

A Comparison of Principles of Economics Curriculum across U.S. Colleges and Universities

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ABSTRACT

This paper compares principles of economics curriculum in 2015-16 academic catalogues among the Princeton Review's The Best 380 Colleges 2016 Edition. The paper finds that 76 percent of schools on the list offer separate principles courses for microeconomics and macroeconomics, while 25 percent offer a single principles course covering both micro and macro. A few schools provide both options. Of those schools offering separate micro and macro principles courses, 28 percent require that micro be taken prior to macro, while only 5 percent require macro before micro. Large schools are more likely to offer two separate courses and are also more likely to require micro before macro. A minimum level of math proficiency prior to enrolment in principles courses is required by 16 percent of schools. The goal of this paper is to provide business and economics faculty with information on how other institutions approach the principles of economics curriculum.

Keywords: principles of economics; economics curriculum; microeconomics; macroeconomics.

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Introduction

This paper provides a comparison of how introductory – or principles – economics courses are offered across colleges and universities. Using 2015-16 undergraduate academic catalogues for each of the schools listed in the Princeton Review's *The Best 380 Colleges 2016 Edition*, the paper answers the following questions:

- How many schools offer one combined principles of economics course versus two separate courses for microeconomics (micro) and macroeconomics (macro)?
- Of those schools offering separate micro and macro courses, how many require that micro be taken prior to macro, or vice versa?
- How common are math prerequisites for principles courses, and what level of preparation is required?
- How does curriculum differ by type of school (e.g., public vs. private, large vs. small)?

The purpose of this article is to provide business and economics faculty in four-year institutions with data on the economics principles curriculum of other schools, which may be useful for future curriculum decisions made by the readers' institutions.

Previous Literature on Inter-Institutional Comparisons of Economics Curriculum

Within economics, some previous work has been done comparing the degree requirements of bachelor's degree programs, most notably by economist John Siegfried. Siegfried and Wilkinson (1982) provided a survey of the major requirements for undergraduate economics majors for the 1980 academic year. In addition to providing a baseline for future studies, thereby allow for comparisons over time, the study was noteworthy in its finding that there was little difference in the economics curriculum between those economics programs housed in a business school versus those residing in a liberal arts school. The most notable difference was that business schools were much more likely to require students complete an accounting course.

Bosshardt, Watts and Becker (2013) and Siegfried and Walstad (2014) have provided more recent updates to the earlier works by Siegfried and Wilkinson (1982) and Siegfried and Bidani (1992). These more recent studies show the trend over the past few decades being one of an increasing quantification of economics major requirements. Economics degree programs are requiring more econometrics and mathematics and less economic history and economic thought than they were 30 years ago. Regardless of the academic merits of this switch, it does have the effect of giving the typical economics degree holder a signal of high quantitative ability to take to the labour market with him/her after graduation. It also means that principles courses are more likely to maintain a quantitative bent given that they are prerequisites to the upper-level courses.

It should be noted that the aforementioned studies comparing curriculum across institutions relied on department chairs or school deans to fill out a survey sent by the authors, which of course raises issues of sample response bias. That sampling method is different than that used in this paper, which was to manually analyse the academic catalogues of all of the institutions in the population chosen (Princeton Review schools). The response rate in Siegfried and Walstad (2014) was 43 percent (337 out of 784), but the authors point out that the response rate was higher for larger public universities.

Siegfried and Walstad (2014) does provide some data on principles courses similar to this paper. The results are roughly similar. But that study differs from this one in a few notable ways:

- (1) This study is more up-to-date (2015-16 academic year instead of 2012-13).
- (2) This study provides data on the frequency with which institutions impose mathematics prerequisites on enrolment in principles courses; Siegfried and Walstad (2014) does not.
- (3) This study does not rely on department responses and is instead a full census of all schools in the Princeton Review's list with curriculum information manually researched using publicly available academic catalogues instead of relying on survey responses by institutions.

An obvious question is to what extent are economics principles courses relevant? Siegfried and Walstad (2014) found that 42 percent of college graduates matriculate having taken at least one economics course. Most of these students choose to take the class either as part of a major requirement, elective, or general education course. According to the American Council of Trustees and Alumni's *What Will They Learn* initiative, only 3 percent of colleges and universities in the United States require all students to complete an economics course prior to graduation. ACTA has set up a website (whatwilltheylearn.com) that allows users to compare general education requirements across institutions. Economics is one of the areas the organization emphasizes – along with composition, literature, foreign language, U.S. history, mathematics, and science. Their target audience is prospective college students and their parents. Of the 1,109 institutions surveyed, only 34 institutions require economics. Of course, most schools allow students to choose general education courses within broader categories; economics is typically an option that is competing for students within the social science cohort against political science, sociology, psychology, and/or history.

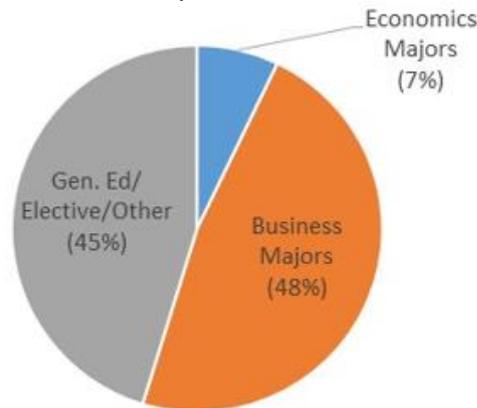
What should Students Learn from Economics Principles Courses?

Although the authors of this paper may be biased, economics principles courses are arguably the most important business and economics courses at most institutions. From a utilitarian perspective, economics principles courses will be the only form of business or economic education that most college students receive. From the perspective of economics departments and business schools seeking to increase enrolment, economics principles courses can attract students taking the course to fulfil a general education requirement to switch their majors to business or economics. On the flip side however, economics principles courses can also dissuade business and economics majors early in their academic careers from continuing a business major due to either lack of interest or course difficulty. Finally, economics principles courses can serve as useful filtering devices to prevent students that are likely unprepared or unfit to major in business or economics from starting down an unsuccessful path.

There has been quite a bit of ink spilled over the years among economists debating what students should get out of the principles of economics curriculum. At its core, this is an economic question: what topics should be covered given the constraint of a 15-week semester? One problem is the competing objectives given the different audiences of the principles courses. As Figure 1 illustrates, the bulk of students in economics principles courses are either taking the course to satisfy a business major requirement or as an elective, general education, or degree requirement for non-business/economics majors. (For example, economics is often required of international affairs majors.) Less than 10 percent of students in the courses will be economics majors. The numbers in Figure 1 were calculated based on the indicated current enrolments and the following assumptions and statistics:

- It is assumed that all business and economics majors must take principles of economics.
- According to the U.S. National Centre for Education Statistics (Chen, 2013), 20 percent of all college graduates were business majors.
- According to Siegfried and Walstad (2014), 3 percent of all college graduates are economics majors, and 42 percent of college graduates take economics.

Figure 1.
Profile of Economics Principles Students



Sources: Chen (2013), Siegfried & Walstad (2014)

What business majors need out of a principles of economics course may differ from what an economics major should learn, which differs from what a non-business/economics major should learn from the course. One might propose that there could be multiple versions of introductory economics courses that could be geared towards those different audiences. And such a system is in place at a few institutions. But this has many practical problems. First, it may increase the courseload of business majors because it is possible that business or managerial economics may not satisfy a social science general education content requirement. This would force business majors to take an additional social science course instead of their current “double-dipping.” Second, many students do not know what their ultimate major is going to be when they take principles of economics courses. Therefore, which type of introductory course they should enrol is unclear. Finally, many institutions simply do not have the resources to split students into different versions of introductory economics.

The current approach to teaching principles of economics appears to be trying to appease each of these constituencies. For example, in microeconomics, business and economics majors get introduced to the complex topics of costs and the different types of competitive regimes in a market that they may need in their major. This content is often viewed as the most difficult in micro principles, and it has a cost as the literature over the past few decades has highlighted, which is discussed next.

The general line of criticism of the current paradigm is there are simply too many principles being covered in the principles courses. The effect of this excess material is too few students leaving principles of economics courses with an understanding of the key concepts in economics. As Stigler argued as in 1963:

“The watered down encyclopedia which constitutes the present course in beginning college economics does not teach the student how to think on economic questions...The student will memorize a few facts, diagrams, and policy recommendations and ten years later will be as untutored in economics as the day he entered the class.”

Colander (2016) echoes this view in a recent article. Colander, who is the author of a popular principles textbook, points out that students are focused on memorizing the principles for the next exam. He claims the problem is only getting worse and will continue to get worse as economics education follows the entire education sector down the road to online education.

Bartlett (1993) argued that much of what is taught to students in economics courses is not only boring to undergraduate students but is not consistent with what actual economists do on a daily basis. For example, calculating market equilibrium points or tangencies between budget constraints and indifference curves is not done even by professional economists, so why should we require our students to do those tasks? Colander (2005) disagrees with this view, claiming there is little reason that the principles being taught to students need to correspond with the work that economists do.

A 1998 article in the Minneapolis Fed's publication *The Region*, Ronald Wirtz provides a good overview of the issue of principles coursework. In the article, popular textbook author Gregory Mankiw is quoted saying: "Economics professors love economics, and often this love came quite naturally. As instructors, we have to remind ourselves that not all our students are just like us." Also in the article, economics professor Paul Heyne contends that principles courses are being taught as if every student is eventually going to pursue a PhD in economics.

Because of the perceived deficiencies in the current approach to principles courses, Hansen, Salemi, and Siegfried (2002) proposed a new mapping of topics for principles courses and a new curriculum method to accompany it. Specifically, under their proposal, there would be two principles courses but instead of divided between micro and macro, they would be divided into basic and advanced. The first principles course would enforce and reinforce the fundamental concepts of economics, such as scarcity, trade-offs, and cost-benefit analysis with little mathematics and a far less emphasis on graphs than is currently employed in most principles courses. The second course in the sequence would build off the first and delve deeper into each topic such as production functions. Overall, this approach would likely be less quantitative than the current approach, especially for the first course. In fact, the mathematics prerequisites that are required by some schools would likely be unnecessary under this new approach.

The current approach to teaching principles courses is reflected in what is covered in principles textbooks. The textbooks cover very similar content in very similar fashions – all based generally on the Samuelson framework – a reference to Paul Samuelson's classic textbook *Economics* that was the market leader for decades. They all contain virtually the same graphs on the same topics covered in the same order. As Walstad, Watts and Bosshardt (1998) wrote: "There is a surprising degree of consensus among the textbook authors." This raises the question – if a new approach was to become more popular, how long would it take for new textbooks to embrace it?

From a political economy perspective, the standard approach towards principles courses in the United States is the so-called neo-classical-Keynesian synthesis (Goodwin, Harris, Nelson, Roach and Torras, 2014). Students are rarely exposed to other schools of thought in principles courses. Of course, exposing students to other schools of thought may require further altering of the curriculum and/or tough decisions on what to cut out of the current principles courses. In performing the survey for this paper, only a handful of schools mentioned alternative approaches such as feminism, Marxism, Austrian or other heterodox economics theories in their course descriptions for principles courses.

One of the concerns with changing the current approach to principles courses is the extent to which there would be a trickle-down effect into upper-level economics courses. If topics currently covered in the principles curriculum such as elasticity calculations or aggregate supply-aggregate demand were not covered, time would need to be taken in upper-level courses to cover them. So what should be taken out of the upper-level courses? Would another course need to be added to the major to cover the requisite content? Similarly, are there topics currently covered in principles courses that business majors need to know more so than the typical economics student? If these were taken out, where in the business curriculum would they be covered?

Overall, there appears to be a consensus among economists that something is wrong with how principles of economics is being taught. But despite the recommendations of Hansen, Salemi, and Siegfried (2002), very few institutions have made changes similar to those they advocate, according to Adkins and Newsome (2006). Why is that? First, like many things in academia, there is a status quo bias. Changes require that decisions be made and people reach consensus, but changing economics curriculum has many stakeholders. These stakeholders include most notably economists who will of course disagree on what changes should be made. For example, some such as Colander (2005) believe too much of an emphasis is placed on welfare analysis and efficiency in principles instruction, while Mankiw (1998) argues the opposite. Another key stakeholder from any curriculum changes would be business schools and other departments who may need to re-evaluate how a new approach to teaching principles of economics fits into their curriculum. Second, any single school is making its decision in isolation, and any deviation from the overall population is likely to have costs that exceed benefits. Conformity has been the name of the game in principles of economics.

One Course or Two Courses?

The first principles curriculum decision that economics departments must make is whether to offer one principles of economics course that teaches both micro and macro or to separate them into two courses. One of the benefits of offering a combined micro-macro course is that it allows for those students who only take one economics course in college to be exposed to key concepts from both micro and macro. This option can also limit the time spent covering duplicate material common to both micro and macro principles courses such as scarcity, opportunity cost, trade and specialization, supply and demand, etc.

On the other hand, for students seeking a more thorough study of both micro and macro without having to major in economics, separate courses allow for greater depth and breadth of topics. This could be the case for business majors, for example, whose ideal level of economics coursework may be greater than one combined micro-macro course but less than the intermediate theory level. Of course, if student quality is sufficiently high, a single class at an accelerated pace can cover content equivalent to two separate micro and macro courses.

Of the 369 schools offering principles of economics courses from the Princeton Review's list, 92 schools (25%) offer only a combined micro-macro principles course, while seven schools (2%) offer students the choice of a single combined micro-macro principles course or two separate micro and macro courses. (The combined course option is often quoted in the catalogue as being "accelerated pace.") The bulk of the schools surveyed, 282 schools (76%), require students to take two separate courses for micro and macro.

As Table 1 shows, large schools – those with more than 10,000 FTE (full-time equivalent) students – are much more likely to offer both micro and macro as

separate courses than small and medium sized schools. Schools that are classified as “more selective” are more likely to offer a combined micro-macro course than those classified as merely “selective.” One possible reason for this difference is that students at “more selective” schools are likely able to learn at a faster pace than other schools’ students. Selectivity is based on the 25th percentile ACT score for the institution, per Carnegie Classifications. All of the categories used to define schools in Table 1 are courtesy of the Carnegie Classifications.

Table 1.

*Comparing Principles of Economics Curriculum among The Best 380 Colleges**

Category	All Schools				Schools with Two Courses		
	No. of Schools	% One Course	% Two Courses	% Math Prereq.	No. of Schools	% Micro Pre Macro	% Macro Pre Micro
All Schools	369	24.9	76.4	15.7	282	27.7	5.3
Public	119	13.4	89.1	24.4	106	34.9	0.9
Private	250	30.4	70.4	11.6	176	23.3	8.0
By Size:							
Small or Very Small	146	38.4	61.6	13.7	90	15.6	10.0
Medium	94	22.3	79.8	18.1	75	29.3	4.0
Large	129	11.6	90.7	16.3	117	35.9	2.6
By Basic Classification:							
Bachelor’s	144	41.0	59.0	13.9	85	16.5	7.1
Master’s	65	12.3	90.8	23.1	59	28.8	6.8
Research University	160	15.6	86.3	14.4	138	34.1	3.6
By Selectivity:							
Inclusive	7	28.6	71.4	28.6	5	0.0	20.0
Selective	98	8.2	91.8	25.5	90	24.4	6.7
More Selective	263	30.8	71.1	11.8	187	29.9	4.3

* As determined by the Princeton Review. Eleven schools from the Princeton Review’s list do not offer standard principles of economics courses and are thereby excluded from the table.

Note: Category classifications for public/private, basic classification, and selectivity come from the Carnegie Classification of Institutions of Higher Education.

Is Micro a Prerequisite for Macro (or Vice Versa)?

For economics departments choosing to offer separate courses in both micro and macro, the next question is whether or not one should be a prerequisite for the other. There have been multiple studies in the literature on this question, mostly using data from one or a handful of colleges, and the conclusions from these studies vary. Fizel and Johnson (1986) recommend micro before macro. Lopus and Maxwell (1995) take the exact opposite view: macro before micro. Brasfield, et al (1993) argue that the order does not matter, while Terry and Galchus (2003) conclude that students taking micro and macro concurrently is the optimal policy.

One benefit of requiring either micro or macro to be taken prior to the other is that it reduces the need for duplicate material to be covered in-depth. While a review of topics may still be necessary in the second course, covering topics such as supply and demand can be done at a quicker pace in the second course if a student has previously been exposed to the topic. But does the order of micro and macro matter? A standard way of evaluating whether one course should be a prerequisite for another is if some content covered in Course A is necessary for learning new content in Course

B. Calculus I, for example, will always be a prerequisite for Calculus II because to learn new material in Calculus II, one must have a mastery of the prerequisite content from Calculus I. But is this the case for microeconomics and macroeconomics?

As the numbers in Table 1 indicate, it is much more common for micro to be a prerequisite for macro than vice versa. One rationale for taking micro before macro is that learning microeconomic principles may give students a better understanding of the macroeconomy. For example, the standard neoclassical flexible price model used to explain long-run macroeconomic growth is rooted in the microeconomic production function concept where output is a function of capital, labour, and technology. Deviations from this flexible price model are called business cycles, which are explored in macroeconomics principles courses, typically from a Keynesian perspective, which assumes some price stickiness in the short-term. Lucas (1976) and other critics of Keynesian economics have argued that macroeconomics should generally be rooted in microfoundations. Therefore, to the extent that an economics department seeks to teach macro principles from microfoundations as opposed to the more typical Keynesian perspective, that department should be more likely to require micro before macro. For example, a department that wanted to teach real business cycle theory in macro principles would find it advantageous for students to have taken micro prior to macro.

On the other hand, Thoma (2010) argues that the reality of short-run stickiness in prices acknowledged in macroeconomics should be incorporated more so in microeconomic analysis. It is possible that students in micro principles courses are sceptical of the usefulness of the standard supply and demand model that predicts instantaneous price changes from an increase or decrease in supply or demand because (save a few exceptions such as gasoline) the consumer prices that students see on a daily basis are not changing frequently. Therefore, one can make the argument that if students are to take one class in economics, it should be a macroeconomics course where students learn the key concept of supply and demand but also the macroeconomic models that illustrate that the traditional supply and demand model may come with some real-world caveats. Another argument for pushing students into macro before micro is that first-time students often find macroeconomics to be more interesting than micro. Therefore, capturing students' general interest in economics early via macro makes them more engaged when they take micro. This student engagement difference is what Perumal (2012) finds in Australia.

Requiring students to take either micro or macro prior to the other does have its costs. First, it restricts flexibility in student scheduling as the class times of micro and macro sections at some schools may not match student preferences. Similarly, it forces schools to offer uneven numbers of micro and macro in different semesters of the school year given that most students would probably prefer to take the two in the same school year back-to-back. Furthermore, it precludes students from taking micro and macro in the same semester, which some may need to do to play catch-up if they declare late in their academic careers a major in economics or business given that principles courses are often prerequisites to some upper-level courses such as finance and intermediate theory. Finally, requiring students to take micro before macro raises the cost of taking only macro for students outside of business and economics who may be more interested in learning about the macroeconomy than microeconomics to satisfy general education requirements.

Of the 282 schools in the Princeton Review's list that offer micro and macro principles as two separate courses, 78 schools (28%) require that micro be completed prior to enrolment in macro, while eight schools merely recommend in their course descriptions that students take micro prior to macro. Only 15 schools (5%) require students to take macro prior to enrolment in micro. Overall, the overwhelming

majority of schools (67%) allow students to take micro and macro principles courses in any order. As Table 1 indicates, small schools are less likely to require one be taken prior to the other. This would make sense because fewer sections of courses generally at small schools make prerequisite conditions more costly for student scheduling.

Also noteworthy is that out of the 282 schools that offer both micro and macro principles, 193 schools (68%) have micro as the lower numbered course, while 32% have macro as the lower course number. Micro and macro were immediately preceding one another in numbering in virtually all cases. Although economics faculty in schools with no required micro-macro ordering may see course numbering as irrelevant, some students and advisers outside economics or business schools may mistakenly assume that ECON 101 is a prerequisite for ECON 102, just like Spanish 101 is a prerequisite for Spanish 102. In fact, to avoid such misunderstandings, many economics departments specifically state in their course descriptions that micro is not a prerequisite for macro and vice versa.

Math Prerequisites

Of the 369 schools offering principles of economics courses, a specific mathematics requirement was imposed by 58 schools (16%) prior to enrolment in principles courses. Furthermore, six other schools (2%) simply recommended that certain levels of math competency be achieved prior to enrolment. Therefore, over 80% of schools neither require nor recommend in their course description that students obtain a specific level of math competency prior to enrolling in principles of economics courses.

Most schools imposing a math requirement used performance on either the ACT, SAT, or a school's own math placement exam to determine whether or not students could enter economics without taking any math course in college (often remedial). Typically, an Algebra II level of math competency was the threshold. The implicit assumption is that students are more likely to succeed in economics if they have a certain level of math competency, which is supported by previous literature (Hoag and Benedict (2010) and Ballard and Johnson (2004)). Kansas State University endorses this assumption as its prerequisite for micro principles actually references a probability of passage based on math test scores and math coursework. The prerequisite reads "Probability of a grade of C or higher of at least 40 percent according to the economics component of the ACT Student Profile, a score of 18 or higher on the Math Placement Exam, or a grade of B or higher in MATH 010 (Intermediate Algebra)."

A math prerequisite can serve two purposes. First, it can assure that students have knowledge of certain math skills such as basic algebra and graphing that are necessary for successful completion of principles of economics. Second, it can simply serve as a filtering mechanism for enrolment in economics. That is, students with mathematical skills (even those not used in principles of economics courses) are more likely to succeed in economics simply because strong math skills are correlated with skills that also predict success in economics.

Schools classified as "more selective" were the least likely to have a math prerequisite. This is likely due to the fact that inadequate math skills are less of a concern at those institutions given that their entrance requirements are so high. There was some difference between schools based on size, but as Table 1 shows, there was not a clear relationship. Public schools were twice as likely as private schools to require a math prerequisite for enrolment in principles courses.

Other Items of Note

In the process of researching each school's curriculum, there were a few other findings that are worth noting:

- Two schools offer two separate principles courses but do not separate them into micro and macro. The University of Denver separates the two separate principles courses into history and policy: *Introduction to Micro- and Macroeconomics I: History and Theories* and *Introduction to Micro- and Macroeconomics II: Theories and Policies*. Occidental College separates the two principles courses in terms of the complexity of the material. Specifically, the second course (Economics 102) description begins “A continuation of Economics 101 that completes the coverage of economic principles by incorporating the development of more sophisticated analytical tools.”
- Eight schools require students to have completed some college coursework prior to enrolment in principles courses. For example, some require “sophomore standing” to enrol in principles courses.
- A few schools require other courses to be taken prior to economics principles courses, such as a first-year English course or an introductory business or management course.

Conclusion and Summary

This paper identified that the majority of schools listed in the Princeton Review’s *The Best 380 Colleges 2016 Edition* offered both micro and macro as separate principles courses with the majority of those schools allowing students to take micro and macro in any order for the 2015-16 academic year. The paper also highlighted that only 16 percent of schools have formal math prerequisites for principles courses. Finally, this paper also identified that smaller schools are more likely to offer only one combined micro-macro course and are less likely to require micro be taken prior to macro.

The findings of this paper provide economics and business faculty with useful information as to how their peers are making curriculum decisions pertaining to principles of economics courses. This is important because it allows faculty to determine to what extent, if any, their own curriculum deviates from the norms of other institutions. As is the case in any industry, a firm analysing what other players in the industry are doing can be a reasonable first step at assessing the individual firm’s possible need for change.

Aligning one’s curriculum with the majority of other schools also improves coordination for the purposes of students transferring credits between institutions. Because economics principles courses satisfy general education requirements at most schools and are often taken early in students’ academic careers, they are frequently transferred between institutions. Therefore, if a school has an economics principles curriculum that differs dramatically from the schools to/from which students are transferring, this can make the transfer credit evaluation process more difficult. On this issue of transfer credits, individual four-year institutions may find it worthwhile to perform an analysis similar to this paper as it relates to local community colleges and their principles of economics curricula.

Given that this paper shows diversity in economics principles curriculum, future research on the question of what is the optimal principles of economics curriculum may be worthwhile for a significant number of schools. For example, this research can be done comparing student performance pre-and-post curriculum changes. Or in the large number of institutions that allow for micro and macro to be taken in any order, research comparing performance in micro and macro between two groups (those taking micro first versus those taking macro first) could be enlightening, especially if such research was done by a variety of institutions. Such research is the next step for the authors of this paper.

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