

The Undergraduate Origins of Ph.D. Economists: The Berkeley Experience

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Abstract:

The University of California, Berkeley sends more undergraduate students to Economics Ph.D. programs than does any other public university. While this fact is surely a function of its size, there may be lessons from the Berkeley experience that others could adopt. To investigate why Berkeley generates so many Economics Ph.D. students, I convened and interviewed two groups: Economics student services staff, and a self-selected focus group of twelve Economics undergraduates who plan to apply to Ph.D. programs. Four factors came up repeatedly in these conversations: math preparation, advanced track for theory courses, research opportunities, and availability of information. A fifth factor was implicit in the conversations: peer effects.

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The Undergraduate Origins of Ph.D. Economists: The Berkeley Experience

Martha L. Olney

Why does the University of California, Berkeley send more undergraduate students to Economics Ph.D. programs than does any other public university?¹ What advice can Berkeley's experience offer to faculty and advisors at other large public research universities? To answer these questions, I met with two groups: Economics undergraduate student services staff, and a self-selected focus group of twelve Economics undergraduates who plan to apply to Ph.D. programs. To put the conversations in context, I begin with a description of Berkeley undergraduates and Berkeley's economics major.

THE BERKELEY ECONOMICS MAJOR

Demographics

U.C. Berkeley is a large, public research university. The campus currently awards approximately 11,000 degrees annually: about 7,500 undergraduate degrees, 2,500 masters and professional degrees, and 1,000 doctoral degrees.² The number of undergraduate degrees awarded has increased by about 1,000 students per year since before the 2008 financial crisis, primarily due to increased enrollments of international students (from under 250 to about 800 students per year) and underrepresented minority students (from about 900 to about 1,200

students per year).³ Table 1 sets out annual campuswide data for 2004-2014, including ethnicity and gender for the undergraduate population.

[Insert Table 1 about here]

Berkeley students have a reputation for academic excellence which is evident in the reported statistics and student profile. For Fall 2014 entering freshmen, the average GPA was 3.89 (unweighted) and 4.39 (weighted). The combined SAT scores averaged just over 2000 with an interquartile range of 1860 to 2200. Composite ACT scores averaged 30 with an interquartile range of 27 to 33.⁴

What is perhaps less well-known is that Berkeley students are disproportionately from low and moderate income families. In 2011-2012, 37 percent of students were eligible for federal Pell grants, awarded at the time to families with annual incomes below \$45,000.⁵ About 20 percent of seniors graduating in 2013-14 were from families with income of \$20,000 or less as seen in Table 2. Another 15 percent were from families whose income is between \$20,000 and \$50,000.⁶

[Insert Table 2 about here]

Just over a quarter of entering Berkeley undergraduate students are first-generation students: 30 percent of female students and 21 percent of male students report neither parent graduated from college. The likelihood of being a first-generation student varies widely by race, ethnicity, and national origin. Just 12 percent of white students and 13 percent of international students in Fall 2013 were first-generation college students, as were 23 percent of Asian/Pacific Islander students. But fully 68 percent of Black or Hispanic students were first-generation.⁷

The Economics major is the most popular department on campus. We award about 500

B.A.'s per year (544 in 2013-14), accounting for about 7 percent of undergraduate majors. In the College of Letters and Sciences, the next most popular departments or programs by number of undergraduate degrees awarded are Political Science (427 in 2013-14), Molecular & Cell Biology (424), Integrative Biology (417), and English (325). The undergraduate Business major is housed in the Haas School of Business and awards about 350 bachelors' degrees per year.⁸

Student-faculty ratios are much higher than in the typical liberal arts colleges, as is the norm for a large public research university. Enrollments in Berkeley's Economics Department surged over the last decade. At the same time, retiring and departing faculty were not all replaced. As a result, our student-faculty ratios rose to the highest on campus. In Spring 2014, counting all declared economics majors but not all enrolled students in economics courses, our student-faculty ratio was nearly 40.⁹

The Economics major is not representative of the campus as a whole in ethnicity or gender. See Table 3. The Economics major has absorbed more international students than any other major; statistics is a distant second. Economics is more male than the campus as a whole, has slightly more Asian/Pacific Islander students, and has a smaller representation of white and underrepresented minority students than the campus as a whole.

[Insert Table 3 about here]

Stock and Siegfried report that 52 Berkeley undergraduates earned an economics Ph.D. between 2008 and 2012.¹⁰ Assuming 7 years between awarding of the B.A. and the Ph.D. (2 years work experience plus 5 years in the program), those 52 students represent about 4 percent of the 1,372 students who graduated with an Economics degree between 2000-01 and 2004-05.

Admission and Course Requirements

Undergraduates wishing to become an Economics major must apply. Admission is based on grades in a series of prerequisite courses. About 70 percent of Economics majors enter the University as freshmen; the other 30 percent are junior transfer students, typically from a California community college. Berkeley is on a semester system, with an optional summer session that is the equivalent of a third semester per year.

Prospective majors entering as freshmen must complete 5 courses with an average GPA of 3.0 or above: two semesters of calculus, one semester of calculus-based statistics, a one-semester introduction to economics (Econ 1 or 2), and one of the two intermediate theory courses (microeconomics – Econ 100A or 101A, or macroeconomics – Econ 100B or 101B, which can be taken in either order). Students entering as junior transfers typically take their introduction course and two semesters of calculus at the community college and must have an average GPA of 3.0 in those courses. Junior transfers must complete 2 courses at Berkeley with an average GPA of 2.7 or above: one semester of calculus-based statistics, and one of the two intermediate theory courses. Because the university requires that a major be declared by the middle of the junior year, junior transfer students must take these courses during their first semester.

Broadly speaking, a student wishing to be an economics major must be an average or above-average student in the prerequisite courses.¹¹ The average grades awarded in the prerequisite classes, Fall 2010-Spring 2013, are shown in Table 4. These are the averages for all students enrolled in the courses, not just for those who become economics majors. Average grades hover around 3.0, with lower grades in the calculus-for-math-majors (Math 1A and 1B)

than in the calculus-for-social-sciences-majors (Math 16A and 16B), and in the calculus-based statistics course.

[Insert Table 4 about here]

The admission rate to the major is about 80 percent. We have no way to measure what percent of students enter the university wanting to major in economics but who never reach the point of applying to the department because of their grades in the calculus or statistics courses. Certainly there are some, so admissions relative to those who wanted to major in economics when they arrived at Berkeley is lower than 80 percent.

Once students are admitted to the major, the requirements for graduation are far from onerous. To graduate with a B.A. in economics requires, in addition to the calculus and statistics courses:

- Intermediate Microeconomics (Econ 100A or 101A)
- Intermediate Macroeconomics (Econ 100B or 101B)
- Econometrics (Econ 140 or 141)
- 5 additional upper-division economics electives

There is no required capstone course nor required thesis. With about 500 graduating seniors each year and just 32 FTE ladder faculty, we do not have sufficient faculty to require a capstone project. Students with a 3.5 GPA in upper-division economics courses and a 3.3 overall GPA can choose to write an honors thesis which must be advised by a faculty member (ladder, lecturer, or adjunct), and about 60 students do so each year.

GETTING INTO A PH.D. PROGRAM

What does it take to get into a top tier Ph.D. program? Berkeley's departmental website provides interested students with a clear set of criteria.¹² Successful applicants typically have

- GPA of 3.8 or higher, with consideration for the degree of difficulty of course work
- Upper level math courses (at least real analysis or honors advanced calculus), with grades of A- or better
- Quantitative GRE score of at least 780 (old scale) or 163 (new scale)
- Grades of A- or better in intermediate micro theory, intermediate macro theory, and econometrics courses, with a strong preference for honors or math-track versions of the three courses
- Advanced undergraduate or graduate-level course work in economics
- Proven independent research ability, such as an honors thesis

THINKING ABOUT THE QUESTION: A CONCEPTUAL MODEL

Why does Berkeley send so many students to Economics Ph.D. programs? My approach to thinking about this question is set out in Table 5. There are two groups of undergraduate students who go on to Ph.D. programs: those who entered college intending to eventually go to graduate school, and those who chose the Ph.D. path only after they had begun college. I call those two groups "Pre-Selectors" and "Deciders." For the Pre-Selectors, the question is: Given that you started college wanting to eventually go to graduate school, why did you attend Berkeley rather than some other college or university? For the Deciders, the question is: When in your college years did you decide you wanted to study for a Ph.D. and what in particular pushed you toward that decision? For both groups – Pre-Selectors and Deciders – we had a

second question: What aspects of the undergraduate experience at Berkeley have helped prepare you for graduate school?

[Insert Table 5 about here]

THE BERKELEY EXPERIENCE AND PREPARING FOR GRADUATE SCHOOL

I conducted conversations with two groups: Economics student services staff (“Staff”) and a focus group of twelve current undergraduate economics majors who plan to apply to Ph.D. programs (“Student <XX>,” not the true initials). The department has three professional undergraduate student services staff, individuals with at least Master’s level work in higher education or college counseling. The student group, self-selected in response to an email invitation to all economics majors, met in late July 2014. Because of timing, the group was restricted to those attending summer classes or working a summer job in the Berkeley/San Francisco area.

Both Staff and Students underscored four aspects of the Berkeley experience that pushed them toward or prepared them for an Economics Ph.D. program

- Strong math preparation
- Existence of an honors or advanced track for intermediate theory and econometrics courses
- Opportunities for undergraduates to conduct research
- Availability of information about Economics Ph.D. programs

Based on our conversations, I identified a fifth aspect:

- Peer effects

The literature on graduate school choice provided limited guidance. Much of the literature focuses on the decision to enroll in graduate school.¹³ We found no published work on graduate school decisions by Economics students in particular. English (2012) used the 2000/01 Baccalaureate & Beyond Longitudinal Study to study decisions to apply to and enroll in graduate school, and found that academic success and attending a university that offered graduate degrees was correlated with pursuing a graduate degree. Eagan (2010) underscored the importance of undergraduate research opportunities.

Observation: Very few Pre-Selectors, Mostly Deciders

Staff suspected that many students arrived at Berkeley as 18 year olds planning to get a Ph.D. but of the twelve students in the focus group, only Student ML fit that profile.¹⁴ All the other students decided they were interested in a Ph.D. after arriving at the University. I do not find this result surprising: I would not advise most high school seniors who want to go on to a Ph.D. program to attend Berkeley, where only the self-confident and determined are likely to be noticed. Instead, I would advise most 17 year olds to apply to selective liberal arts colleges at which there are many opportunities for many students to conduct research, at which they will be well-known by many faculty, and at which they will be surrounded by peers with similar aspirations. Certainly Stock and Siegfried's results are consistent with my advice: Controlling for institution size, their list of schools sending the most students on to an Economics Ph.D. program is largely a list of the top liberal arts colleges in the country.¹⁵

Observation: Strong Math Preparation Matters

Students planning to attend Economics Ph.D. programs need a strong math background: a year of calculus (not the social science variety), multivariate calculus, real analysis, possibly linear algebra. Many of the focus-group students who plan to pursue a Ph.D. had wound up on the student-named “quant” track before they made the decision to pursue a Ph.D. Some had entered the University as engineering, math or physics majors, which tracked them directly into Math 1A (calculus for engineers and math majors) rather than 16A (for life and social science majors). Others took Math 1A because they wanted to take the honors version of the economics intermediate theory course, which lists the third semester of calculus-for-math-majors as a prerequisite. All students underscored the importance of taking “the right” math classes.

About 25 percent of economics majors are double (or triple, or even quadruple) majors, an option facilitated by the low number of economics credits required for graduation. Table 6 lists the most popular double and triple majors. Statistics, computer science, and math are three of the top four second majors. These majors all require substantial math-for-math-majors courses.

[Insert Table 6 about here]

Observation: An Honors Track Matters

Berkeley offers two versions of both intermediate theory courses and the econometrics course: the regular version and an advanced or honors version. The differences are laid out in Table 7. The students have a name for the second set of courses – the “quant” track – but the department does not. We simply provide descriptions in the course catalog – which differ only

by the use of the word “theory” in the advanced or honors version – and offer the courses each semester. Students self-select into the courses.

[Insert Table 7 about here]

The existence of a dual track for these three courses implicitly tells students that there is “a Ph.D. track.” Students AE and JJ decided to pursue a Ph.D. after completing Economics 101A, the honors version of intermediate micro, taught to them by Prof. David Card.

Observation: Research Opportunities Matter

Staff and students both mentioned the importance of opportunities for conducting research. Students universally underscored how very important research was in convincing them they wanted to pursue a Ph.D.¹⁶ Nearly half of the students stated they decided to pursue a Ph.D. after their first research opportunity. Berkeley offers students several ways to get involved in research.

- *Undergraduate economics research seminars.* The research seminars are the equivalent of some capstone courses at other schools. These courses, linked to a particular field, enroll no more than 20 students and are typically taught by a ladder faculty member. Students read and discuss published journal articles, and conduct their own economics research. The Economics department typically offers 5 to 6 research seminars each year. Students need to first take the related upper-division field course.
- *Economics 191.* This course is a moderate-enrollment course taught by a ladder faculty member, with between 60 and 100 students. About half the class are international exchange students, a mix of advanced undergraduate and master's level students visiting

Berkeley for one semester. The goal of the course is to teach students how to conduct research. Five or six faculty present their latest research in standard graduate-seminar format. Two or three graduate student instructors (GSIs) offer lectures and in-class activities that teach the research process. Students write a substantial research paper with guidance from the lead faculty member and the GSIs.

- *Honors Thesis.* About 60 economics majors a year write an honors thesis, an option available to anyone with a sufficiently high GPA in the major and overall. Students are required to complete a research seminar or other research-preparation course the fall or spring before they write a thesis. Most advisors are economics faculty (ladder, lecturer, or adjunct). Outside faculty with an Economics Ph.D. can also choose to advise an economics undergraduate.
- *Haas Scholars Program (<http://hsp.berkeley.edu>).* Each year, about 20 undergraduates with financial need are selected from the entire university community to be Haas Scholars. Each student completes an independent research project that will serve as the basis for an honors thesis.
- *Working as a research assistant.* Undergraduate students can work with graduate students or faculty as research assistants. In addition to “cold-calling” or “cold-emailing” faculty to obtain an RA position, the university and the department have the following programs or systems to help link undergraduates with those who need research assistance:

- *URAP (Undergraduate Research Apprentice Program, <http://research.berkeley.edu/urap>).* This program is offered by the College of Letters and Sciences. Faculty list research projects for which they are seeking undergraduate assistance. Students peruse the list, submit an online application, and hope to receive a request for an interview. Positions are typically unpaid.
- *SMART (Student Mentoring and Research Teams, <http://smart.berkeley.edu>).* This program is offered by the Graduate Division. Graduate students apply in the fall to be a mentor. Those accepted to the program take a semester-long seminar in mentoring undergraduate students. Undergraduate students apply in the spring to be an RA in the summer. Funding is provided by donor contributions which are matched by Graduate Division. Positions are paid: Graduate student summer stipend of \$5,000; undergraduate student summer salary of \$3,500; research expense funding of \$1,500.
- *Economics database.* This service is offered by the Economics Department. At the beginning of each term, declared economics majors are invited to submit an application to an online database that can only be accessed with a university logon. The database is made available to the department's graduate students and faculty who are interested in hiring an undergraduate RA.

Observation: Information Flows Matter

Staff and students underscored the importance of information. Students wanting to pursue a Ph.D. need to get started on a Ph.D. track early in their undergraduate years. The

department has an undergraduate student services staff of three professional advisors, each with a Master's in Higher Education or College Counseling, plus about a dozen student peer advisors. Faculty do not have advising responsibilities as a rule, though the five members of the undergraduate committee hold a few office hours each semester that are open to any economics major by appointment. The peer advisors are trained by the staff and are the most common point of contact for undergraduates. The department maintains a website that is a key source of information for students.

Information matters, but students need to seek it out. Information about pursuing a Ph.D. is offered to undergraduates in a number of ways.

- *Student Orientation.* Entering freshmen and entering transfer students attend summer orientation sessions. The orientation sessions for transfer students explicitly include information about course selection for those students planning to pursue a Ph.D. Freshmen orientation sessions do not.
- *Department Website.* The department relies heavily on its website as a source of information for students. Both the undergraduate and graduate pages contain information on preparing for graduate school, including the importance of taking the “right” math classes and the honors or advanced track for theory and econometrics.
- *Student Advising.* Staff report that many of their advising appointments cover how to prepare for a Ph.D. program. Students are not required to meet with an advisor, but those who are interested in graduate school typically take advantage of this opportunity. About half of the 50-60 students who sign up for faculty advising each term wish to discuss their graduate school preparation and plans.

- *Graduate Students.* The very existence of a cadre of Economics Ph.D. students announces to undergraduates that getting a Ph.D. is something that “normal” people do.¹⁷ Our entering graduate classes are 20-25 students, so there are about 100-150 graduate students in residence at any time. Conversations in office hours about graduate school are common. The Women in Economics group organizes an annual workshop for undergraduate female students interested in pursuing a Ph.D.

Observation: Peer Effects Matter

Perhaps because peer effects are less obvious though nevertheless important, the effect of a group of peers who are interested in pursuing a Ph.D. and who value academic excellence was not emphasized by either staff or students. But several comments point to the importance of such a peer group.¹⁸ One student reported taking the more challenging math classes simply because his friends had said “Take math!” Another expressed appreciation for Omicron Delta Epsilon, the undergraduate economics honors society, because its members are all highly-motivated students. A third mentioned the Haas Scholars Program which brings together 20 talented undergraduate students from across campus to meet regularly and engage in academic research.

ADVICE BASED ON THE BERKELEY EXPERIENCE

Based on Berkeley’s experience with placing students in Ph.D. programs, what might we recommend to other public universities? And what might Berkeley do to improve?

Advice: Advise Early and Often

Advice on preparing for a Ph.D. program should be offered early and often. From what math class to what theory class to how to find research opportunities, advising is crucial. The students were unanimous in citing the importance of advising and asked for more faculty advising. Limited resources require Berkeley to rely on the website and e-mail blasts for much of the information flow.

It is important that students be told – from summer orientation on – that taking calculus for social scientists will close doors that can remain open by taking “real” calculus, Math 1A and 1B. At the same time, most students felt it important that the major not require everyone to take the more difficult math courses but maintain the option of either math track. Berkeley could do a better job here, by offering the information at freshman orientation and ensuring that the college level advisors (L&S advisors) are not channeling students into Math 16A/16B without advising them of the opportunity costs.

Advice: Offer an Honors or Advanced Track

Public universities rely on large-enrollment courses of necessity, and resource limitations often bind. But where possible, offering an honors or advanced track for micro theory, macro theory, and econometrics is important. Not only do graduate admissions committees like to see students take these courses, but the very existence of an honors or advanced track announces to entering freshmen that there is something beyond the B.A.

Advice: Institutionalize Ways to Offer Research Opportunities

Find ways to easily match undergraduates with faculty or graduate students doing research. Conducting research can turn students on to graduate school. Waiting until senior year to do any research may mean that students start thinking about graduate school when it is too late. The database that Berkeley set up in the department was a quick and easy start: the web-guru set up the form, the student services staff includes an announcement in its weekly e-blast to majors, the undergraduate chair sends an email containing the database link to faculty and graduate students a week or two later. The database asks about language proficiency (reading documents in another language is sometimes necessary), programming & software proficiency, as well as more typical questions such as GPA and why are you interested in an RA position.

Beyond the department, are there college or university level programs that link undergraduates to faculty or graduate students conducting research? Berkeley's SMART mentoring program is funded by donors with matching donations from the Graduate Division. Because of the direct connection to particular students' research and mentoring aptitudes, it is the type of donor-funding model a Development Office likes.

Advice: Make it Easy to Double Major

Allow students to double major and still graduate on time. Students who double major in economics and math or statistics or computer science will have an easier time getting into an Economics Ph.D. program. They will have the necessary math as part of their second major, and they will excel on the quantitative part of the GRE. Can students count courses from their second major toward economics? (Berkeley allows students to "double dip" with two courses, applying a single course to the requirements for two majors.) Is it possible to complete all the

courses for two majors in four years, with enough electives left over to cover breadth requirements, perhaps study abroad, and a few personal enrichment / interest courses? Can students double major without having to complete two entirely separate theses?

Advice: Expose Students to Faculty and Graduate Student Research

Economics students should see faculty and graduate student research. A course that is accessible to students with an intro level of knowledge, in which faculty and graduate students discuss their research, and which invites students into the research process rather than leaves them as outside observers could whet the appetite. Are there resources available to establish a course in which different scholars present their research to undergraduate students? Berkeley has a few courses that come close but don't quite fit the bill. The College of Letters and Sciences offers a course in which faculty from across the college give brief presentations of their research to an audience of undeclared freshmen and sophomores. The Economics Department offers Econ 191, in which juniors and seniors hear 5 or 6 faculty present a one-hour seminar. This is an area where Berkeley could improve.

CONCLUSION: FROM A BIG PUBLIC SCHOOL TO A PH.D. PROGRAM

The Berkeley experience may be instructive for other public research universities in preparing their undergraduate economics majors to go on to a Ph.D. program. Despite the resource constraints common to large public schools, we can implement low-cost, effective steps that help our students succeed in applications to Ph.D. programs. Math preparation is vital: advise entering students to consider taking calculus-for-math majors. Perhaps ironically,

reducing the requirements for the major may make it easier for students to prepare for an Economics Ph.D. by enabling them to add a second major in a math-based field. Help motivated students find each other well before their senior year through ODE, other honors organizations, or small honors classes. Develop ways to hook undergraduates on research, early. And, on our teaching days, talk with students about what we do on our non-teaching days. Who knows? That student in the front row of your 600-student intro course might just be a future Clark Medal recipient.

NOTES

¹ Stock and Siegfried 2014, Table 2.

² Cal Answers, “Degree Counts, by academic year, degree level, and unit: Headcount Degree Recipients Table.” (<http://calanswers.berkeley.edu>, Accessed 12/29/14)

³ Cal Answers, “Degree Equity Comparison, by academic year, degree level, unit, gender, and ethnicity.” (<http://calanswers.berkeley.edu>, Accessed 12/29/14)

⁴ Cal Answers, “Academic Indicators – SIREd (Statement of Intent to Register).”

(<http://calanswers.berkeley.edu>, Accessed 1/7/2015) and

<http://admissions.berkeley.edu/studentprofile> (accessed 1/2/15)

⁵ <http://berkeley.edu/about/fact.shtml> (accessed 1/7/2015) and

<http://opa.berkeley.edu/sites/default/files/2011-12PellGrantComparison.pdf> (accessed 1/7/2015)

⁶ Cal Answers, “Undergraduate Debt at Graduation by Income,” <http://calanswers.berkeley.edu> (accessed 1/7/2015). About 25 percent of graduating seniors did not file a FAFSA and thus have no income bracket reported. The percentages cited in the text are shares of *all* students. Students not filing a FAFSA are not receiving any financial aid – loans or grants – and are therefore likely, though not guaranteed, to be in the upper brackets of family income. Therefore, the percentages of students in the lower two income brackets cited above are probably understated, but only slightly. The unreported percentages of students in the higher income brackets would probably be understated to a much greater degree.

⁷ Cal Answers, “Undergraduate Applicants by Multiple Fields: Neither Parent has 4 year College Degree, Applicants who filed Statement of Intent to Register.” (<http://calanswers.berkeley.edu>, accessed 1/7/15).

⁸ Cal Answers, “Degree Counts: Headcount Degree Recipients Table.”

(<http://calanswers.berkeley.edu>, Accessed 12/29/14).

⁹ “Economics Department Hiring Plan, 2015 to 2020,” Table 2. (Mimeo, Spring 2014).

¹⁰ Stock and Siegfried 2014, Table 2.

¹¹ Grade histograms for Berkeley’s undergrad courses are available at

<http://schedulebuilder.berkeley.edu>. This is an open-access website which does not require a University logon.

¹² <https://www.econ.berkeley.edu/grad/admissions/profile> (accessed 12/29/14)

¹³ See, for instance, the literature reviews in Perna (2004) and Eagan (2010).

¹⁴ All students in the focus group had entered Berkeley as freshmen. Junior transfers from a California community college might be more likely than 4-year students to be pre-selectors.

¹⁵ Stock and Siegfried 2014, Table 3.

¹⁶ Eagan et al (2013) report that early experience with research by underrepresented minority students in STEM fields increased students’ intentions of pursuing graduate studies.

¹⁷ English (2012) in his study of the 2000/01 Baccalaureate & Beyond Longitudinal Study found that attending an institution that offered graduate degrees increased the likelihood that an undergraduate student would go on to graduate school.

¹⁸ Similarly, Eagan (2010, p. 243) found that in his study of underrepresented minority students in STEM fields that students who attend institutions with “more engaged faculty and peers” are more likely to want to go on to graduate school than those at other institutions.

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Table 1. U.C. Berkeley Degree Recipients, 2004-05 to 2013-14

A. All Degrees Awarded

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Doctoral	801	753	895	865	864	877	904	887	932	930
Masters/Professional	2,331	2,287	2,305	2,347	2,338	2,367	2,427	2,493	2,522	2,571
Bachelor	6,582	6,507	6,446	6,765	7,072	6,892	7,271	7,313	7,594	7,361
Grand Total	9,701	9,539	9,633	9,963	10,266	10,120	10,587	10,676	11,032	10,854

B. Undergraduate Degree Recipients by Ethnicity and Gender (number and percent)

		2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Female	Asian/Pacific Islander	1546 (24)	1445 (22)	1404 (22)	1516 (22)	1611 (23)	1479 (21)	1564 (22)	1524 (21)	1547 (20)	1509 (21)
	White/Other/Decline to State	1427 (22)	1369 (21)	1468 (23)	1518 (22)	1550 (22)	1446 (21)	1485 (20)	1452 (20)	1531 (20)	1335 (18)
	Underrepresented Minority	517 (8)	573 (9)	526 (8)	544 (8)	592 (8)	604 (9)	660 (9)	656 (9)	691 (9)	675 (9)
	International	117 (2)	92 (1)	107 (2)	99 (1)	110 (2)	108 (2)	155 (2)	254 (3)	296 (4)	392 (5)
Female Total		3607 (55)	3479 (54)	3505 (54)	3677 (54)	3863 (55)	3637 (53)	3864 (53)	3886 (53)	4065 (54)	3911 (53)
Male	Asian/Pacific Islander	1108 (17)	1160 (18)	1142 (18)	1206 (18)	1317 (19)	1319 (19)	1364 (19)	1310 (18)	1328 (17)	1303 (18)
	White/Other/Decline to State	1333 (20)	1293 (20)	1288 (20)	1355 (20)	1358 (19)	1342 (19)	1346 (19)	1388 (19)	1358 (18)	1220 (17)
	Underrepresented Minority	365 (6)	386 (6)	365 (6)	401 (6)	408 (6)	432 (6)	494 (7)	447 (6)	521 (7)	522 (7)
	International	118 (2)	146 (2)	131 (2)	115 (2)	122 (2)	153 (2)	198 (3)	280 (4)	319 (4)	402 (5)
Male Total		2924 (45)	2985 (46)	2926 (45)	3077 (46)	3205 (45)	3246 (47)	3402 (47)	3425 (47)	3526 (46)	3447 (47)
Grand Total		6,531	6,464	6,432	6,754	7,070	6,883	7,266	7,311	7,591	7,358

Source: Cal Answers, "Degree Counts, by academic year, degree level, and unit: Headcount Degree Recipients Table." (<http://calanswers.berkeley.edu>, Accessed 12/29/14).

Notes: Underrepresented Minority students are African American/Black, Hispanic/Chicano(a)/Latino(a), or Native American.

Table 2. Family Income Range for 2013-14 Graduating Seniors, U.C. Berkeley

Family Income Range	Campus			Economics		
	Count	Distribution		Count	Distribution	
	All Students	All Students	Excluding no FAFSA	All Students	All Students	Excluding no FAFSA
\$20,000 or less	1,364	19%	25%	70	13%	24%
\$20,001 to \$50,000	1,002	14%	18%	54	10%	19%
\$50,001 to \$80,000	716	10%	13%	34	6%	12%
\$80,001 to \$140,000	956	13%	17%	50	9%	17%
\$140,001 or more	1,441	20%	26%	81	15%	28%
Sub-total	5,479			289		
No FAFSA filed	1,801	25%		255	47%	
Grand Total	7,280			544		

Source: Cal Answers, "Undergraduate Debt at Graduation by Income," <http://calanswers.berkeley.edu> (accessed 1/7/2015).

Note: Students receiving no aid or loans were not required to file a FAFSA form and therefore did not report their family income.

Table 3. U.C. Berkeley Economics Undergraduate Degrees Awarded, 2004-05 to 2013-14

		2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Female	Asian/Pacific Islander	142 (30)	126 (30)	114 (28)	140 (31)	145 (29)	137 (28)	133 (26)	96 (21)	114 (23)	127 (23)
	International	16 (3)	11 (3)	9 (2)	9 (2)	9 (2)	15 (3)	25 (5)	49 (11)	62 (13)	90 (17)
	White/Other	51 (11)	46 (11)	40 (10)	55 (12)	62 (12)	50 (10)	46 (9)	38 (8)	27 (6)	41 (8)
	Underrepresented Minority	12 (3)	6 (1)	8 (2)	11 (2)	10 (2)	7 (1)	7 (1)	6 (1)	8 (2)	10 (2)
Female Total		221 (47)	189 (45)	171 (42)	215 (48)	226 (45)	209 (43)	211 (41)	189 (41)	211 (43)	268 (49)
Male	Asian/Pacific Islander	127 (27)	137 (33)	123 (31)	128 (28)	154 (31)	135 (28)	152 (30)	137 (30)	115 (23)	105 (19)
	International	20 (4)	16 (4)	14 (3)	6 (1)	20 (4)	26 (5)	46 (9)	46 (10)	77 (16)	87 (16)
	White/Other	87 (19)	61 (15)	83 (21)	87 (19)	77 (15)	90 (19)	82 (16)	70 (15)	72 (15)	67 (12)
	Underrepresented Minority	15 (3)	16 (4)	12 (3)	16 (4)	20 (4)	25 (5)	18 (4)	21 (5)	15 (3)	17 (3)
Male Total		249 (53)	230 (55)	232 (58)	237 (52)	271 (55)	276 (57)	298 (59)	274 (59)	279 (57)	276 (51)
Grand Total		470	419	403	452	497	485	509	463	490	544

Source: Cal Answers, "Degree Counts, by academic year, degree level, and unit: Headcount Degree Recipients Table." (<http://calanswers.berkeley.edu>, Accessed 12/29/14).

Notes: Underrepresented Minority students are African American/Black, Hispanic/Chicano(a)/Latino(a), or Native American.

Table 4. Average grades awarded to all University students in Economics pre-req courses, Fall 2010 - Spring 2013

	Average Grade
Calculus	
For students in life & social sciences	
Semester 1	3.15
Semester 2	3.12
For students in math, engineering, and physical science	
Semester 1	2.94
Semester 2	2.89
Statistics (calculus-based)	2.90
Economics	
Intro to Micro & Macro	2.98
Intermediate Micro	
Regular	3.16
Honors	3.35
Intermediate Macro	
Regular	3.00
Honors	3.12

Source: Calculated by the author from data at <http://schedulebuilder.berkeley.edu> (accessed December 29, 2014)

Table 5. Conceptualizing the Issue

Pre-Selectors	Deciders
<i>Decided on Ph.D. track before college</i> <i>Chose Berkeley as part of Ph.D. plan</i>	<i>Decided on Ph.D. track during college</i> <i>Something in Berkeley experience mattered</i>
Q: Why Berkeley?	Q: What made you choose Ph.D. track?
Question for both groups:	
Q: What aspects of the Berkeley experience helped prepare you for grad school?	

Table 6. Economics Majors with a Double or Triple Major, Fall 2014

Additional Major(s)	Double Majors	Triple Majors
Statistics	80	18
Business Administration	32	3
Computer Science	23	4
Math or Applied Mathematics	22	19
Psychology	17	0
History	9	1
Political Science	9	0
Other (<9 econ majors each)	76	7
Number of students	267	26

Source: Economics Student Services Staff

Notes: Students with triple majors are counted twice. For instance, a student majoring in economics, statistics, and mathematics is counted in both the “statistics” and “mathematics” rows.

Table 7. Comparing Regular and Honors Theory and Econometrics Courses

	Regular version	Advanced or Honors version
Course numbers	100A (micro), 100B (macro), and 140 (metrics)	101A (micro), 101B (macro), and 141 (metrics)
Enrollment	100A and 100B: 400 students	101A and 101B: 60 students
	140: 240 students	141: 60 students
Lead Instructor	Lecturer or Adjunct Faculty	Ladder Faculty
Graduate Student Instructors	May not be from Economics Department	Economics Ph.D. student
Prerequisite Math	Math 16A-16B (calculus for life & social sciences)	Math 53-54 (multivariate calculus, linear algebra & differential equations)
Average Grade	B	B+
Course catalog descriptions		
Micro	Resource allocation and price determination.	Theory of resource allocation and price determination with an emphasis on microeconomic principles.
Macro	A study of the factors which determine national income, employment, and price levels, with attention to the effects of monetary and fiscal policy.	A study of theories of the determination of national income, employment, and price levels, with attention to the effects of monetary and fiscal policy.
Econometrics	Introduction to problems of observation, estimation, and hypothesis testing in economics. This course covers the linear regression model and its application to empirical problems in economics.	Introduction to problems of observation, estimation, and hypothesis testing in economics. This course covers the statistical theory for the linear regression model and its variants, with examples from empirical economics.