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## Procrastination, academic success and the effectiveness of a remedial program<sup>☆</sup>

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### ABSTRACT

Procrastination produces harmful effects on human capital investments and study activities. Using data from a large sample of Italian undergraduates, we measure procrastination with the actual behavior of students, considering their delays in finalizing their university enrolment procedure. We firstly show that procrastination is a strong predictor of students' educational achievements. This result holds true when controlling for quite reliable measures of cognitive abilities, a number of background characteristics, family income and indicators of students' motivation. Secondly, using a Regression Discontinuity Design, we investigate the effects of a remedial program in helping students with different propensities to procrastinate. We show that the policy especially helps students who tend to procrastinate. Even though we are not able to identify the specific mechanism driving this effect, our results suggest that policies that are not directly aimed at handling procrastination can also help to solve self-control problems.

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## 1. Introduction

Many important economic decisions, such as investments in human capital, saving, searching for a new job and health-related activities, lead to costs and benefits that occur at different points in time. The standard economic theory assumes that individuals trade-off utilities in different time periods according to an exponentially declining discount factor, which entails time consistent preferences.

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However, a lot of empirical evidence has shown that individual decisions are better described through present-biased preferences or a “quasi-hyperbolic” time discounting factor (Laibson, 1997; O’Donoghue and Rabin, 1999; DellaVigna, 2009). Present biased individuals face problems in pursuing their long term objectives in that, due to their lack of self-control, they seek immediate gratification and tend to put off (procrastinate) tasks with long term rewards.

The tendency to procrastinate has proven to produce negative consequences on consumption and savings (Laibson, 1997; Angeletos et al., 2001), credit card use (Ausubel, 1999), health club memberships (DellaVigna and Malmendier, 2006) and telephone use (Grubb, 2009).

Present-biased preferences can also produce particularly negative consequences on human capital investment decisions. When confronted with an investment such as studying in the current period (creating benefits in a distant future in terms of higher earnings related to better educational attainments), an individual with present-biased preferences will tend to procrastinate and postpone the effort to the next period, and then delay yet again until the next one.<sup>1</sup> Even if endowed with high cognitive abilities, a present-biased student may obtain a low academic performance or fail to accomplish the educational program. In general, students’ performance will not only depend on their cognitive abilities but also on their self-control abilities in terms of avoiding distractions, keeping concentrated and being methodical in study activities.

Techniques for managing procrastination are suggested on the websites of many universities worldwide.<sup>2</sup> However, there is little evidence of the relationship between procrastination and educational performance. The limited amount of existing literature shows that students’ performance correlates negatively with their tendency to procrastinate (Ariely and Wertenbroch, 2002; Mischel et al., 1989; Wong, 2008).

In this paper we focus on procrastination problems among Italian college students. We firstly investigate the relationship between procrastination attitudes and academic success. Secondly, we analyze to what extent an educational policy requiring students to attend some remedial courses is effective for individuals with a tendency to procrastinate compared to others who procrastinate less.

Many of the existing empirical investigations on the relationship between procrastination and individual outcomes rely on self-reported measures of procrastination, often obtained from surveys asking subjects about their tendency to accomplish a task immediately or to delay it. Another measure, especially used by psychologists, is to consider students’ behavior in handing in term papers (see for example, Solomon and Rothblum, 1984; Dewitte and Schouwenburg, 2002; Howell et al., 2006): given their nature, these studies usually rely on very small samples.

In our work, we use a measure of individual procrastination based on students’ actual behavior rather than on survey questions, with the additional advantage of having quite a large sample of students. We exploit the fact that all applying students are notified of the admission decision at the same time at the University we consider (through the university official website) and students have seven weekdays in which to accomplish the enrollment procedure. This requires some bureaucratic procedures and the payment of an initial fee through a bank or post office (credit cards or on-line payments are not accepted). These activities represent small but immediate transaction costs for students, in terms of time lost in filling in the forms and in making the payment. Individuals with a tendency to procrastinate are likely to accomplish the task toward the end of the seven days or even just before the deadline. In fact, accomplishing the enrollment procedure generates an immediate cost, while the benefit is long term (respecting the deadline imposed by the University and avoiding the risk of being excluded from the degree program because of some unexpected event).<sup>3</sup> Despite the very small probability of unexpected events (illness, bank or transportation strikes, etc.), which could hinder the student in their accomplishing the procedure at the last moment, the cost associated with this eventuality is very high, since the student will not be able to enroll on the chosen Degree program (and it is too late to apply to other Universities).

Therefore, we consider the number of days a student takes to accomplish the enrollment procedure after admission notification as a proxy of individual procrastination. This measure of procrastination is a reasonable behavioral alternative to asking students survey questions about their tendency to “complete assignments immediately”, “complete before deadline”, or “at the last possible moment”. Therefore, we assume that procrastination in carrying out this administrative task is predictive of a general tendency to procrastinate, something we consider to be a relatively stable and persistent characteristic of an individual.

To assess whether our indicator of procrastination reflects a typical student attitude, we also conducted a survey among a sample of students who were asked to rate their tendency to procrastinate. Results from this survey (discussed in detail in Appendix A) confirm that students who take longer to accomplish the enrolment procedure are also, according to their answers to the survey, more likely to show a higher tendency to procrastinate.

Similar measures of procrastination are used by Reuben et al. (2009) who consider both students’ delay of in cashing a check and the timing for the application to an MBA. Compared with their measures, our indicator is less likely to be affected by factors other than students’ tendencies to procrastinate. In fact, we do not consider the timing of application to the Degree

<sup>1</sup> Similarly, Akerlof (1991) derives procrastination from the undue saliency of current costs with respect to future costs.

<sup>2</sup> See, for example, Harvard University, Procrastination – Bureau of Study Counsel – Harvard University; University of Pennsylvania, “One of These Days I’ll Stop Procrastinating”, “Battling the Block: Writing Through and Beyond Writer’s Block”; University of Buffalo, “Overcoming Procrastination”; Cornell University, “Creating a Daily To-Do List”.

<sup>3</sup> Similarly, Reuben et al. (2009) explain their indicator of procrastination based on the number of days taken by students to cash a check as the tension between the short term costs (walking to an ATM machine) and the long term benefits of being sure that the check is not lost.

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