The Journal of Economic Education

ISSN: 0022-0485 (Print) 2152-4068 (Online) Journal homepage: https://www.tandfonline.com/loi/vece20

Liberal Arts Colleges and the Production of PhD Economists

Philip N. Jefferson & Ellen Magenheim

To cite this article: Philip N. Jefferson & Ellen Magenheim (2015) Liberal Arts Colleges and the Production of PhD Economists, The Journal of Economic Education, 46:2, 189-199, DOI: 10.1080/00220485.2015.1015191

To link to this article: https://doi.org/10.1080/00220485.2015.1015191

THE JOURNAL OF ECONOMIC EDUCATION, *46*(2), 189–199, 2015

ISSN: 0022-0485 / 2152-4068 online
DOI: 10.1080/00220485.2015.1015191

Routledge
Taylor & Francis Group

FEATURES AND INFORMATION

Liberal Arts Colleges and the Production of PhD Economists

Philip N. Jefferson and Ellen Magenheim

Data from the National Science Foundation (2014) indicate that at least one PhD in economics was awarded to a Swarthmore College graduate in every year since 1966. The authors' purpose in this article is to consider factors that may have contributed to the high number of PhDs in economics awarded to Swarthmore College graduates. While there is little doubt that self-selection plays a significant role, they describe curricular and environmental aspects of the economics department at Swarthmore that may have contributed to this outcome.

Keywords *economics major, honors program, liberal arts, students, Swarthmore*

JEL codes *A22, A23*

From 2000–2012, forty-three PhDs in economics were awarded to Swarthmore College graduates. Over this timeframe, there was at least one PhD in economics granted each year, and the median for the sample period is three per year.[1] Our purpose in this article is to consider factors that may have contributed to this high rate of production of PhDs in economics. Approximately 15 percent of the students graduating from Swarthmore College are economics majors.[2] The economics department's stated goals for economics education at Swarthmore are to (1) learn and apply models in microeconomics and macroeconomics and statistical tools for analyzing economic processes, decisions, and institutions; (2) analyze and evaluate public policy; and (3) think critically about the outcomes of public and private economic institutions and systems domestically and globally. Conspicuously absent from these goals is any mention of preparing economics majors for the attainment of a PhD in economics. Therefore, in part, this article articulates some unstated cues that may influence a subset of majors to get a PhD in economics.

Philip N. Jefferson (e-mail: pjeffer1@swarthmore.edu) is Centennial Professor of Economics and Ellen Magenheim (e-mail: emagenh1@swarthmore.edu) is a professor of economics, both at Swarthmore College. Jefferson is the corresponding author.

The remainder of the article is organized as follows. The next section discusses some of the benefits and challenges of studying economics at liberal arts colleges in general and at Swarthmore College in particular. The following section describes the dual-track structure of the economics major at Swarthmore, considering differences in admission to the major, curriculum, and culminating exercises, and highlighting how the Swarthmore curricular structure differs from that of many peers. The next section focuses on nonpedagogical practices and procedures characteristic of department life that may help stimulate and sustain student interest in PhD acquisition. Finally, conclusions are offered in the last section.

ECONOMICS AT LIBERAL ARTS COLLEGES

A Context for Appreciating Economics

Historically, liberal arts colleges taught a range of fields that were not necessarily intended to be practical or useful in creating job skills.[3] They were intended as education for those wealthy enough to not have to learn a trade. More recently, the goals of liberal arts colleges as well as the composition of their student bodies have broadened, and there is a greater desire among students and their families to see the practical implications of the academic program.[4] This focus on practical applications of one's education is a part of the tradition at Swarthmore; a key Quaker value is that of using education to improve society. This is not to say that Swarthmore College and many of its peers do not continue to offer excellent programs in fields with less obvious practical applications.

Economics has long been an integral part of the curriculum at Swarthmore as well as one of the most heavily enrolled departments.[5] Over time, economics at Swarthmore has served as a meeting point for students with a range of interests and goals. Some students are attracted to economics by the mathematical elegance of models, while others are interested in the wide range of policy applications. Still others find economics to be the major closest to their interest in business. Whatever the students' interest, however, the economics department has always emphasized the development of analytical and critical thinking.

Student Contact with the Teacher-Scholar

Students are often drawn to small liberal arts colleges by the opportunity to get to know faculty and to develop lasting relationships. This happens in small classes and seminars but also through other interactions, such as meetings with a faculty academic advisor or serving as a research assistant on a faculty member's project. Students see firsthand what it is like to be a faculty member at a small liberal arts college. They observe what it is like to teach smart and engaged students in small classes, but that is not all they see.

In order to be successful at top liberal arts colleges, faculty members are expected to be active scholars. The expectation is not that faculty will publish at the same rate as their university colleagues but that they will publish and be engaged in scholarly professional activities more broadly. Students learn about faculty in ways that enable students to see their faculty members as teacher-scholars. Because students get to know these professors and sometimes get to learn about their research in classes and to participate in their research, they see directly the professional

demands associated with trying to fulfill the dual mandate to excel in pedagogy and scholarship. Students see the tradeoffs and compromises that professors sometimes have to make. How these tradeoffs are negotiated is sometimes the topic of conversation in office hours with students who are curious about life in the academy. The key point is that students observe, in a very personal way, what it is to be an economics professor at a small liberal arts college without the distance that separates faculty and students at most larger institutions.

Connecting Economics to Problems Faced by Society

Many students are drawn to Swarthmore because of its tradition of helping students make connections between their academic work and problems faced by society. The Swarthmore economics curriculum is broad but has a particular concentration of courses and seminars focusing on social problems and potential policy solutions. The college facilitates students applying their academic work in these areas to real-world problems by making students aware of summer internships with nonprofit and public organizations, as well as private-sector ones.

Some faculty members also conduct studies that offer opportunities for students to participate in community-based research. For example, Bronchetti and colleagues (2013) designed a field experiment that considered the saving decisions of low-income households at tax filing time. Implementation of the experiment required the assistance of Swarthmore students. The students traveled to low-income communities proximate to Swarthmore College to help implement the experiment. Some of these students had taken experimental and behavioral economics courses at the college.

Another example of connecting academic work to societal issues is given by Jefferson and Kim (2012). This co-authored paper was written when Kim was still a student at Swarthmore. Kim was a student in the Advanced Econometrics seminar in her junior year. She applied for and received summer research funding from the college with Jefferson serving as her research sponsor. Because of Jefferson's and Kim's interest in poverty and Kim's desire to learn more econometrics, they decided to use the time provided by the summer research grant to deepen Kim's training in econometrics and to begin the research on the paper. Their collaboration continued throughout Kim's senior year. These are but two examples of the type of connections that link the economics that students learn in classes and seminars to problems faced by society.

Constraints

Although economics is a relatively large department by Swarthmore College standards (12.5 full-time equivalent positions), it is small compared to university programs and even some other liberal arts colleges. The structure of our curriculum allocates a substantial number of teaching credits to the introductory course. The college's honors program (described more fully below) demands considerable resources for seminars taken by honors students. As a result, the number and variety of courses that we are able to offer at the intermediate level is somewhat smaller than those at peer institutions. The range of students' interests and goals also can create pressure on the allocation of teaching credits, and tradeoffs are commonly confronted. For example, while there will be some student interest in an economic history course that will contribute to a richer understanding of modern economics, enrollments will likely be higher in a financial economics course. Issues of equity across students and the desire to offer a rich curriculum as well as equity

across faculty teaching courses of very different sizes make curricular planning a complicated project.

Faculty teach in a wide range of fields, with some developing new courses throughout their careers. Offerings are designed and balanced to meet the needs of students with applied interests and students interested in advanced work in microeconomic theory, macroeconomic theory, and econometrics. The challenge for students is that not all of these courses can be offered on a regular basis; faculty are on leave every fourth year, and many field courses are not offered when the faculty members teaching those courses are on leave. Some of these constraints are circumvented by the fact that Swarthmore students can take courses at Bryn Mawr College and Haverford College and, with some restrictions, at the University of Pennsylvania. For example, from 2011–14, 10.6 percent of economics majors took a business or economics class at the University of Pennsylvania. Typically, Swarthmore students use these options to take courses in fields not offered at Swarthmore, such as corporate finance or graduate-level econometrics.

Limited research opportunities for undergraduates are another constraint arising within a relatively small liberal arts college department. We do not have graduate students, so we rely on our undergraduates as research assistants. Individual faculty members hire students to work with them in the summer or during the academic year. The college offers stipends for students collaborating on research with professors during the summer (as well as for students doing independent research projects). Opportunities are limited, however. We are a relatively small faculty given our large number of majors, and not all faculty research assistant needs can be met by even excellent undergraduate students. Some students are able to find research opportunities outside of Swarthmore. In recent years, students have done summer research at the National Bureau of Economic Research (NBER), the University of Chicago, the Philadelphia Federal Reserve Bank, and in think tanks, as well as with faculty at the college.

THE ACADEMIC PROGRAM: DIMENSIONS OF STRUCTURE AND RIGOR

The Economics Course Major

The economics major at Swarthmore is structured to meet the needs of students with different goals and interests. All students are required to take the introductory combined macroeconomics and microeconomics class, intermediate microeconomics, intermediate macroeconomics, and introduction to econometrics.[6] The so-called "course" economics major requires only four additional elective courses to complete it. This is a relatively low number of credits to complete a major. This structure allows students to combine economics with another major or a minor. Many students take more than the minimum number of credits in economics. From 2010–14, 61 percent of course majors took more than eight economics credits (the minimum required to complete the major). From 2009–13, 47 percent of economics majors were double majors. The leading second majors for economics majors were political science, mathematics, engineering, and biology. College-wide, across all disciplines, 24 percent of students double-majored from 2009–13. Thus, the rate of double-majoring by economics students is almost double the college-wide rate.

Admission to the major requires that students have successfully completed at least two economics courses and have a grade of B or better in at least one economics course and no failing

grades. The department also recently instituted a requirement that all majors have taken or placed out of at least single-variable calculus. While it may be surprising that the department only recently added this requirement (and that the requirement does not include higher-level math), the department's philosophy has long been to make the major available to students with a wide range of preparations and interests and then to offer courses at many levels of analytical sophistication to meet the range of student preparations and needs.

It has become increasingly common for our majors to add mathematics as a second major. The small number of required upper-level economics courses makes this possible. The students who double-major in mathematics are the most likely to go on to graduate study in economics. They master multivariable calculus, linear algebra, and differential equations. Many of them are required to take a real analysis or a modern algebra course. Because mathematics and statistics share a single department at Swarthmore, it is highly likely that a math major will have also taken an advanced course in probability and mathematical statistics. An advantage of this preparation in mathematics/statistics is that these students are able to meet the analytical challenges of a first-year sequence in a top-ranked economics PhD program.[7]

Some students prefer to combine an economics major with an interdisciplinary minor (e.g., Black Studies or Environmental Studies) or a second major (e.g., Computer Science or Political Science). This preference works well for students who want to combine economics with their social-action interests and career goals.

Comprehensive Examinations

Course majors must pass a comprehensive exam, given in the spring of their senior year. The comprehensive exam poses questions on intermediate microeconomics, intermediate macroeconomics, and introduction to econometrics. The exam is three hours long, and all three sections must be passed in one sitting for a passing grade on the exam overall. The students are required to demonstrate proficiency with economic theory at the intermediate level. The level for the statistics/econometrics section is slightly more basic. Students are given questions in advance, and the exams present a subset of those questions. Students do not receive academic credit for taking the exam, nor do they attend a class that prepares them for the exam. There is an expectation that the students will prepare independently for the exams; direct faculty participation in that preparation is minimal. Historically, students have responded to the expectation of preparation by forming small study groups. It is not uncommon for a study group to revisit course material (readings, exams, and problem sets) from classes taken earlier.

To graduate from the college with an economics course major, the student must pass the comprehensive exam. The economics department offers three rounds of the exam. If a student does not pass all three sections in the first round, then the student must sit the exam again at a later date. (In 2014, forty-five of forty-eight students (94 percent) passed the exam in the first round.) If that same student does not pass all three sections in the second round, then the student must sit the exam again, a third and final round. (In 2014, all three students who participated in the second round passed the exam.) Historically, very few, if any, students make it to the third round. If a third round of the comprehensive exam is necessary, however, the student is provided with a peer tutor who has performed excellently in the major. This collaboration has produced the desired result: a demonstration of the required level of proficiency to pass the exam by the tutee.

The Honors Program: A Brief Overview

The Swarthmore College Honors Program has existed for nearly 100 years and is unique among American colleges and universities. Students spend a significant portion of their academic program during their last two years participating in rigorous and challenging seminars. These seminars have a small enrollment and are notable for the active engagement of the students in learning and helping their fellow students learn. In this way, the honors program mimics its model at Oxford University.[8]

A key feature of the program is that students are examined by evaluators from outside the college at the end of the senior year. Each student is examined by four external examiners. These four individual evaluations of the student are averaged to arrive at the final overall evaluation. There are four possible outcomes for students participating in Honors: Highest Honors, High Honors, Honors, and Passing (No Honors). Most students achieve at the Honors or High Honors level with Highest Honors a relatively rare outcome.

The Honors Economics Major

During the spring semester of their sophomore year, approximately one-third of economics majors self-select into Swarthmore's Honors Program. There is a department-based application process and a departmentally determined grade point average (GPA) requirement: a 3.0 GPA (a B average) in economics courses and no D or F grades in economics courses. Thus, self-selection is mediated by minimum requirements for acceptance. The requirements for admission to the honor program in economics are more demanding than those for admission to the course economics major.

The honors economics major requires the same four core courses as the course economics major but also requires four so-called honors preparations. Typically, these are seminars, although in rare cases, a student writes a thesis as an honors preparation. Honors economics majors are required to take three seminars in economics and one additional seminar in another discipline (denoted the honors minor). The units acquired as a result of taking seminars substitute for those acquired by taking elective courses.

Seminars

The structure and content of the honors program allow students interested in pursuing particular fields in more depth and at a more advanced level to do so. The honors program also offers students the opportunity for more active learning in a seminar format. Seminars in economics are small (typically twelve students or fewer) weekly gatherings lasting three hours or more. Each seminar in economics covers a single subfield of the discipline. For example, during the 2013–14 academic year, the department of economics offered honors seminars in the following topics: Advanced Macroeconomics, Advanced Microeconomics, Advanced Econometrics, Financial Economics, Public Economics, International Economics, and Labor and Social Economics.

The spirit of the seminar is that of peers learning together. The success of any seminar relies heavily on the quality of student engagement and participation. Faculty organize seminars as they prefer, but features common to most seminars include limited lecturing by the professor, preparation of seminar papers presented to the group by the student authors, group engagement

in problem sets, and direct student-to-student discussion, without each comment filtering through the professor. Faculty encourage students considering graduate study to take at least one (if not more) of the advanced theory and econometrics seminars, both to help prepare them for graduate school and to help them get a better sense of whether they want to attend graduate school in economics.

As with course offerings, seminars are affected by faculty sabbatical schedules. Because most faculty leaves are anticipated, the economics department announces the seminar schedule two years in advance. This practice allows students to plan ahead in order to secure their seminars of choice. Advance planning is also needed to ensure that enough seminar spaces are available to meet the demand so that students can complete their honors programs.

Written and Oral Examinations by External Examiners

A signature component of the honors program is that multiple external examiners examine each student in the program in the spring semester of their senior year. External examiners are professional colleagues who have been commissioned to visit campus for the purpose of conducting 45-minute oral examinations with honors students in a field of economics. External examiners are drawn from other academic institutions, government agencies, nonprofit organizations, and think tanks. Some of the external examiners are Swarthmore alumni with PhDs in economics. All external examiners provide an invaluable service to the college, given that the only means for graduating from Swarthmore with an honorific is via the Honors Program. They serve, if you will, as an annual external review committee that evaluates the depth and breadth of our students' knowledge of economics. For honors students, written and oral examinations by external examiners are an extension of the discourse that students experience in seminars, and they represent an alternative culminating exercise.

Student preparation for written and oral exams is intense. It is not uncommon for students to spend months preparing for these exams while carrying a full schedule of courses, some of which may have little to do with economics. For these students, the examiner is a wildcard. They are not likely to know the examiner's views on the topic in which they will be tested. They are not likely to know the examiner's test-writing philosophy. They certainly have no idea what the examiner will ask them in an oral exam. Students' only insurance against the inherent uncertainty of the process is to prepare and to prepare some more. Fortunately for them, they are not alone: They have their peers to support them. Honors students spend hours together outside the seminar room working out problems from past honors exams and peppering each other with questions about the material that may appear on written exams and/or in oral exams. This process of self-study combined with communal prompting, testing, and learning hones and consolidates the students' internalization of relatively advanced material.

Economics students take an exam written by the external examiner for that seminar at the end of the senior year; external examiners grade the exams, and then they all come to campus in late May to conduct oral examinations with each student and to determine the student's overall honorific (Highest Honors, High Honors, or Honors). This is an exciting opportunity for students to interact with professional economists on the basis of the students' intellectual achievement and engagement. This also serves as a way for faculty to ensure that their seminars are kept up-to-date, and conversations with examiners can help Swarthmore faculty think about how to change their seminars to keep up with new research and new thinking in their fields. In addition,

it is commonly thought that the high bar set for teaching challenging and modern material in seminars filters down to provide a kind of quality control throughout the curriculum, not just in the seminars themselves.

To spell out how written and oral examination processes work, let us consider the case of an actual economics honors student who graduated in May 2014. We call her Jane (not her actual name). Jane took four seminars: Public Economics, Advanced Microeconomics, Advanced Macroeconomics, and Mathematical Statistics. Three of these seminars were taken during her senior year, and one was taken in the second semester of her junior year. Although Jane took one seminar her junior year, she must wait until the second semester of her senior year to sit the honors exam for that seminar. Associated with each seminar is a separate external examiner. Thus, in early May 2014, Jane took four written exams that were written by four different external examiners. In late May 2014, Jane met and was subjected to oral examination by these same four examiners. Had Jane taken different seminars, she would have encountered different external examiners. In May 2014, the economics department brought eight external examiners to campus: one for each seminar offered over the previous two years. All departments at Swarthmore follow the same procedure. We are not aware of any other institution that conducts an honors program on the same scale as Swarthmore.

How Swarthmore Differs

Our curriculum differs in a number of ways from that of many of our peers. We have not traditionally had any math prerequisites for the economics major, although we recently instituted the requirement that majors have taken at least single-variable calculus. We offer a one-semester introductory course, and all students take that course whether or not they intend to be majors (in contrast to departments that stream students into majors and nonmajors from the beginning of their economics education and require a two-semester introductory sequence). We require only introduction to econometrics, while many of our peers require a second semester course equivalent to our (elective) econometrics course. While some of our peers offer a thesis or research seminar option (which we do not), we offer the honors program seminars and external examination.

The structure of our curriculum reflects our goal to welcome all interested students into the major with relatively low barriers to entry. For those students who want to do more advanced work in applied fields, theory, and econometrics, we offer seminars taught at a very advanced level (in some cases comparable to the first year of graduate school). In other words, rather than limit entry into the major, we offer a structure that allows students to sort themselves. All students take the four required courses and after that point, they choose to join those who want to take a range of additional courses at approximately the intermediate level or those who want to do significantly more advanced work in seminars.

We recognize that it may be surprising that a program with our relatively low level of mathematics-and econometrics-required preparation is also one that produces a substantial number of students who go on to get PhDs. In the next section, we offer some hypotheses to explain this surprising result.

INTANGIBLES OF EXCELLENCE: CULTURE AND COMMITMENT

Advising

Advising is an integral and active part of the economics major at Swarthmore. Upon entry into the college, students are assigned a faculty advisor by the Dean's Office based on academic interests expressed in their application to the college. These pre-major advisors help students to become familiar with the college's curriculum and to select courses that engage their interests as well as make progress toward meeting the college's distribution and graduation requirements. During the sophomore year, students select a discipline in which to major. After acceptance into a department as a major, the department assigns a faculty advisor. This departmental faculty advisor picks up where the pre-major advisor leaves off. The departmental faculty advisor will remain with the student until graduation. It is not uncommon for the student and faculty advisor to meet multiple times during a semester. Some of these meetings are dictated by college processes (e.g., advising for preregistration in next semester's classes), while others are based on the rapport between the student and faculty advisor that naturally leads to more frequent consultation about intellectual and academic matters.

Students often seek the advice of their professors and advisors with respect to summer jobs and internships as well as jobs following their graduation. They also seek advice (and letters of recommendation) when they apply for fellowships and scholarships (e.g., Rhodes, Marshall, Watson, and Fulbright). Some faculty members use such conversations as opportunities to talk with students about the students' own expectations for the future. This is the kind of setting in which a faculty member might ask whether a student has considered graduate study and might, for the right students, encourage them to consider it and help them think about the academic preparation they need to make that a possibility. Faculty can also help students identify post-college research positions, such as at the NBER or the Federal Reserve or policy institutions, which serve as excellent experiences prior to graduate school. Some students come in knowing they want to pursue graduate study, but for others, a professor's question or encouragement may stimulate in the student the first consideration that graduate work in economics is a real option for him or her.

The advising process is one mechanism through which department culture is transmitted, permeated, and manifested. In their consultations with their advisors, students learn what is expected of them, the choices before them, and why what they decide matters. Faculty members also signal that they care about them and are happy to provide career advice. At Swarthmore, the economics faculty is fortunate to be able to provide current students with numerous examples of the career outcomes of former students and to connect those outcomes to choices made at Swarthmore.[9] Such discussions set the stage for student achievement very early in the student's academic career. Simply put, the student is informed at the beginning of the kinds of classes, the intellectual curiosity, the heartfelt passion, and the quality of mind that is required to pursue advanced study in economics. This is not to say that the economics faculty members expect all of our majors to pursue a PhD in economics. Rather, the perspective is that the faculty desires to transmit to all majors (and nonmajors in our classes) a sense of meaning, purpose, and rigor in our approach to economics.

Self-Selection

It would be interesting if the economics faculty at Swarthmore could actually demonstrate that department structures and practices are what lead to Swarthmore's high rate of production of PhD economists, but we cannot conduct that experiment. The simple fact of that matter is that the quality of the input (the students) that comes to us is extremely high. It is commonly thought that a substantial number of Swarthmore students come from families where at least one parent has an advanced degree. Further, a subset of this group comes from families where one of the parents is an academic. These students may come to college with the expectation that they will get advanced degrees. Thus, the economics department at Swarthmore cannot rule out the strong possibility that we are the beneficiaries of positive self-selection into the college and into the major. At the same time, however, there is clearly some interaction between self-selection and the department's environment. Students' decisions to major in economics are affirmed in such a way that each cohort of majors enriches and fosters that environment. Through their subsequent accomplishments, they enhance the reputation of the department. This virtuous circle attracts faculty who are committed to teaching undergraduates. Combined, these factors create a self-perpetuating and intense intellectual environment within the department.

Informal Outreach and Encouragement

Another element of culture is the propensity for faculty outreach to and encouragement of students. This occurs both in the context of classes and academic advising but also more informally. Informal interactions provide ample possibilities for faculty to become more informed about students' intellectual interests. This facilitates faculty members' ability to match individual students with appropriate internal and external opportunities that may arise.

CONCLUSIONS

Has Swarthmore College been the beneficiary of positive self-selection, or has it been particularly good with respect to the production of PhD economists? This is the question at the core of this article. Our answer is that both factors contribute to the observed outcome. Swarthmore is fortunate to attract highly capable students, some of whom come from families with high levels of academic achievement and/or high expectations for the students' achievement. These students may be predisposed toward advanced study in a field of their choosing. There are, however, other highly capable Swarthmore students who have not been "pre-treated." When these students choose the economics major, they are exposed to an environment that appears to be highly conducive to stimulating an interest in attaining a PhD in economics. Features of this environment include (1) close student contact with the teacher-scholar; (2) pedagogy that attempts to connect economics to problems faced by society; (3) research opportunities; (4) multiple rigorous tracks through the major; (5) a structure that permits space for interdisciplinary minors and double majors; (6) the college's honors program that exposes students to multiple field-specific external evaluations during one week shortly before graduation; (7) small seminars where students take responsibility for group learning; (8) focused advising; and (9) regular informal outreach and encouragement. We note that not all students are exposed to all of these features.

ACKNOWLEDGEMENTS

The authors thank John Caskey, Stephen Golub, Gail Hoyt, Mark Kuperberg, and Stephen O'Connell for their helpful comments, and Nancy Carroll for assistance with the data.

NOTES

1. In fact, the National Science Foundation (2014) data indicate that at least one PhD in economics was awarded to a Swarthmore College graduate in every year for which these data are available (i.e., since 1966).
2. From 2010–13, there were 221 economics majors and 1,463 total graduates. These totals cover four graduating classes. At Swarthmore, a student must have at least one major in order to graduate.
3. Hawkins (2000, 15) noted that the view that "liberal education prepared one for living, not for making a living" was a common rationale for liberal arts colleges in the 1950s.
4. Bowen (2014, 191) identified the expectation of parents and students that higher education will fulfill "short-run vocational objectives" as one of the environmental trends of the twenty-first century.
5. Hausman (2005) documented the evolution of the economics department from its beginnings as a single offering in political economy in 1872 to the "present," circa 1972, when its current most senior members first joined the department.
6. Opportunities are available for students to place out of the introductory course and to substitute statistics courses for the introduction to econometrics.
7. Hillmon (2014, 44–48) explained why such training is necessary.
8. See Swarthmore College (2014) for more on the Honors Program at Swarthmore.
9. Current students also interact with alumni with PhDs when they hire students for summer or post-college research positions.

REFERENCES

Bowen, W. 2014. More to hope than to fear: The future of the liberal arts college. In *Remaking college: Innovation and the liberal arts*, ed. R. Chopp, S. Frost, and D. Weiss, 189–202. Baltimore, MD: Johns Hopkins University Press.

Bronchetti, E., T. Dee, D. Huffman, and E. Magenheim 2013. When a nudge is not enough: Defaults and saving among low-income tax filers. *National Tax Journal* 66(3): 609–34.

Hausman, J. 2005. One hundred years of economics at Swarthmore. http://www.swarthmore.edu/economics/history-economics-department

Hawkins, H. 2000. The making of the liberal arts college identity. In *Distinctly American: The residential liberal arts colleges*, ed. S. Koblik and S. R. Graubard, 1–27. New Brunswick, NJ: Transaction Publishers.

Hillmon, S. 2014. *Getting a Ph.D. in economics*. Philadelphia: University of Pennsylvania Press.

Jefferson, P., and K. Kim. 2012. Macroeconomic fluctuations and poverty. In *The Oxford handbook of the economics of poverty*, ed. P. Jefferson, 519–50. New York: Oxford University Press.

National Science Foundation (NSF). 2014. *NSF survey of earned doctorates*. Arlington, VA: NSF National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR). https://webcaspar.nsf.gov (accessed July 2014).

Swarthmore College. 2014. *Honors Program*. http://www.swarthmore.edu/honors-program.