Do Part-Time Undergraduates Respond Differently to Educational Costs than Full-Time Undergraduates? Evidence from a Small Undergraduate University

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Many small U. S. colleges and universities rely on tuition revenue as their main source of income. Indeed, many small institutions of higher education receive more than 90% of their revenue from tuition. As the number of high-school graduates began to decline in the late 1980s, many colleges and universities looked to enroll more nontraditional students as a way to supplement their revenue stream. Most of these nontraditional students attend college on a part-time basis. The purpose of this study is to determine if part-time undergraduate students respond differently to educational costs than do full-time undergraduate students.

DESIGN OF THE STUDY

The design of this study investigates the relationship of full-time enrollment to full-time tuition, and the relationship of part-time enrollment to per-credit hour costs. One of the difficulties in establishing these relationships is to hold constant other factors that may affect enrollment numbers. These include factors such as the amount of tuition assistance and financial aid that students receive, the income levels of the students' families, new program development, and the dollar amount of advertising the university puts into the student recruitment effort. The study focuses on the response of both full-time students and part-time students to changes in educational costs to see if any difference exists. The greater this response is, the more tuition, or price-sensitive, the demand is. The relevant literature on this topic suggests that full-time enrollment is price-inelastic, that is, that full-time enrollment is not very price-sensitive. By extension, it is expected that part-time enrollment is also not very price-sensitive.

To conduct the study, data for the 20-year period from 1995-1996 to 2014-2015 was collected on full-time tuition, full-time enrollment, per credit hour costs, and part-time enrollment for a small, mid-western university from the university's registrar's office and business office. Over this 20-year period, full-time tuition increased by about 4-5% per year, whereas the per-credit hour costs rose at about a 3% clip a year. Despite the smaller increase in costs, the part-time enrollment fell nearly every year, from a high of 813 part-time students in 1995-1996 to a low of 322 part-time students in 2014-2015. Part of this drop in part-time enrollment is due to the reduction in the advertising budget and reduction in staff to recruit part-time students. Full-time enrollment, on the other hand, increased by 75% over this same time period. The

university did put more monies into its advertising budget and hired more staff to recruit full-time students over this time period.

THE MODELS USED

The model for the full-time students considered two of the more important determinants of full-time enrollment: discounted tuition for full-time students, that is, full-time tuition after adjustments for scholarships and financial aid, and income. The model for the part-time students explained the part-time enrollment on the basis of per credit hour costs, income, and a dummy variable to capture the use and nonuse of a director for the part-time student program during this 20-year period.

A more explicit form of the full-time student model is:

$$E_{FT} = a + b\ C_{FT} + c\ I \quad (1)$$

Where: E_{FT} = annual full-time enrollment at the university

C_{FT} = discounted full-time tuition costs per year, and

I = income.

Student demographic data at the university show that roughly three-fourths of the students are in-state, and the other one-fourth come from a nearby state. Thus, the income measure used was a weighted average of family incomes for the two states where most of the students come from. State income data were obtained from the Bureau of Economic Analysis website (www.bea.gov) with a weight of three-fourths attached to in-state income data and a weight of one-fourth used or the nearby state data.

A more explicit form of the part-time student model is:

$$E_{PT} = d + e\ C_{PT} + f\ I + D \quad (2)$$

Where: E_{PT}= annual part-time enrollment at the university

C_{PT} = per-credit hour costs for part-time students

I = income, and

D = a dummy variable, with D = 1 if a director of the part-time student program exists and D = 0 if there is no director.

RESULTS AND IMPLICATIONS OF THE STUDY

The regression results for the full-time model showed the following:

$$E_{FT} = -118.646 - 0.00214\ C_{FT} + 0.061776\ I$$

The signs on the independent variables (C_{FT} and I) are as expected, with increases in tuition costs having a negative effect on full-time enrollment and increases in income with a positive effect on full-time enrollment.

For the part-time model, the regression results were as follows:

$$E_{PT} = 1202.277 - 1.91446\ C_{PT} + 32.88629\ I - 0.00386\ D$$

Again, the signs on the independent variables (C_{PT}, I and D) are as expected, with increases in per-credit hour costs having a negative impact on part-time enrollment, increases in income with a positive effect on part-time enrollment, and the absence of a director for the part-time student program having an adverse effect.

To estimate the response of full-time enrollment to tuition costs and the response of part-time enrollment to per-credit hour costs, the point price elasticity of demand was used in this study. This approach incorporates the use of the first derivative of the dependent enrollment variables in each of the above regression equations with respect to its corresponding cost variable (C_{FT} and C_{PT}). This derivative is then multiplied by a ratio of a selected combination of cost-to-enrollment, usually at the midpoint of the data set. The point price elasticity of demand for the full-time model was only -0.01, whereas the point price elasticity of demand for the part-time model was -0.78.

Our results found a higher response of part-time students to educational costs than full-time students. Both groups did exhibit a demand that was price-inelastic, that is, both groups had price elasticities of demand which were less than one in absolute value. However, for the part-time students, the price elasticity of demand was 0.78, while the full-time students had a price elasticity of only 0.01. Other studies done on the price elasticity of demand focus on the full-time student response and showed a range of values, averaging about 0.2, which is somewhat higher than my results. These results imply, that other things constant, a 10% increase in the full-time tuition reduces full-time enrollment by only 0.1%. A similar 10% increase in the costs per credit hour to part-time students reduces part-time enrollment by 7.8%. From a revenue standpoint, with both groups showing inelastic demands, university revenues would rise with increases in educational costs to both full-time and part-time students.

This study also suggests that university administrators consider the enrollment ramifications of increases in educational costs to their various student populations. Because part-time students respond more to educational costs than full-time students, increases in per-credit hour costs will increase university revenues very little. Increases in per-credit hour costs should thus be kept to a minimum. Larger increases in full-time tuition may generate more revenue for the university.

Future research should consider such factors as the tuition costs of the university's main competitors for both full-time and part-time students to gauge a substitution effect. Additional factors, such as the advertising expenditures by the university and the university's main competitors for both full-time and part-time students may yield interesting results for computing the advertising elasticity of demand, which is the responsiveness of enrollment to advertising expenditures of the university.