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# Promptness and Academic Performance

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## Abstract

This article uses university administration data to investigate the relation between student behavior (rapid response in finalizing enrolment procedures) and academic performance. It shows how student promptness in enrolling, or lack of it, can prove a useful forecast of academic success. Several explanations can be given, including simply the greater or lesser tendency to procrastinate.

## Introduction

Imagine a classic romantic scene: a couple dining by candlelight. The boy timidly but hopefully asks for the girl's hand; she hesitates, gives no reply, feels the need to think things over, puts off answering. The time she takes to make up her mind is clearly a sign of indecision over whether to make the plunge or not. If the question had been just what she had been longing for, she would have accepted on the spot. In the same way, though less dramatically, the speed with which students first enroll at university, i.e. the number of days between the initial enrolment day and the deadline, can be an important indicator of the motivation of choice. Those who enroll at the first opportunity have clearly made up their minds and are determined to become university students. Those who attend a few lectures and enroll at a later date, are probably not quite so sure. There are indeed various reasons why some students need to find out more and reflect over the steps they are taking. Whatever the cause, one thing is sure, they are certainly less convinced about what they are doing.

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Uncertainty over what course to follow is not the only reason why some students delay carrying out administrative procedures. They may well not be so keen on university studies (which is different from being uncertain over the faculty to choose) or more often than not they put off any kind of duty/obligation. University enrolment dates can therefore be a potential indicator of certain student behavior patterns (interest, personal motivation, will power, tendency to put things off), which can indeed go to affect academic performance.

This article uses data coming from university administration to show how a single behavior pattern like promptness in dealing with paper work, i.e. university enrolment, may well be a useful predictor of a student's university career. Section 1 offers a panorama of the objectives, the research carried out and methods adopted by psychologists and economists who have worked on academic performance. Section 2 describes the data and presents the results obtained. Section 3 presents some hypotheses on the meaning of the date of university enrolments. The final paragraph then draws conclusions and follows on with suggestions on how these conclusions can affect policy-making.

## **§ 1. Literature on academic performance**

Various studies have analyzed academic performance from different points of view. Psychologists, for example, dedicate much attention to the personal characteristics which can determine student success, concentrating above all on learning-related problems and possible pathological behaviors. Investigation is frequently carried out by using self-evaluation questionnaires and the data often shows that though cognitive abilities are necessary, they are not sufficient by themselves to explain academic success. The non-cognitive characteristic that psychologists most frequently link to academic performance is motivation (see Deci 1995). Part of the literature (e.g. Linnenbrink and Pintrich 2002) offers a multidimensional vision of motivation and explains it with more or less customary variables, taking into consideration, for example, cultural and demographic factors, personality traits, study environment but also the meta-cognitive capacity. Some personal characteristics like perseverance, conscientiousness, sociality, readiness to make new experiences, even pushiness, can be equally useful predictors of academic performance (see Chamorro-Premuzic and Furnham 2006). However, though generally psychological questionnaires can elicit precious information on the characteristics of student behavior, the problem is that they are not very reliable. Students may well be reluctant to answer the questionnaire or take it seriously, especially when aware of its purpose. From an economic perspective they do not have incentives to give correct information.

Economists working on education are more interested in identifying objective measuring methods which can predict academic success and other similar values. Park and Kerr (1990) applies a multinomial logit model to identify the variables that can predict students' marks in a banking and finance course. Vivo and Franco (2008) make a statistic analysis based on a ROC curve to identify the variables which can predict the academic success of students enrolled in the 1<sup>st</sup> year of Economics and Business Administration, in order to pick out those possibly needing backup. Leppel (1984) uses the tobit model for comparing the academic performance of regularly enrolled students with those returning after a few years out. Spector and Mazzeo (1980) prove that the probit model is particularly suitable for analyzing discrete variables in the field of teaching economics. Di Canio (1986) deal with student evaluations of lecturers.

For Italy in particular, the school-leaving certificate mark is generally considered a very important indicator for signaling student talent, as is the type of secondary school attended and the parents' education level (Checchi 2000; Bertola and Checchi 2001; Checchi and Pravettoni 2003). Aina, Baici and Casalone (2011) study the factors influencing how long it takes to graduate (in Italy there are no time-limits) and show the relevance of individual and family factors (typology of secondary school, school-leaving certificate mark as well as parents' education). Students attending universities far from home tend to graduate more quickly and choosing another city is an indirect indicator of family's means and also possibly motivation.

Another important non-cognitive factor that the literature often links to academic success is the habit of spinning things out. The phenomenon has been analyzed from many different points of view. Aina, Baici and Casalone (2011) explain external factors that cause people to delay. An individual tendency to procrastinate is another possible reason for delaying (see sub-section 3.3).

The present study offers a descriptive analysis of some aspects of student behavior in order to identify promptness in enrolling as a possible new indicator for predicting student performance. It also seems useful for indicating student motivation and recognizing tendencies to procrastinate.

## **§ 2. The Empirical Analysis**

A delayed enrolment can also be influenced by circumstances such as: being worker-students; awaiting the result of an entry test to another university/faculty; being in the

process of transfer elsewhere; living far from the university.<sup>1</sup> Students from low-income families may well delay enrolment in order to wait for salaries to be paid in. Thus, procrastination can be related to low income and this could predict a possible low performance, as long as income proxies parents' educational level (Filmer *et al.* 1999). Yet very low income, students are exempted fees and may have grants.

The choice to enroll close to the deadline can be also determined by behavior patterns strictly linked to motivation, like uncertainty, little interest in university life and the tendency to put off important and difficult decisions. The enrolment date could, indeed, reflect personal characteristics which could be completely irrelevant for understanding the reasons for academic success. Students could, for example, loath doing the necessary admin work but love what they are studying. And therefore they systematically put off enrolment, but gain good results the same. Other students could prefer to enroll after attending some lectures, in order to make a more pondered and potentially better choice. Others again could feel the need to think over calmly whether to go to university or take another road.

While pondered decisions could be also more valid, it is just as true that putting off a decision is certainly an indicator of uncertainty. The need to collect further information near the deadline is also a possible index of scarce motivation and interest. After all, presumably well-motivated students could and should decide on their career and collect enough information in time. Promptness can also be interpreted in terms of identity economics (Akerlof and Kranton 2010): students could choose to enroll quickly in order to identify and be identified with the status of university student.

The considerations illustrated above suggest that no haste in enrolling can be correlated to a weaker performance. The following subsections present the data and try to verify this hypothesis and discriminate among the various factors leading to it.

### § 2.1 Data

The data collected comes from the Law Faculty of the University of East Piedmont, at Alessandria. The observations were taken on 1<sup>st</sup>, but also on 2<sup>nd</sup> and 3<sup>rd</sup> year enrolments in the period between 2003 and 2010, so amply allowing for a student career to be tracked for at least three years.<sup>2</sup> 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year enrolments all require students to deal with

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<sup>1</sup> Italian universities offer some structures which can board the most merit-worthy students (halls, residences) but they can in no way be compared to the facilities offered by North-American/UK university campuses.

<sup>2</sup> First time enrolment could take place in different periods in these years. They could also be effected after the deadline with a late payment penalty. In 2004 up to 30/09; 2005 up to 30/09; 2006 up to 29/09; 2007 up to 1/10; 2008 up to 30/09; 2009 up to 16/10; 2010 from 23/8 to 1/10; 2011 from 22/8 to 30/09. Up to 2010 the opening day for enrolments was always 1<sup>st</sup> August.

administrative procedures, pay their fees and send/hand in the due documentation to the offices.

In this study the measure of promptness in enrolling is understood as the time between the deadline and when the student enrolls, in relation to the total number of days available for such proceedings. For example, if students enroll on the first possible day of a sixty-day period, they have a value of 1 (sixty divided by sixty), on the last day the value corresponds to 0, while enrolments after the deadline have a negative value.

### *§ 2.2 Results*

Table 1 presents the aggregated results for all the years covered in the survey.<sup>3</sup> The students were divided into quartiles according to their enrolment date<sup>4</sup>, while enrolments post-deadline were placed in a separate group (termed Quartile 0). Quartile 1 includes students enrolled near the deadline, while Quartile 4 contains very prompt enrollers. The Table contains both Kruskal-Wallis's non-parametric test (preferable as a test since the distribution of some variables is almost certainly not normal) and the variance analysis. The results of the two tests are however generally coherent. Besides comparing the differences between the four groups, the Table shows the non-parametric test which compares Quartiles 0 and 1 – after and near the deadline –<sup>5</sup> and Quartiles 1 and 4 (the very late vs. the very prompt enrolments). This serves to verify if there are differences between those enrolling in time and not only between the early enrollers and those enrolling after the deadline.<sup>6</sup>

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<sup>3</sup> Analogous tendencies are met in considering the data of the single years, despite there being fewer observations.

<sup>4</sup> We could conduct the analysis using correlation coefficients or other procedures and the results would not change. In general all the analyses proposed are very robust to the type of instrument proposed and the period considered. In this seat we chose a simple easily described approach.

<sup>5</sup> This distinction was introduced since enrolment near the deadline can reveal more complex nuances of behavior than for those enrolling after the deadline. Thus it was more appropriate to use quartile and not correlation coefficients, which will be deployed later on in the analysis.

<sup>6</sup> The number of observations in the various groups changes from cell to cell. Obviously there are no 3<sup>rd</sup> year average marks for students who drop out earlier. This data is evidently both cause and effect of dropping out - those who drop out do not sit exams and those who do not sit exams drop out.

**Table 1. Average indicators on student careers by quartile of enrolment date (all those not coming from other faculties or universities).**

q		Likelihood of withdrawal within first year	Performance	Number of credits	Number of exams passed	Average mark	Number of exams failed	School leaving certificate mark	Liceo	Percentage of failures	Age enrolment	Average 2 <sup>nd</sup> installment payment
0	Average	0.55	66.83	72.90	10.37	23.87	1.6	71.63	0.31	0.14	25.00	523
	N	71	30	30	30	28	47	71	71	38	79	55
1	Average	0.36	70.77	77.39	11.31	24.55	1.3	74.05	0.34	0.14	24.01	502
	N	129	84	84	84	83	87	129	129	86	129	100
2	Average	0.31	80.23	90.72	12.83	24.46	1.6	76.75	0.37	0.14	21.51	510
	N	210	158	158	158	153	162	210	210	157	210	192
3	Average	0.23	87.48	97.15	13.53	24.93	1.58	78.75	0.39	0.15	20.68	506
	N	213	180	180	180	175	184	213	213	181	213	190
4	Average	0.14	99.14	110.27	15.66	24.62	2.15	79.25	0.4	0.13	20.53	592
	N	207	172	172	172	171	182	207	207	181	207	194
tot	Average	0.28	85.61	95.31	13.49	24.62	1.70	77.03	0.37	0.14	21.71	530
	N	830	624	624	624	610	655	830	830	643	830	746
	K-W	.000	.001	.000	.000	.43	.022	.002	.694	.140	.000	0.21
	Anova	.000	.000	.000	.000	.281	.014	.149	.805	.140	.000	.187
	0-1	.001	.001	.524	.391	.224	.827	.276	.654	.788	.138	.763
	1-4	.000	.000	.000	.000	.592	.005	.000	.272	.281	.000	.106

*i) Promptness and likelihood of giving up.* The first variable considered is the percentage withdrawing within the 1<sup>st</sup> year. The differences between times of enrolment are considerable and significant, both with the parametric and non-parametric tests. Late enrollers emerge as having a greater likelihood of withdrawing within the 1<sup>st</sup> year.<sup>7</sup> As expected, the difference is significant, both in comparisons between last minute enrollers and those paying the late penalty, and prompt enrollers and those enrolling close to the deadline. Both enrolments near the deadline and those paying the late payment penalty seem to signal characteristics which are relevant to the career.

While it is obvious that a working-student has a more complicated career, from an economical point of view, students paying late payment penalties, and therefore a higher cost, should in theory be more motivated to finish. It is not like that, and paradoxically those who

<sup>7</sup> The same effect appears when verifying that those who withdraw with the beginning of the 2<sup>nd</sup> year have an average value of promptness lower than the others (data not present in the table).

pay more have less probability of finishing. These students are not less motivated, but have less available time.

*ii) Promptness and academic success.* Those enrolling near the deadline do fewer exams, obtain fewer credits and have a lower average mark<sup>8</sup> than those who enroll promptly. They mark up fewer failures and withdrawals.<sup>9</sup> This is quite significant: had the late enrollers been less ambitious, they would have accepted lower marks and withdrawn less often. Prompt enrollers register instead both a higher average mark and a better performance. The latter was calculated as the number of exams by average mark divided by three (the number of years considered).<sup>10</sup> Limiting our attention to the students enrolled up to 2005, we find that those not so quick off the mark in enrolling also have less likelihood of graduating (data not presented in the table).<sup>11</sup>

*iii) Promptness and degree mark.* The enrolment date is also correlated to the degree mark, often used as an indicator of talent (see, for example, Checchi and Pravettoni 2003). The effect is significant (but only with the non parametric test). There are no differences between last minute enrollers and those arriving after the deadline (Quartile 0 against Quartile 1). Indeed, differences appear between those enrolling very quickly and those more slowly, though the difference between the 1<sup>st</sup> and 4<sup>th</sup> Quartiles is only 5%. To obtain a comparable term on the distribution of graduation marks divided by quartiles, the difference is very high, with the average of the best at 97% and of the weaker students at 61%. The correlation between delays in enrolling and school-leaving certificate marks is positive and significant, but therefore not very high. Almost 40% of those with a high school certificate mark delay their enrolment at university. In the same way there is a high quota of students with a low

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<sup>8</sup> After the 1999 Italian University Reform (D.M. 509/99), degrees are awarded on the acquisition of credits (European Credit Transfer System ECTS), which are the measure of the working/learning process, including individual study. Students have to have an adequate initial preparation in order to acquire the knowledge and abilities foreseen by the regulations. A credit is conventionally worth about 25 hours' work and training including individual study, practicals, laboratories, internships, and lectures. The average year's work of a full-time student is traditionally fixed at 60 credits, which corresponds to 1,500 hours. For a first-level degree 180 credits are needed, for a second-level one 300 credits.

<sup>9</sup> In reality failure figures are not available for all, because some of the teaching staff tend not to register them (especially with written exams). Student could also decided to withdraw from an exam (failures and withdrawals are registered differently) on getting a low mark or running the risk of failing. Sometimes the students are encouraged to withdraw, to avoid a failure being registered. In the Italian system a student can take an exam umpteen times, so the decision to withdraw is not too costly.

<sup>10</sup> This variable is used, for example, by Checchi and Pravettoni (2003) as a synthetic indicator of a brilliant student career.

<sup>11</sup> While our observation is limited to students enrolling in a three-year degree course between 2005 and 2011, from 2005 onwards most of the students went on to a Master's degree with time-lines too long to be included in this study.



certificate mark who enroll very quickly. There is a 35% likelihood of those with low certificate marks against 41% of slow enrollers; so enrolment post deadline predicts withdrawal better than a certificate mark in the 4<sup>th</sup> Quartile.

A way to control directly the role of the certificate mark is to calculate the coefficient of partial correlation between two variables (promptness and indicator of academic success), checking a third (school certificate mark). The partial correlation coefficients of promptness with the various indicators utilized (e.g. 2<sup>nd</sup> year enrolment, performance, average mark) are always fully significant. The difference expressed by a delay in enrolment cannot be just explained in relation to individual cognitive capacities. They are correlated but different phenomena. Those with poor secondary school results do not necessarily enroll late.

Classical and scientific “Liceo” high schools in Italy have much heavier study programs (aimed at preparing for attending University) than technical institutes. Whatever, the different quartiles do not offer significant differences. About 40% in all the groups come from high schools (Table 1).

*iv) Promptness and fee level.* The students under examination have to pay their fees in two installments: a first fixed installment (usually the same for all except those exonerated), and a second installment the following spring. The amount of the latter depends on the family income, the size of the household and the availability of grants.<sup>12</sup> In the first year grants clearly depend only on income and not marks or exams. The second installment in the first year is a good proxy for the family's income.

The last column on Table 1 gives the average second instalment payment in the first year of enrolment. The promptest students have higher average values than the other groups, but the difference is not significant. So promptness does not appear to depend on the family's income.

### *§ 2.3 Discussion*

The data shows that the initial enrolment date predicts some important aspects of a student's university career. Those who enroll later than the others have a greater likelihood of withdrawing in the first year, lower likelihood of graduating, the same average mark, but with a lower performance, with fewer credits and fewer exams passed. They also mark up fewer exam failures, which seems contrary to what has been observed up to now, but explainable by the fact that those who enroll late evidently do fewer exams or refuse fewer marks.

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<sup>12</sup> The data on the income is not available.

Those who pay a late penalty to enroll have a greater likelihood of withdrawing and also a far lower performance than those who enroll late, but within the terms. This result is not surprising if we consider that late enrollers are most likely to have tried an admission test in other universities; besides they could be very undecided about enrolling at university. Their lower-than-average performance can therefore possibly be explained by a low motivation. Not passing a test can also be a sign of little study or motivation. Enrolling late before the deadline is similar but not identical to enrolling after the deadline. The aim of the following section is therefore to investigate the nature of the relation between a lack of promptness and performance.

### **§ 3. Hypothesis**

This part of the article presents a series of data useful for understanding better the meaning of promptness in enrollment. Subsection 3.1 reproduces the data from Table 1, excluding however over twenty-two year olds, presumably already mostly workers. Subsection 3.2 uses new data to go further into the idea that a lack of promptness in completing administrative procedure is caused by less interest in university life and low motivation in studying. Subsection 3.3 proposes data which allows slowness in enrolment to be read alongside an individual tendency to procrastinate. Subsection 3.4 presents and discusses the results of a questionnaire on enrolment dates. The results thus obtained are then compared to those emerging from a self-assessment questionnaire given in a later moment to the same students.

#### *§ 3.1 Student ages*

Table 1 shows that the students enrolling near or over the deadline are the oldest (24.1 in Quartile 1 against 20.53 in Quartile 4) and therefore presumably mostly workers or with work experience. Table 2 gives the same data on a sample excluding students over 22. To obtain a still more homogeneous sample, the few students of non-Italian nationality, who usually enroll later because of bureaucratic difficulties, were also excluded.<sup>13</sup> The aim of this analysis is to verify if promptness in enrolling is to attribute only to the fact that late enrollers are older, and are possibly holding down jobs, and therefore experience more difficulties in their university careers just for this.

In Table 2 the enrollment date is still a predictor of different aspects related to both previous career (school certificate mark) and future one. Delayed or late enrollments are

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<sup>13</sup> Anyway there are very few foreign students in the sample.

more likely to stay at university only a year. The performance in the various years continues to be significantly diverse, due above all to the different number of exam passes and credits obtained; the difference in the average mark is of little significance. Neither are there differences in the number and percentage of failures. The graduation mark is lower, especially for those enrolling after the deadline (the difference between the 1<sup>st</sup> and 4<sup>th</sup> Quartiles is not significant). There continues to be an age difference (an extra few months) among those enrolling beyond the deadline.

**Table 2. Average indicators on student careers by quartile of enrolment date, excluding over 22s and foreign students.**

q		Likelihood of withdrawing within first Year	Performance	Number of credits	Number of exams passed	Number of times failed	Average mark	School certificate mark	Liceo	Percentage of failures	Age of enrolment	2 <sup>nd</sup> instalment payment
0	Average	0.59	53.72	59.50	7.92	1.90	24.12	72.00	0.41	0.15	19.62	541
	N	39	12	12	12	20	11	39	39	19	39	29
1	Average	0.32	76.55	84.09	12.26	1.63	24.50	75.34	0.39	0.17	19.57	530
	N	87	65	65	65	67	64	87	87	66	87	79
2	Average	0.27	84.76	95.47	13.44	1.70	24.58	77.68	0.42	0.15	19.38	525
	N	178	142	142	142	146	140	178	178	144	178	166
3	Average	0.19	91.48	101.35	14.07	1.62	25.08	79.47	0.43	0.14	19.22	539
	N	190	165	165	165	169	162	190	190	167	190	171
4	Average	0.14	102.78	114.17	16.19	2.25	24.75	79.94	0.43	0.14	19.30	611
	N	191	161	161	161	170	161	191	191	170	191	179
Total	Average	0.24	90.46	100.62	14.18	1.84	24.76	78.19	0.42	0.14	19.35	552
	N	685	545	545	545	572	538	685	685	566	685	624
Anova		.000	.000	.000	.000	.077	.383	.001	.971	.808	.001	.293
K-W		.001	.005	.001	.001	.112	.348	.035	.916	.780	.009	.269
0-1		.005	.211	.173	.087	.647	.529	.193	.837	.987	.773	.779
1-4		.000	.001	.000	.001	.165	.333	.007	.494	.781	.024	.226

Again there are not differences between the average second instalment among the students of the different groups. So while some differences among the quartiles disappear, the principal effects remain very strong. The partial correlation between promptness and success indicators with a check on the school certificate mark, continues to be fully significant.

Effects on exams do not seem therefore to be due only to the fact that older students enroll later. The subsection below gives other evidence and identifies additional possible explanations of the effect of promptness in enrolling.

### *§ 3.2 Interest and motivation*

There is indeed the possibility of students enrolling close to the deadline because they are undecided about which faculty to choose or the advisability of going to university at all. And as mentioned above, delays may also depend on waiting for the results of an entry test elsewhere. These circumstances may depend on the uncertainty factor. Again delaying in enrolling could, yet, depend on an individual tendency to procrastinate, which could in turn be linked to little motivation. Things get put off because they are not deemed important, and therefore the effort to do them is perceived as great, or because their plus factors are limited. The following subsection proposes a new table which aims at reducing the cases linked to a marked uncertainty about enrolling, i.e. in students who delay enrolling because they are uncertain about which faculty to choose or because they are waiting for test results from elsewhere. In this way it is possible to try to differentiate between the effect of uncertainty and a low motivation delay. Uncertainty about the advisability of trying the university adventure, like delays caused by awaiting test results, should in fact only influence the date of enrolment in the first year. Delay due to a more general lack of motivation or tendency to procrastinate should also occur also in the later years.

#### *3.2.1 Promptness in the second and third years*

Table 3 proposes another comparison between students enrolling with different degrees of promptness. This time the quartiles are defined according to the average promptness in enrolling in the 2<sup>nd</sup> and 3<sup>rd</sup> years.<sup>14</sup> The Table considers again all under 22 nationals enrolled. In this case, those not arriving at the 3<sup>rd</sup> year and therefore making the average of promptness impossible to calculate, have been excluded.

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<sup>14</sup> The idea of using an average is connected both to the need not to multiply indicators and tables and to the fact that such a value contains more information.

**Table 3. Students under 22, enrolled for at least three years, subdivided according to average promptness in enrolment in the second and third years.**

q		Performance	Number of credits	Number of exams passed	Number of failures	Average mark	School certificate mark	Liceo	Average no. Failures	Age at enrollment	2 <sup>nd</sup> instalment fees
1	Average	79.53	88.49	12.75	2.06	24.45	76.04	0.46	0.17	19.34	490
	N	105	105	105	106	104	109	109	105	109	109
2	Average	100.12	112.92	15.83	2.14	24.71	78.00	0.50	0.14	19.22	559
	N	108	108	108	109	107	115	115	108	115	115
3	Average	115.16	127.18	17.79	1.78	25.22	80.93	0.50	0.10	19.20	585
	N	119	119	119	122	119	123	123	122	123	122
4	Average	115.14	125.53	17.43	2.25	25.38	83.10	0.41	0.12	19.24	522
	N	109	109	109	114	109	118	118	114	118	116
Total	Average	102.99	114.07	16.02	2.05	24.95	79.61	0.47	0.13	19.25	540
	N	441	441	441	451	439	465	465	449	465	462
Anova		.000	.000	.000	.457	.021	.000	.424	.003	.370	.349
K-W		.000	.000	.000	.604	.010	.000	.423	.053	.527	.337

The principal effects brought to light in the preceding tables still remain. Those enrolling on average late after the opening date ( $q=1$ ) record a lower performance, fewer credits, fewer exams passed, lower school certificate mark, greater likelihood of exam failures. No differences appear in the total number of failures because these students probably do fewer exams. There are no differences either in the average mark, secondary school typology or age on enrolment and even at the level of the 2<sup>nd</sup> instalment fees.

Promptness in enrollment in the 2<sup>nd</sup> and 3<sup>rd</sup> years has therefore an effect comparable to that of first enrollment<sup>15</sup>. However, this result widens the meaning and possible explanations. We can certainly no longer speak of an uncertainty linked to a desire to familiarize with the environment and the faculty (what can be called a problem of orientation and choice). The factor of motivation now seems prevalent. Delay in dealing with administrative obligations is almost a counterpart of delay in doing exams, and not just partial data linked to initial problems over choice. The following part of this paper in depths the possible persistence of this attitude over time, and therefore attempts to understand if it can be considered an individual characteristic.

Table 4 shows Spearman's correlation coefficients between promptness in enrolling from the first to the eighth year<sup>16</sup> (still using only Italian nationals under 22 at the time of enrolment). Apart from very few crossings (in the seventh or eighth years) the correlations

<sup>15</sup> The partial correlation coefficients, with control of school certificate mark, enrollment date and success indicators, continue to be significant.

<sup>16</sup> There are students who have enrolled eight times, but not many.

are always significant and positive. If students who enroll for the first time late, do so in the following years, it could well be a systematic factor, a kind of personal behavior concealed behind a delay in action.<sup>17</sup>

**Table 4. Spearman's correlation coefficients of promptness in enrolments to different years.**

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Year 1	coefficient	1.000	.197**	.219**	.142**	.125*	.064	.211*	.018
	N	646	507	454	410	364	182	98	45
Year 2	coefficient		1.000	.430**	.353**	.325**	.284**	.299**	.182
	N		508	455	411	365	183	99	46
Year 3	coefficient			1.000	.472**	.361**	.249**	.412**	.217
	N				411	365	183	99	46
Year 4	coefficient				1.000	.380**	.152*	.297**	-.025
	N				411	365	183	99	46
Year 5	coefficient					1.000	.498**	.375**	.357*
	N					365	183	99	46
Year 6	coefficient						1.000	.450**	.347*
	N						183	99	46
Year 7	coefficient							1.000	.559**
	N							99	46
Year 8	coefficient								1.000
	N								46

### 3.2.2 Promptness in enrolling for an examination

Table 5 focuses on promptness in enrolling for individual exams, and correlates it to the promptness taken into consideration up to now. The exam sittings in the Faculty are divided into winter sessions (December-February), summer (June-July) and autumn (September). Enrollments normally open from two months to barely one before the sitting (depending on the session and the date of the sitting within the session) and always close three days before the date of the sitting.

The available data concerns the average delay in enrolling for the exams in the various sittings of summer 2009, autumn 2009 and winter 2010.<sup>18</sup> The value used for appraising promptness in enrolling in the sittings is the time span existing between enrolment/deadline dates divided by the total number of days available for enrolment. It is the same kind of

<sup>17</sup> The phenomenon remains, even if we divide the data according to students' home towns/provinces. Those from Alessandria do not always enroll promptly, while those from outside do not always delay. The data, not included here for reasons of space, is available on request.

<sup>18</sup> Obviously not all the students considered in the initial analyses were still enrolled in 2009/2010, though there is a sample of over 300 students who sat for at least one exam in one of these sittings.

calculus already used in this paper for enrolling in the courses: a value equal to 1 for maximum promptness – first-day enrolment – a value equal to 0 for a last-minute enrolment.

**Table 5. Spearman's correlation coefficients of promptness in enrolments for exam sittings.**

		Average promptness in enrolling for exam sittings
Promptness enrolment in faculty (average 1 <sup>st</sup> and 2 <sup>nd</sup> years)	Correlation coefficient	.156**
	Sig. (2-code)	.005
	N	316
Promptness enrolment in faculty (1 <sup>st</sup> year)	Correlation coefficient	.041
	Sig. (2-code)	.451
	N	333

Those who enroll late for an exam may have decided at the last minute, be habitual delayers or just absent-minded.<sup>19</sup> Deciding late to take an exam may also be connected to issues of capacity and readiness. An insecure or weaker student – slower therefore in getting ready for the exam – will not enroll at once. An early enrolment may be a form of personal commitment or a demonstration of the capacity to program (see, for example, Wertenbroch 1998; Read *et al.* 1999; Ariely and Wertenbroch 2002). This variable seems therefore a valid indicator of motivation, punctuality and capacity for programming.

The average variable in enrolling in the faculty is positively and significantly correlated to the promptness in enrolling for exams.<sup>20</sup> There is no significance instead between promptness in enrolling for the first time and enrolling for exam sittings. This data further suggests that promptness in enrolling in the 1<sup>st</sup> year signals something at least partially different from promptness in enrolling in the 2<sup>nd</sup> and 3<sup>rd</sup> years. Those not enrolling at once in the 2<sup>nd</sup> and 3<sup>rd</sup> years also put things off in other contexts. Although it cannot be totally excluded that the dates for enrolment at the exam sittings and the university may depend on other factors belonging to the personal life of the student, it is reasonable to hypothesize that a lack of promptness may be an individual characteristic that can be probably classified as procrastination.

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<sup>19</sup> Most exams are oral. Late enrollers may have the problems over the time of their examination. They could have to wait a few hours, at times a few days. The delay may yet be seen by procrastinators as a relative advantage, in that they have more study time and can also listen to the questions being asked the other candidates.

<sup>20</sup> The result would be the same if we considered the delays in the individual sittings and not the average.

### § 3.3 Procrastination

If as recently defined by Shu and Gneezy (2010) procrastination is a “tendency to postpone an action to a future date” and furthermore “differences in completion rates for different groups can be used as a proxy for different levels of procrastination” (p. 933), behavior patterns which put off administrative obligations or enrolling in exam sittings can all be considered forms of procrastination. In these cases the enrolment date does not only function as a performance predictor but possibly an objective variable potentially capable of measuring an individual tendency which may explain delays in completing studies.

Behavioral economists also conceive the tendency to procrastinate as a form of preference reversal and describe it via the phenomenon of hyperbolic time discounting (Ainslie 1975, 1992, 2001; Wertenbroch 1998; Read *et al.* 1999; Muraven and Baumeister 2000; Ariely and Wertenbroch 2002; Bénabou and Tirole 2004). However, their studies concentrate on the costs for the procrastinator (i.e. non-maximizing behavior, incoherent preferences) rather than on the causes of such, and they show how self-control mechanisms can improve performance with the aim of reducing costs. Bénabou and Tirole (2004) for example develop a model based on self-commitment mechanisms (personal behavior rules, promises made to self), where the sense of personal esteem plays a determining role in respecting a self-imposed deadline. Wertenbroch (1998), Read *et al.* (1999), Ariely and Wertenbroch (2002), in particular, test the practical efficacy of self-imposed deadlines as mechanisms for overcoming the habit of procrastinating.

However, one of the interesting methods most used by psychologists is to enquire into the promptness in turning in term papers (see, for example Ellis and Knaus 1977; Semb *et al.* 1979; Solomon and Rothbaum 1984; Beswicket *al.* 1988; Effert and Ferrari 1989; Schouwenburg 1992; Senecal *et al.* 1995; Dewitte and Schouwenburg 2002; Howell *et al.* 2006). In this kind of empirical study, students are usually asked to do an assignment (very often for mid-term evaluation), and hand it in within a certain date. Reuben *et al.* (2009) use timing for the application to an MBA as a possible indicator of procrastination. As a variable it presents diverse problems, partly similar to those described above about the date of first enrolment. In spite of this, “later applicants have a higher discount rate” (p. 23) in an experiment on inter-temporal preferences, where participants have to choose between an immediate or delayed advantage. According to the authors in virtue of other empirical evidence, the preference for an immediate recompense is correlated to the tendency to procrastinate. A confirmation is given by the evidence proposed in this paper.

What now follows came out of a similar test carried out on a small sample of students, with



the view of further linking our considerations on enrolment with the literature on procrastination.

During the 2011 seminar “Communications Techniques” (compulsory for students having to obtain credits with seminar activities), 3<sup>rd</sup> year students were asked to write an aphorism on the meaning of Law and send it in. The task was given on 24<sup>th</sup> March and had to be e-mailed in by the 5<sup>th</sup> of April. Table 6 presents the correlation coefficient (and Spearman’s Test) between the promptness in consigning the aphorism (always calculated as the relative distance from the deadline, and therefore equal to 0 for those consigning right at the end and 1 for those consigning at the beginning) and the promptness in enrolling in the 1<sup>st</sup> and average between the 2<sup>nd</sup> and 3<sup>rd</sup> years, average mark and number of exams passed at the end of the third year.

Differently from term papers, this test had no mark and the aphorism could be as little as a quote. Both the cognitive component and the emotive one linked to the fear of being evaluated and failing were therefore reduced to a minimum. It was thus a valid test for testing the tendency to pure procrastination.

**Table 6. Correlation coefficients between the promptness in sending in the aphorism and enrolling in 1<sup>st</sup> and 2<sup>nd</sup> years, average mark and number of exams passed at the end of the 3<sup>rd</sup> year (Spearman’s test).**

		Promptness aphorism	Promptness enrolment 1 <sup>st</sup> year	Average promptness 2 <sup>nd</sup> and 3 <sup>rd</sup> years	Average mark 3 <sup>rd</sup> year	Number exams passed 3 <sup>rd</sup> year
Promptness aphorism	Correlation coefficient	1.000	.217	.437	.292	.373
	Sig. (2-code)	.	0.131	0.001	0.040	0.008
Promptness enrolment 1 <sup>st</sup> year	Correlation coefficient		1.000	.352	.068	.188
	Sig. (2-code)		.	0.012	0.639	0.192
Average promptness 2 <sup>nd</sup> and 3 <sup>rd</sup> years	Correlation coefficient			1.000	.275	.284
	Sig. (2-code)			.	0.053	0.046
Average mark 3 <sup>rd</sup> year	Correlation coefficient				1.000	.502
	Sig. (2-code)				.	0.000
Number of exams passed in 3 <sup>rd</sup> year	Correlation coefficient					1.000
	Sig. (2-code)					.

Promptness in handing in the aphorism was correlated positively with academic success (average mark and number of exams passed) with promptness in enrolling in the 2<sup>nd</sup> and 3<sup>rd</sup> years. The significance with 1<sup>st</sup> year enrolment was very low. The correlation between a delay in sending the aphorism and the average promptness in enrolling is higher than that with the

number of exams and the average mark. Promptness in enrolling does not therefore simply act as a proxy for capacity.

The result is in its way very strong, in spite of the reduced dimension of the sample (51 observations, all students were third year, in line with their studies, regularly enrolled and under 22).<sup>21</sup> The correlation with the average enrolment date confirms that this indicator also picks up, at least partly, student promptness and therefore the tendency to procrastinate. The initial enrolment, instead, is less likely to signal this aspect in that it is conditioned, by various factors, especially uncertainty over enrolling.

Our results thus let us hypothesize that the tendency to delay doing a specific task may be linked to inter-temporal preferences and problems in putting off gratifications. This idea would be in line with what emerges from some experiments carried out by behavioral psychologists (Thaler and Shefrin 1981; Prelec 1989; Hoch and Loewenstein 1991; Loewenstein and Elster 1992; Tversky and Shafir 1992; Bargh and Gollwitzer 1994; Loewenstein 1996; Kirby 1997; Laibson 1997; O'Donoghue and Rabin 1999, 2001). It is also confirmed by neuropsychological experiments. Khaneman (2003) and McClure *et al.* (2007) have shown the intentions over a long period (promises about the future) are formed in the prefrontal cortex but can be easily supplanted by the impulses generated by the limbic system which is particularly sensitive to the concrete stimuli coming from immediate gratifications.

This analysis clearly shows that procrastination and performance are related. Thus, procrastination could be conceived as a personal characteristic of the individual.

It is consequently possible to conjecture that the possibility of freely choosing the examination sitting has the undesired collateral effect of favoring procrastination, up to the point of effecting negatively overall performance and allowing students to go beyond the normal number of years. Too much freedom maybe posited as having a negative effect.

### *§ 3.4 What's in a date?*

This section extends the analysis conducted up to this point and presents the result of a questionnaire administered to a sample of the students under examination, in September 2010. The questions centered on the date of first enrolment. The students were all enrolled in the 3<sup>rd</sup> year, so that though their answers could well have been conditioned by the way their academic careers had gone, they still prove useful for our purposes.

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<sup>21</sup> The seminar was also open to 4<sup>th</sup> and 5<sup>th</sup> year students, who have been excluded from the analysis in order to have as homogeneous a sample as possible. In adding them and widening the sample to 68 observations, the results remain the same.

The same questionnaire was also answered by 1<sup>st</sup> year students in 2010, who were not included in the above analysis. Before focusing on the students of the sample evaluated up to now, it is appropriate to make an overall comparison. 263 students answered the question, 85 of which in the first year. Of these 24% declared they had tried an admission test in another faculty. Only 9% of the students in later years reported having sat for entry tests in other faculties. This statistically significant result suggests that many that sit a test do not enroll beyond the first years. The result confirms some of the hypotheses put forward above and induces thought on their direct effect on other limited-access faculties, in addition to the need to improve orientation activities.

The students making up the narrow sample used for the successive analysis (therefore all under twenty-threes) are 96.<sup>22</sup> The questionnaire contained many items concerning the first enrolment date. This information is correlated with the real promptness in both the 1<sup>st</sup> and in the average between 2<sup>nd</sup> and 3<sup>rd</sup> years. For the sake of simplicity the following tables highlight significant 99% data with three asterisks, 95% with two and 90% with one (always Spearman's test).

Before analyzing the answers, it is useful to analyze on this sample the correlations between the promptness indicators and the academic career evaluated via average mark and number of exams passed.

**Table 7. Correlations between promptness indicators and academic career evaluated via average mark and number of exams passed.**

	Promptness 2 <sup>nd</sup> and 3 <sup>rd</sup> year average	Promptness 1 <sup>st</sup> year enrolment	Average mark	Number of exams passed by the end of the 3 <sup>rd</sup> year
Promptness 2 <sup>nd</sup> and 3 <sup>rd</sup> year average	1.000	.656***	.245**	.418***
Promptness 1 <sup>st</sup> year	.656***	1.000	.008	.074
Average mark	.245**	.008	1.000	.604***
Number exams 3 <sup>rd</sup> year	.418***	.074	.604***	1.000

The average promptness in the 2<sup>nd</sup> and 3<sup>rd</sup> years is correlated positively and significantly to the average mark and number of exams passed. Promptness in first enrolling is not, however. Differently from in the other tables above, the sample in this case is composed of students enrolled in the 3<sup>rd</sup> year and who attend lectures. In this group delay in first enrolling clearly loses its predicative force, which is probably strong only when the entire group of freshers is considered. Late 1<sup>st</sup> Year enrollers do not usually continue with their studies and presumably

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<sup>22</sup> Not all the students answered all the questions, so that some cells contain fewer observations.

were not in the room to answer this questionnaire.

Table 8 considers the answers to Questions 1 and 2. Question 1 asks explanations for the delayed enrolment and Question 2 how far the choice of faculty was already decided at school level (see Box 1 for the complete questions).

**Box 1. Questions 1 and 2 in the questionnaire.**

D1. About the date of first enrolment, how much weight did the following factors have, give a mark from 0 (not at all) to 10 (quite right) to each affirmation (the label before the question indicates the variable used in the following tables):

- D\_IND\_ISC you were unsure about enrolling in university
- D\_IND\_FAC you were unsure which faculty to choose
- D\_VACANZA you were still on holiday
- D\_TEST you tried a test in another faculty
- D\_CALMA there was no reason for hurrying
- D\_ALTRO you did not have time because of other commitments
- D\_CODE you wanted to avoid queuing
- D\_CONO you wanted to begin getting to know the faculty
- D\_RIFLET you wanted to think over your choice
- D\_SE\_LEZ you wanted to attend some lessons
- D\_MEG\_P once you had decided, you had just as well enroll

D2. Evaluate with mark for 0 (not at all) to 10 (quite right) the following affirmation:

D\_SUPER I decided to enroll in the Law Faculty before finishing upper secondary school

The values of the answers are considered in relative terms on the total of the answers so as to eliminate individual diversities in the order of magnitude of the answers (the 7 given by a person who gives 6 to all the rest is one thing, another if given by someone who gives all 8s). Table 8 ignores correlation coefficients between the various answers to concentrate on the correlation with the indicators of promptness and academic success.

**Table 8. Correlation of the answers to Question 1 on the date of first enrolment with the indicators of promptness and academic success.**

	Promptness average 2 <sup>nd</sup> and 3 <sup>rd</sup> year	Promptness 1 <sup>st</sup> year	Average mark 3 <sup>rd</sup> year	Number of exams passed 3 <sup>rd</sup> year
di_ind_isc_r	-,011	-,046	-,067	,039
d_ind_fac_r	-,027	,113	,039	-,039
d_vacanza_r	-,107	,027	,008	-,150
d_test_r	-,134	-,181	,027	-,072
d_calma_r	,008	-,012	,058	,136
d_altro_r	-,227**	-,123	-,170*	-,149
d_code_r	,246**	,280***	,167*	,216**
d_cono_r	,051	,254**	,040	,113
d_se_lez_r	-,240**	-,090	-,101	-,121
d_meg_p_r	,114	,042	-,078	-,136
d_riflet_r	,001	-,073	,145	,113
d_super	,282***	,210**	-,072	-,041

Although it is not possible to identify cause-effect relations here, variables moving in the same direction can be observed, with the limits common to all non anonymous surveys (chance answers, limited interest, desire to cut a good/not bad figure with the lecturer, attempts to lie to self, etc.) Students declaring that their first enrolment date was due to other commitments, enroll late in the 2<sup>nd</sup> and 3<sup>rd</sup> years (but not in the first). They have a lower average mark, but pass as many exams as the others. They may well be holding down jobs (eliminating over 22 year old does not mean necessarily eliminating all those in the workforce). They could also be seasonal workers (a common occurrence in the Alessandria area), which has a limited impact on their success (mark slightly lower with a difference which is not very significant).

There is no correlation between delay in first enrolling and possible uncertainty over choosing the university (di\_ind\_isc\_r) or faculty (di\_ind\_fac\_r). Students may not want to declare it openly, partly because they could have forgotten their uncertainty by the third year. Those who were uncertain are probably no longer at university. Those who declare they had already made up their minds at secondary school enroll quickly. This is an obvious result, insofar as uncertain people probably put off enrolment. It does, however signal that uncertainty is an important cause influencing promptness - an obvious cause-effect relation.

Far less predictable is the fact that students that have already decided at secondary school level (d\_super) go on to enroll promptly also in the 2<sup>nd</sup> and 3<sup>rd</sup> years. This suggests that those who are convinced about doing a certain profession are more motivated to enroll, but this has no effect on their average mark or their number of successful exams. Promptness could also have a non-cognitive component, from which it is at least partially independent ("I want to be

a lawyer even though I am no genius”). Promptness seems to be, again, a measure of motivation.

Those who say that they wanted to get to know the faculty quickly (d\_cono\_r), did indeed enroll early. The more powerful variable, in that it is correlated to all four indicators considered (though only very weakly with the mark) is the desire to avoid queues (d\_code\_r). To avoid queues, you have to enroll early. It’s a known fact. This explanation is very important and it is correlated to promptness in enrolling in all years, but especially to the number of exams passed and even to the average mark. It seems therefore that the answers to this variable pick up in some way an individual desire to be quick or, mainly, not to waste time.

In this questionnaire, the students were also asked for a self-assessment in four dimensions (box 2). One was their tendency to put things off. It is a common procedure in empirical psychological analysis to ask more or less directly how much an individual tends to procrastinate (the question is often asked in reference to specific situations: “I tend to put off unpleasant tasks”, for example). In this case, too, the answers are evaluated in relative terms (evaluation averaged on the four sub-questions).

**Box 2. Question on self-assessment of some personal characteristics.**

Give a mark between 0 (not at all true) and 10 (very true), to the following affirmations about you (the label before the question indicates the variable used in the following tables):

- I’m instinctive
- I tend to procrastinate
- I reflect a lot over things
- I’m worried about my future

Table 9 proposes the correlations of the answers to these questions with the indicators of promptness and academic success.

**Table 9. Correlation between the answers to Question 2 on the personal characteristics with indicators of promptness and academic success.**

	Promptness average 2 <sup>nd</sup> and 3 <sup>rd</sup> years	Promptness 1 <sup>st</sup> year	Average mark 3 <sup>rd</sup> year	Number of exams 3 <sup>rd</sup> year
I'm instinctive	,216**	,056	-,105	-,069
I procrastinate	-,223**	,022	-,276***	-,298***
I reflect	-,009	-,056	,264***	,176
I'm worried	,074	-,117	,164	,211**

The tendency to procrastinate has negative effects on the average mark and number of exams passed. This is a well known result in the psychological literature, and is confirmed by the present data which also shows that procrastination is negatively correlated with promptness in the 2<sup>nd</sup> and 3<sup>rd</sup> years but not with promptness in the 1<sup>st</sup>. Promptness in the 2<sup>nd</sup> and 3<sup>rd</sup> years is correlated also with being instinctive (in the common language a instinctive person is less prone to reflect and therefore quicker to take a decision).

Lastly, Table 10 gives the correlation between the variables of promptness and academic success with satisfaction for enrolling in the faculty in the answer to the simple question: "Are you satisfied with your choice of faculty?"

**Table 10. Correlation between the answers to the question of satisfaction for the choice of faculty and academic success.**

	Promptness average 2 <sup>nd</sup> and 3 <sup>rd</sup> years	Promptness 1 <sup>st</sup> year	Average mark 3 <sup>rd</sup> year	Number exams 3 <sup>rd</sup> year
Promptness	0,155	0,042	0,377***	0,429***

Satisfaction is not correlated to the enrolment date, but, as is predictable, to the performance indicators. Thus, enrolment dates do not measure satisfaction. A late enrolling student is not less satisfied than a prompt one.

## Conclusions

This study had a very simple aim, that of studying the relation between student promptness in carrying out their administrative duties and their academic performance. Promptness in enrolling is correlated with diverse indicators of performance as well as the final degree mark. The date on which students enroll reveals and reflects a series of non-cognitive factors (like not much motivation or interest in their studies and a tendency to procrastinate) which can go on to influence their success at university.

A first result therefore is the availability of a new objective and immediate predictor of

university success, available from the moment in which an enrolment is made, eventually helpful for tutoring and backup services. As in fact has been shown, the effect of promptness in enrolment is quite robust even changing the way the sample is selected. The validity of this indicator no doubt needs further confirmation from other universities, but, indeed, the enrolment date has the same effect on student performance in the Economics Faculty of Milano Bicocca (data are available on request).

Various factors can explain the relation between enrolment and success. Considering the overall data of first enrolment, the predictive capacity of promptness seems to be explainable by the fact that it is an indicator of student available time, interest and motivation in the course and in the university studies in general. With promptness in the 2<sup>nd</sup> and 3<sup>rd</sup> years, the persisting effect calls for further hypotheses closer linked to individual behavior patterns. The present study has offered a series of initial ideas, which per force need further testing and discussion.

Delay in enrolment signals also uncertainty and poor motivation, and they are clearly linked to academic procrastination: students put off acting not so much out of anxiety or fear of failure (two of the causes of procrastination most investigated in the literature) but far more likely because of a substantial lack of motivation in the studies to undertake, not to mention an individual tendency to put things off.

In analyses of this type it is indeed very difficult to identify the direction of the cause-effect. Students might enroll late in the 2<sup>nd</sup> year, for example, because they have been put off by their 1<sup>st</sup> year performance. Whatever, the data lead us to hypothesize that promptness in enrolling has a clear exogenous component, i.e. that it partly conditions rather than is conditioned by academic performance, and that for three reasons.

Promptness in first enrolling (which is obviously not endogenous) is a useful predictor of student academic performance. The simple fact that there exists a significant correlation between enrolments in all years shows by itself the existence of a systematic factor at the basis of such behavior patterns. It emerges from the questionnaires that promptness in enrolling is not correlated with satisfaction in being in the faculty. That means that despite less brilliant results, late enrollers were not less satisfied with their studies. Satisfaction indicates more than the mark the way in which students perceive their university career (see Castellani, Di Giovinazzo and Novarese 2010). If promptness were endogenous, the correlation between enrolment and satisfaction would have to be strong between the mark and promptness itself. But it is not.



Finally, the proposed results suggest possible normative implications. The Italian system leaves total freedom in the organization of university commitments, which could encourage students to be not so quick off the mark. In order to improve academic performance, it might therefore be appropriate to overhaul the organization of studies on the line of Anglo-Saxon models, where students hand in mid-term papers and have a final exam when the course ends. A system with more rigid and cogent deadlines in the teaching part might correct individual behaviors which work against the students' own interest.

In the same perspective it seems that problems over choosing degree courses lead to higher costs and need to be better tackled. All the students who enroll are evidently interested in the faculty. The time taken for first enrolment indicates in such a case the strength of that interest and motivation to study. In this case less interest probably becomes the cause but perhaps the effect too of little motivation and therefore goes to explain a complicated and not very successful university experience.

The analysis proposed in this study developed a useful proxy for procrastination. It also offered a useful means for distinguishing between the case where the search for information is aimed at refining the decision-making process and that in which, on the contrary, the procrastinating behavior is simply a means for taking time and putting off making a decision or taking an action.

Lastly, the present results lend themselves to a reading that goes beyond the limited area of the university. Promptness in enrolling could be used for prediction in other contexts, too. Those who delay applying for a job are less convinced? Those putting off signing contracts are more doubtful? Those who make a subscription later are less interested in the product/service? Further analysis need to be developed.

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