

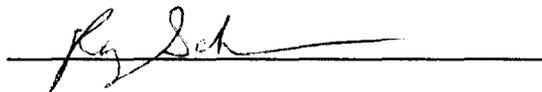
Selecting a Ph.D. Program in Economics

An Honors Thesis (ID 499)

by

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completed the Ph.D. Despite the fact that the majority of economists have advanced degrees, there are many job opportunities for those who only have bachelor's degree. A bachelor's degree in economics is one of the broadest degrees in business. It provides the recipient an overall view of how the economy works and allows many roads for specialization. With a bachelors degree in economics you can pursue a variety of different careers in business. Financial analyst, credit analyst, and market-research analyst are just three of the many occupations that are open to economics majors. Economics provides the basic mathematical tools that are needed in these positions, and the analytical methods used in each occupation are similar. Economists with just an undergraduate background can also do well in occupations outside of economics. The rational, systematic thought that is instilled through the study of economics makes the economist a good candidate for jobs that require unbiased decisions.

The average salaries for computing the opportunity cost of not working vary among the academic, private, and government sectors. Both the government and private sector hire economists with bachelor's degrees. Government jobs pay less than those in the business sector. According to BLS (Bureau of Labor and Statistics), salaries for federal jobs that require a bachelor's degree started at about \$14,800. A private sector economist with a bachelor's degree started at \$22,400. Thus, assuming a 10% interest rate, the opportunity cost of foregoing a private

sector job for four years is approximately \$70,000 and the opportunity cost of foregoing a government job is approximately \$47,000.

To determine whether or not graduate school offers you a normal return to your investment, you must calculate the return from graduate school. On the one hand, if you plan on teaching with your Ph.D, you may find that it takes a long time to pay the costs of graduate school and start earning a profit on your time investment. Starting college professors earn an average of \$35,000 per year. Thus, a professor earns about \$12,500 more than a person using his or her bachelor's degree in the private sector. Using these numbers, it takes approximately eight and one-half years to break even on graduate school. Clearly, a doctoral degree in economics does not lead to instant monetary gratification.

Clearly, the decision to go to graduate school is costlier than the decision to go from high school to college. This is because schooling raises your hourly price to society; thus, a person with a bachelor's degree will have a higher opportunity cost than a person with a high school diploma. Furthermore, the monetary rewards from each year of graduate school are less than the monetary rewards from each year of college because of diminishing marginal monetary returns to education. Ultimately, the decision to go to graduate school depends upon the individual. There are also individual psychic cost and benefits that must be taken into account. The psychic costs and benefits

are often the deciding factors for the student contemplating graduate school. It is a good idea to list your perceived psychic cost and benefits. A list will help you to weigh the pluses and minuses of getting a Ph.D. For example, a psychic benefit from graduate work is the prestige of the title. An example of a psychic cost is the loneliness of the long hours completing a dissertation or the four years of living on a graduate stipend.

Section 2. The Requirements of a Ph.D. Program in Economics.

Once the decision has been made to go to a graduate school in economics, a person must make sure that he or she is prepared to enter a graduate school. All of the top fifty PhD programs in economics require that certain courses be completed before graduate studies begin, and they also have requirements concerning GPA and GRE scores.

The prerequisite undergraduate courses vary from program to program, but without exception an adequate background in economics and mathematics is required to enter a graduate school in economics. A desirable background in economics would be the undergraduate degree in economics. An adequate background in economics would be principles of micro and macroeconomics and intermediate micro and macroeconomics. An adequate background in mathematics would include at least two semesters of calculus, a semester of linear algebra, and a semester of mathematical statistics.

The GRE is the next consideration. Scores for the Graduate Records Exam are required in the admission application of all of the top 50 schools. Essentially, the GRE is an advanced SAT. The GRE has three tests designed to evaluate a person's verbal, quantitative, and analytical abilities. In addition some schools require the applicant to take the subject test in economics; therefore, if you have a strong background in economics, it is advisable that you take the subject test.

Most graduate schools do not publish minimum acceptable GRE scores. But an applicant's GRE score on each exam should be at least 600-650. Furthermore, a poor GRE can be reconciled with an impressive GPA. Moreover, GPAs and GRE scores are not the only criteria considered during the selection process. For example, recommendation letters play a big role in the decision to admit a candidate. The higher your score on the GRE exams and the higher your GPA, however, the more likely you will be admitted to the graduate school of your choice and the more likely you will receive assistance. That is, the GRE exams and your GPA are the best indicators of your future success in graduate school.

Section 3. The Choice of a Ph.D. Program in Economics.

Once the decision has been made to get a Ph.D. in economics and the applicant has met the requirements to get into a graduate program, a school must be chosen. The choice of the ideal school entails a matching of your personal constraints to the school's curriculum. The only way to do this is to

investigate schools and then send applications away to those that you like and would qualify for.

After you have evaluated your personal abilities and academic achievements, you can begin to narrow down a group of schools that fit your background. Some considerations when choosing a graduate school may be financial support, geographic location, and the type of graduate school.

The financial support from a graduate school may be an assistantship or fellowship. A fellowship is given to the brightest applicants and pays tuition and a stipend. Moreover, the fellow has no official responsibilities except his own work. Unless you are an exceptional candidate, you will not receive a fellowship. An assistantship is essentially a job. Assistantships are less competitive than fellowships. But assistantships are scarce goods because there are more applicants than available assistantships. Some schools will not accept an applicant unless they plan to give him an assistantship. That is, they will have a cutoff of how many applicants they will accept and will give them all assistantships. Other schools will accept other applicants without offering them an assistantship. Duties of a graduate assistant vary depending on the nature of her graduate assistantship. Most graduate assistantships are for 20 hours per week. Teaching assistants may help out in large classes by providing review sessions each week or they may have their own principles courses in which they are responsible for the entire teaching and giving grades.

Teaching assistants normally spend 20 hours per week in fulfilling their duties. Research assistants provide assistance to professors that are actively engaged in research. Some research assistants go to the library to review the literature on a particular research problem; other research assistants input data into the computer. Gradually, the research assistant is given additional duties like interpreting data. Since most professors get a research assistant and some professors are more active than others in research, a research assistant spends anywhere from 5 to 20 hours a week in fulfilling his duties. Finally, some graduate assistants grade papers and perform other administrative work for the department. Like the research assistant, these graduate assistants spend from 5 to 20 hours per week in fulfilling their duties.

If an assistant is successful in his graduate work and fulfills his duties as an assistant, he will be offered the assistantship back each year. In addition, an assistant may be offered summer research assistantships and grants to do independent research. These opportunities are generally available in the third and fourth year of graduate work.

In addition, a graduate student may supplement his or her income with a student loan. Some schools treat fellowships and assistantships as financial aid. Therefore, a graduate student may not be able to obtain a guaranteed student loan. A popular alternative is the plus loan. A disadvantage of this loan, however, is that interest on the loan immediately accrues.

In investigating schools that do offer doctoral degrees in economics, you will find that the general path to that degree is similar among many schools. One of the primary distinguishing factors, is the schools status as a research college or a teaching college. Although most graduate programs claim to be top notch in both categories, there is usually an emphasis placed on training teachers or researchers. In addition, some graduate schools are more mathematical than others. Thus, deciding on whether teaching or research is more important to you and determining your preferences for mathematics, can help you eliminate certain colleges that are not consistent with your preferences.

Section 4. The Application Process.

Applying to a graduate school is a time consuming process. But this task can be made easier if the candidate knows what to expect and is realistic about her goals and abilities. The application process involves three tasks: 1) sending letters to respective schools; 2) applying for and taking the GRE; 3) obtaining reference letters.

To start the application process, send letters of inquiry to those schools that you are interested in around the last of November. Graduate schools will send you information and application sometime in December or early January. The application deadline varies from school to school but most schools have a deadline falling between February 14 and March 1. The application process is very time consuming especially

when filling out the first application. Therefore, do not procrastinate when filling out the applications. When filling out other schools' applications you can benefit from the experience obtained from filling out the first application. That is, there are increasing returns to filling out applications. Most of the application is filling out basic information like your name, address, social security number, and the schools you have attended. Do not be surprised if you fill out the same information on several forms. Most schools require an application to the particular department and a general application to the school itself. The application may require a short essay on why you wish to go to graduate school, or how you believe a particular school may help you fulfill career goals. After completing the first application, make a copy of it so that you can quickly fill out other applications. Another requirement of application is sending graduate transcripts. Again, this may take time. Some schools will send your transcripts out the next day. Other schools may take longer. Hence, give your undergraduate school plenty of notice when requesting a transcript. Applying to these schools is costly. Not only is time involved but also some schools require an application fee. The application fee ranges from \$35 to \$50. In addition, GRE examination services charges a fee to send your grade report to each school that you apply to. Finally, it is wise to fill out a financial aid application after you have accepted at a particular school and after they have given

financial aid in case you need a loan to supplement your income.

The GRE is offered once every two months and costs \$35 for the general tests and \$35 for the subject test in economics. A GRE information bulletin can be obtained from your university's financial aid office. In this bulletin, there is a sample test. In addition, there are booklets and short courses that can help a person study for the exams. It is advisable to prepare for these exams. The questions in these booklets will not be the same as the ones you will be tested on but you can get a good idea of the types of questions asked and the areas in which you should brush up on. A general rule of thumb is that you should concentrate on the subjects which will get you the highest return. Time is a scarce resource. Most people study for these exams while they are taking other classes. Therefore, instead of trying to do everything, concentrate on brushing up on those areas in which you can make the strongest showing. In addition, reserve about one hour each night to prepare for the exam. Do not wait until a couple of weeks before the exam and try to cram.

The next consideration in the application process is letters of recommendation. The form of the letters will vary from school to school. Some schools require the reference write a letter discussing the candidates qualifications. Other schools require the reference to fill out specific questions on a form. Most of the top 50 schools require 3-4 letters of recommendation. You should choose professors who are familiar

with your undergraduate work in economics and mathematics. In general, these are the professors that you have taken a number of classes from. When asking a professor for a reference, give him or her a resume that describes your academic career and future goals. Choose a professor that will take this task seriously. Most professors will not turn you down when you ask for a reference letter. But some professors do not take this task seriously enough. Since the marginal benefits to the professor from writing the letter are low, some professors have a tendency to procrastinate. The ultimate responsibility, however, in getting the reference letter out is the applicant. Graduate schools do not care why your reference letters are not in. If the reference letters are not turned in on time, the school may simply reject your application. Thus, ask the professor two to three weeks ahead of time for the letter of recommendation. Stress to the professor the deadline of application. Finally, check back with the professor to see if he has completed the letter. The graduate school sometimes may write you a letter listing the references who have not sent in your letters. Moreover, an applicant can call the graduate school to ask if everything is in.

Section 5. The Description of a Typical Ph.D. Program.

In this section, we describe what a typical Ph.D. program in economics is like. The topics that are discussed in this section include: core courses, areas of specialization, preliminary examinations, and the writing of the doctoral

thesis. First, the core courses do not differ that much between graduate schools. A graduate student in his first semester will probably take price theory, mathematical analysis for economists, and probability theory. Price theory discusses microeconomics from a rigorous mathematical background. Basically, it relates topics discussed in your undergraduate principle and intermediate microeconomics courses to calculus. For instance, you will be expected to derive the Slutsky income effect from calculus. Mathematical analysis for economists is often offered at graduate schools because the graduate school is trying to ensure that every graduate student has a common background in mathematics. Probability theory discusses probability laws, random variables, and probability distributions and how these topics relate to economics.

In the second semester, a graduate student may take statistical inference, general equilibrium economics, and macroeconomics. Statistical inference discusses hypothesis testing and statistical estimators. General equilibrium economics discusses how markets are related and the Pareto optimality of exchange and production. Macroeconomics rigorously discusses Keynesian, neoclassical, monetarist, and nonmonetarist theories of the economy.

Other courses in the core may include decision theory, theory of economic growth, and econometrics. Decision theory discusses game theory in economics. The theory of economic growth discusses and applies dynamic programming to economic

topics. Econometrics discusses regression analysis and how to apply it economic data.

The graduate student must also choose courses to satisfy areas of specialization. Most graduate schools require three areas of specialization. A graduate student may choose an area in environmental economics, monetary economics, labor economics, international economics, macroeconomics, mathematical economics, econometrics, experimental economics, economic history, economic education, or a graduate student may choose a related area such as accounting marketing, and management. Usually one of these areas of specialization provide the foundation for the graduate student's own research project, the doctoral dissertation.

In addition to these courses, a graduate student is expected to participate in seminars related to his areas. Usually prominent economists are invited to speak at these seminars on the latest advances in their field. In addition, faculty members will share what they are working on so that you can get a good idea of who you will ask to sit on your dissertation committee. In addition, these seminars are beneficial because the graduate student has a chance to see how research projects evolve. Many times class work consists of reading only finished papers.

The second topic discussed in this section is preliminary examinations. A graduate student usually takes three preliminaries. A preliminary is a comprehensive examination over the topics a graduate student learns in his classes. The

examination has a written and oral part. In the oral part, the graduate student is asked to defend his answers on the written part. The first preliminary covers price theory, decision theory, general equilibrium economics, and macroeconomics. It is after the first year of graduate school. The second preliminary covers the quantitative courses, probability, statistical inference, and probability. It is after the fall semester of the second year. The third preliminary covers topics in the graduate student's major area. It is the last requirement before the graduate student starts work on her doctoral thesis.

The final requirement of a Ph.D. program is the doctoral dissertation. The graduate student is expected to carry out an original research project under the supervision of a dissertation committee. The dissertation committee consists of a major chairman, who oversees the graduate student's work, and three other committee members who will read the dissertation and offer suggestions. To start the doctoral thesis, the graduate student picks a major area of specialization and starts to think about a particular research idea in that area. The graduate student then writes a paper on the relevant literature related to that research idea. This literature review will give the graduate student hints on what contribution he can make to the area. After the literature review, the graduate student writes a proposal about what he would like to research. At this point, the graduate student defends his proposal in front of her

committee who offers suggestions on how to improve the proposal. After the proposal defense, the graduate student begins to work on the actual analysis of the problem she has chosen. Writing the dissertation usually takes one year if the graduate student faces no major obstacles.

Section 6. Summary.

This essay has been written to provide a prospective graduate student some brief information on several topics that will help him or her select and apply to a graduate program in economics. We have covered information on the opportunity cost of a Ph.D. degree, the requirements needed to get into a graduate school in economics, and how to select and apply to a graduate school in economics. In addition, we have described a typical graduate program in economics. Finally, we have provided the addresses of the top 50 graduate programs in economics.

APPENDIX

1.
Chair
Department of Economics
University of Chicago
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2.
Chair
Department of Economics
UC-San Diego
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3.
Chair
Department of Economics
Ohio State University
Columbus, OH 43210
4.
Chair
Department of Economics
Yale
New Haven, Ct 06520
5.
Chair
Department of Economics
Princeton University
Princeton, NJ 08544-1017
6.
Chair
John F. Kennedy School of Government
Harvard University
Cambridge, MA 02138
7.
Chair
Department of Economics
University of Iowa
Iowa City, IA 52242
8.
Chair
Department of Economics
M.I.T.
Cambridge, MA 02139
9.
Chair
Department of Economics
Columbia University
New York, NY 10027
10.
Chair
Graduate School of Business
Stanford University
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11.
Chair
Kellogg Graduate School of Management
Northwestern University
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12.
Chair
Department of Economics
University of Minnesota
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13.
Chair
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Rochester, NY 14627
14.
Chair
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16.
Chair
Department of Economics
Rice University
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17.
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18.
Chair
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19.
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Chair
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Chair
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26.
Chair
Department of Economics
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Ithaca, NY 14853-4401
27.
Chair
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University of Illinois
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28.
Chair
Department of Economics
University of Oregon
Eugene, OR 97403
29.
Chair
Department of Economics
University of Washington
Seattle, WA 98195
30.
Chair
Department of Economics
University of Virginia
Charlottesville, VA 22901
31.
Chair
Department of Economics
Boston College
Chestnut Hill, Ma 02167
32.
Chair
Department of Economics
University of Michigan
Ann Arbor, MI 48109-1220
33.
Chair
Department of Economics
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Houston, TX 77204-5882
34.
Chair
Graduate School of Public Policy
University of California Berkley
Berkley, CA 94720
35.
Chair
Department of Economics
George Mason University
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36.
Chair
Department of Economics
Swarthmore College
Swarthmore, PA 19081
37.
Chair
Department of Economics
University of North Carolina
Chapel Hill, NC 27599-3305
38.
Chair
Department of Economics
University of Maryland
College Park, MD 20742
39.
Chair
Department of Economics
Southern Methodist University
Dallas, TX 75275
40.
Chair
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43.
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44.

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45.

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46.

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47.

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48.

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50.

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Bibliography

Laband, David N. (1985). "An Evaluation of 50 'Ranked' Economics Departments - by Quantity and Quality of Faculty Publications and Graduate Student Placement and Research Success," Southern Economic Journal. Vol. 52 no. 1, pp. 216-240.

a Ph.D. in economics is more than the cost of tuition. The time spent in graduate school could have been utilized in the job market; thus, graduate school also involves an opportunity cost. Therefore, the cost of the Ph.D. will be the cost of the education you receive and the income you forego while in school. Tuition will vary from one graduate school to another graduate school. Most schools, however, waive tuition and fees. Consequently, the biggest cost of a Ph.D. is the foregone salary.

The opportunity cost of graduate school is equal to the foregone salary that you could have earned while in graduate school minus the income you receive during graduate school. With respect to the latter, you may be fortunate enough to receive a fellowship or an assistantship. Many schools do not accept any student that they do not plan to fund with a fellowship or assistantship.

With respect to the former, in order to calculate a proxy figure for your expected income, you must decide which sector - government, business, or education - where you will seek employment. Essentially this cost is the net income you could have earned during these four years. A proxy value for foregone yearly income can be calculated by taking the average income, for jobs that you could have been eligible.

Most economists have advanced degrees. The latest survey by the National Association of Business Economists showed that 90 percent of respondents had graduate training; 40 percent had