



Working while studying? Student aid design and socioeconomic achievement disparities in higher education [☆]



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HIGHLIGHTS

- We analyze the relation between academic achievement and student labor supply.
- We exploit institutional variation derived from a Swedish financial aid reform.
- The reform provided incentives to reallocate time from studying to market work.
- Results show a decrease in relative study pace for more disadvantaged students.
- Effects driven by increased market work from more financially constrained students.

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ABSTRACT

We analyze the relation between student academic achievement and labor supply by exploiting institutional variation derived from a Swedish public financial aid reform which altered the relative cost of financing college education through taking up student loans and engaging in market work, respectively. Applying detailed administrative data we estimate relative changes in earnings and academic credits attributed to the intervention for students from different social backgrounds. Results show that the reform increased relative earnings and decreased relative study pace for students from a lower socioeconomic background. These effects appear to have been driven by students more financially constrained by the previous system.

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1. Introduction

Previous research has often found that costs of attending college affect the individual enrollment decision.¹ These costs mainly comprise college tuition fees and student aid levels but also the opportunity cost of time allocated to market work. The literature has mostly focused on

¹ For studies of the impact of tuition levels on enrollment decisions, see e.g. Manski and Wise (1983), McPherson and Shapiro (1991a,b), Kane (1994), Rouse (1994), Hoenack (1971), Ehrenberg and Sherman (1987), Moore et al. (1991). For studies of the impact of student aid on enrollment decisions, see e.g. Schrøter Joensen (2010), Nielsen et al. (2010), Baumgartner and Steiner (2006), Linsenmeier et al. (2006), Dynarski (2002, 2003), van der Klaauw (2002), Reuterberg and Svensson (1994), Fredriksson (1997), and Hammarström (1996).

the *extensive* study margin (i.e. the decision of whether to attend college or not) and somewhat less on the *intensive* study margin (i.e. decisions made within a study spell).² While the former primarily concerns the extent to which the higher educational system is able to match prospective students to corresponding educational pursuits, the latter relates more to the output and study duration of enrolled college students. In this paper we analyze how the design of the student aid system may affect a crucial policy parameter: the duration of college studies.³

We focus specifically on the degree of labor supply of college students, which is a factor likely to impact average study durations in most countries. Part-time work while enrolled in higher education is common in many OECD countries and allows for students to top up their incomes from other sources. The average OECD student in 2003 was employed about 27% of the time while studying (OECD, 2005). While the opportunity to work during college studies may increase living standards of students, there are also potential adverse effects related to an excessively high student labor supply, such as increased risks of dropping out and prolongation of studies (see e.g. Ehrenberg and Sherman, 1987; Stinebrickner and Stinebrickner, 2003; Bound et al., 2012). Hence, assessing the relationship between the design of the financial aid system and students' degree of labor supply should be vital for education policy makers.⁴

We empirically analyze the relation between student academic achievement and labor supply by exploiting institutional variation derived from a Swedish public financial aid reform, implemented in 2001, which altered the relative cost of financing college education through the cost of taking up student loans and engaging in market work, respectively. Specifically, the institutional changes included a substantial increase in the exempt amount of income students were allowed to earn (while also receiving financial aid) and a significant tightening of the student loan repayment rules. On the one hand, this creates an incentive to substitute student loans for labor market earnings. On the other hand, as increased labor supply would imply less time available for studying, any such change in relative study costs might also have entailed an indirect effect on the study pace of college students. We study the effects of the financial aid reform on student labor supply and academic achievement to test this time-reallocation hypothesis.

Using detailed Swedish administrative data on student aid income, earnings (as a proxy for labor supply), academic achievement and socioeconomic factors, we sample all college students who enrolled in an academic program between 1997 and 2000 and follow them over their length of study. As the reform was implemented for all students simultaneously, we estimate relative effects of the reform for student groups of different socioeconomic status who were likely to vary in their exposure to the institutional changes. Specifically, previous literature has shown that students from a lower socioeconomic background are in general more dependent on, and more sensitive to, changes in the student aid system (see e.g. Becker, 1993; Card, 1999; Eckstein and Woepflin, 1999; Bettinger, 2004; Cameron and Taber,

2004). Furthermore, we also study whether students closer to the relevant margins which were altered with the reform (i.e. students with high pre-reform earnings and student loans) reacted differently to the new rules, compared to other, less constrained, students.

The results from estimation show that students from a lower socioeconomic background increased their relative earnings by approximately 25%, compared to students from a higher socioeconomic background, as a consequence of the changed rules in the financial aid system. Furthermore, this change coincided with a ten percent average decline in the relative study pace for the same students. We interpret these results as supporting the hypothesis that the student aid reform induced students, in particular from a lower socioeconomic background, to increase their labor supply in a way that indirectly caused their relative study pace to fall. This interpretation is further reinforced by the results from a number of robustness checks we subsequently perform to corroborate the main results. In contrast, Humlum and Vejlin (2013) find that lower financial aid (for high school students) only increased student labor supply while academic achievement remained unchanged, hence implying that financial aid appears to subsidize leisure, rather than studies which appears to be more the case in this study. In addition, the composition of students who were particularly constrained by the old financial aid system reacted more strongly than non-constrained students to the reform in terms of relative post-reform earnings and study pace. This finding may partly explain the estimated relative effect found for students from different socioeconomic backgrounds as the share of constrained students was relatively higher in the lower socioeconomic student group. In summary, we find robust evidence that the design of the student aid system is likely to be an important factor influencing study durations, in particular for more credit-constrained students.

As the student aid reform primarily affected relative, rather than absolute, costs of studying, the results from this study could to some extent be generalized to other countries. Even if the magnitude of the effects might vary across different educational contexts, the results are still important as they suggest that students indeed react to economic incentives in the student financial aid system. Our findings should hence be of significant relevance for both education and redistribution policies as part-time work among college students is widespread throughout the OECD.

The remainder of this paper is organized as follows; the next section briefly outlines the main characteristics of the Swedish university system and financial aid for college studies in Sweden, before and after the institutional changes in 2001. The empirical approach and the data used in the analysis are discussed in Section 3. Results from estimation are presented in Section 4. Finally, a short summary and some concluding remarks are offered in Section 5.

2. The Swedish system of higher education⁵

The Swedish system of higher education is financed and regulated by the Swedish Government and Parliament. A national administrative authority handles admissions to all colleges. High school GPA is the primary selection instrument governing entry into the higher education system. However, a national aptitude test and previous work experience may also be taken into account in the selection process. The graduation requirement is a minimum of 120 completed academic credits where each credit corresponds to one week of full-time study and 120 credits correspond to three years of full-time studies.⁶ Two general types of students can be separated; program and course students. Program students, who constitute approximately two-thirds of the total student population, enroll in a study program lasting three or more years, while course students register for separate courses that typically last

² A few studies examine the effect of student aid on academic efficiency: Häkkinen and Uusitalo (2003) evaluate time-to-graduation for Finnish college students in the 1990s when a major student aid reform was implemented in the country. Nielsen Arendt (2013) analyzes the impact of the financial aid system on student drop-out and completion behavior using policy variation derived from a Danish student aid reform. Humlum and Vejlin (2013) evaluate the achievement of high-school students applying the timing-of-birth instrument to generate plausibly exogenous variation in student aid take-up. Finally, Schrøter Joensen (2010) models the sequential nature of the college-to-employment decisions of individuals within a structural dynamic model framework.

³ Declining reported number of hours of studying among college students seem to be a major concern in the U.S. (see e.g. Boston Globe, 2010). In particular Babcock and Marks (2011) estimate that the effective number of hours of studying declined for the average full-time college student by one-third (from 40 to 27 h) per week between 1961 and 2003. They attribute this drop mainly to falling achievement standards in post-secondary educational institutions (Babcock and Marks, 2010).

⁴ There also exist empirical evidence that working while studying could be positive for later labor market outcomes due to an improved labor market attachment (see e.g. Light, 2001; Hotz et al., 2002; Häkkinen, 2006; Geel and Backes-Gellner, 2012). However, in this paper we focus mainly on the labor supply effects on student academic achievement.

⁵ See HSV (2006) for a detailed description of the Swedish system of higher education.

⁶ Since 2007, as a result of the Bologna process, one academic credit in the old system corresponds to 1.5 ECTS points in the new system. However, the time period studied in this paper does not cover 2007 and later years.

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