

# Accounting for the Rise and Fall in the Number of Economics Majors with the Discouraged-Business-Major Hypothesis

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The last 15 years have been a roller coaster for undergraduate studies in economics. The 1980s experienced the long climb to the top—a period of substantial and sustained growth in the popularity of economics as an undergraduate major at U.S. colleges and universities. The 1990s were something else again—a breath-taking and sudden drop in enrollments, majors, and degrees conferred in economics.

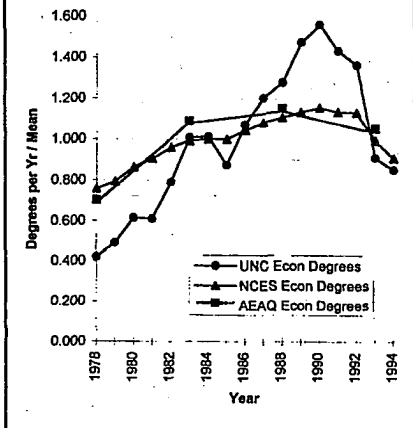
The ups and downs in the economics major were particularly pronounced at the University of North Carolina at Chapel Hill (UNC). On average, between 1978 and 1994, UNC conferred 173 bachelor degrees in economics per year. In 1978, only 73 degrees (43 percent of average) were conferred; in 1990, degrees peaked at 271 (157 percent); in 1994, the number fell to 148 (85 percent). See Figure 1 for data comparing UNC degrees to national measures computed by the U.S. Department of Education and to the American Economic Association (AEA) questionnaire data of Siegfried and Scott (1994). The data confirm the pronounced nature of the swings at UNC.<sup>1</sup>

What accounts for the substantial rise and fall in the number of economics majors? We argue that much of the swing was caused by an increase and subsequent decline in the popularity of undergraduate business studies during roughly the same period. We call our hypothesis the discouraged-business-major (DBM) hypothesis because students who were screened out of the business curriculum often made an economics major their second choice. We explain how this screen worked and how we identified those economics majors who were discouraged business majors. Although our study uses data only from UNC, the findings of our study have implications for many other institutions.

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**Figure 1**  
**Economics Degrees Conferred at**  
**UNC and in the Nation**



## GROWTH AND DECLINE IN UNDERGRADUATE BUSINESS STUDIES

The University of North Carolina at Chapel Hill is the flagship of the 16 constituent institutions of the University of North Carolina. Total enrollment at UNC in 1995 was approximately 22,000 with an undergraduate enrollment of just over 12,000. All undergraduates first matriculate in the General College. After completing General College requirements in their sophomore year, students either declare a major in the College of Arts and Sciences or matriculate in a professional school such as the Kenan-Flagler School of Business.

At UNC, the economics department and the business school were more closely related in the past than they are today (Blaine 1991). The Department of Economics was established in 1901, predating the business school by 20 years. Economics was incorporated into the School of Commerce when the latter was established in 1920. The department remained part of the business school until 1975 when it was transferred to the College of Arts and Sciences. There remain connections between the undergraduate degree programs in business and economics: Prebusiness course requirements include Econ 10: Economics Principles, and Econ 100 or 101: Intermediate Microeconomics. Econ 130: Money, the Financial System and the Economy, is a core course required of all bachelor candidates in business administration.

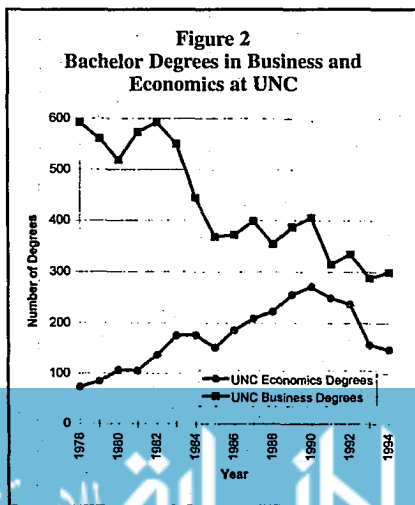
Undergraduate degree programs in business experienced unprecedented increases in popularity between the mid-1970s and mid-1980s. The Department of Education HEGIS survey (*Change* 1987; 37-42) found that sampled schools awarded 143,400 degrees in business and management (15.5 percent of total

degrees) in the 1975–76 academic year. In 1984–85, they conferred 225,400 degrees in business and management, accounting for 23 percent of the total. UNC also experienced increased popularity in undergraduate business studies. The share of business majors rose from 13 percent in the early 1970s to an average of 18 percent between 1976 and 1980, leading to the conferral of an annual average of 553 business degrees between August 1976 and May 1980.

The business school responded to the increased demand by increasing entry requirements and lowering its target number of admissions from 600 in 1975 to 400 in 1982 and 300 in 1988. The economics department could not counter this strategy because departments in the College of Arts and Sciences are not permitted to impose entry requirements more stringent than those imposed by the college.

Before 1977, requirements for entry into the business school were the same as requirements for attaining junior status at the university—a 1.75 grade point average (GPA) and 60 hours of course credits. Students were expected to complete certain prebusiness courses but often did so during their junior and senior years. In 1977, the business school began monitoring records to ensure that students completed most prebusiness courses prior to their junior year. In 1979, it announced the first in a series of increases in the minimum GPA required for admission—2.5 in 1982, 2.75 in 1984, and 3.0 in 1988. The standards were not absolute, and admissions personnel exercised discretion at the margin.

The screening procedures had their intended effect. The number of undergraduate degrees conferred in business declined from a peak of 593 in 1982 to



373 in 1986 (Figure 2). The graduation class of 1984 was the first to encounter substantial increases in requirements, which accounts for the sharp decline in degrees between 1983 and 1984. The effect of the second tightening of standards is also apparent in the decline in degrees from 406 in 1990 to 315 in 1991.

Nationwide, the popularity of undergraduate business programs peaked in the late 1980s and declined thereafter. The proportion of freshmen who aspired to degrees in business dropped by about one-third between 1989 and 1993 (Boyd and Halfond 1993; 4). The decline is correlated with a change in hiring practices that occurred during the decade.

Employers rediscovered the liberal arts major during the 1980s. In one survey of hiring practices, 64 percent of firms indicated that they had either increased or held steady the number of liberal arts majors newly hired between 1983–86; and 87 percent predicted an increase or no change in the number of liberal arts majors newly hired during 1987–88 (Useem 1988; 48). At UNC, requests by firms to interview business majors accounted for 28.7 percent of requests in 1985 but only 17.5 percent of requests in 1990. Requests to interview “any major” grew from 12.9 percent in 1985 to 24.7 percent in 1989 and averaged 22.6 percent between 1990 and 1994. Interestingly, requests to interview economics majors remained relatively steady throughout this period, accounting for 8.7 percent of requests in 1985, 6.9 percent in 1989, and 9.7 percent between 1990 and 1994.<sup>2</sup>

Where did UNC students who were screened out of the business major go to complete their undergraduate education? We hypothesized that they chose a major, like economics, that employers would regard as a close substitute for business.<sup>3</sup> We investigated the extent to which the rise in popularity in undergraduate business studies coupled with the increased screening of applicants can account for the rise of undergraduate economics majors that occurred during the 1980s. We also investigated whether the decline in the popularity of business studies in the late 1980s can account for the fall in economics majors after 1990.

## THE DISCOURAGED-BUSINESS-MAJOR HYPOTHESIS

The discouraged-business-major hypothesis has two parts. First, two kinds of students major in economics: discouraged business majors (DBM) and other economic majors (OEM). DBMs make economics their choice after being screened out of the business major by entry criteria. The procedure we used to identify DBMs is described below. OEMs are all others and include students who choose economics for a variety of reasons. Some OEMs make economics their first choice. Others try other fields and discover that they prefer economics. Some OEMs may choose economics with regret, but no OEM is excluded from pursuing a degree in business.

The second part of the hypothesis is that a rise and subsequent decline in the number of DBMs accounts for much of the rise and fall in the number of economics majors during the last 15 years. Those who were screened out of the business school settled on economics more often than on other fields of study. As the popularity of undergraduate business studies waned in the late 1980s, the number of DBMs decreased, and the total number of economics degrees fell as a result.

To test the DBM hypothesis, we collected data for a random sample of students who received undergraduate degrees in economics between 1983 and 1994. The resulting data set comprised 764 of 2,439 degree recipients or, 31.3 percent of the population.<sup>4</sup> Of the 764 records, we dropped 110 students who had transferred more than 40 credit hours to UNC. UNC transcripts do not contain detailed listings of transferred courses, and we could not determine whether the transfer students would have passed the business school screen. As a basis for comparison, we collected data for a random sample of students who graduated in 1977 and 1978. These years predate the announcement of business school screening so that all economics majors graduating in 1977 and 1978 must have been OEMs.

For each student, we collected the following information from the department copy of the transcript: Year admitted to UNC, year degree was received, number of credits earned at other institutions, high school class rank and class size, SAT mathematics and verbal aptitude scores, whether the student was a first or second major in economics, GPA earned by the student, birth date of the student, and grades earned by the student in a selection of courses.

Between 1982 and 1990, applicants to the business school were required to take 10 specific courses during their freshman and sophomore years. Several of these courses were prerequisites for many majors; others were specific to business. Because prospective business majors were required to maintain a certain GPA in their prebusiness courses, we recorded the grades for Stat 23, Busi 24, Econ 10, Poli 41, Busi 71, Busi 72, and Econ 100 (or 101).

According to the UNC *Undergraduate Bulletin*, Stat 23 is a course in probability and statistics for business students and is required by no other program at UNC. Busi 24 is a course in business decisionmaking. Busi 71 and Busi 72 are accounting courses designed for prospective business majors.<sup>5</sup> Econ 10 is the principles of economics course, and Econ 100 and Econ 101 are intermediate microeconomics courses. Econ 100 is designed for business majors and Econ 101 for economics majors, but these courses were completely interchangeable until 1990 and somewhat interchangeable thereafter. Poli 41 is a course on American government that is not specifically targeted to business students.

For each record in our sample, we applied two criteria to determine whether the student was a DBM. Students who did not satisfy either of these two criteria were classified OEM. To be classified a DBM, students must have (1) taken a sufficient number of prebusiness courses during their freshman and sophomore years to indicate that they were seriously interested in pursuing an undergraduate degree in business, and (2) earned grades both overall and in prebusiness courses too low to meet the business school standard in place in their junior year.

Two examples will clarify how we applied these criteria. Student A is an economics major who completed most prebusiness courses but earned through sophomore year a GPA below the business-school cutoff. Student A is a DBM who, we surmise, did not determine that he or she was screened out until late in the sophomore year. In contrast, an economics major who completed all the pre-

business requirements and maintained a GPA above the cutoff is an OEM. This student was not screened out and, we surmise, changed her or his mind.

Student B is an economics major who took Stat 23 and one or two other pre-business courses, made grades far below the cutoff, and then stopped enrolling in prebusiness courses. Student B is a DBM who, we surmise, concluded early on that he or she would be screened out.

Because Stat 23 is a prebusiness course required by no other major, it played an important role in classifying economics majors. Most DBMs took Stat 23, but taking Stat 23 was neither necessary nor sufficient for being classified a DBM. A student with good grades who earned at least a C in Stat 23 was classified OEM. This student might simply have tried this course and changed his or her mind. On the other hand, a student who took many other prebusiness courses but not Stat 23 and whose GPA was clearly below the cutoff was classified a DBM on the grounds that he or she might well have given up having concluded that he or she would not be admitted to the business school.

In summary, classifying a student as a DBM or OEM required a judgment on our part—whether the student would have been screened out by the business school requirements. When in doubt, we assigned a student to the OEM category, so the number of DBMs in our sample is likely to understate the true number of DBMs. In what follows, we checked our findings by sorting students according to whether or not they took Stat 23 for credit.

## SAMPLE STATISTICS

Sample statistics for our data are contained in Table 1. Variables measured were Age, the age of students at the time of entry to UNC; Transfer Hours, the number of hours transferred from other postsecondary institutions; MSAT and VSAT, mathematics and verbal statistical aptitude test scores; High School Rank, the students' rank in their high school class (on a scale of 1 to 100, where 1 is the valedictorian); GPA, the grade point average earned at UNC; Econ Grades in the principles of economics and intermediate micro courses; and Time to Graduation, the number of years separating a student's graduation date and entry date. The Proportion of students taking Stat 23, the prebusiness statistics course, and Busi 71, the accounting course for business majors, were also reported. Statistics were reported both for the total data set and for the DBM and OEM subsets.

Based on the data in Table 1, we concluded that DBMs and OEMs were alike in some ways and different in others. On average, the two groups entered the university at about the same age, transferred about the same number of hours from other institutions, and took about the same amount of time to earn their degrees. DBMs differed from OEMs in several important ways. Given the nature of the screening process, one expected DBMs to earn lower grades. The difference in group means was 0.42 grade points, and the differences for principles of economics and intermediate microeconomics were large, 0.70 and 0.435.<sup>6</sup> The two groups differed in other ways as well. DBMs were slightly more likely than OEMs to be female, 33 percent as opposed to 31 percent. DBMs entered the university with much lower SAT scores: the differences were 26.5 for MSAT and

TABLE 1  
Sample Statistics

	1983-1994 sample						1977-78 sample (N = 64)	
	Total (N = 654)		DBM (n = 221)		OEM (n = 433)		M	SD
	M	SD	M	SD	M	SD		
Age	18.370	0.438	18.389	0.366	18.360	0.470	18.420	0.743
Transfer hours	2.789	6.169	2.475	5.591	2.949	6.444	1.531	5.603
MSAT	597.534	77.151	580.000	66.257	606.505	80.780	636.984	67.713
VSAT	521.914	80.133	492.579	63.719	536.921	83.513	579.000	67.637
High school rank	12.788	34.493	18.040	56.654	10.037	10.726	8.146	7.179
GPA	2.834	0.483	2.557	0.289	2.975	0.500	3.239	0.376
Time to graduation	4.003	0.994	3.992	0.671	4.009	1.124	3.784	0.431
Econ grades								
Principles	2.796	0.823	2.332	0.678	3.033	0.790	3.355	0.812
Intermediate micro	2.699	0.877	2.411	0.790	2.846	0.883	2.886	0.940
Proportion taking								
Stat 23	0.479		0.991		0.217		0.141	
Busi 71	0.491		0.756		0.356		0.391	

Note: DBM is discouraged business major; OEM is other economics major. The percentage of females was: total sample .315, DBM .330, OEM .307, 1977-78 sample .172.

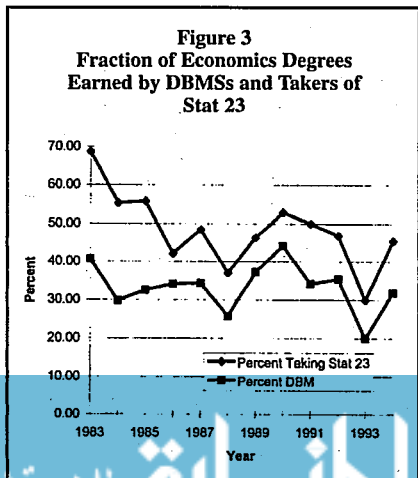
42.9 for VSAT. On average, DBMs and OEMs placed in the 82nd and 89th percentiles of their high school classes.

Statistics for the 1977–1978 sample of economics majors, all of whom were OEMs, are presented in Table 1. A comparison of this sample with the DBM subsample from 1983–94 supports the conclusion that the true differences between the DBMs and OEMs were greater than indicated by the comparison of the 1983–94 DBM and OEM subsamples. This finding is not surprising, for two reasons. First, in order not to overstate the number of DBMs, we classified students as OEM whenever they appeared close to the business school cutoff point. Some of these students may actually have been screened out. Second, some students may have wanted to major in business but did not take any prebusiness courses because they believed that they could not make the cut. Although such students would be true DBMs, in the absence of evidence that they pursued a business degree, we would have classified them as OEM.

### A TEST OF THE HYPOTHESIS

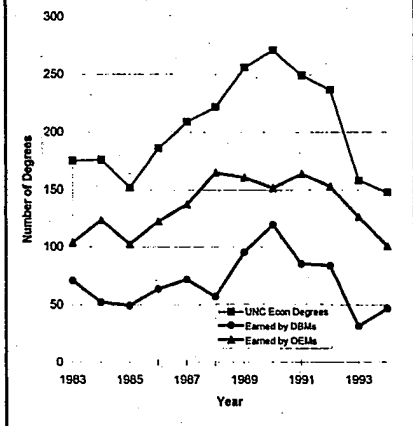
Does a rise and subsequent fall in the number of discouraged business majors account for the rise and fall in the number of economics majors that occurred between the late 1970s and 1994? The proportion of economics majors classified as DBM for each year between 1983 and 1994 is presented in Figure 3. These proportions were used to predict the total number of DBMs at UNC (Figure 4).

Because their share of economics majors grew between 1984 and 1990 and fell between 1990 and 1993, DBMs accounted disproportionately for the cycle in the total number of economics majors observed at UNC between 1983 and 1994.<sup>7</sup> DBMs exhibited a more pronounced cycle than that for total economics majors (Figure 4). The projected number of degrees earned by DBMs rose from 0 to 71





**Figure 4**  
**UNC Economics Degrees Earned**  
**by DBMs and OEMs**



in 1983, fell to 52 in 1983, and then grew steadily until achieving a peak of 120 in 1990. The number of degrees fell to about 85 in 1991 and 1992, dropped to a sample low of 32 in 1993, and rose to 47 in 1994. Based on the standard test, one would reject the hypothesis that the proportion of DBMs was constant and equal to the sample mean of 0.340 for each year in the sample period. The resulting  $\chi^2$  statistic has 11 degrees of freedom and a  $p$  value of  $<.001$ .

The decline in the proportion of and number of DBMs in 1988 is a surprising departure from the pattern. It is possible that the decline was caused by sampling error. But it is interesting to observe in Figure 2 that a one-year dip in business degrees also occurred in 1988. If fewer members of the class of 1988 desired a business degree and if the business school responded by easing the standards for admission that year, the decline in the number of business degrees and DBMs could both be accounted for.

## **GENDER COMPOSITION OF DISCOURAGED BUSINESS MAJORS**

The large shift into the undergraduate business major that occurred between the mid-1970s and the mid-1980s was largely accounted for by an increase among women in the study of business (Change 1987; 39). It is thus interesting to check for variation in the gender composition of DBMs and OEMs. The female share of economics degrees conferred each year shows that the gender composition of DBMs varied more than the gender composition of OEMs (Table 2). The sample standard deviation of the female share is 1.6 times as large for DBMs as for OEMs. On the basis of a  $\chi^2$  test, one would reject the hypothesis that the female share of DBMs was constant and equal to the sample mean for

TABLE 2

## Gender Composition of Economics Degrees Conferred

Grad. year	Proportion of females		
	Total	DBM	OEM
1983	0.344	0.308	0.368
1984	0.404	0.500	0.364
1985	0.395	0.571	0.310
1986	0.263	0.231	0.280
1987	0.250	0.273	0.238
1988	0.387	0.250	0.435
1989	0.328	0.400	0.286
1990	0.221	0.300	0.158
1991	0.257	0.292	0.239
1992	0.342	0.357	0.333
1993	0.325	0.125	0.375
1994	0.318	0.286	0.333
Mean	0.320	0.324	0.310
Std. dev.	0.061	0.120	0.075
Statistic		43.34	4.467
<i>p</i> value		< .001	0.954

Note: DBM is discouraged business major; OEM is other economics major.

each year in the sample. One would not reject this hypothesis for the OEMs.

The time pattern of the gender composition of DBMs gives additional evidence of a connection between cycles in the business major and cycles in the economics major. DBMs were more likely to be female between 1983 and 1985 than in any other subperiod. The proportion of female DBMs was unusually high in the same years that women were an unusually high proportion of business majors.

## CONCLUSIONS

On average between 1983 and 1994, discouraged business majors accounted for 69 of the annual total of 203 UNC economics degrees. The share rose between 1984 and 1990 and fell between 1990 and 1993, indicating that DBMs accounted disproportionately for the economics-degree cycle at UNC. Over this period, the UNC degree cycle was more pronounced than the national degree cycle. However, the number of DBM degrees was much larger than that needed to account for the difference. If, for example, the cycle at UNC had matched that in the National Center for Educational Statistics (NCES) data, UNC would have conferred 35 fewer economics degrees in 1990. In 1990, DBMs accounted for 120 economics degrees.

Discouraged business majors do not fully account for the UNC cycle. The number of degrees earned by other economic majors grew in the 1980s, reached a plateau between 1988 and 1992, and fell thereafter. Because we used conservative criteria to assign students to the DBM category, our data may overstate the swings in the number of degrees earned by other majors and understate the swings in DBM degrees.

DBMs and OEMs have different characteristics: DBMs have higher SAT scores, lower college GPAs, and lower grades in principles of economics and intermediate microeconomics. The differences have been both significant and pronounced, especially when the basis for comparison is the sample of economics majors drawn from the 1977–1978 population.

Our study has implications for all colleges and universities, even those where no explicit screening of business majors occurred. Our findings confirm the Siegfried and Wilkinson (1982) finding that students consider an economics degree to be a substitute for a business degree. A change in the popularity of business studies is thus likely to have a greater impact on economics than on other programs. Administrators should be aware that the recent decline in the number of economics degrees may be one part of a cycle. Indeed, the number of economics majors increased so much in the 1980s that there were more in 1994 than in the late 1970s. Because much of the cycle can be attributed to changes in student tastes for business studies, economics departments may want to consider what factors account for that change. Economics departments should realize that they serve two different client groups and consider whether their curriculum meets the needs of both. Finally, administrators should be aware that permitting one school to screen applicants can have serious effects on others, particularly on the College of Arts and Sciences.

#### NOTES

1. The figure reports the ratio of degrees in a year to the sample mean. The National Center for Education Statistics (NCES) data were the total number of bachelor's degrees awarded in economics between 1978 and 1994. For 1978–1992, the data were taken from the 1994 *Digest of Education Statistics*. The NCES data for 1993 and 1994 were constructed by applying the growth rates reported in Siegfried (1995) for 1993 and 1994 to the 1992 total-degree number reported in the *Digest*. The AEA data were from Siegfried and Scott (1994), who used the results of the American Economic Association Universal Questionnaire.
2. Data are from the annual reports of the University Career Services Office at UNC.
3. In their study of 546 colleges and universities, Siegfried and Wilkinson (1982; 137) concluded that students perceive economics and business to be close substitutes. In particular, they found that the fraction of undergraduates majoring in economics was significantly lower at institutions that offer a business major.
4. The population was all economics majors for whom the department of economics had a transcript on file. In principle, the university registrar provides departments with the transcript for every first major. In practice, there is a small discrepancy between the department roster of majors and the registrar roster because of clerical errors and near-graduation changes in major. Departmental files were used because of the cost and delay associated with asking the registrar to provide transcripts for such a large number of students. Second majors in economics were underrepresented in our sample because the registrar does not routinely send transcripts to a student's second department and because students do not necessarily contact their second department for counseling.
5. During this period, the business school offered an accounting course for nonmajors. Busi 72 was dropped from the list of prebusiness requirements in 1988.
6. More DBMs took Econ 100 (micro for business majors), and more OEMs took Econ 101. The GPA difference likely would have been greater if all majors had taken the same course.
7. We repeated our analysis by dividing recipients into those who had taken Stat 23 for credit and those who had not. The proportions of degree recipients who took Stat 23 for each year in the sample are reported in Figure 3. This sorting increased the average number of DBMs and produced an interesting time path. The proportion of degree recipients taking Stat 23 was almost 70 percent in 1983, fell to about 40 percent in 1988, rose to 50 percent in 1990, and fell to 30 percent in 1993. One would reject that these proportions are constant at standard significance levels.

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