

# *A Profile of Students Majoring in Economics*

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## **Abstract**

In addition to creating a profile of (our) students who choose to major in economics, we address the issue of whether students who transfer in to a four-year institution from two-year community colleges are as well prepared to complete the relatively rigorous coursework of the economics major. Perhaps surprisingly, we find that students transferring in from two-year institutions appear to be as well prepared, and complete their students in a superior academic manner compared to those students who conducted their entire academic program in a four-year institution.

## **Introduction and Purpose of the Paper**

During tight fiscal periods, more and more state legislatures are trimming budget allocations to public colleges and universities of higher learning. This is particularly true in the state of North Carolina. Over the past decade, public funds earmarked for the 16 campuses in the North Carolina system have declined from 52% of a student's total educational bill to 39%. To make up the declining revenue, the various campuses throughout the state have sought to recoup the loss of dollars by increasing student tuition and fees. During this same period, students have seen their educational bill rise by 32%. While it is usually the case that costs of education are typically borne by parents or other family members, it is not atypical for the student to participate to some degree with easing the burden of higher costs. Those individuals, parents or students, who find themselves saddled with greater and greater expenses begin to seek alternative ways in which to meet the increasing demands placed on their pocketbook. This is particularly true during poor economic conditions.

One option that appears to offer some relief lies with community colleges and their substantially lower tuitions and fees. Many states, and North Carolina in particular, have articulation agreements between community colleges and public four-year institutions. These agreements simply stipulate that four-year institutions of higher learning are willing to accept the courses and transcripts taken by individuals who matriculate between the two educational units. It is not unusual for some universities, and particularly schools of business, to find almost half of their enrollment has matriculated from two-year institutions. For example, at the university that makes up the data for this study, 47% of its current business students have transferred from community colleges (transferring in, on average, approximately 36 semester hours). Ten years ago, the figure was below 35%. Clearly the trend has grown and it is likely to grow in the future. The question that concerns many faculties is the quality of instruction that students receive at two-year schools.

It is a fact that most instructional staff in these schools has achieved academically little more than a master's degree. It is not unusual for the individuals to provide instruction in areas in which they are not trained or who have only limited knowledge. Further, it is not uncommon for instructional staff to be adjunct in nature and have no allegiance to the school or to the profession. Herein lays the issue: are students coming from two-year institutions adequately prepared to meet the rigor associated with course beyond the introductory level? It is this question the authors wish to address.

The purpose of this paper has two dimensions:

1. To address the question alluded to above. Specifically, are transfer students from community colleges, which choose to major in economics, as adequately prepared to excel in 300- and 400-level courses as those entering as freshmen?
2. To offer a profile of students majoring in economics as suggested by the paper's title

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## Data Set, Descriptive Statistics, and Statistical Tests

The data set is from a mid-size, accredited North Carolina University, accredited by the Association to Advance Collegiate Schools of Business (AACSB), and represents 101 graduating seniors majoring in economics from the years 1988 to 2001. The data are analyzed by students who come to the university as freshmen (n=74) and stay until graduation and students who transfer from community colleges (n=27) and remain until graduation. The data is part of a larger set of information gathered by the university's Office of Institutional Research. Relevant variable selected for analysis and comparison include: Sex (male/female), Entry Type (freshmen/transfers) Verbal SAT score (VSAT), Math SAT score (MSAT), High School Rank, High School Average, Predicted GPA, and Graduating GPA. It should be noted, however, that the university does not require SAT scores for transfer students, average high school rank, average high school grade point average (GPA) and predicted graduating GPA. The relevance of these facts become important later in the paper as it limits the size of the sample when some statistical models are conducted.

### Descriptive Statistics of Students Majoring in Economics

Table 1 below provides a snap shot of two sets of students: those entering as freshmen and those who transfer from a two-year (community college) institution. The data are for the years 1988 to 2002 for those students majoring in the BS degree program in economics. The number of students for both sets total 101. It should be noted that economics is housed in an accredited AACSB program and not in the liberal arts. It is best to interpret all succeeding tables by interpreting "Entering Freshmen" as entering freshmen that ultimately chose economics as a major, and "Transfer Students" as students coming from a two-year college who likewise ultimately chose to major in economics.

The table provides an interesting starting point for discussion. The average SAT score for all entering freshmen who ultimately majored in economics was 531 (verbal) and 546 (mathematics) for a combined score of 1077. This represents an average score taken from the years 1988 to 2002. When compared with the all entering freshman at the university, regardless of major, the VSAT (484) and MSAT (512) were 81 points higher for economics majors. Further, it is interesting to note that for entering freshmen, males scored higher on the math SAT than did females. The opposite is true for VSAT. In other words, males appear to possess greater quantitative skills than females and females tend to possess more verbal skills than males.

As indicated earlier, the university does not require of transfer students to submit scores for the SAT, nor does the university require transfer students to provide their high school GPA or high school Rank. This limits, but does not negate, several findings to be presented later in the study. Table 1 also reports that when compared to the university (last row), entering freshmen average high school Rank is slightly higher (63.3) for entering freshmen than for the university population. However, economics major's average high school GPA is below that of all students.

What preliminary information does Table 1 provide?<sup>3</sup> First, it records the fact that economics majors achieve higher SAT scores on both the verbal and math components than the university population as a whole. Second, it reports that economics majors possess a higher percentile rank while in high school when compared to the university population. Third, the table further records the fact that economics majors graduate with a higher GPA than do their peers in other disciplines.<sup>4</sup> Lastly, although of curious interest, overall more males choose economics as their major (almost 4:1) than females. However, for students coming from two-year institutions, there is a 1:1 ratio. Could this suggest that not enough credit is given to the instructors at community colleges? In other words, are their teaching skills not only adequate, but are their motivation skills toward the discipline equal if not superior to skills displayed by four-year university faculty?<sup>5</sup> In sum, it appears that economics majors enter college with elevated human capital compared to

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<sup>3</sup>The possibility of differential grading rigor between two- and four-year institutions is recognized. However, this conclusion seems somewhat anecdotal and difficult to quantify. Certainly the possibility exists that transfers achieve their higher ultimate GPA by having avoided "difficult" classes at four-year institutions.

<sup>4</sup>The question could of course be raised as to whether economics faculty is "tougher" graders, on average, than other faculty. There seems to be no motivation, *a priori*, to conclude this is true. Perhaps this should not come as a surprise. Leigh and Gill (2004) show that attending a community college significantly expands a student's educational aspirations.

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their cohorts and exit the university after gaining greater knowledge, if grade point averages are one measure of intellectual advancement.

**Table 1**

<b>Students Majoring in Economics Descriptive Statistics</b>							
	<b>VSAT</b>	<b>MSAT</b>	<b>Average H.S. Rank</b>	<b>Average H.S. GPA</b>	<b>Entering GPA</b>	<b>Graduation GPA</b>	<b>Pred- icted GPA</b>
Entering Freshmen:	531	546	67.0	2.93	--	2.82	2.77
All (74)	526	549	69.2	2.91	--	2.83	2.74
Males (59)	550	533	63.8	2.96	--	2.76	2.78
Females (15)							
Transfer Students:	--	--	--	--	2.68	3.00	--
All (26)	--	--	--	--	2.64	2.90	--
Males (13)	--	--	--	--	2.71	3.10	--
Females (13)							
University	484	512	63.3	3.02	--	--	--

Note: The final column in Table 1, Predicted GPA, can be compared to the Graduation GPA of these students, in order to compare their success in the study of economics to that of other specializations.

### **Transfer Students Compared to Entering Freshmen**

As suggested in the introduction, another important component of the paper is to test whether or not transfer students are adequately prepared, relative to those who enter as freshmen, to meet the demands of upper-level courses. The model(s) and statistical test(s) are based on the hypothesis: there is no statistical difference between entering freshmen and transfer student’s achievement (as measured by Graduating GPA). That is, transfer students are just as prepared to excel (i.e., they are adequately prepared) in upper-level economics courses as compared to their cohorts who have taken similar instruction from faculty at the four-year institution. The statistical test used to measure differences between the two data sets is the “t” test.

**The Null Hypothesis:**  $H_0$ : there is not statistical difference between freshmen and transfer students

**The Alternative:**  $H_1$ : there is a statistical difference between freshmen and transfer students

Table 2 below provides a comparison between Entering Freshmen and Transfer Students and is divided between Graduating Grade Point Averages – Freshmen vs. Transfers, and Entering Grade Point Averages vs. Graduating Grade Point Averages.

The first component of the table records no statistical difference at the 10% level or better for all observations (74) between the two sets of cohorts, although transfer students “outperformed” those individuals who have spent all four years at this institution. In other words, when focusing on all students in the sample set, there is not a statistical difference between the groups. The transfer students are as adequately prepared as their counterparts. When using cross section data, however, female transfer students perform better (probability value of 0.086) for upper-level instruction if graduating grade point average is a viable

reference.<sup>6</sup> There was no statistical difference between males. It appears that the null hypothesis is to be accepted for all students but rejected for one subset, females.

Table 2

Comparison Between Entering Freshmen And Transfer Students: <i>t</i> -Test				
<b>Graduating Grade Point Averages – Freshmen vs. Transfers</b>				
	Freshmen Students	Transfer Students	t-Statistic	Prob. Value
All	2.82 (74)	3.00 (26)	1.59	.115
Males	2.83 (59)	2.90 (13)	.44	.661
Females*	2.76 (15)	3.10 (13)	1.79	.086
<b>Entering Grade Point Averages vs. Graduation Grade Point Average: Transfers</b>				
	Entering GPA	Graduating GPA	t-Statistic	Prob. Value
All	2.68	3.00	2.45	.020
Males	2.64	2.90	1.59	.139
Females*	2.71	3.10	1.82	.090

The lower half of Table 2 focuses on transfer students only and provides additional support that suggests clearly that transfer students not only appear to be equally prepared as their peers, but “rise to the occasion” after entering a four-year institution. All transfer students graduated with a higher GPA than which they entered and the difference was statistically significant at the 5% level or better.<sup>76</sup> Further, females again outperformed the males. The difference in their entering and “exiting” GPA was statistically significant at the 10% level or better. Given the number of males or females in the sample, we note the potential for small sample errors in this testing, but still consider the results interesting.

Table 3 on the following page is designed to capture predictor variables using Ordinary Least Squares. The hope was to capture any relevant variables which might emerge as significant in determining one’s final level of success, as measured by his or her graduating grade point average. The data are limited to entering freshmen as it was previously indicated the university does not require certain information from transfer students as it does for entering freshmen. As can be seen from the table, only one variable, MSAT, emerges as statistically significant at the 10% level or better when regressed against the dependent variable, Grade Point Average.

Table 3

Relationship Between Predictor Variables and Graduating Grade Point Averages: Freshmen Students			
Variables	Parameter Estimate	“t-Value”	Prob. Value

<sup>6</sup> Prichard et al (2000) conclude females outperform males in the Principles of Finance class (similar to Principles of Economics in mathematical rigor). This is balanced by Surette’s findings (2001) that females who transfer from a two-year institution to a four-year institution are less likely to complete their studies, often brought about by the existence of children in the family

<sup>7</sup> The academic success of transfer students at our institution may be related to the specific two-year institutions from which they transfer. See Ehrenberg and Smith (2004) for a predicting quality of preparation in *specific* two-year institutions.

INTERCEPT	.6300	1.29	.263
GENDER	.0860	0.68	.496
VSAT	-.0002	-0.21	.837
MSAT	.0018	1.90	.061
HS RANK	.0058	1.55	.126
HS GPA	.1989	1.01	.315
PREDICTOR GPA	.1130	0.38	.702
Adj R <sup>2</sup> : .237			
N: 74			

### Summary and Conclusions

The authors clearly recognize the limitation of the study. Namely the fact that it involves one institution and a fairly small sample size (n=101). However, there are enough results to pique other researchers' curiosities concerning the question of adequate instruction emanating from community colleges. The findings in this study suggest that not only are these institutions adequately preparing their students for upper level courses, as it applies to the economics major, they are doing a better job than faculties at this four-year institutions. This can be interpreted as good news for parents who are looking for ways to reduce their total educational bill, at least for two of the four years.

### References

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