

Some Microeconomic Principles
for the Twentieth Century

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Abstract

Criticisms are advanced against four “economic principles” that traditionally receive a great deal of attention in introductory courses: margins, scarcity, opportunity cost, and economic profit. This paper argues that all but the most cursory discussions of margins should be postponed until intermediate level (and preferable calculus-based) courses, and that the other concepts add little value to economic education at any level and should be abandoned.

Discussions of which topics belong in introductory microeconomics classes arguably devote too little attention to the question of which topics *do not* belong in those classes. This paper makes a modest effort towards correcting this imbalance by challenging four stalwarts of microeconomic principles: margins, scarcity, opportunity cost, and economic profit.

It is worth emphasizing at the outset that these challenges arise in the context of classroom time constraints. Eliminating topics from the introductory curriculum frees up space that can be used to reinforce other topics (e.g., through greater use of class experiments) or to address topics such as game theory that would otherwise be covered briefly or not at all. Consideration of the alternatives may make the ideas advanced in this paper more palatable. This is

especially true in the case of margins, where the relevant issue is not “teaching margins versus not teaching margins” but rather “teaching margins now versus teaching x , y , and z now and teaching margins later”.¹

1 Margins

The importance of marginal analysis in economics is difficult to overstate. It is nonetheless possible to question whether “thinking at the margin” should be a central component of an introductory class. A number of arguments suggest that all but the most cursory discussions of margins should be reserved for a more advanced course, preferably one with a calculus prerequisite.

First, discussions of margins do surprisingly little to help beginning students understand the economic perspective on the world around them. The prime example here is competitive markets: students do not need marginal analysis to understand supply and demand, and with supply and demand it is possible to explain market equilibrium, movements of and along supply and demand curves, the effect of taxes, elasticities, and other important topics.² What additional insights, then, are to be gained by reformulating supply and demand curves as

¹Of course, postponing margins until a more advanced course may also necessitate the elimination of other topics from that more advanced course. But perhaps not: anecdotal evidence suggests that many intermediate courses operate on the assumption that students have retained little or nothing from their introductory courses. In any case, there is likely to be a net gain because teaching margins is much easier in calculus-based courses.

²See Bauman (2002) for an approach that covers these topics without reference to margins.

marginal cost and marginal benefit curves? Very few: most of the value-added comes from issues relating to consumer and producer surplus, and half of these are technically incorrect because (following, e.g., Silberberg and Suen (2000)) accurate measures of consumer surplus involve Hicksian demand curves rather than the Marshallian demand curves used in introductory courses.

Second, discussions of margins are easy with calculus and difficult without. Optimization with calculus involves a first order condition—the derivative of the objective function with respect to the choice variable has to equal zero—that can be easily described in terms of margins. In contrast, marginal analysis without calculus can be difficult for teachers and difficult for students. Showing the relationship between demand curves and marginal benefit curves, for example, often leads to questions about whether these curves are step functions or linear functions, and which one is correct to use in calculating consumer surplus; answering such questions accurately without reference to calculus is tricky, if not impossible. Confused students may consequently find it hard to understand “thinking at the margin”.

The relationship between margins and calculus suggests a third argument, one of fundamental importance: marginal analysis is in fact not a *principle* (“a basic truth or law or assumption”) but a *tool* (“an implement used in the practice of a vocation”).³ In particular, marginal analysis is a tool that economists use to find local maxima and minima, i.e., in situations involving optimization

³These definitions come from dictionary.com. A similar line of reasoning indicates that “proof by contradiction” is not a mathematical principle but a mathematical tool.

of continuous variables. It is worth noting that this tool is not the only one available in such situations; the marginal approach of optimal control theory, for example, is not the only way to show that the shortest distance between two points is a straight line. It is also worth noting that there are important situations in which marginal analysis is the wrong tool. Examples include problems involving optimization of discrete variables, such as a billiards player attempting to determine which ball to hit next, or a consumer comparing different brands of soap, or someone in a prisoner's dilemma-type situation.⁴

As the previous paragraph suggests, the *principle* that motivates the use of marginal analysis is optimization. Economics is driven by the idea that individual agents pursue goals such as cost-minimization or utility-maximization. Indeed, microeconomics can reasonably be defined as the study of the actions and interactions of optimizing individuals. It is the idea of optimization—and not marginal analysis, which is merely a means to that end—that deserves prominence in introductory courses.

What of the practical task of actually determining optimal values, for example calculating the profit-maximizing price for a monopolist? These are not economics problems but mathematics problems, and the *faux calculus* exercises traditionally used to solve such problems contain precious little economic content. As far as economics is concerned, students who wish to know the quantitative solution to the monopoly pricing problem should receive the same response

⁴It is of course possible to use the phrase “marginal analysis” in reference to discrete choice problems, but the terminology is misleading.

they would receive if they asked about the maximum value of $f(q) = 10q - 2q^2$:

“come back and ask again after you learn some calculus.”⁵

To sum up, then, the argument against margins is as follows: marginal analysis is a tool that people who understand calculus use to think about optimization of continuous variables; the use of such a tool in an introductory (non-calculus) class is ill-advised because (1) it is a difficult topic that requires a significant investment of time and energy, (2) the rate of return on that investment is meager, (3) discussing margins in a calculus-based class is much easier and generates higher rates of returns, and (4) eliminating margins frees up space that can be put to better use; as a result, introductory classes should stop focusing on the tool of marginal analysis and instead focus on the underlying economic principle of optimization.

2 Scarcity

The idea of scarcity features prominently in many discussions of economics. In a typical discussion, Perloff (2001, p. 1) defines microeconomics as “the study of the allocation of scarce resources”. This approach is problematic for three reasons.

First, focusing on scarcity sells economics short. There is no reason why economics cannot address the allocation of *non-scarce* resources. For example,

⁵The function $f(q)$ is the profit function for a monopolist with costs $C(q) = q^2$ and demand curve $q = 10 - p$.

Pareto efficiency suggests that non-scarce goods should be freely available for everyone. As such, Perloff’s definition might profitably be expanded to cover the allocation of *all* resources.

Second, microeconomics *does* address issues other than the allocation of scarce resources. Some branches of economics—e.g., contract theory—are more concerned with incentive structures than with the allocation of scarce resources. Other branches—such as information economics—deal with resources that are (at least potentially) not scarce.

The third and final problem is that scarcity—which dictionary.com defines as “a small and inadequate amount [ant.: abundance]”—is the wrong word for describing the idea that “you can’t have everything”. An individual at a fabulous all-you-can-eat restaurant has to make *choices*, and those choices can be studied using the tools of economics, but the argument that this is a situation involving scarcity is diametrically opposed to the common meaning of the word.

These problems suggest that a focus on scarcity—and, to a less extent, on resource allocation—is unwarranted. As discussed above, a better approach is to focus on individual decision-making by defining microeconomics as the study of the actions and interactions of optimizing individuals.

3 Opportunity cost

The idea of opportunity cost, usually defined in terms of “the next best alternative”, faces definitional problems stemming from the failure to adequately

describe the next best alternative. During his years with the Chicago Bulls basketball team, was Michael Jordan's next best alternative playing baseball, or playing basketball for a different team, or playing for the same team but exercising less? Is "selling the store" an acceptable alternative for a monopolist, as suggested by Alfred Marshall?⁶ What about hiring a different receptionist, or buying computers from Dell instead of Compaq?

These definitional problems hamper any theoretical value that "opportunity cost" might have. The term has little descriptive value either, since the layperson's word "alternative" is a superior means to the same end (as in, "the opportunity cost of studying is going to the movies").

The only truly useful application of the idea of opportunity cost is a pedagogical one that arises in the context of a cost-benefit approach to decision-making. Frank (1991, p. 4) provides an explicit exposition of this approach:

⁶On p. 519 of the eighth edition (Book VI, Chapter VIII, Section 10), Marshall writes that "The earnings of a successful business, looked at from the point of view of the business man himself, are the aggregate of the earnings, firstly, of his own ability, secondly, of his plant and other material capital, and thirdly, of his good-will, or business organization and connection. But really it is more than the sum of these: for his efficiency depends partly on his being in that particular business; and if he were to sell it at a fair price, and then engage himself in another business, his income would probably be much diminished. The whole value of his business connection to him when working it is a notable instance of *Conjuncture or Opportunity value*. It is mainly a product of ability and labour, though good fortune may have contributed to it. That part which is transferable, and may be bought by a private individual, or by a large amalgamation of firms, must be entered among their costs; and is in a sense a *Conjuncture or Opportunity cost*." [Emphases in original]

Many of the choices that economists study can be posed in the form of the following question: Should I do activity x ? . . . Economists answer such questions by comparing the costs and benefits of doing the activity in question.

Frank then discusses pitfalls such as ignoring opportunity costs or failing to ignore sunk costs.

The concept of opportunity cost is crucial in this cost-benefit framework because of that framework's single-minded focus: "Should I do activity x ?" However, the cost-benefit approach to decision-making is not the only option. Superior in our view is an approach based on decision theory: write down all your options, then pick the best one. Sunk costs are visibly evident as costs that appear in all the alternatives; opportunity costs are not evident because the decision theory approach makes them unnecessary. By examining all of the options instead of just one, this approach explicitly shows that the correct question is not "Should I do activity x ?" but rather "Should I do activity x or activity y ?"

4 Economic profit

Any definitional problems with "opportunity cost" are certain to affect "economic profit". Leaving these aside, however, there is an additional issue. Many authors take pains to distinguish "economic profit" from a layperson's concept

of profit, which is likely to be along the lines of “money in minus money out”.⁷ This divergence between common and technical language carries with it a burden of proof: those who wish to replace a broadly understood popular idea with a narrowly understood technical one should provide one or more good reasons for doing so.

No such reasons exist. In terms of theory, there is no need for economic profit: a firm that maximizes money in minus money out (or, more precisely, the present value of money in minus money out) will behave in exactly the same way as a firm that maximizes economic profit.

There is also no pedagogical need for economic profit. Granted, there is some attractiveness to the idea that profit is zero for firms in a competitive market. But the simplicity of this statement belies its complexity. Consider Perloff (2001, p. 262), who argues that firms need to maximize economic profit:

In a competitive market with identical firms and free entry... [economic] profits are driven to zero at the long-run equilibrium. Any firm that did not maximize [economic] profit... would lose money. Thus *to survive in a competitive market, a firm must maximize its [economic] profit.* [Emphasis in original.]

This is a questionable conclusion⁸, but in any case the more clearly applicable

⁷One dictionary.com definition is “the excess of revenues over outlays in a given period of time”. Economists are likely to call this (or a modification to include present value considerations) “accounting profit”.

⁸Consider Alchian (1950), who argues that “[r]ealized positive [accounting] profits, not

term here is not economic profit but the layperson's conception of (accounting) profit. After all, it is the firm's bank account balance that ultimately determines whether or not the firm can stay in business.

The use of the layperson's definition of profit has the advantage of putting difficult concepts out in the open. Statements such as "profit-maximizing firms in a competitive market earn the market rate of return" are not as pithy as "economic profit is zero", but they are arguably more informative and less likely to mislead.

5 Conclusion

This paper argues that some of the traditional elements of economic principles courses should be postponed or eliminated entirely. We have not addressed the question of what should take their place, but other authors (for example Becker and Watts (2000) and Walstad and Saunders (1997)) provide numerous suggestions.

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maximum profits, are the mark of success and viability." (Emphasis in original.) This suggests that a firm making negative economic profit can still make positive accounting profit.

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