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## Building research skills in the Macalester economics major

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### ABSTRACT

Economics majors at Macalester College have won numerous awards for their research papers, and this success has helped them land jobs in finance, consulting, and the nonprofit sector, as well as gain admission to top graduate programs. This article describes how the Economics Department at Macalester promotes economic research among its students.

### KEYWORDS

Econometrics; research; writing

### JEL CODES

A2; A22

According to a recent report from the Macalester College Institutional Research Office, Macalester ranks 13th among liberal arts colleges in terms of baccalaureate origins of people receiving U.S. doctorates between 2005 and 2014. When the data are disaggregated, the Economics Department at Macalester ranks 8th. In addition, we have a strong track record of placing students in top finance and consulting positions as well as those in the nonprofit sector. What accounts for this success?

We believe it is due, in part, to the emphasis we place on economic research. All Macalester students take a first-year course that emphasizes writing, and we build on that by progressively incorporating more research into the economics major over the next three years. An important element of this is our *Introduction to Econometrics* course, which not only covers estimation methods, but also teaches students how to write an original research paper. Students then write a senior honors thesis or complete a large research paper in their senior capstone course. Many of these students have won awards given by the Minnesota Economics Association and other professional organizations.

### An overview of the college

Founded in 1874, Macalester is a residential liberal arts college located in the heart of the Twin Cities metropolitan area. The student body has grown in recent years, from around 1,850 students a decade ago to over 2,000 today.

The Macalester campus is a short drive from both downtown Saint Paul and Minneapolis. The Twin Cities are home to 19 *Fortune* 500 companies (more than any other metropolitan area its size), including industry leaders in manufacturing (3M), retail (Target), and health care (UnitedHealth) (Thompson 2015). There are many universities and colleges nearby, including the Minneapolis and Saint Paul campuses of the University of Minnesota, and both the state capitol and Minneapolis Fed provide educational opportunities for our students as they pursue various research interests.

Despite its Midwestern location and ethos, Macalester College has a long history of internationalism. Macalester has a higher percentage of international students than most other liberal arts colleges, and significant resources are dedicated to international programming. Around 50 percent of our economics majors are international students, with many coming from the United World College high school program. These students enrich the culture of our department and help create an environment where academic achievement is highly valued.

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Macalester's endowment grew significantly in the 1990s with a generous gift from the family of DeWitt and Lila Wallace, founders of *Reader's Digest*. These resources have been used to lower student-faculty ratios and place greater emphasis on faculty-student collaborative research and writing.

## The Economics Department and major

The Economics Department has eight tenure-track economists, one full-time accountant and an ex-investment banker who teaches courses in applied finance. Our program is consistently one of the largest on campus with between 45 and 65 majors graduating each year. Although we only have one major and one minor (both in economics), we offer two types of courses: Group E courses, which are typical of those offered by an economics department; and Group B courses, which include accounting, entrepreneurship, and applied finance. Many of our students also major in mathematics, applied mathematics and statistics, or computer science. Double majors with international studies, geography, and political science are also common. Macalester is somewhat unique with its large geography department, and we encourage our students to take courses in geographical information systems in order to expand their empirical tool kit.

To complete the economics major, students take a minimum of 12 courses:

- Four required courses: Principles of Economics (micro and macro combined in one semester), Intermediate Microeconomics, Intermediate Macroeconomics, and Introduction to Econometrics.
- Six electives at various levels, including a senior capstone course with a significant research component. Only two of the six can be Group B courses.
- Two math courses: Multivariate Calculus and Statistics.

Our mathematics department has, to a significant degree, tailored the two math courses to meet the needs of our majors, although these courses also serve students in other divisions and majors. We attribute much of our students' success to the time they spend with the mathematicians.

Economics majors do a number of different things after graduating. Many pursue careers in business and finance. Particularly noteworthy here is our long history of placing graduates in investment banking. Students interested in this path take our accounting and finance courses, as well as *Introduction to Investment Banking*, which includes a class trip to New York where they interact with alumni working on Wall Street. Consulting has become a popular career path in recent years, and many alumni have gone on to work for Accenture, Analysis Group, Brattle Group, Cornerstone, Deloitte, McKinsey, and other firms. A large number of students are interested in economic development and the nonprofit world, with many finding positions at organizations like the Urban Institute, World Bank, the Federal Reserve System, Peace Corps, and so on. Approximately two to four of our students enter PhD programs each year. For instance, this past fall, two began PhD programs in economics, one in computer science and another in health care management.

## Three stages of research

Hoyt and McGoldrick (2017) summarize the goals of student research that economics departments typically pursue: “[T]hey want students to identify and ask worthwhile questions, connect these to the literature, hypothesize, gather and process data accordingly, effectively employ analytical tools, interpret findings, and present their work in writing and orally” (p. 656). At Macalester, we attempt to achieve these goals by asking students to engage in research at three different points in the economics major.

### Stage 1: The 200-level elective course

Students are first asked to conduct economic research in the 200-level (sophomore) elective course. Prior to this, during their first semester at the college, students take a first-year course that has a significant writing component. This includes sessions with library staff who teach students how to use library resources, the difference between academic and popular press articles, the rules regarding plagiarism, proper citation methods, and so on. Therefore, students enter the 200-level elective with a general understanding of the academic literature and how it can be used to write a term paper.

One approach taken is illustrated by the term paper required for *World Economic History*. In this course, students write a 10-page paper where they pose a question (e.g., Why did the Industrial Revolution begin in England and not China?) and utilize the academic literature to address it. This assignment helps students learn how to (a) formulate a question, (b) locate academic resources and properly cite them, and (c) write a persuasive and well-organized paper (i.e., one with an introduction, theory and evidence sections, and a conclusion). In addition, exposure to the academic literature introduces students to methodologies utilized by economists, including mathematical modeling and regression analysis.

### **Stage 2: The econometrics course**

The second stage of research occurs in *Introduction to Econometrics*, usually taken in the junior year. This course convenes in our econometrics lab, which has 28 computers. Enrollments are capped at 22 students per section due to the heavy burden that draft editing imposes on the professor. The course covers standard econometric topics: estimation using OLS, hypothesis testing, serial correlation and time series, as well as introduction to more advanced topics such as panel data, instrumental variables, and logit/probit estimation. Data analysis is conducted with STATA, which students begin using the second week of class, and the instruction tends to be applied rather than mathematical/algebraic. A required one-hour lab was added 25 years ago to provide extra instruction time to cover research methods. The course also receives extensive support from our library staff who have developed instruction modules and resource guides to assist students with their research.<sup>1</sup>

The econometrics course builds on knowledge students acquire in *Introduction to Statistics*, the 200-level elective, and the intermediate micro and macro theory courses. Because the introductory statistics course covers a significant amount of regression analysis, students hit the ground running in econometrics and are prepared to immerse themselves in the mechanical process of technical writing in economics. Throughout the semester, they simultaneously work on problem sets and their research paper. With guidance from the instructor, students choose their own research topic and locate relevant datasets. There is no final exam; rather the research paper serves as the final for the course. This approach has proved successful, and a large number of papers from this course have won prizes from the Minnesota Economic Association and other professional organizations.

We also offer an advanced econometrics course that provides upper-level students an opportunity to explore the underlying mathematics of econometrics. Enrollments in this course have increased sharply over the past decade.

### **Stage 3: The capstone project**

Research continues during the senior year when all students are required to complete a capstone project. About 8 to 12 of our seniors do this by writing a senior honors thesis. Those who aspire to write a thesis must have a minimum GPA of 3.3 and submit a short proposal toward the end of their junior year. If the proposal is accepted, they enroll in the senior honors seminar in the fall of their senior year where they learn more about the research process and critique each other's work. It is not uncommon for the honors thesis to be an extension of a project that began in the econometrics course. Students continue working on their thesis during the spring semester and provide an oral defense in mid-April. Typically, some of these students will also present their work at conferences such as those held by the Midwest Economics Association. Seniors who do not write an honors thesis enroll in a 400-level capstone course and complete a large research project related to the focus of the course. We currently offer six capstone courses: Advanced Econometrics, Applied Dynamic Macroeconomics, Behavioral and Experimental Economics, Economics of Public Policy, Empirical Finance, and International Economic Development. Each course requires a term paper and enables students to expand their methodological toolkit.

Both approaches to capstone research have been fruitful. A few years ago, two students conducted a public goods experiment in Behavioral and Experimental Economics and provided evidence that free-riding fell significantly in treatments with designated punishers (compared to treatments where

punishment responsibility was decentralized). This paper was published in the *Atlantic Economic Journal*. A junior in Advanced Econometrics recently studied the link between terrorist attacks and bond yields, and extended this analysis in his honors thesis the next year to examine the effect of U.S. drone strikes on Al Qaeda terrorist attacks. This student won the 2016 Frank W. Taussig Article Award given by the Omicron Delta Epsilon Honor Society.

## Resources and incentives

In addition to the curricular structure discussed above, we attempt to promote student research by allocating resources in particular ways and structuring incentives to raise the return to research activity. We seek to hire faculty who are passionate about research and view themselves as both teachers and scholars. We find that those who do applied research are better able to involve students in their research, and we attempt to identify people who enjoy working collaboratively. Faculty are also incentivized to publish papers with students. For instance, they are asked to highlight Macalester student co-authors on their CV, and this type of collaboration is valued by the committee that makes tenure and promotion decisions.

Faculty-student research is funded internally three different ways. First, faculty receive \$1,750 each year for travel and research. Second, they can compete for Wallace Scholarly Activities grants that are often used to hire research assistants. Finally, Student-Faculty Collaboration & Summer Research grants can also be obtained rather easily and, as the name suggests, promote co-authorship.

A number of articles have been published in peer-reviewed journals by Macalester faculty and students. For example, in 1998, Professor Gary Krueger and Marek Ciolko published, "A Note on Initial Conditions and Liberalization during Transition" in the *Journal of Comparative Economics*. Professor Liang Ding has written four articles with students, and in 2012 he and Macalester mathematics professor Vittorio Addona worked with Hao Zou, who is currently completing his PhD in finance at the University of Rochester, and published "Semi-Transparency, Dealership Market and Foreign Exchange Market Quality" in the *Review of Financial Economics*. Professor Amy Damon has published two papers with students, and she and Devon Kristiansen wrote "Childhood Obesity in Mexico: The Effect of International Migration," which appeared in *Agricultural Economics* in 2014. Sarah West has written papers with several students, and in 2014 she and Needham Hurst published "Public Transit and Urban Redevelopment: The Effect of Light Rail Transit on Land Use in Minneapolis, Minnesota" in *Regional Science and Urban Economics*.

We look for ways to increase the efficiency of classroom teaching in order to free up time for research and one-on-one work with students. This includes reducing the overall number of course preps, teaching back-to-back sections of the same course in a given semester, and hiring student preceptors to grade problem sets and tutor peers. Our proximity to the University of Minnesota makes it relatively easy for us to hire part-time replacements and thus encourage sabbatical extensions.

We are fortunate to have facilities that support student research. About three decades ago, the department received an NSF grant to build a computer lab, and the college continues to invest in this space with new hardware (28 Macs) and software (STATA). Our introductory and advanced econometrics courses benefit a great deal from the lab, and it is a hub for research activity throughout the year. The walls of the lab are covered with plaques that commemorate research-paper prizes our students have won, and we hope that they inspire the younger students.

Throughout the year, each honors thesis writer has their picture and thesis title prominently displayed in the hallway leading to the economics department office. To further shine a spotlight on thesis writers and hopefully inspire younger students to follow in their footsteps, economics classes are canceled on a Friday in April and all honors defenses occur on that day. Extra credit and food are used to incentivize students to attend presentations, and parents and grandparents have been known to show up on occasion.

Each year, we hold a ceremony to honor our seniors in late April. Those who have completed an honors thesis are given the podium for a few minutes to summarize their research. In addition, departmental awards with cash prizes are announced. These awards provide another incentive for students to invest time into research because they are based, in part, on course performance and term paper grades.

The *Macalester Journal of Economics* is published once each year and contains the best five to six course term papers as judged by the student-run editorial board. The *MJE* provides visibility to those who have written outstanding term papers at all levels of the curriculum.

Finally, we have experimented with social media to promote student research. Once students declare an economics major, they are invited to join the department Facebook page, which has over 600 current and former majors as members. Here, they have a window on the professional lives of alumni, many of whom are engaged in academic research, and gain access to job postings, academic articles, datasets, and so forth. The page also enables students to interact with professors on an informal basis for the purpose of discussing economics and sharing research ideas.

## Conclusion

Relatively few economics majors at Macalester College will go on to academic careers. Nonetheless, the skills developed during the research process (i.e., learning to ask good questions, engage in abstract reasoning, locate and analyze data, and communicate persuasively through the written and spoken word) are important in many different walks of life. If the goal is to get our students to “to think like economists,” there is no better way than to immerse them in the research process.

## Note

1. <http://libguides.macalester.edu/econ381>

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