

**So, you want to go to grad school in Economics?
A practical guide of the first years (for outsiders) from insiders**

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Introduction

You may be wondering about our intentions in writing this document. A bit of background information may be useful here. We, along with many other young, bright students across the U.S. and other countries, were fascinated with the idea of enrolling in a Ph.D. program in economics, but were missing the *big picture* of the process, as well of the outcome! For our case, it is true that we are still working for the degree, but after one year and a half in the program (as of December 2006), we think that the experience may not be for everyone (but may be more exciting for some than for others!). This document is intended to provide, to the best of our knowledge, an accurate picture of the life before and during a Ph.D. program in economics. Our hope is that potentially interested students may benefit from our experience.

As could be expected from a theme such as this one, a usual disclaimer arises. The conclusions expressed within are based from our experience in the economics program at the University of Minnesota; we expect many of the features discussed below to be fairly similar among schools. However, the experience might be different in other programs, within the U.S. or across the world!

Our paper first will discuss what you should do before going to the Ph.D. Then we will try to give you some flavor of the life in the first year of the program, followed by our conclusion.

So you've decided to go for a Ph.D. program

Getting a Ph.D. degree is easier said than done. Your undergraduate or master's advisor is right: It's going to be difficult. In fact, we can agree and go even further: It's going to be the most difficult experience of your life. However, should you decide to go for it, the rewards are easily greater than the costs. The first moral of the story: Think twice before you decide!

In our view, graduate work in economics (or in any other discipline, for that matter) is an exercise in discipline, endurance, hard work, and patience. It is not so easy having all 4 at the same time... but you'll get used to it.

The early work: tests

So, suppose you are really decided to go on the adventure of a Ph.D. program. Congratulations! But now you have to get to work. You should have heard from everyone: "Take the GRE test." Well, we'll also say it: Take the GRE test. And take it early. Even though most universities suggest taking the test no later than the December before the year to enter the program, we suggest taking it no later than June or July of the year *before* entering the program. Why? For starters, bad luck happens. You can take special courses, study for a couple of months, score 800s on your practice tests, but it all comes down to one particular test. And here's where the bad luck comes into play. If you don't get the score you expect, you still have time to reschedule a second test and try to improve your score. You want that to happen in May, not in January where your application could be jeopardized due to a delay in scores. Also, while it is true that most universities assign fellowships on a merit basis, they also do it on a "first come, first served" basis. . We are told that in the past, students have missed out on fellowships simply because they submitted a late application. If you have a strong application, you want to let them know you early in the year! It's to your advantage to do so

If you're not a U.S. national, or have not done undergraduate studies at an English-speaking institution, you should also schedule a TOEFL / IELTS test as soon as possible. The same guidelines apply!

So suppose you have your scores, you're ready to go. Everything else is downhill, right? Think again. Be ready to prepare at least 10 applications, maybe more, to get a decent shot at a program of your choice. In economic lingo, you want to maximize the probability of being accepted. Each application is enough to demand plenty of time, so be ready to multiply that times 10!

And the last piece of advice: Be patient. Most often universities take their time before giving out a reply. The corollary: No news is good news. Take your time and wait. You might as well use the time to rest before entering the program. You'll need it later.

The early work: Mathematics

The dreaded question is often: "How much math should I know?" The answer might vary from program to program, but we can say for sure: "As much as you possibly can." For better or worse (for better, we think), economics has become an extremely technical field, with mathematics as its unifying language. It's better to know the language when you arrive at a new country, than learn it after you're there.

A common error (which one of the authors made) is to mistake *problem-solving ability* for formal "*theorem-proof*" ability. As an undergraduate student, one can breeze along calculus courses, maybe take one or two specialized courses in linear algebra or differential equations, and that's usually more than enough for the rest of the program. However, most of the times, *hard* math courses (such as a formal real analysis sequence based on Rudin (1976) or a similar level book) are seldom taken. But these are the ones that matter the most! Economics, as mathematics, has become a very technical discipline where one cannot use a result without proving it first. Being able to work with mathematical logic, arrive at conclusions and prove

statements is essential for progress in the first year. While one thinks that this is only unique to microeconomics (the most usual flagship being Mas-Colell et al. [1995]), macroeconomics is not without its formality (Stokey et al. [1989]; Ljungqvist and Sargent [2004]). Even more, when specializing in a particular field of economics, it is usually the case that more specialization in mathematics is also needed.

In a nutshell, we say that the more mathematics, the better; however, one should not fall into the trap of confusing an economist with a mathematician! In familiar language, mathematics becomes a necessary but not sufficient condition; intuition should not be left for second place!

Quoting J.M. Keynes (1924):

“The study of economics does not seem to require any specialized gifts of an unusually high order. Is it not, intellectually regarded, a very easy subject compared with the higher branches of philosophy or pure science? Yet good, or even competent, economists are the rarest of birds. An easy subject, at which few excel! The paradox finds its explanation, perhaps, in that the master-economist must possess a rare *combination* of gifts. He must reach a high standard in several different directions and must combine talents not often found together. He must be mathematician, historian, statesman, philosopher—in some degree. He must understand symbols and speak in words. He must contemplate the particular in terms of the general, and touch abstract and concrete in the same flight of thought. He must study the present in the light of the past for the purposes of the future. No part of man’s nature or his institutions must lie entirely outside his regard. He

must be purposeful and disinterested in a simultaneous mood; as aloof and incorruptible as an artist, yet sometimes as near to earth as a politician.”

Aware that we may converge to the preface of any advanced economics book, from our experience, at the very least you should have a competitive knowledge of calculus and linear algebra. Familiarity with statistics is also welcome. The ideal is to have knowledge of real analysis and some concepts of measure theory. The important thing is that you are able to take care of these requirements *before* entering grad school!

Life in the first year

The first year is often considered the breaking point of your Ph.D. career. It is the most demanding part of it, and you need to be ready to have the energy to cope up with the program’s demands. There are certain things (truths, half-truths, lies, and urban legends) which are usually found floating around the idea of a Ph.D. program. Below we discuss some of them.

Courses

During the first year, usually you’ll be exposed to full-year sequences in both micro and macroeconomics, usually with an econometrics sequence. (Note that this is more than enough to keep a student entertained throughout the first year.) If you come from a very competitive undergraduate / master’s program, chances are you are familiar a great deal of the material. If not, now it’s the time to learn it well. Take your time to do so; it’s not a race against time or your classmates to see who can master the material first. Of course, this brings up one of the most important things you need to know during the program (*any* program):

Grades *don't* matter.

Really, they don't. No one is going to ask for your transcript when hiring you for a position at a university or research institution. They are going to carefully check your ideas, your research, and your teaching experience. That's all there is to it. But one cannot do frontier research if one doesn't know what the frontier is! And for that, the material you learn in the first year is important. Take your time to learn it properly. You'll see that it more than makes up in the long run.

Homework assignments

We said that you should be ready to work. *Here* it is where you should be ready to work. Homework assignments (also known as problem sets) are designed to test your endurance and ability to work under pressure. And you'll be under a lot of *continuous* pressure! It is not uncommon to see 30-40 page problem sets, which you'll be delivering every week or two, for every one of your economics courses. Sounds rough? It is.

One thing is true (at least from our experience). Unless you are a brilliant / top-of-the-class / remarkably well prepared student, it is not feasible to do all the assignments for all courses on your own. (You *could*, for a while, but after some time the lack of sleep may break you up.) Here's where our advice may be different from several other experiences in other programs. Both cooperation and camaraderie is the key. Form a study group with students who are at the same level as you are. In this way you can work together and learn the material

together, and take advantage of comparative skills. Remember: The important thing is to learn, not to finish the race in time for the next problem set.

Social life and leisure

Social life. Leisure time. Say goodbye to both of them. Quoting Professor V.V. Chari: “You’ll find a new ability to sleep during times and positions you’ve never dreamed of.”

It is not uncommon to start your day at 7:00 A.M. to discover you’re going to bed at 2:00 or 3:00 A.M., and repeat again. And then, you discover that you’ve been working all day long, no breaks except for food / classes / teaching (this last one, in case you’re TAing). You should be able to program yourself to accept this as a way of life during the first year, possibly the second, third and fourth too!

We know it takes some time to get used to this new way of life. But you’ll get over it. However, this is where the *motivation* for studying the program comes in to play. If you are not motivated enough to keep on with this new lifestyle for the next five or six years, chances are you’ll run out of steam way before the first year ends. A high motivation is an excellent substitute for sleep; lack of motivation won’t help at all no matter how many hours you sleep every day. This is why we stress again: Be careful with the decision!

Research

Usually, unless you are a very advanced student, you don’t spend much time on research in the first year simply because you don’t have time for it. But if you *really* have some time available, you can go to some seminars, especially to the so-called *job market talks*, given by recent Ph.D. graduates who want to apply for an assistant professor position at your department.

These talks are really helpful to show you the competition among Ph.D. graduates, and they may also give you an idea of the recent research topics in economics.

Another option that always comes in handy is to go over recent issues of some journals just to relax and/or see what is going on in economics nowadays, especially articles or working papers published by your current professors. Since professors often like to put their own “special touch” to their classes (i.e., show samples or their research on the core economics courses), chances are you may end up getting another point of view on the material you’re covering in the class!

Relationship with professors and TA’s

Unless the number of first year Ph.D. students is really big, the professors will know you by name or at least recognize you outside the classroom. It is to your advantage to have good relations with professors from the first year onwards, even though you don’t do any (or much) research in your first year. Going to office hours and classroom discussions will contribute to this. It is also a good idea to attend the social events organized by your department, not only to have some time to relax, but also to chat with professors and other students and at least share some of the pain you are suffering in the first year.

Besides the professors, the TA’s of the courses you are taking in your first year are also an important part of the first year life. Don’t hesitate to talk to them. Go to their office hours and ask. They will probably understand you, your questions and your concerns better than the professors because they were right in your position one or two years before.

Fellowship / Assistantships

Almost all of the Ph.D. students are either financed by some form of fellowship or assistantship. Of course, it is better to have a fellowship in the first year so that you don't devote any time or energy for teaching or grading purposes. But being a TA is not a bad thing. One of the authors of this paper believes that teaching and even grading (unless you happen to grade 400 homeworks every weekend) during the first year helps you to relax. In addition to that, it is very likely that after finishing your Ph.D. you will need to teach some courses in an academic or non-academic institution. Why not prepare for that, from the first year onwards? The sooner, the better!

One warning here for foreign students: We don't suggest you to get a Fulbright scholarship or something similar which requires you to go back to your home country after you obtain your Ph.D. This not only decreases your value on the job market in USA to zero (simply because you have to go back), but also adversely affects your bargaining power with the institutions in your home country. If a Fulbright (or a similar) scholarship are your only means of getting your Ph.D. then it's your decision; if you have several alternatives, avoid this option if possible.

Preliminary examinations / Core examinations

Yes, we said that grades don't matter. Then, what is the way to weed out the outstanding from the tourists? The answer, of course, is to use the preliminary examinations.¹

Preliminary examinations, or *prelims* for short, are end-of-year tests which measure your understanding of all the material covered. *These* are your main objective in the first year (after learning all the material, of course). Instructors don't care if you got an A+ or a C- as long as you

¹ These are also known as core examinations, qualifier examinations, among others. The names vary from program to program.

pass the examinations. If you do, you can jump on to new, more advanced classes and devote all your time to it. If you don't, well, it depends on the institution. In some cases you are allowed to repeat the examinations within a certain limit of trials (like in Minnesota). In others, failure to pass may mean being suspended from the program.

Concluding or, the way ahead

Before concluding, let us remind you again that this paper was based on our individual experiences in the first year of the economics Ph.D. program at the University of Minnesota. But we think that this experience, more or less, applies to the general first year experience of the economics graduate students. It is a difficult experience but not an impossible one, but isn't life also the same?

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