

## **It's Better Being an Economist (But Don't Tell Anyone)**

Richard B. Freeman

**T**he recent evidence on the job market for new Ph.D. scientists—including that developed by professional societies under the aegis of the Commission on Professionals in Science and Technology (CPST) (1998a, 1998b), diverse data from the National Science Foundation, and sources like the Siegfried and Stock paper in this issue—reveals a number of problems in the science job market. In several fields, salaries are relatively low; new Ph.D.'s face uncertain job prospects upon graduation and often end up in postdoctoral positions with low pay and limited futures rather than in “real” jobs. The weak labor market for new Ph.D.'s has generated considerable concern in mathematics (Davis, 1997) and in physics, as can be readily discerned from the Notices of the American Mathematical Society at (<http://www.ams.org/notices>), or in various documents put out by the American Institute of Physics. Similar problems in the biomedical fields have led the National Research Council (1998) to declare a “crisis in expectation” for young scientists in that area and to recommend that graduate schools maintain rather than increase Ph.D. production in the biomedical sciences. In many fields, new Ph.D.'s have great problems attaining careers with pay and position commensurate with their training.

These grim prospects are in stark contrast to the claims made just a few years ago by members of the scientific establishment that the United States needed more Ph.D. scientists. In one widely cited article, Richard Atkinson (1990), then-president of the American Association for the Advancement of Science, called the need for more scientists and engineers a “national crisis in the making.” A Com-

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mittee on the Mathematical Sciences in the Year 2000, meeting as part of the National Research Council (1990), proclaimed a shortage of workers with math training. The National Science Foundation forecast huge shortages of scientific workers overall (Marshall, 1992), despite internal and external criticisms of its forecasting methodology that eventually led its director to repudiate the study in 1995 (Nervis, 1992; Weinstein, 1998).

Economics appears to be enjoying a better job market than most Ph.D. sciences, including two of the most important scientific areas, mathematics and physics, as shown by the evidence collected in Table 1. Economics graduates obtain real jobs, not postdoctorate positions which nominally extend the period of human capital investment for students by three to seven years at low wages and with limited benefits, but which in many cases simply represents a market-driven reduction in compensation for work. Economists' salaries are higher upon graduation and median earnings for all doctorates exceed those for nearly all other sciences, sector by sector (save for those employed by government, where 16 percent of new Ph.D. economists get jobs).

To be sure, economics has experienced some of the problems in graduate education and the job market that plague other Ph.D. research areas. The length of time to complete a Ph.D. in economics has increased from 5.7 years in 1977 to 6.8 years in 1996, paralleling a general elongation in the time to Ph.D. The proportion of economics Ph.D.'s with postdoctoral employment plans and the proportion planning to work in education has fallen, as in other specialties (Siegfried and Stock, this issue, Table 1). Minority representation continues to be small, despite efforts by the American Economic Association and others to increase the number of minority graduate students. Women still face some career problems in economics, although the proportion of women has risen and will raise the female share of tenured researchers in the future. Finally, the earnings of economists have dropped relative to those in several other high skill occupations, including professional athletics, entertainment, and executives in major firms.

But while the world may not demand economists as much as rappers, basketball players, or even professional wrestlers, it's still better to be an economist in the job market than most anything else in the Ph.D. world. This may strike you as perverse or natural, depending on your discipline and perspective. Some in the physical sciences find it perverse that economists have markedly better career prospects than mathematicians or physicists and other natural scientists. To paraphrase one physicist, it just isn't right that researchers in a field whose Nobelists' theories arguably blow up in their face in a way that threatens the world financial system (in the case of Robert Merton, Myron Scholes and the Long-Term Capital Management hedge fund of which they were among the directors) should do better than real scientists, like physicists, whose theories can blow up the world only if they predict accurately how forces of nature work. But to labor economists, there is nothing odd about the phenomenon of pay differences that may appear implausible at first glance. It's just our old friends, supply and demand and marginal principles, at work.

*Table 1*  
**The Economists' Edge Over Mathematics and Physics**

	<i>Economics</i>	<i>Mathematics</i>	<i>Physics</i>
Percent of Ph.D. Recipients			
In Temporary Job	19	46	57
In Postdoctoral Position	4	26	48
Median Starting Salary by Area			
Education (9–10 months)	48,000	36,000	33,000
Business	73,500	60,000	62,000
Government	54,800	57,260	63,000
Postdoctoral	42,800	37,500	36,000
Median Salary of PhDs, in Universities and 4 Year Colleges	59,000	53,000	55,400
Percentage Change in Median Salary, 1977–1995	179%	—	143%

*Sources:* Siegfried and Stock (this issue, Tables 7 and 8); Commission on Professionals in Science and Technology (1998a, 1998b); National Science Foundation (1995, table 40).

In this comment, I consider the complaint of physicists and mathematicians about the seeming perversity of how the labor market treats different fields and then examine how supply and demand operate to produce a better job market for economists than for physical scientists and mathematicians.

### Is it “Right”?

Imagine that the job market was better for sociologists or political scientists than for economists. This would unnerve economists no end. Sociologists and political scientists have less powerful analytic tools and know less than we do, or so we believe. By scores on the Graduate Record Examination and other criteria, our field attracts stronger students than theirs, and our courses are more mathematically demanding. Although economists are trained to shun normative judgments about relative positions (the Invisible Hand blesses only Pareto-improving changes), many of us would still feel that only in a screwed-up and perverse world would the strongest social science not be rewarded accordingly.

From this perspective, economists should be able to appreciate how mathematicians and physical scientists feel about the economic status of scientific fields in the recent study of new Ph.D. scientists in 14 disciplines. Consider the raw abilities of specialists in two fields with very weak labor markets, mathematics and physicists, compared to those of economists. Mathematics is the queen of the sciences, requiring a gift for abstract thought that few human beings possess. How can it be that “quantitative” economists are paid 60 percent more than mathema-

ticians, when few mathematical economists could make it in mathematics?<sup>1</sup> Physics is the ideal natural science, whose combination of theory and experimentation has yielded remarkable knowledge about the physical world, and which has traditionally attracted the best and brightest minds. How can it be that young physicists have worse career prospects than young economists? The graduate admission policies of economics departments show that we believe that almost any bright mathematician or physicist could sail through our graduate courses with flying colors. More grudgingly, we recognize that even the most technically adept economist would struggle in Ph.D.-level courses in mathematics or physics, and perhaps even in advanced undergraduate courses in those fields.

Even economists' own models of wage determination seem to call into question the relative standing of the fields. Physical scientists use expensive equipment to conduct their studies—cyclotrons, space probes, and million dollar labs—while empirical economists usually make do with government-sponsored data and the latest personal computer. Physical scientists generate new data designed to answer scientific questions. All too often, economists analyze data gathered by administrative agencies, which are often based on admirable sampling procedures but with little concern for scientific questions, or else turn to surveys conducted by, yes, sociologists. The National Science Foundation grants oodles of money to the physical scientists and the National Institutes of Health grants oodles to the biomedical scientists. When was the last time you or an economist-friend put in for a million dollar grant? Capital-labor ratios are positively correlated with earnings across countries and industries. Why not across the sciences as well?

It would be wonderful to respond to these comments by proclaiming that the job market is better for Ph.D. economists because economics gives its practitioners more or better-determined facts and principles about how the world works, just as we economists believe it does vs. our sister social sciences. But not even the most pride-filled economist would claim that economists know more about how economies operate than physicists know about the four—or is it three, or two, or one?—forces of matter or almost anything else. No economist would dream of stacking the firmest piece of empirical economics against the constants of physical science. Our theories of rational optimizing agents acting in market settings are as valid in the abstract as any high-powered theory in physics, but they are *ceteris paribus* theories in a world where *ceteris* is never *paribus*. As a result, findings in economics almost never generalize as well as those in the natural sciences. When it comes to the diagnoses of economic problems in the real world, things often blow

<sup>1</sup> This is based on the median annual salary in academe for quantitative economists in Table 6 of Siegfried and Stock in this issue, compared to the median in mathematics in their Table 7. The disparity is not affected by the higher proportion of mathematics Ph.D.'s who end up in postdoctorate jobs, because pay in post-docs is comparable to starting pay in education among mathematicians. I use quantitative economists in my comparison because the data does not have the salary of mathematical economists or theorists, who would presumably be closer substitutes to mathematicians.

up in the face of economists—not necessarily because our theories are wrong, but because the relative importance of factors changes across time or space.

If it is not that we economists attract innately more able students than mathematics or physics or other natural sciences, nor that we give our students a firmer grasp on the how the world works, why is the job market for new Ph.D. economists stronger than for new Ph.D.'s in these other sciences? Why have we largely avoided the job market problems of other Ph.D. fields? Can we continue to lead charmed lives while the theorists of charm face uncertain career prospects?

## **Why Is It?**

Unlike medical doctors, economists do not control entry conditions into our profession, so the answer to our relatively strong wage and job position lies not in the craft union virtues of our occupational association, the American Economic Association, virtuous though it is, but in the basic supply and demand of economists compared to other scientists. That we know less than natural scientists but earn more reflects the fact that salaries are not determined by the “innate” ability of practitioners, nor by the stock of cumulated knowledge that they possess, but rather by the supply and demand for new research findings and by the marginal principles that underlie these two blades of the market scissors.

On the supply side, the great edge of economics is that most people do not see economics as having the same intellectual appeal or heroic subject matter as the physical sciences. Youngsters in grade school and high school are taught about the great scientists—Newton, Einstein, Darwin and so on—and their intellectual battles to understand the world of nature. They are not taught about the great economists—Smith, Marshall, Walras—and their intellectual battles to understand market economies. The vision of the natural scientist as hero doing battle for mankind and knowledge is deeply ingrained in the culture. Bright kids grow up dreaming about being physical scientists, discovering cures to diseases, learning about ants, new galaxies, or mysterious compounds, not about figuring out how the business cycle works. With the rare exception of one or maybe two of my colleagues, I know no one who at age 10 or 12 or 15 had a burning desire to be an economist. Once in mathematics or physics, moreover, students are often given the impression that economics is really (help!) sociology, which no self-respecting whiz should enter, thereby reducing the potential flow from those fields into ours.

Fields with a core of young persons dedicated to a career such as mathematics or physics have relatively inelastic labor supply, at least in some range and over some time period. When demand drops or supply increases for some exogenous reason, such as changes in defense spending or drops in NASA funding or immigration of foreign experts, wages and employment conditions will fall greatly. Eventually, the supply of young American entrants may drop, as has occurred in physics and math, but in the global market, this supply may be replenished by foreign students facing a different set of incentives. By contrast, economics has, I

hypothesize, a relatively elastic supply curve. If the job market collapses, our potential graduate students are more likely to move en masse to other fields than math and physics whizzes. Indeed, our subject matter is more likely than the physical sciences to attract persons with lucrative alternative opportunities—law and business, in particular.

On the demand side, the great edge of economics over other fields is, sadly, that we have not solved major problems to the extent that other sciences have. Because our base of confirmed knowledge is less than in the physical sciences, we are higher up the marginal product curve for basic research than many of them. After all, what determines demand for research is not the problems that a science has solved, but the new things it can learn and the value that new learning can bring to society. The smaller base of confirmed knowledge also helps explain why we economists have relatively few postdoctorates. In part, postdoctorates are a market response to poor conditions—that is, they are an institution for offering low-paid jobs in certain oversupplied academic markets—but in part they also reflect a genuine need for Ph.D.'s to get additional skills and knowledge. In economics, what you learn differs some across departments, but the techniques are less arcane and lab-specific.

Another area in which economists have a demand edge over most Ph.D. sciences is that our skills are useful in various non-research activities. Business schools demand our services. It may disturb economists working in arts and science faculties that our colleagues in B-school earn more than we do (though it would take a huge wage premium to get many of us to put on suits and ties every day), but demand from business schools helps maintain our pay. Moreover, medical schools demand economists, and so do law schools and schools of public administration. The business community has a large demand, as does the government. The principles of rational decision-making, optimization, analysis of computerized data files, and skill of making inferences from often fuzzy non-experimental data that are the hallmark of economics are indeed a useful skill in much real-world applied research or development.

## **Don't Tell Anyone**

If this diagnosis is right, or at least as right as most economic analyses, the trick for maintaining the relatively strong market for economics is twofold. We must prevent youngsters from seeing economics as an exciting intellectual field, where scientific heroes slay great dragons, so that money be damned, they want to enter the research fray. Potential economist, be a good *homo economicus* and try accounting, real estate or plastics if they make a buck more than your economics professors do. In this vein, we should encourage PBS to keep running documentaries about the great physical scientists but not about the great economists. Also, some high level AEA honcho (D. Gale Johnson, are you listening?) should tell Milton Fried-

man that talking about economics in an interesting way does the profession more harm than good.

There is a thin line to walk, however. To maintain a high university demand for our services, we want undergraduates to think that economics is necessary to take, but that economics is a sufficiently dismal science that is worth entering only if the economic rewards are high. To maintain demand for our research, we have to make progress on truly important problems, but the market may punish us if we succeed all that much. Heaven forbid, if our scientific productivity increased greatly, we might end up in the position that physics has faced at various times in its history, when physicists thought all the big problems were done and the field was less intellectually fruitful than in the past.

Above all, don't tell anyone that while economists have some job market problems, we are doing better than most Ph.D. scientific specialties and are just as much (or more) intellectually fun as they are. Remember, it's the dismal science.

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