self-select into retention or are retained by their institutions. Retained students may thus differ systematically from their fellow students, for example, in terms of prior performance. Hence, uncorrected differences in educational outcomes between retained and non-retained students are likely to reflect differences in student characteristics rather than the effects of retention.

We exploit a grade retention policy at the University of St. Gallen (Switzerland) in a sharp regression discontinuity design. First-year students who do not achieve a strict performance requirement after the first year have to repeat all first-year courses before they can proceed to the second year. We exploit local variation in the retention status around the performance threshold (henceforth also "cutoff") and estimate the effects of (1) grade retention on dropout probabilities and (2) repetition of all first-year courses on outcomes that occur after repeating: grade point averages (GPA), credits obtained per semester, and major choice. Both performance and choice outcomes are important for later labor market success (c.f. Altonji, Blom, & Meghir, 2012; Arcidiacono, 2004).

This paper is the first to study grade retention in a higher education setting. It contributes to both the empirical literature and the policy debate on retention policies at different schooling levels. Researchers have so far focused on retention in primary and secondary education where school attendance is compulsory. Recent studies find positive effects of grade retention on grades, especially for primary school children.[5] On the negative side, grade retention appears to increase dropout rates of children during high school. This result has been confirmed by Jacob and Lefgren (2009) for 8th graders in Chicago and by Manacorda (2012) for 7th to 9th graders in Uruguay. This result, however, does not hold for 6th graders (Jacob & Lefgren, 2004). Overall, the effects of grade retention appear to be age-dependent, with rather positive results for primary school children, and rather negative results for high school students.

The effects of grade retention and course repetition are supposedly different in settings where education is voluntary (i.e., beyond levels of compulsory education). In particular, immediate student dropout—in response to grade retention—is a more likely outcome (Finn, 1989). Based on a sample of German students in upper secondary education, Uysal (2010) finds a negative effect of grade retention on both the probability of receiving a high school diploma and on subsequent course grades. A related strand of literature investigates the impact of failing the high school exit exam in the US. While high school exit exams are conceptually different from grade retention policies, both instruments are used to maintain educational quality. Ou (2010) and Hemelt and Marcotte (2013) show that failing high school exit exams increases the probability of immediate dropout for 11th graders.

The effects of grade retention and course repetition in higher education may differ from the effects in primary and secondary education settings for at least four additional reasons. First, mature students may cope better with negative events, and thus, the negative effects of retention may be less pronounced for older students (e.g., Amirkhan & Auyeung, 2007; Williams & McGillicuddy-De Lisi, 1999). Second, stigmatization by fellow students and instructors may be mitigated because university students—and in particular freshmen—are less frequently exposed to small-classroom settings. Third, bonding with initial cohort members may be stronger or weaker in a university environment. Fourth, university students may benefit especially from repeating the first year. Some students need additional time to cope with the new environment and develop new study habits, which are crucial for college success (Credé & Kuncel, 2008; Robbins et al., 2004). For these students, grade repetition may provide a valuable chance of adjusting.

We find large and persistent positive effects of retention on student performance, but also modest effects on student dropout rates. Students who have to repeat a full year are 10 percentage points more likely to drop out after the first year than students who are immediately promoted. The gains for repeaters, i.e. students who do not drop out, are large. By the time of on-time graduation, repeaters outperform non-repeaters by about 0.5 standard deviations in grade point averages.[6] Notice though that grades are only observed for students who do not drop out. If retained students drop out at higher rates, compared to non-retained students, and if the decision to drop out is negatively related to student performance in subsequent semesters, the stated effect may be upward biased. Therefore, we implement a bounds analysis (c.f. Lee, 2009), which confirms a positive and significant effect of retention on GPA. In contrast to grades, credits obtained per semester as well as major choice after the first year remain unaffected.

2. Institutional setup

The University of St. Gallen offers three-year undergraduate degree courses. Students can choose among five majors (Business Administration, Economics, International Affairs, Law and Economics, and Legal Studies). The university plays an important role for the education of Managers and Economists in Switzerland: In the past years, around 30% of all Swiss graduates in Economics and Business Administration received their degree from St. Gallen (Table A.1). According to federal law, the university must admit all students with either a Swiss high school degree ("matura") or a Swiss nationality.[7] Following the general trend, the number of students has increased strongly over the last two decades: Between 1990 and 2013, the number of first-year undergraduates more than doubled (from 582 students to 1,328 students) (Table A.2).

To maintain control of the number of enrolled students, the university introduced a probation period, or "assessment year", in 2001: Students have to fulfill a strict performance requirement in order to continue their studies after the first year. This requirement is based on course performance across the bundle of all compulsory first-year classes (see details below). Students who either do not meet the performance requirement or do not complete all compulsory courses are allowed to repeat the first year once. Over the years 2001–2008, approximately 70% of all entering undergraduate students passed the first year at their first attempt, and ap-

[5] An unequivocally positive effect on test scores seems to exist for retained 3rd graders in the US. Three independent studies find a positive effect for Chicago (Jacob & Lefgren, 2004), Texas (Lorence & Dworkin, 2006), and Florida (Greene & Winters, 2007; Schwerdt, West, & Winters, 2015). Roderick and Nagaoka (2005) find even negative effects on test scores of 6th graders in Chicago. All outcomes examined in these studies are short-term outcomes, that is, measured 1–3 years after grade retention, with the exception of Schwerdt et al. (2015), who study outcomes through 6 years after grade retention.

[6] Students graduate on time if they complete the major-specific level, which starts after students have passed the first year, within four semesters.

[7] Foreign students are admitted based on an entrance test. The admission quota for foreign students varies by year, but is usually around 25%.