

The Making of An Economist Redux

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## The Making of an Economist Redux

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Individuals are not born as economists; they are molded through formal and informal training. This training shapes the way they approach problems, process information and carry out research, which in turn influences the policies they favor and the role they play in society. The economics profession changes as cohorts with older-style training are replaced with cohorts with newer-style training. In many ways, the replicator dynamics of graduate school play a larger role in determining economists' methodology and approach than all the myriad papers written about methodology. Arjo Klamer and I came to that belief in the early 1980s, and it led us to publish our "Making of an Economist" (Colander and Klamer, 1987), which in turn led to a much more thorough study by a Commission on Graduate Education in Economics appointed by the American Economic Association (Hansen et al., 1991). Over the years, I have received numerous suggestions to update our earlier study.<sup>1</sup> This paper is the update.

The paper reports the findings of a survey and interviews with graduate students at seven top-ranking graduate economics programs: University of Chicago, Columbia University, Harvard University, Massachusetts Institute of Technology, Stanford University, Yale University and Princeton University. It consists of two parts. The first part explores who current graduate students are and what they think

<sup>1</sup> I did this study alone because Arjo has since moved to the University of Amsterdam in the Netherlands and is no longer involved in U.S. graduate economics education. Our earlier book, *The Making of an Economist*, is out of print, but I will make it available on the web at (<http://community.middlebury.edu/~colander/articles>). I have also looked at the changing views of students who were in the original study. These findings can be found in Colander (2003).

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about economics, the economy and graduate school. In doing so, it offers a snapshot of current training that can be compared to our earlier snapshot, giving a sense of how graduate students and graduate education have changed over the past 20 years. The second part is more reflective, offering my interpretation of the nature of the changes in graduate school and in economics more generally.

To maintain comparability, I followed the same procedures that I followed last time, distributing an identical questionnaire and following a similar interview procedure. Exhibit 1 presents specific information about the survey and interview procedures.

## Profile of Students

The profile of the typical graduate student in economics at highly selective institutions has not changed significantly since the original 1985 study. The average age is still 26 years. Students are predominantly male, although the percentage of women in the survey increased from 19 percent to 29 percent. This percentage is in line with the fact that 30 percent of economics Ph.D.'s were awarded to women in the profession in 2003 (Blau, 2004, p. 4). A slight majority of the students did not go to graduate school directly after completing their undergraduate degrees, but instead had a variety of jobs, primarily as economic research assistants.

The majority of the respondents (62 percent) are foreign. That percentage differed significantly by school; for example, 14 percent of the Chicago respondents were U.S. students, while 78 percent of the Stanford and MIT respondents were U.S. citizens.<sup>2</sup> On the question about race and ethnicity, 21 percent chose not to answer; of those who did answer, 68 percent were white, 18 percent Asian, 10 percent Hispanic and 4 percent other. About two-thirds of students (69 percent) said they were nonreligious, and about two-thirds (65 percent) said they were involved in a long-term relationship. Most came from upper middle class families, many from academic backgrounds.

<sup>2</sup> I checked the number of foreign students responding with those in the programs in 2004, which is not an exact comparison since two or three years had passed, but it gives a good basis of comparison. Foreign student made up 62 percent of my survey, whereas, in 2004, they made up 70 percent of the student body at these schools. When I asked students about this difference, they said that foreign students were less likely to fill out questionnaires.

The percentage of foreign students in these top graduate programs is a higher percentage than the 52 percent found by Aslanbeigui and Montecinos (1998) in a more extensive survey of foreign graduate students for the period 1995–1996. The difference could reflect a greater percentage of foreign students in these top schools, an increase in the percentage of foreign students over the last decade, or a combination of the two. In my survey results, schools reporting especially high U.S. percentages had especially low foreign student response rate, specifically MIT and Stanford, where foreign students made up only 22 percent of these school's respondents to my questionnaire, but both programs had slightly more than 50 percent foreign students in 2004. Foreign students were in the majority at all seven schools in 2004.

The large majority (81 percent) had majored in economics as undergraduates, while 21 percent had majored in mathematics and 22 percent had other majors. (A number of students had double majors.) U.S. students and foreign students who had done their undergraduate work in the United States were much more likely to have majored in math, reflecting the higher math content in foreign undergraduate economics programs. In the interviews, it was generally believed by both U.S. and foreign students that foreign students had the stronger math background, at least as it related to economics.

At these top schools, financial issues were not stressful for most students; 90 percent had fellowships in their first year. Only 9 percent found financial issues very stressful. Some students even stated that they were able to save during their studies. What students identified as most stressful was finding a dissertation topic: 29 percent found this very stressful, and another 33 percent found it stressful. Relations with faculty were generally not stressful. Those relations did, however, become more stressful over time, with 4 percent of first-year students finding relationships with faculty very stressful, but 16 percent of fifth-year students finding those relationships very stressful.

Almost half of the students (47 percent) were involved in writing a scholarly paper. Most students beyond their third year were working; 65 percent of students beyond their third year were working as teaching assistants, and about 38 percent beyond the third year were working as research assistants. Some were doing both.

Economists are often thought of as conservative, but that was not the case in the previous study nor in this one. In this study, 47 percent of the students classified themselves as liberal, 24 percent as moderate, 16 percent as conservative and 6 percent as radical. (Six percent stated that politics were unimportant to them.) These percentages are very similar to the last study, although the share of those identifying themselves as radicals declined (from 12 percent). The students perceived their views as slightly more liberal than those of their parents, 40 percent of whom they classified as liberal, 36 percent as moderate, 16 percent as conservative and 3 percent as radical.

The large majority of students (80 percent) felt that their political views did not change in graduate schools, although that changed by year, with 10 percent of first-year students reporting a change in their views, but 32 percent of fourth- and higher-year students reporting a change in their views. In particular, 10 percent of first-year students considered themselves conservative; by the fourth and fifth year, this number had risen to 23 percent. There was also a large drop by year in students who considered themselves radical; that percentage fell from 13 percent of first-year students to only 1 percent of fourth-year and higher students.

## **Interests of Students**

The majority of the students were positive about their graduate school experience, although students in the first and second year often were concerned by the

*Exhibit 1***Methodology of the Questionnaire**

The questionnaire was distributed in 2001–2002 at Princeton University and the 2002–2003 school year at the other schools. The total number of respondents was 231 from an estimated population of 800–900, a response rate of approximately 27 percent, normal for this type of survey. The survey was identical to our 1985 survey and took students anywhere from 15 minutes to more than an hour to complete. The distribution of respondents by school was Chicago 26 percent, Princeton 15 percent, Harvard 18 percent, Yale 7 percent, MIT 10 percent, Columbia 12 percent and Stanford 12 percent. The distribution by year was first year 22 percent, second year 25 percent, third year 19 percent, fourth year 14 percent and fifth year or more 20 percent. The full survey can be found in Colander and Klamer (1987).

The academic coordinators at the various schools distributed the survey. It was placed in student mailboxes, and students were asked to return it to a central return point. Students were reminded to varying degrees by e-mail from the academic coordinators to fill in the questionnaires, and the differing tenacity of the academic coordinators in reminding students likely accounts for some of the different number of respondents by school.

As we stated in the previous study, there is a potential for bias in the surveys; technically oriented students were probably less likely to answer questionnaires, as were foreign students. Other biases are also possible. For example, there is a social dynamic in answering questionnaires in which student's interactions with other students leads to subgroups of students participating more than other subgroups. For example, a former Harvard student told me that in our 1985 survey, radical Harvard students made a concerted effort to get other radical Harvard students to respond, thereby influencing the results. To check for such biases, I asked students in the interview about particular results that seemed as if they might reflect such a bias, and did not find any obvious outliers. Still, care must be taken in using these data as anything other than a general indication of the nature of graduate education and how schools differ.

Interviews were conducted with students who agreed to be interviewed and who gave their e-mail address on the questionnaire. They were contacted, and a date was set up for the interview. Although the interviews were taped and transcribed, anonymity was promised to all interviewees. (The full interviews will be included in a book, which will expand upon this study.) Students were interviewed in varying size groups in interviews that were approximately an hour in length. During the interviews I asked students about the questionnaire, graduate economic education and economics, and about differences between their schools and others. I had a number of set questions, but allowed each interview to evolve on its own.

Response rate to the interviews differed by school and varied from three to ten participants per school. (The interview with Yale students has not yet been completed.) No attempt to insure a random selection of students to interview was done, although in all interviews, I asked the students if they felt they were representative of the views of the larger student population. One obvious difference between this interview process and the last is that I did all of the interviews this time, whereas in our earlier study Arjo Klamer did a number of them.

lack of relevance of what they were learning. A typical comment of upper-level students was, "The first two years were miserable. Now it is kind of fun and exciting, but I'm not sure the pain was worth it." First-year students were more likely to question the relevance of economics. One wrote, "I'm not convinced I'm doing anything that matters outside the ivory tower of academia." Despite these feelings, the level of concern was slightly less than it was in the previous study, and there seemed to be less cynicism than in the previous study. Only 7 percent said they would not have undertaken the program if they could do it over; 16 percent said they were unsure.

In terms of future jobs, the majority of students planned on an academic career; only 7 percent said they did not plan to pursue an academic career. The majority of the students (59 percent) expected to be at a major university in 15 years, 18 percent at a major research institution, 18 percent at an institution involved in policymaking and 9 percent at a good liberal arts school.<sup>3</sup> This involved some changes from the previous study, when only 41 percent expected to be at a major university, 32 percent expected to be at a policymaking institute, and 16 percent expected to be at a good liberal arts school. Since graduate training is definitely geared toward training students for academic careers in major universities, this result suggests a more effective selection process than before.

In the interviews, the push by the faculty toward eventually working at major research universities was clear. One student stated, "There is definitely a perception among the graduate students that you're better off not advertising that you're not interested in a research university." Another said, "I mentioned to one of my advisors last year that I might be interested in policy research, which I really am interested in, and she was definitely dismissive." Creating researchers for major universities is clearly the role that these schools see for themselves.

Although approximately the same percentage of students listed a desire to engage in policy formulation as very important (50 percent compared to 53 percent

<sup>3</sup> Judged in terms of major U.S. universities, such career expectations may seem wishful thinking, but since 62 percent of the respondents are foreign, and, as Aslanbeigui and Montecinos (1998) report, foreign students are very likely to return to their home country where they will likely be hired at a major university, these expectations do not necessarily exhibit irrational exuberance.

in the previous study), in this study the students did not see policy interests as incompatible with their academic careers. My interpretation of this result is that the policy role they see themselves playing is not that of a person directly involved in making policy within a political arena, but instead as a person providing expert advice and empirical support rather than direct policy implementation. One student put it this way: "Although a direct link to policy formation is not always present, economists serve a crucial role in providing clarification of issues both technically and in policy debates." About two-thirds of students (68 percent) did not consider political reasons to be important in their decision to do graduate work in economics; only 11 percent saw it as very important.

There were some changes in the interest of students in various fields since the earlier study. Economic development, labor and public finance increased in importance while macro theory, political economy, money and banking, international trade, industrial organization and history of thought decreased in importance. In most areas interest did not vary significantly by year, but it decreased somewhat by year for both macro and for money and banking. The largest change by year occurred in the interest in the history of thought, where interest fell as students progressed, with 19 percent of first-year students interested in history of thought, 16 percent of second-year students and then about 3 percent of third-year and higher students being interested in the history of thought. Women were more interested in labor compared with men and less interested in theory, macro and history of economic thought.

In the interviews, macro received highly negative marks across schools. A typical comment was the following: "The general perspective of the micro students is that the macro courses are pretty worthless, and we don't see why we have to do it, because we don't see what is taught as a plausible description of the economy. It's not that macroeconomic questions are inherently uninteresting; it is just that the models presented in the courses are not up to the job of explaining what is happening. There's just a lot of math, and we can't see the purpose of it." The students also pointed out that foreign students were more likely to study macro than were U.S. students.

### **Perceived Importance of Alternative Skills**

Perhaps the most discussed finding in our earlier study concerned what students felt put them on the fast track. In the earlier study, having a broad knowledge of the economics literature was seen as very important by only 10 percent of the students, and having a thorough knowledge of the economy was seen as very important by only 3 percent of the students. Table 1 reports the results from the earlier study compared with the results from this study. The view of the importance of literature remained much the same, but students believing that having a thorough knowledge of the economy was very important increased from 3 to 9 percent. Being interested in empirical research also increased significantly in importance, with the percentage finding it very important increasing from 16 percent to 30 percent. The increased emphasis given to empirical work could also be

Table 1  
Perceptions of Success

	<i>Very important</i>		<i>Moderately important</i>		<i>Unimportant</i>		<i>Don't know</i>	
	<i>New</i>	<i>Previous</i>	<i>New</i>	<i>Previous</i>	<i>New</i>	<i>Previous</i>	<i>New</i>	<i>Previous</i>
	Being smart in the sense that they are good at problem solving	51%	65%	38%	32%	7%	3%	2%
Being interested in, and good at, empirical research	30%	16%	52%	60%	12%	23%	4%	1%
Excellence in mathematics	30%	57%	52%	41%	14%	2%	3%	0%
Being very knowledgeable about one particular field	35%	37%	42%	42%	15%	19%	7%	2%
Ability to make connections with prominent professors	33%	26%	40%	50%	19%	16%	7%	9%
A broad knowledge of the economics literature	11%	10%	44%	41%	35%	43%	8%	5%
A thorough knowledge of the economy	9%	3%	24%	22%	51%	68%	15%	7%

seen in other parts of the survey. For example, a typical response to the question of their idea of a successful economist was “someone who affects policies by empirical studies.” Problem solving, the most important skill by far last time, went down somewhat in importance, from 65 to 51 percent finding it very important. Excellence in mathematics also went down significantly, from 57 to 30 percent finding it very important.

In many ways, Table 1 summarizes my perception of the changes that have occurred in the profession over the last 15 years. Math is still important, but less importance is given to math for the sake of math, and more importance is given to empirical work, which means that knowledge of the economy is more important. Economics is still a field that gives its literature little importance, but the field has become more consciously empirical, and students believe that their ability to do good empirical work separates them from the other social scientists.

The changes are not earth shattering; 51 percent still see a thorough knowledge of the economy as unimportant, and 35 percent still see a broad knowledge of the literature as unimportant. To an outside observer who was not familiar with economics graduate training 15 years ago, economics today would likely still appear highly technical, theoretical and unconcerned with reality. But compared with our previous study, the change away from theory for the sake of theory, and toward empirical and applications, is strongly apparent.



Additional insight into the students' views can be gained by considering the views by year. Interest in doing outside reading in mathematics, which overall was 35 percent, declined from 53 percent of first-year students thinking readings in mathematics very important to only 22 percent of fifth-year students seeing it as very important. Similarly, excellence in mathematics was seen by 46 percent of the first-year students as very important in putting someone on the fast track; the number finding it very important falls to 18 percent by the fifth year.

A slightly different picture emerges when we consider views on the stress caused by mathematics by year and by gender. The share of students finding math stressful was greatest in the first year, with 18 percent of the first-year students finding it very stressful. By the third year that had decreased to 5 percent, but then it increased in the fourth- and fifth-year students to about 10 percent. My interpretation of that finding is that while the core program is centered on math, the field courses are not, and in the third year students are choosing a dissertation, so math is not their main concern. But then in the fourth and fifth years when they are actually writing the dissertation, some students again face the problem of solving models, which brings the math stress back. In terms of gender, 23 percent of women but only 7 percent of the men found mathematics highly stressful. This stress in women, however, is not because the women cannot do the math; almost all the women I interviewed had a strong math background and demonstrated a strong knowledge of mathematics.<sup>4</sup>

The share of those who thought "having a thorough knowledge of the economy" did not rise as students progressed through their education. Instead it fell, with about 15 percent of first- and second-year students seeing it as very important to put them on the fast track, but less than 1 percent of the fourth- and fifth-year students seeing it as very important. Foreign students were much more likely to see a thorough knowledge of the economy as very important, with 13 percent seeing it as very important and 2 percent of U.S. students seeing it as very important. My interpretation of these data is that foreign students are more likely to return home and work in policy positions, where a practical knowledge of the economy is important, whereas U.S. students are more likely to be going into academia, where they will specialize in a particular area of study and will not be using general knowledge of the economy. The decline in importance by year suggests that when students are writing their dissertations, their interests narrow from a general interest to an interest in their particular field.

### **Relevance of Graduate Training**

One criticism that has often been made of graduate economic education is its supposed lack of relevance. In this spirit, we started our 1987 paper with a

<sup>4</sup> Women also found coursework and relationships with faculty more stressful than did men; they experienced no more stress than men in finding a dissertation topic, in conflict between course content and interests, and in relationships with other students. They exhibited less stress in regard to their financial situation; 11 percent of the men found this stressful; 2 percent of the women found it stressful.

discussion of the view: "Departments of economics are graduating a generation of idiot savants, brilliant at esoteric mathematics yet innocent of actual economic life." That view is still around, but less widespread, and more economics students see relevance in their studies. For example, in the previous study 34 percent of the students strongly agreed that neoclassical economics is relevant for economic problems; this time the number increased to 44 percent. The number strongly agreeing that economists agree on fundamental issues also rose from 4 to 9 percent. Similarly, the increase in the number of students seeing economics as the most scientific of the social sciences rose from 28 to 50 percent.

My interpretation of these changes is threefold. First, students coming into graduate school are now better informed about what it will involve, so that those who think what economists currently do is relevant are the ones choosing graduate study in economics. Second, while graduate economics education is still highly mathematical, it is much more empirical; the math often ties in with the empirical work, and hence is more relevant for policy analysis. Finally, in many top programs, while the math is presented in the first two years, the core exams and the class exams do not require an in-depth knowledge of the mathematical theory, but instead simply an ability to do a variation of fairly well-defined problems. Given the strong math background of many of the students, math is no longer seen as a major obstacle; it is simply a tool to be used when appropriate. As one graduate student stated, "You learn the five tricks of the math as it applies to economics and that's it for the math."

Whatever their views, the students were well on their way to being acclimated to being economists. For example, a defining attribute of an economist is often thought to be use of the concept of optimizing behavior, and the students fit this mold. In answer to the question about whether they use the notion of individual optimization behavior, and given the options, very often, infrequently, or never, 74 percent said they used it very often, 23 percent said they used it only infrequently, and 3 percent said they never used it.

## **Differences Among Schools**

The earlier study found distinctive views in various schools. Table 2 reports several opinions about economics by school in the previous study and in the current study.

The breakdown by schools shows less difference among schools in this study compared with the previous. In the previous study, Chicago stood out on the high end as seeing neoclassical economics relevant, and Harvard stood out on the low end. This time the overall results of students strongly agreeing that neoclassical economics was relevant increased, but the number strongly agreeing at Chicago decreased, while the number strongly agreeing at Harvard increased. Today, in terms of their views of the relevance of neoclassical economics, Harvard and

*Table 2*  
**Opinions of Economics as a Science: Comparison Among Schools**

	<i>Strongly agree</i>		<i>Agree somewhat</i>		<i>Disagree</i>		<i>No clear opinion</i>	
	<i>Then</i>	<i>Now</i>	<i>Then</i>	<i>Now</i>	<i>Then</i>	<i>Now</i>	<i>Then</i>	<i>Now</i>
<b>Neoclassical economics relevant</b>								
<b>Total</b>	<b>34%</b>	<b>44%</b>	<b>54%</b>	<b>45%</b>	<b>11%</b>	<b>5%</b>	<b>1%</b>	<b>5%</b>
Chicago	69%	63%	28%	25%	3%	7%	0%	5%
Princeton		29%		65%		3%		3%
Harvard	20%	55%	56%	43%	22%	0%	2%	3%
Yale	33%	40%	60%	47%	8%	7%	0%	7%
MIT	31%	26%	56%	74%	22%	0%	2%	0%
Columbia	24%	33%	68%	44%	8%	4%	0%	19%
Stanford	34%	29%	60%	46%	6%	21%	0%	4%
<b>Economists agree on the fundamental issues</b>								
<b>Total</b>	<b>4%</b>	<b>9%</b>	<b>40%</b>	<b>43%</b>	<b>52%</b>	<b>44%</b>	<b>4%</b>	<b>4%</b>
Chicago	3%	8%	47%	53%	44%	37%	6%	2%
Princeton		6%		44%		47%		3%
Harvard	2%	13%	27%	55%	68%	29%	2%	3%
Yale	13%	14%	33%	21%	47%	50%	7%	14%
MIT	4%	9%	31%	43%	60%	39%	4%	9%
Columbia	4%	0%	48%	33%	44%	59%	4%	7%
Stanford	2%	13%	51%	22%	43%	65%	4%	0%
<b>We can draw a sharp line between positive and normative economics</b>								
<b>Total</b>	<b>9%</b>	<b>12%</b>	<b>23%</b>	<b>34%</b>	<b>62%</b>	<b>40%</b>	<b>6%</b>	<b>14%</b>
Chicago	22%	14%	38%	38%	34%	38%	6%	10%
Princeton		13%		19%		52%		16%
Harvard	9%	11%	4%	47%	84%	32%	2%	11%
Yale	7%	7%	33%	20%	60%	53%	0%	20%
MIT	7%	13%	16%	22%	73%	48%	4%	17%
Columbia	0%	15%	32%	27%	52%	42%	16%	15%
Stanford	9%	4%	30%	52%	55%	26%	6%	17%
<b>Economics is the most scientific of the social sciences</b>								
<b>Total</b>	<b>28%</b>	<b>50%</b>	<b>39%</b>	<b>27%</b>	<b>19%</b>	<b>16%</b>	<b>14%</b>	<b>6%</b>
Chicago	47%	69%	28%	25%	9%	10%	16%	7%
Princeton		56%		13%		22%		9%
Harvard	9%	54%	43%	23%	30%	15%	18%	8%
Yale	13%	33%	47%	53%	40%	0%	0%	13%
MIT	27%	43%	36%	26%	24%	22%	13%	9%
Columbia	36%	50%	24%	23%	28%	27%	12%	0%
Stanford	27%	35%	31%	48%	23%	17%	19%	0%

Chicago differ only slightly; they both see neoclassical economics as more relevant than do the other schools.<sup>5</sup>

<sup>5</sup> This finding is subject to different interpretations. In the 1980s when we did the first study, the term "neoclassical economics" stood for mainstream economics and was contrasted with a substantial undercurrent of heterodox thought that existed at the time. Today, the term neoclassical is far less used, and mainstream economics has incorporated many elements that previously were considered heterodox in developments in fields such as behavioral economics and evolutionary game theory. When I asked a

Another question where a school stood out was in the question of whether economists agreed on fundamental issues. Columbia had no student who strongly agreed with this statement. When I asked Columbia students about this they stated that the policy views of two major professors at Columbia were starkly opposed, which may account for the result.

Overall, Table 2 shows that economics is currently regarded as more relevant and more scientific, with slightly more agreement on fundamental issues, than 20 years ago. There was a substantial increase in those students who agreed that economics is the most scientific of the social sciences, with an increase in the percentage of students strongly agreeing increased from 28 to 50 percent. While Chicago was still an outlier here, again it was less so than in our previous study. The most substantial change was in Harvard, where 54 percent now strongly agreed that economics is the most scientific social science, whereas only 9 percent had believed that earlier.

I also asked students to compare their current views on various issues with the views that they believed they held before they came to graduate school. Table 3 reports those results. (To save space, I report only "strongly agree.") Overall, most students saw themselves as believing that neoclassical economists had become more relevant; the percentage strongly agreeing increasing from 37 percent to 44 percent. However, Chicago showed the largest increase, jumping from 44 percent to 63 percent, while MIT actually declined. In terms of agreeing on fundamental issues, Chicago, MIT and Columbia show decreases in the view that economists agree on fundamental issues, and Yale and Stanford show increases.

There were also changes in views that learning neoclassical economics is learning a set of tools, with all schools but MIT increasing, and Harvard remaining the same. In regard to seeing economics as the most scientific of the social sciences, Harvard, Yale and Stanford decreased, while Chicago, Princeton, Columbia and MIT increased.

### **Differences in Political Orientation Among Schools**

Schools differed in political orientation among schools as Table 4 shows. I found it surprising that Chicago is not a major outlier; Stanford students saw themselves as more conservative than Chicago. Stanford students were also least likely to change their views, while Yale students saw their views changing the most. In the survey, I also asked those who did change their views in what direction their views changed. For most schools the change went both ways. One student captured what likely is happening when he stated, "I became more eclectic. Both conservatives and liberals have their favorite pipe dreams at odds with reasonable economics." There were two exceptions. At Chicago, nine students reported becoming more conservative, and only one more liberal, while at Princeton six students

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Stanford student why Stanford students' views on neoclassical economics differed from those at other schools, he stated, "It would probably just be that the people didn't know what neoclassical economics was."

Table 3  
**Current versus Earlier Perspectives on Economics**

		<i>Current view</i>	<i>View before entering graduate school</i>
		<i>Strongly agree</i>	<i>Strongly agree</i>
Neoclassical economics is relevant for today	<b>Total</b>	<b>44%</b>	<b>37%</b>
	Chicago	63%	44%
	Princeton	29%	30%
	Harvard	55%	48%
	Yale	40%	31%
	MIT	26%	30%
	Columbia	33%	29%
Economists agree on the fundamental issues	Stanford	29%	27%
	<b>Total</b>	<b>9%</b>	<b>11%</b>
	Chicago	8%	16%
	Princeton	6%	9%
	Harvard	13%	14%
	Yale	14%	0%
	MIT	8%	13%
We can draw a sharp line between positive and normative economics	Columbia	0%	7%
	Stanford	13%	4%
	<b>Total</b>	<b>12%</b>	<b>15%</b>
	Chicago	14%	15%
	Princeton	13%	19%
	Harvard	11%	10%
	Yale	7%	7%
Learning neoclassical econ is learning a set of tools	MIT	13%	22%
	Columbia	15%	19%
	Stanford	4%	12%
	<b>Total</b>	<b>36%</b>	<b>26%</b>
	Chicago	32%	18%
	Princeton	34%	21%
	Harvard	33%	33%
Yale	47%	31%	
Economics is the most scientific of the social sciences	MIT	23%	35%
	Columbia	48%	29%
	Stanford	42%	23%
	<b>Total</b>	<b>50%</b>	<b>46%</b>
	Chicago	69%	47%
	Princeton	56%	42%
	Harvard	54%	64%
Yale	33%	38%	
	MIT	43%	39%
	Columbia	50%	29%
	Stanford	35%	48%

reported becoming more liberal and only one more conservative. Since Princeton and Chicago reported roughly the same percentage of conservative students, it seems that Princeton brings in conservative students and turns them into liberals, while Chicago brings in liberal students and turns them into conservatives. When

Table 4  
**Political Views of Different Schools**

		Chicago	Princeton	Harvard	Yale	MIT	Columbia	Stanford	Total
Indicate your political orientation:	Conservative	19%	19%	13%	0%	9%	14%	28%	16%
	Moderate	21%	23%	21%	31%	30%	25%	24%	24%
	Liberal	43%	39%	64%	62%	43%	50%	44%	48%
	Radical	3%	13%	3%	8%	13%	4%	0%	6%
	Politics are unimportant to me	14%	6%	0%	0%	4%	7%	4%	6%
Did your political views change in graduate school?	No	82%	81%	73%	63%	74%	75%	93%	78%
	Yes	18%	19%	28%	38%	26%	25%	7%	22%

asked about the tendency of economics students toward a more conservative point of view, one student noted that one of the teachers in the first year stated, "I'm not here to teach you; I'm here to brainwash you." The student continued, "And that's been pretty much successful."

In the previous survey, major differences among schools showed up in the opinions on the importance of economic assumptions and on opinions about policy issues. Table 5 shows the views on the importance of economic assumptions in the previous study and in this one. Here I report only Chicago, Harvard, MIT and Stanford for the individual schools, because those were the schools presented last time. The other schools showed no major differences from the total. Students seeing the rationality assumption as very important increased from 35 percent to 68 percent at Harvard, whereas at MIT the percentage fell from 44 percent to only 9 percent. (Most of those moved to seeing it as important in some cases.) Harvard students also showed a significant change in their view of rational expectations, with the number seeing it as very important increasing from 14 percent to 41 percent, while Chicago fell from 59 percent to 43 percent, still larger than the average, but no longer an enormous outlier. MIT remained an outlier, with 0 percent seeing rational expectations as very important. Other schools' percentages seeing rational expectation as very important were Yale, 27 percent; Columbia, 12 percent; Stanford, 12 percent; and Princeton, 15 percent; making Harvard and Chicago the outliers.

The importance given to price rigidities went down in all schools, with all schools moving closer together. The importance of imperfect competition stayed about the same in overall importance, but there was less difference between Chicago and other schools. Behavior according to convention increased in importance, with Chicago no longer an outlier.

The differences are starker in terms of opinions about policy issues reported in Table 6. Overall, views have moved only slightly. Fiscal policy is seen as less effective;

Table 5  
**Importance of Economic Assumptions**

	<i>Very important</i>		<i>Important in some cases</i>		<i>Unimportant</i>		<i>No strong opinion</i>	
	<i>Then</i>	<i>Now</i>	<i>Then</i>	<i>Now</i>	<i>Then</i>	<i>Now</i>	<i>Then</i>	<i>Now</i>
<b>The neoclassical assumption of rational behavior</b>								
<b>Total</b>	51%	51%	41%	43%	7%	5%	1%	1%
Chicago	78%	79%	22%	21%	0%	0%	0%	0%
Harvard	33%	68%	51%	30%	14%	3%	0%	0%
MIT	44%	9%	44%	87%	9%	4%	0%	0%
Stanford	58%	54%	36%	38%	6%	4%	0%	4%
<b>Economic behavior according to conventions</b>								
<b>Total</b>	4%	9%	25%	55%	57%	17%	19%	19%
Chicago	0%	10%	31%	42%	31%	25%	38%	23%
Harvard	16%	11%	55%	57%	9%	14%	20%	19%
MIT	18%	9%	69%	78%	2%	0%	11%	13%
Stanford	4%	8%	64%	69%	4%	8%	28%	15%
<b>The rational expectations hypothesis</b>								
<b>Total</b>	17%	25%	53%	58%	25%	13%	5%	4%
Chicago	59%	43%	38%	48%	0%	7%	3%	2%
Harvard	14%	41%	45%	57%	38%	3%	2%	0%
MIT	0%	0%	71%	70%	18%	22%	7%	9%
Stanford	9%	12%	53%	81%	32%	8%	6%	0%
<b>Imperfect competition</b>								
<b>Total</b>	40%	37%	55%	58%	4%	3%	2%	2%
Chicago	16%	23%	72%	67%	9%	7%	3%	3%
Harvard	47%	51%	47%	49%	7%	0%	0%	0%
MIT	51%	39%	44%	61%	0%	0%	2%	0%
Stanford	38%	46%	60%	50%	2%	0%	0%	4%
<b>Price rigidities</b>								
<b>Total</b>	27%	14%	60%	65%	10%	11%	3%	10%
Chicago	6%	7%	56%	58%	38%	22%	0%	13%
Harvard	37%	22%	54%	68%	7%	0%	2%	11%
MIT	38%	17%	56%	70%	4%	9%	0%	4%
Stanford	26%	12%	65%	54%	4%	19%	4%	15%
<b>Cost mark-up pricing</b>								
<b>Total</b>	9%	5%	46%	47%	26%	18%	18%	30%
Chicago	0%	3%	16%	38%	50%	28%	34%	30%
Harvard	7%	3%	48%	49%	26%	16%	19%	32%
MIT	9%	0%	62%	70%	18%	13%	9%	17%
Stanford	11%	12%	41%	28%	33%	24%	15%	36%

fewer students see the market as discriminating against women, and fewer respondents believe that the distribution of income should be more equal. In terms of specific schools we see greater movement with less variance of views than before. The percentage of students agreeing that fiscal policy can be effective stabilizing policy increased at Chicago from 6 percent to 15 percent, while the percentage at Harvard decreased from 30 percent to 12 percent. The percentage of students at Chicago who believed that the Federal Reserve should maintain a constant growth of the money supply decreased from 41 percent to 18 percent, whereas at most

Table 6  
Economic Opinions at Different Schools

		Agree		Agree with res.		Disagree		No strong opinion	
		Then	Now	Then	Now	Then	Now	Then	Now
Fiscal policy can be an effective stabilizer	<b>Total</b>	<b>35%</b>	<b>21%</b>	<b>49%</b>	<b>58%</b>	<b>11%</b>	<b>12%</b>	<b>5%</b>	<b>9%</b>
	Chicago	6%	15%	34%	60%	44%	13%	16%	12%
	Harvard	30%	13%	65%	73%	2%	8%	2%	8%
	Yale	60%	20%	33%	67%	7%	7%	0%	7%
	MIT	48%	30%	51%	57%	0%	9%	2%	4%
	Columbia	54%	26%	38%	63%	8%	4%	0%	7%
	Stanford	30%	24%	52%	32%	9%	20%	9%	24%
The Fed should maintain a constant growth rate of the money supply	<b>Total</b>	<b>9%</b>	<b>7%</b>	<b>34%</b>	<b>22%</b>	<b>45%</b>	<b>50%</b>	<b>12%</b>	<b>22%</b>
	Chicago	41%	18%	44%	36%	9%	28%	6%	18%
	Harvard	7%	3%	24%	13%	57%	73%	11%	13%
	Yale	0%	0%	21%	13%	64%	73%	14%	13%
	MIT	0%	0%	27%	22%	60%	52%	13%	26%
	Columbia	4%	4%	50%	22%	33%	52%	13%	22%
	Stanford	2%	8%	39%	16%	44%	40%	15%	36%
Income distribution in developed nations should be more equal	<b>Total</b>	<b>47%</b>	<b>32%</b>	<b>32%</b>	<b>41%</b>	<b>14%</b>	<b>18%</b>	<b>7%</b>	<b>9%</b>
	Chicago	16%	20%	50%	47%	19%	20%	15%	13%
	Harvard	54%	25%	33%	48%	13%	23%	0%	5%
	Yale	60%	57%	20%	29%	20%	14%	7%	0%
	MIT	52%	39%	30%	35%	9%	9%	9%	17%
	Columbia	46%	33%	37%	44%	9%	15%	9%	7%
	Stanford	52%	36%	24%	32%	17%	28%	7%	4%
A minimum wage increases unemployment among young and unskilled	<b>Total</b>	<b>34%</b>	<b>33%</b>	<b>39%</b>	<b>38%</b>	<b>18%</b>	<b>23%</b>	<b>9%</b>	<b>7%</b>
	Chicago	70%	56%	28%	29%	3%	12%	0%	3%
	Harvard	15%	21%	41%	56%	35%	18%	9%	5%
	Yale	33%	33%	27%	53%	13%	13%	27%	0%
	MIT	24%	17%	53%	30%	11%	30%	11%	22%
	Columbia	38%	30%	25%	30%	21%	26%	9%	15%
	Stanford	36%	38%	40%	35%	19%	27%	4%	0%
Tariffs and quotas reduce general economic welfare	<b>Total</b>	<b>36%</b>	<b>51%</b>	<b>49%</b>	<b>39%</b>	<b>9%</b>	<b>7%</b>	<b>6%</b>	<b>3%</b>
	Chicago	66%	62%	34%	25%	0%	13%	0%	0%
	Harvard	20%	53%	56%	45%	11%	0%	13%	3%
	Yale	33%	33%	60%	53%	7%	13%	0%	0%
	MIT	38%	48%	42%	43%	13%	0%	4%	9%
	Columbia	38%	30%	54%	48%	8%	15%	0%	7%
	Stanford	32%	54%	51%	35%	9%	4%	9%	8%
Inflation is a monetary phenomenon	<b>Total</b>	<b>27%</b>	<b>34%</b>	<b>33%</b>	<b>33%</b>	<b>29%</b>	<b>20%</b>	<b>11%</b>	<b>14%</b>
	Chicago	84%	44%	16%	25%	0%	21%	0%	10%
	Harvard	15%	30%	26%	38%	46%	25%	11%	8%
	Yale	13%	40%	40%	20%	33%	20%	13%	20%
	MIT	7%	18%	44%	50%	36%	14%	11%	18%
	Columbia	29%	22%	25%	44%	33%	22%	13%	11%
	Stanford	23%	28%	45%	24%	23%	16%	10%	32%
The market tends to discriminate against women	<b>Total</b>	<b>24%</b>	<b>14%</b>	<b>27%</b>	<b>28%</b>	<b>39%</b>	<b>47%</b>	<b>10%</b>	<b>11%</b>
	Chicago	6%	5%	19%	20%	69%	69%	3%	7%
	Harvard	44%	15%	20%	33%	26%	43%	11%	10%
	Yale	27%	7%	53%	27%	13%	53%	7%	13%
	MIT	24%	22%	22%	30%	40%	39%	13%	9%
	Columbia	38%	26%	21%	26%	33%	26%	8%	22%
	Stanford	11%	8%	38%	32%	43%	52%	9%	8%



other schools this percentage increased. Yale and Harvard remained as the schools with the strongest disagreement with that proposition. A similar convergence of views can be seen in the question about whether inflation is primarily a monetary phenomenon, with Yale and Chicago differing only slightly on their views on this issue. It seems that the Yale/Chicago divide on monetary policy has finally been put to rest.

Table 7 shows students' views of the importance of reading in math, sociology and psychology by school. MIT students saw reading in psychology as very important, but reading in math as not very important. Harvard students saw reading in sociology as very important, while Yale students did not.

### **Differences Among Schools on other Dimensions**

The survey asked a variety of other questions, and here I will try to summarize some of the interesting results of differences by school.

Interest in fields differed among schools. Significant differences include great interest in micro at Chicago and Yale; the most interest in international trade at Columbia; the most interest in labor at MIT and Chicago, with the least interest at Yale and Columbia. MIT students had the most interest in urban economics; macro theory was of least interest at MIT, Stanford and Harvard, and of most interest at Columbia. Public finance was of most interest at MIT and of least interest at Columbia, Harvard and Yale. Money and banking was of least interest at Harvard and of greatest interest at Princeton. Law and economics was of least interest at Princeton and of most interest at Stanford. Columbia and Chicago had the greatest interest in comparative economic systems.

The response to what skills put students on the fast track also differed by schools. Stanford students saw problem solving as most important (69 percent found it very important);<sup>6</sup> Columbia saw it as least important (32 percent). MIT students saw empirical research as most important (50 percent); Harvard students saw it as least important (18 percent).<sup>7</sup> Princeton students saw excellence in mathematics as most important (48 percent); MIT students saw it as least important (17 percent); Columbia students saw having a thorough knowledge of the economy as being most important (25 percent); Yale and MIT students saw it as least important (0 percent).

Chicago students were still the most likely to use the notion of individual optimizing behavior with 85 percent saying they used it very often, although the differences were less than before. Columbia students used it the least with 56 percent saying they used it very often.

Students at Harvard and Yale were much more likely (75 percent) to want to

<sup>6</sup> The percentages reported in this paragraph are the percentages finding a skill as very important.

<sup>7</sup> These percentages reported are the percentage ranking empirical research as "very important." While Harvard students ranked empirical research lowest on this measurement, they were the highest in finding it moderately important. Only 6 percent of the Harvard students found doing empirical research unimportant, compared with 12 percent in the survey as a whole.

Table 7  
**Importance of Reading in Different Fields by School**

		Chicago	Princeton	Harvard	Yale	MIT	Columbia	Stanford	Total
Mathematics	Very important	47%	45%	23%	31%	13%	36%	41%	36%
	Important	34%	21%	35%	44%	26%	32%	30%	31%
	Moderately important	12%	24%	28%	25%	35%	25%	26%	23%
	Unimportant	7%	9%	15%	0%	26%	7%	4%	10%
Sociology	Very important	8%	16%	30%	0%	22%	25%	19%	17%
	Important	41%	41%	40%	44%	43%	25%	41%	39%
	Moderately important	37%	31%	23%	50%	30%	32%	30%	32%
	Unimportant	14%	13%	8%	6%	4%	18%	11%	11%
Psychology	Very important	12%	28%	25%	6%	48%	21%	19%	22%
	Important	22%	22%	30%	56%	39%	36%	22%	29%
	Moderately important	33%	34%	38%	25%	9%	25%	44%	31%
	Unimportant	33%	16%	8%	13%	4%	18%	15%	17%

be at a major university, whereas MIT and Columbia (39 percent and 46 percent, respectively) were less likely to want to be at a major university and more likely to want to be at an institution involved in economic policymaking. MIT also had the largest percentage wanting to be at a good liberal arts college: 17 percent compared to an average of 9 percent. Students at Chicago and Columbia were much more likely to want to be research assistants or teaching assistants than were students at other schools, which is most likely explained by the different support levels of these programs. Columbia has recently changed its practice, reducing the number of admitted students and providing more long-term support for a larger number of those admitted. Chicago remains the one top school that accepts a large number of students without support and reduces the number somewhat in core examinations, although in the interviews, and in discussions with faculty at Chicago, that weeding out is less than it is sometimes rumored to be. Chicago remains the largest program. Columbia, which was a large program, now has a much smaller program.

Chicago students found course work most stressful (42 percent found it very stressful);<sup>8</sup> this is not surprising since the core exams weed out students at Chicago much more than they do at other schools. Harvard students found it least stressful (20 percent). Chicago students also found their financial situation most stressful (18 percent); Harvard students found it least stressful (2 percent); Columbia students found the relationship with faculty most stressful (22 percent); Princeton students found it least stressful (0 percent); Most students did not find the mathematics very stressful; the most stress was felt at Stanford, Princeton and Columbia, with Harvard, MIT and Yale having almost no students finding the math very

<sup>8</sup> The percentages reported in this paragraph are the percentages finding math very stressful.

stressful. Columbia students found conflict between course content and interest most stressful (26 percent); Harvard students found it least stressful (7 percent).

Chicago had the greatest interest in micro theory (53 percent had great interest);<sup>9</sup> MIT had the least (18 percent). MIT had the most interest in labor (45 percent); Yale had the least (7 percent). Columbia had the most interest in macro theory (50 percent); MIT had the least (14 percent); MIT had the most interest in public finance (45 percent); Columbia had the least (14 percent). Harvard and Chicago had the greatest interest in development (47 percent); Yale had the least (25 percent). Princeton had the greatest interest in money and banking (41 percent); Harvard had the least (7 percent). Stanford had the most interest in law and economics (26 percent); Princeton had the least (6 percent).

## Reflections on the Survey Results

Since our earlier study in the 1980s, graduate study in economics has been scrutinized and subjected to self-examination and self-criticism by the Commission on Graduate Education in Economics (COGEE) in a way that few disciplines have undertaken (Krueger et al., 1991; Hansen et al., 1991). Almost none of the COGEE commission recommendations, such as making the core a concern of the entire department or balancing the breadth and depth of the core, were specifically adopted. Nonetheless, this survey shows that economics has changed significantly since the 1980s, and graduate students today are happier with their training than they were.

One reason why these changes have occurred are that the way economics is done has changed, as have economists' view of themselves. Economics has become more consciously empirical than it was, and the mathematics that it uses is more likely to be applied mathematics rather than pure mathematics. Institutional economics has made a comeback, albeit in a different form. Rigid behavioral assumptions have become less sacrosanct and behavioral economics and experimental economics have blossomed, and while this work is not center mainstream, it is clearly at the edge of mainstream.

Technological change has helped bring about this result by making sophisticated econometrics much cheaper to do, allowing students to pull more information out of data. Methods of bringing theory to the data have increased as economists have become less rigid about their approaches to theory and to empirical work.<sup>10</sup> One student expressed it this way: "I think empirical work is becoming the dominant strand of microeconomics. We have the computing power, we have the

<sup>9</sup> The percentages reported in this paragraph are the percentages finding a topic of great interest.

<sup>10</sup> When I did the first study, because I was handing out a survey, a well-known economist asked me whether I had given up economics. Since that time, a number of economists have begun using survey techniques (Blinder et al., 1998; Bewley, 1999), although survey data are still questioned more than are other data (Easterlin, 2004).

data sets, we understand identification issues, and the combination of the three makes the analysis much more credible than in the past, and therefore more readily consumed by policy makers.” Creativity in actually saying something, finding the “killer app” or the perfect field or natural experiment, has gained in importance, and pure technique has faded in importance. As another student put it, “Mathematical ability is great, but creativity is much more important.”

The methodological debates of the 1970s and 1980s, which pitted neoclassical economics against heterodox economics, have faded, and the perception of a rigid neoclassical economics has been replaced by an eclectic mainstream whose central theme is “What can you tell me that I don’t already know?” The view of what has happened in graduate economics education was captured by a student in his responses to two questions. In response to a question of what he most disliked about graduate school, he stated, “Being made more cynical than most would think possible. It is like seeing the inside of a sausage factory.” But in answer to the question of whether economists have a relevant role in society that same student answered, “Yes, they are the only careful, structured, empirical thinkers on most economic, political, and social issues.”

## Issues of Concern

Although graduate students are generally satisfied with economics, serious issues about graduate education in economics remain open. The first issue is that an important reason for the more positive attitude of the students is not a change in graduate economics education, but a change in who is becoming an economist. In the early 1980s, many students went into graduate economics study thinking that it would be like undergraduate school; today almost all students know better.<sup>11</sup> In effect, students have been prescreened to be comfortable with the mathematics in the program. Similarly, graduate schools know better what they want and select students who are comfortable in the approach that will be taught. However, this prescreening comes at a cost, since it likely eliminates those parts of the applicant pool who rank high on creativity and vision, but who either find the mathematics sterile, or do not have the mathematical ability (Colander, 1994). Mathematicians often process information differently than other people, and by filtering student through a mathematical screen, one is likely to change the nature of economics, making it harder to replicate creative economists in the style of Easterlin, North, Olsen, Streeten, Tullock, Rosenberg, Kindleberger or Buchanan. While these are all highly analytical and sophisticated thinkers who have contributed enormously to economics, it is unclear that they would have chosen economics (or whether

<sup>11</sup> A former chair of a major department once told me that I (because of the initial study) have discouraged more students from going on in economics than any other person has; I take that as a compliment because it means that the students going on are more likely to be those who really want to go on.

graduate schools would have chosen them) using the current graduate school filtering system.

A second issue is the structure of the core classes in graduate education. The COGEE report argued that these core courses should teach "those things common to all economists" and be regarded as "the concern of the entire department" (Krueger et al., 1991, p. 1052). Most schools have interpreted "those things common" to mean a set of common techniques. But another interpretation is that economists share a reasoning process, an imaginative combination of insights and reasoning that emphasizes intuition of how incentives matter and how institutions work. The two interpretations are, of course, somewhat connected; certainly statistical methods are common to both. But the "economic reasoning" concept of commonality relies on a less formal set of models than are often taught in the core courses of graduate school today, and emphasizes the relationship of those models to real-world observations much more than does the "technique" interpretation of "those things common."

Robert Solow (1964, pp. 7-8) provided one justification for focusing on highly technical models in the core. He wrote, "In economics I like a man to have mastered the fancy theory before I trust him with simple theory. The practical utility of economics comes not primarily from its high-powered frontier, but from fairly low-powered reasoning. But the moral is not that we can dispense with high-powered economics, if only because high-powered economics seems to be such an excellent school for the skillful use of low-powered economics." Solow may be correct, but if that is the justification, it is worth exploring whether other screening devices could serve the same purpose.

One school, Chicago, stood out in teaching a reasoning-based, rather than a technique-based, core micro. The core micro at Chicago was more applied; it focused on giving students a sense of economic reasoning rather than techniques. The students reveled in the difference. When I mentioned the possibility of their learning more standard micro, most students strongly objected. One student stated what seemed a common view: "In micro I really like the perspective that they have here; there are a lot of schools where they just go through Mas Colell chapter by chapter. I'd much prefer a course where you don't go through a single chapter of that book." That economic reasoning approach to micro was missed at other schools. For example, one Princeton student stated, "We don't learn price theory in the first year, or get introduced to the models we use in the field courses. In applied courses we do a lot with price theory and I was frustrated that that's not part of the core anymore." Students at other schools made similar remarks. Were students to vote, they would strongly favor a core that focused on economic reasoning rather than economic technique and that better tied in with upper-level field courses.

The Committee on Graduate Education in Economics also argued that the core should be the concern of the entire department, but in practice, departments seem to have allocated control of the content to a subset of individuals, and that

subset has allocated control of subparts to specific individuals. Thus, in their core exams students are held responsible for what the teacher of that subcourse chooses to teach. Again and again in the interviews, students remarked that what they learn depended on who was teaching that particular year. They said that if one fails the core exam, one has to retake the entire course, because the next year the content of that core would change so much.

Thus, the core is not what most outside observers would call a core. Instead, it is an introduction to the approach and techniques taken by the professors who are teaching that semester. To put it another way, the core is a more-or-less arbitrary hurdle for students. In the earlier study, we detected a strong objection among students to the requirement that they jump this hurdle. This time there is less concern about the hurdles, partly because departments have preselected better hurdlers, and partly because even those who question whether it is worth doing can still pass the exams, because the exams are structured sufficiently closely to the problem sets so that bright mathematically oriented students who study those problems sets can pass even if they are not totally comfortable with the techniques. One Princeton student made a typical remark: "The first year is pure theory. I frequently was doing stuff that I had no idea why I should care about it." Students are highly cognizant of how the exams are structured, and can devise strategies to pass the exam at the required level, even as they are unclear about what they are learning.<sup>12</sup> However, the question remains whether the core courses are serving the role that core courses should play.

A third issue concerns what subjects are in the core, specifically: with the evolution of thinking in macro, whether macro belongs in the core at all. When we did the last study, the highly technical approach to macro that now characterizes the core was not fully integrated into the core macro courses, which meant that then the core macro course still focused on macro policy. The current study shows that that is no longer the case; today, most of the macro courses never discussed macro policy, and since micro students never take advanced field courses in macro, they are taught no macro policy. The students told me that the differences in policy views on macro that showed up in the survey did not reflect what they were taught about policy in macro, since they were taught almost nothing about macro policy, but reflected their undergraduate training. When asked about survey results showing that students at his school had changed their views on policy, one student stated, "I think that in the macro course we never talked about monetary or fiscal policy, although it might have been slipped in as a variable in one particular model, but that

<sup>12</sup> One of the interesting discussions I had with students concerned the greater anxiety of women students about the core exams. The male students in the interview could not understand the women's anxiety since the rational expectation was that everyone was going to pass. The women agreed, but said that they still felt uncomfortable because they did not really understand what was going on; the male students didn't understand either, but since they were confident they could pass the exam, were not concerned about it.

wasn't the focus, so it didn't come from the courses." Another stated, "Monetary and fiscal policy are not abstract enough to be a question that would be answered in a macro course." In short, the macro that is taught to the students in the core has lost touch with both policy and empirical evidence.<sup>13</sup> Instead, students are presented with dynamic stochastic optimal control theory and Euler equations.

Macroeconomists will be quick to point out that much of the evolution in macro occurred precisely because macroeconomists were trying to bring better models to the data and that an enormous amount of serious empirical work in macro involves that issue. My point here is not to criticize or discuss the state of macro, but only to describe the perception of macro that students get from what they are presented in the core. In micro and econometrics, the students can accept learning esoteric techniques because they hear from upper-level students that in the field courses they may use those techniques; in macro, that is not the case. One Princeton student remarked, "I would still be hard-pressed to tell what any of the tools I learned in macro were for. In micro and econometrics I also initially felt that, but by the second year, things I tried to do before I came here started to make more sense. I was able to construct the models better, and I was able to apply the tools; that was not the case in macro." In many ways, macro theory today is advanced dynamic general equilibrium price theory. A strong argument can be made that macro, as it is currently being taught, does not belong in the core, and it should instead be seen as an advanced upper level course. Eliminating macro from the core would free up resources in the core, which could be advantageously used in a number of different ways. One possibility, which would serve the same "technical hurdle" function that the core macro course does currently, would be to replace the macro core course with another econometrics and statistics course, which would provide students with more tools for bringing the models to the data. Such a course might cover various time series, cointegration, vector autoregression and nonparametric econometric techniques that most core econometric courses do not now cover, but which are of use in macro research.<sup>14</sup>

Another issue with the core concerns the breadth as opposed to the depth of the courses. The report of the Committee on Graduate Education in Economics called for a balancing of breadth and depth in the core. That clearly hasn't happened; the core focuses more on depth, not breadth. The core courses provide little context for why those techniques that the students are learning are important or why they have developed. The core courses almost never survey the field, nor do they attempt to put the ongoing debates in context. They make almost no attempt

<sup>13</sup> At one school that earlier had a department-written exam, I heard that a policy-oriented economist who was not teaching in the core wrote a question for the core macro exam about the likely effect on the economy of a change in interest rates. Almost all students taking the exam had no idea how to answer it. The question was discarded, and the department moved away from department-written exams.

<sup>14</sup> Many other possibilities exist. Suggestions I have received from readers of drafts of this paper include adding an additional price theory course focused on economic reasoning, a policy-based macro course or an economic history component, to the core. Alternatively, some have suggested reducing the number of courses in the core.

to provide knowledge of the field that would translate beyond the particular professor's approach. Students have little sense of background to the debates or the techniques and do not understand why they developed, and what use they are. Instead, the students are thrown into the particular approach, and a particular technique, and told to learn it. What the professors are doing is often interesting, and exciting, so the students are generally comfortable with the course as long as they know that they will be able to pass the exams.<sup>15</sup>

## Conclusion

About the same time that I was doing this survey, French graduate education in economics was going through a student revolt (Fullerton, 2003). The complaints of the French students were, in many ways, the same complaints of critics of U.S. education in economics in the 1980s—that the subject was taught in an unempirical manner and that the economics they were learning lacked connection to the real world. Most graduate students in the United States were unaware of that revolt, and those who were aware of it were surprised that economics could be described as unempirical. U.S. students find their studies very empirical and are reasonably happy both with their education and with economics. U.S. students feel they are learning useful tools and that they are entering into a profession that is respected and has something to say. The problems and stress that go along with getting a Ph.D. remain, but the stress seems to reflect a normal level of concern, not the deeper concern that I detected in the students in our previous study.

I am known as a critic of graduate education in economics, but my critique in this study is quite different from my critique of 20 years ago. Then, my critique was not only of graduate education in economics, but also of economics itself—its rigidity of assumptions, its lack of empirical grounding and its failure to bring the models to the data in a serious way. However, I believe that economics has changed, and it is now attempting to bring the models to the data in a much more meaningful way than it used to. Theory for the sake of theory has been reduced. But as can happen as technology changes, the pedagogical institutional structure has not kept pace with the changing research technologies. My critique of economics now is not about economics, but about

<sup>15</sup> I gave my alternative proposals for structuring and grading the core in Colander and Brenner (1992). They involve outside examiners for the core exams, and an additional general departmental exam on recent economic debates and policy issues based on a reading list, but without specific lectures, which students would have to pass as part of their core training.

The breadth issue is of special interest to me because liberal arts schools, such as mine, need macroeconomists who have some knowledge of macro institutions, macro policy and some sense of the history of macro. Job candidates who have studied macro in top schools often have almost no training in such issues. In a related spirit, Stock and Hansen (2004) argue strongly that graduate training does not fit the nature of the policy jobs that many economists take.



pedagogy—specifically the structure of the core in graduate education. If, as the students strongly argued in the interviews, creativity and economic reasoning, not mathematics, is the core of economics, then it seems reasonable that the core courses should focus on creativity and economic reasoning and not technique.

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