Engaging a Diverse Set of Students in Healthcare Economics

Bruce Brown, Cal Poly Pomona

Objectives

i) Evaluate a student evaluation scheme designed for a diverse group of students (including both majors and non-majors, as well as some masters level students) in a Healthcare Economics class taught Summer 2010.

ii) Examine the relationship between: student choice of evaluation weights and individual performance; as well as major and individual performance.

iii) Analyze the relationship between student risk attitudes and choice of evaluation weights.

Course

One requirement for all Cal Poly undergraduates is an "upper division synthesis" course, combining Social Science with Physical Science. "Industry Studies" has the following official description:

Examination of the historical, scientific, technological, and economic developments of a selected industry. Domestic and international market analysis. Impact of regulations and laws on industry operations. Selected industries may include: health care, entertainment, wine, computer systems, steel, or biotechnology.

Although classified as an economics course, the description indicates it be taught in an interdisciplinary manner with intermediate microeconomics *not* a prerequisite.

In Summer 2010, this course was taught over a condensed quarter schedule: five weeks with two, four-hour meetings per week.

Of the 25 enrolled students, 4 were graduate students, 13 undergraduate economics students, and 8 non-economics undergraduate students. Some students had a pre-existing interest in the topic, but others took this course because it satisfied a requirement and fit into their schedule.

Evaluation of Students

In designing a grading scheme for this course I considered results from the scholarship of teaching literature and resolved to: i) include multiple instruments, as suggested by Walstad (2001) and Sewell (2004); and ii) consider student input regarding how they would be evaluated, as suggested by Bain (2004) and Lang (2010).
Students were required to chose one of four weighting options for grade determination:

Possible Weights	A	B	C	D
1) Quizzes	40%	80%	20%	0%
2) Comprehensive Final	40%	20%	80%	80%
3) Paper or Presentation	20%	0%	0%	20%

Nine students choose option A; thirteen option B, three option C, and no one choose option D. Note risk is generally in the order A < B < C.

Major, Weights, and Performance

i) Economics MS students did better than undergraduates, and economics majors did better than non-majors

ii) Students who chose to write a paper or make a presentation earned lower average scores on quizzes and final exam.

iii) Among students who chose not to do a paper or presentation; those who placed greater weight on the quizzes, on average, did much better on the quizzes and slightly better on the final exam.

iv) Students who reported less risk-averse behavior on a survey, tended to chose more risky grade weighting schemes (not choosing to do a paper or presentation, and putting more weight on the "high stakes" final exam).

Cal Poly Students at Graduation 2010

Conclusions

i) Economics majors had an advantage over non-majors in an upper-division healthcare economics course, and graduate students had an advantage over undergraduates. Some method to ameliorate this disparity may be appropriate. Perhaps a scheme with more weight on the paper or presentation should be considered.

ii) Students reporting less risk-averse behavior also tended to chose more risky grade weighting schemes.

iii) Relative performance on quizzes versus the final exam was related to the students choice of weighting scheme. One may speculate whether students placing greater weight on the quizzes studied more for them, and/or if those students who knew they tended to do poorly on quizzes choose the weighting scheme placing less weight on them.

Risk Attitudes Survey

I administered an optional survey regarding students risk behavior in conjunction with their chose of grade weights. 23 of the 25 students responded (the two that did not respond were non-majors who chose option B for grade weights). The eight questions asked and analyzed were:

I) I have been to a gambling city like Las Vegas:
1) Never; 2) 1-2 times; 3) 3-5 times; 4) 6-10 times; 5) more than 10 times

II) I have purchased lottery tickets for myself:
1) Never; 2) 1-2 times; 3) 3-5 times; 4) 6-10 times; 5) more than 10 times

III) I have purchased lottery tickets as a gift:
1) Never; 2) 1-2 times; 3) 3-5 times; 4) 6-10 times; 5) more than 10 times

IV) I have gambled with my friends with money in a game such as poker or craps:
1) Never; 2) 1-2 times; 3) 3-5 times; 4) 6-10 times; 5) more than 10 times

V) I have bet money on a sporting event:
1) Never; 2) 1-2 times; 3) 3-5 times; 4) 6-10 times; 5) more than 10 times

VI) If I invested 50% of my wealth in a stock market index fund, and the market fell 10% in one day, over the next month I would most likely _____ from this fund:
1) remove my entire investment; 2) remove 0-50%; 3) remove 50-100%; 4) no change; 5) invest more

VII) When driving on a freeway I typically drive:
1) below the speed limit; 2) near or at the speed limit; 3) 1-5 MPH above the limit; 4) 6-10 MPH above the limit; 5) 11 or more MPH above the speed limit.

VIII) In purchasing a car, the safety rating of the care is:
1) the most important factor; 2) very important; 3) of some importance; 4) of little importance; 5) of no importance.

To develop a numerical summary of risk attitude, I added the numerical scores for each student. Note the maximum point total was 40, with a higher total indicated higher risk tolerance and less risk-aversion.

Simple Regression Results

A regression of the measure of risky behavior (with values 1-40, higher numbers corresponding to riskier behavior) on two qualitative variables indicating choice of weighting scheme, indicated those reporting more risky behavior tended to choose more risky weighting schemes. Specifically, relative to weight scheme C (20 % on quizzes and 80% on the final exam), those choosing weight scheme B (80 % on quizzes and 20% on the final exam) had an estimated risk score 6.6 points lower; and those choosing weight scheme A (40 % on quizzes and 40% on the final exam and 20% on a paper or presentation) had an estimated risk score 9.4 points lower. Both estimates were significant at the 5% level for a one-sided hypothesis test.