The Factors of Differential Grading Standards across Academic Units

Application to the Learning Analytics Fellows Program

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Abstract

The proposed research is the second phase of the project Determinants of Students' Choices of Undergraduate Majors and Programs' Strategies started under this program’s aegis in Spring 2016. The long-term agenda of this research is to identify factors contributing to IU undergraduate students' choices of their major concentrations, and especially to infer the actions and policies of major programs in effecting those student decisions. During the first phase of the project we focused on examining academic units’ grading standards as the instruments potentially aimed at attracting and retaining appropriately prepared students. Specifically, using a rich IUB Student Learning Analytics data set we established statistically significant negative relationship between national level average mid-career salaries associated with areas of study and grading standards in corresponding academic studies at IUB, after controlling for effects of student and class characteristics. This allowed us to conclude that grading standards may to an extent play a compensatory role in attracting students to programs which offer comparatively lower monetary rewards in the job market. In the next phase of the project, we will employ the experience gained in organizing the data set and the initial results to obtain broader and more sophisticated understanding of the evolving grading standards across IU academic programs. Specifically, we will focus on the dynamic interplay between the changing sizes and compositions of the programs’ student bodies and the grading standards the programs appear to employ strategically to affect their size and composition. In particular, we plan to demonstrate that the programs which have been growing in the recent past are less likely to lower their standards, and vice versa. We will then explore the longer-term effects of lowered grading standards on the perceived value of programs measured by the average quality of their students on the programs’ future growth and quality.
Project Description

The proposed research is the second phase of the project *Determinants of Students' Choices of Undergraduate Majors and Programs' Strategies* started under SLA Fellows Program’s aegis in the spring of 2016. The long-term agenda of this line of our research is to identify and quantify the factors contributing to IU undergraduate students’ choices of their major concentrations including the changes in students’ choices in the course of their studies. Our research agenda is especially aimed at inferring the actions and policies of major programs in effecting student decisions.

During the first phase of the project we focused on examining academic units’ grading standards as the instruments aimed at attracting and retaining their target student population. Specifically, we explored statistical relationships between national level data on mid-career salaries associated with areas of study and grading standards in corresponding academic units at IUB, after controlling for effects of student and class characteristics. The SLA program enabled us to use a uniquely rich IUB Student Learning Analytics data, assembled by BAR, which spans the period from 2005-06 to 2015-16, tracks 86,681 students who were enrolled at IUB over this period. Using this data, which contains detailed information about student academic and demographic characteristics, as well as characteristics of classes taken by these students, we established that the relationship between national mid-career average salaries associated with areas of study and grading standards in corresponding academic units is negative and strongly statistically significant, after controlling for effects of student and class characteristics, both across major programs at IUB, schools at IUB, as well as majors within select schools. These results suggest that academic units use grading standards (and likely other academic requirements) as strategic tools in pursuit of their goals, which combine the concerns about the quality and quantity of their students in their major. Specifically, this implies that grading standards may play as a compensatory role in attracting students to programs which offer comparatively lower monetary rewards in the job market.

The most valuable outcome derived from the first phase of the project has been the experience we gained in organizing this very large data set and applying initial statistical analysis to it. This experience has allowed us to develop better insights in the potential of this data and the most effective approaches to extract insights into the relationships between academic policies and student choices and outcomes. Our use of students’ earnings expectations (based on Payscale information in particular) to explain the competition between departments/programs for students has essential limitations: such earnings information is only available for a subset of majors and, furthermore, the national average figures provided by Payscale may require substantial adjustment when applied to corresponding IU programs depending, for instance, on their national rankings. More broadly, to the point of our goal to reveal strategic motives behind the evolving grading standards applied by departments and programs, such unit strategies appear to respond to changing dynamics in student demand as it affects the size and composition of student bodies in these programs. In other words, whatever may be the external motivation behind students’ changing preferences (such as monetary and other rewards of respective post-graduation careers), departments’ strategies regarding curricular and grading standards can be effectively detected by observing their responses, over time, to the changes in student demand for their and competing majors.
Thus, our next steps are to

(i) Measure the strength of competitive strategic motive behind programs’ evolving grading standards based on the intrinsic dynamics of the programs’ sizes. In particular, we aim to demonstrate that the programs which have been growing in the recent past are less likely to lower their standards, and vice versa. Such approach will offer a richer, more complete, and clearer analysis of the factors behind the evolution of the cross-unit landscape of curricular and grading standards but carries substantial econometric challenges such as reverse causality (e.g., the changes in grading standards may be in turn responsible for the past changes in the size and quality of student body), which we expect to overcome by using appropriate econometric techniques.

(ii) A further advance in our statistical analysis will be switching to treating academic programs, rather than individual students, as units of observation, whereby GPA averages and other moments in grade distributions in the programs are treated as program characteristics. The reason this is essential: when cross-program relationships are examined with outcomes of individual students as units of observation, this automatically gives higher weight to larger programs and thus biases the regression analysis accordingly. It is thus appropriate to treat programs and average student GPAs in them as units of observation with, as already mentioned, program sizes serving among the explanatory variables as factors affecting programs’ motives to change grading standards.

(iii) An additional ambitious goal of this further analysis is the potential measurement of a positive feedback effect of the above described strategy of using grade inflation to attract students. Such effect can stem from a negative impact of lower standards on the perceived value of a major measured by the average quality of its graduates. Thus defined declining value of a major may further weaken its attractiveness to students regardless of the intrinsic high value possessed by the underlying academic discipline, thus undermining the strategy aimed at attracting more students to the major.

These expected results of the second phase of our research project will make significant novel academic contribution to the economics of higher education. We also expect them to help inform campus and unit administrators about the implications of curricular policies as they affect student choices and outcomes, including retention. This may ultimately contribute to improving efficiency of the policies from the standpoint of institutional and student costs.