

Doing Economics:

*A Guide to Understanding and
Carrying Out Economic Research*

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Houghton Mifflin Company Boston New York

This book is dedicated to my friend Bob McConnell, who showed me this was a feasible project, and to my wife Kathy, who made it possible for me to complete it.

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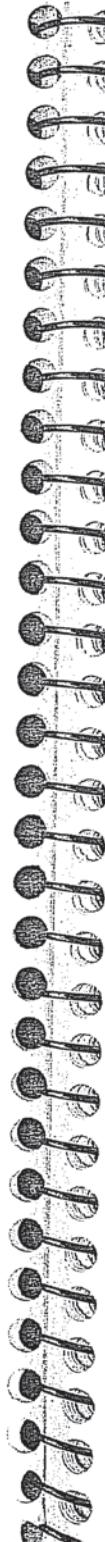
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Preface

"To complete the process of intellectual maturation, every student should be required to apply what he or she has learned to an economic problem and, in the process, acquire experience really 'doing economics.' For a particular intellectual encounter to accomplish this goal, it should involve considerable responsibility on the student's part for formulating questions, gathering information, structuring and analyzing information, and drawing and communicating conclusions to others in an oral and/or written form."

—SIEGFRIED ET AL. (1991)

In the last fifteen years many leading experts in economic pedagogy have argued that rather than merely passing courses, economics students should be required to demonstrate proficiency in *doing* economics. Although *doing* economics (in the form of economic research) is a key element in graduate education, it has not been the norm at the undergraduate level. Over the last decade this has changed as an increasing number of institutions have added an undergraduate research emphasis to their economics programs. This book aims to guide these novice researchers, whether they are taking an undergraduate course in research methodology, completing a senior capstone course, pursuing a senior thesis, or attempting a research project early in graduate studies.

The objective of *Doing Economics* is to make explicit to novice researchers what experienced researchers know implicitly about the research process. The book's principal thesis is that research is fundamentally a process of constructing persuasive arguments supported by theory and empirical evidence. The more technical issues of literature

searching, theory formulation, data collection, and empirical testing are the details by which the process occurs, but the big picture is about building a case around one's interpretation of an interesting issue or problem.

Research is often viewed as one of those competencies students must have learned in an earlier course or can pick up on their own. But experts in the field of research and writing expose this view as a fallacy.

Although many research skills are taught in traditional courses, the broader skills required for research design tend not to be. Traditional courses succeed in teaching the technical skills—for example, those involving analytic reasoning. When asked to apply a specific theory to an issue or problem, or to perform a specific statistical test on a given data set, most novice researchers do quite well. However, traditional courses are less successful in teaching the broader, creative skills required for research. These broader, creative skills include:

- The ability to frame a good research question when given an issue or problem
- The ability to identify and apply an appropriate model to a given research problem
- The ability to develop an appropriate data set
- The ability to select appropriate ways to test a specific hypothesis
- The ability to use the results to create a scholarly argument

More generally, novice researchers fail to grasp that research is not a straightforward, mechanical process, but one that is replete with ambiguities: there is more than one correct way to approach a given research problem, as well as many incorrect ways. While research can never be reduced to a simple cookbook process, it can be taught in a more explicit manner, and this text seeks to make the steps involved in doing research clear to the novice researcher.



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This book, more than most I suspect, has benefited from the help of many individuals. Research methodology covers such a range of topics that it is difficult for any author to be a master of them all. I would like to thank the reviewers who commented on this project early on and provided many useful notes and suggestions: Stephen DeLoach, Elon University; Adam Grossberg, Trinity College, Hartford, CT; Wm. Stewart Mounts, Jr., Mercer University; Craig M. Newmark, North Carolina State University; Paul Rappoport, Temple University; and Michael Ye, St. Mary's College of Maryland.

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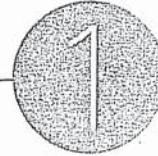
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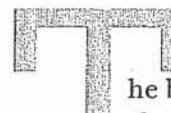
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What Is Research?

"I hear and I forget; I see and I remember; I do and I understand."

CONFUCIUS



The best way to *learn* economics is not to hear about it, or to read about it, but to *do* it. Doing economics means performing economic research. As Booth et al. (1995, 2) note, "Doing research can help you understand the material you are studying in a way that no other kind of work can match."

Faculty often view research ability, like writing, as a skill that students either must have learned earlier in their education or can pick up on their own. After all, haven't all undergraduates written term papers? In fact, experts in the field of research and writing have exposed this as a fallacy. Bean (1996), a nationally known scholar of critical thinking, points out that most undergraduates do not really understand how to write a discipline-specific research paper.

This book is intended to remedy this problem. It is designed to guide students through the research process from the conception of the research question to the completed research report. Students often find that research is a difficult process. As they struggle to complete the project they conclude that something is wrong with *them*. What they fail to grasp is that research *is* difficult. It is not a straightforward, mechanical process but one replete with ambiguities, wrong turns, and "wasted" efforts. Progress in the research process often comes in fits and starts rather than evenly. It isn't always or even usually predictable. In contrast to most of the assignments students encounter in their education, with research there may not be a well-defined answer. Every researcher, including experts, feels confused or even overwhelmed at some point during a research project. The difference is that experienced researchers, like marathon runners hitting "the

wall," know that this is normal and that with perseverance one will get through it.¹ In short, this book is designed to make explicit to undergraduate economics students what experienced researchers know implicitly about the research process.

The book is an introduction to research methodology in economics. Methodology is more than a fancy word for methods. Research methods are the tools of economic research: for example, online search skills, critical reading and writing, and statistical methods. Research methodology is how those tools are combined to produce valid and reliable research.

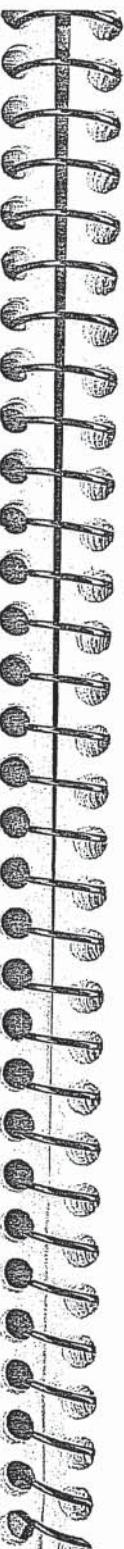
Research Is the Creation of Knowledge

One popularly held view of research is that it means "the search for knowledge." This definition seems to view knowledge as like fruit on a tree in a forest. Thus, all that is necessary in the research process is for the researcher to discover the tree and collect the knowledge, much like a farmer picks fruit.

This idea of knowledge is based on the traditional view of science as entirely objective, where the data, when collected, "speak for themselves." In other words, the data will yield the same conclusions to any researcher.

This view fails to differentiate between knowledge and facts. Knowledge is what is believed to be true about something, what is believed to be a correct understanding of something. Facts are just data. Knowledge, by contrast, is facts with meaning; that is, it is an expert's best interpretation of the facts. You can see this distinction if you compare the results from a chemistry lab (i.e., the data) with the researcher's discussion of the results in a lab report (i.e., the interpretation). Only the latter is the knowledge.

Research, then, is not merely searching for facts. Research is more completely defined as the creation of (valid) knowledge.² Facts are *discovered*; knowledge, as an interpretation, is *created*.³ Instead of a farmer harvesting a fruit tree, a better analogy for research is a detective searching for clues and then developing a case on the basis of those clues or other evidence. Scholars create knowledge by constructing arguments. In a research context, an argument is not primarily a quarrel or controversy. Rather, an argument is a point of view or position on a question. More formally, an argument is an assertion or claim supported by reasons or evidence.⁴ Knowledge in any discipline can be thought of as a conversation or dialog between scholars as they develop competing arguments. One example familiar to students of macroeconomics is the conflicting views between the Monetarists and the Keynesians. Through this dialog, arguments are evaluated, the weaker ones are winnowed out, and the stronger ones are refined and improved.⁵ Thus, over time knowledge in the field advances.



Students and even some faculty believe that it is simply unrealistic to expect undergraduates to be able to perform original research. Cohen and Spencer (1993, 222) cite student comments such as "How can I tell you anything you don't already know?" and "How can you expect an undergraduate to say anything original?"

Part of the reasoning behind such comments stems from the perception that research includes only groundbreaking, paradigm-shifting examples like the theory of evolution or the theory of relativity. There are two problems with this perception. First, the majority of research represents only marginal improvements in our understanding. This is not to say that such improvements are not important, merely that they represent relatively modest advances in our knowledge. Second, even major "breakthroughs" are based on the work that came before. For example, Ethridge (1995) points out that the "discoveries" we associate with such notables as Alfred Marshall and John Maynard Keynes can be traced back to earlier work by lesser-known scholars.

In fact, undergraduates *can* complete serious, legitimate research projects. This is attested to by the growing number of undergraduate economics programs that require senior research projects and the increasing number of journals that publish undergraduate research.⁶ Booth et al. (1995, 7) assert that "it is no exaggeration to say, that done well your [research] will change the world tomorrow."

Ethridge (1995) distinguishes between two types of research: discovery, that is, "formulating, finding, and creating new knowledge or information" and confirmation, that is, "discerning the validity or reliability of knowledge or information." Undergraduate research may be largely confirming, such as running new tests of previously established theories. Such research is still considered "new" in that it adds to our knowledge by, for example, applying the previous theory to new data or new situations, which if successful, broadens its applicability.

How Are Arguments Evaluated?

Earlier, we defined research as the creation of *valid* knowledge, and we described knowledge as a dialog between competing arguments. Arguments "compete" through their validity. What makes knowledge valid? Each discipline has its own approach and language of discourse, but they all boil down to the use of logic and evidence to support a conclusion.⁷

Let's explore this idea in more detail, to find out how arguments are evaluated and either (provisionally) accepted or refuted.

First-year college students tend to think "**dualistically**."⁸ That is, they perceive (nearly) every question to have a unique correct answer, like a problem

in mathematics, for example, $2 + 2 = 4$. Students think in terms of black and white, despite the fact that we live in a gray world. This perception is not their fault; they've been trained for at least twelve years to think that way.

By the time students are sophomores and juniors, their thinking has advanced to "multiplicity." That is, questions have more than one correct answer. For example, in macroeconomics students learn both that "The Great Depression was caused by inappropriate monetary policy" and that "The Great Depression was caused by instability in the private sector." Most students conclude that since multiple points of view exist, knowledge and truth are essentially subjective! Though multiplicity is a more sophisticated form of thinking than dualistic thinking, it's not valid to conclude that knowledge and truth are subjective. In truth, the fact that there are different points of view about an issue or question does *not* imply that all points of view are correct or equal. (I have often said to my students, "There is more than one correct answer to this question, but there are also an infinite number of incorrect answers.") Suppose you are a juror in a criminal trial and both the prosecution and defense bring in experts who contradict each other. There are two points of view, but only one is true: the defendant is either guilty or innocent. How do you decide?

To make a valid decision, you will need to think critically about the testimony.⁹ Critical thinking is one of those concepts (like "liberal education") that college students are familiar with but often find difficult to put into words. Missimer (1995) defines critical thinking as the evaluation of competing arguments on the basis of their evidence. Thus, it involves the ability to recognize and assess an argument and its constituent parts, including the assumptions, logic, and evidence. This will be explained in detail in Chapter 4. For now, we can say that when scholars evaluate different arguments, they ask questions such as:

What are the reasons behind the argument?¹⁰

Does the argument make sense? Why or why not?

Is the logic flawed?

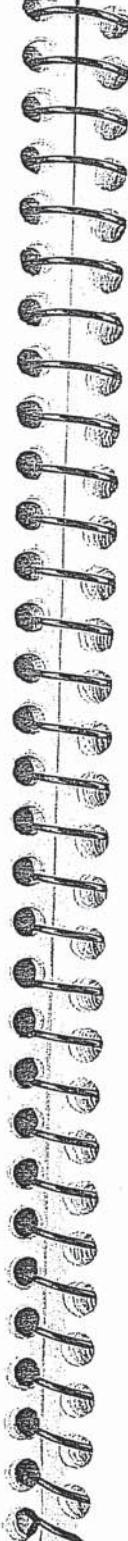
What are the underlying assumptions (explicit and implied)? Are they flawed?

How critical are the assumptions? That is, would different assumptions lead to different conclusions?

What is the empirical evidence? Does it support the conclusion?

In light of the reasons and evidence provided, is the argument persuasive? If so, the conclusion is valid.¹¹

Let's think about how this winnowing process works. Arguments are evaluated to see if they stand up to intellectual scrutiny according to the



criteria just given. If flaws are discovered, the arguments are disproved, after which they may be revised or discarded. For the moment, however, they are removed from consideration. If flaws are not discovered, the arguments are only provisionally accepted, never proved.

That arguments can be disproved but never proved is sometimes difficult for people to grasp. Consider a sports metaphor. Who is the best tennis player in the world? Players compete and as long as they win, they remain in the running for the title. When they lose, they are (at least temporarily) out of contention. But no player can ever be the best forever, only provisionally so, until a better player comes along. It is the same way with arguments.

Think of an argument as a rope across the Grand Canyon. Each test of an argument is like a thread. No one test is strong enough to bear your weight. Over time, however, when multiple tests confirm the argument, the thread becomes a string, the string becomes a rope, and the rope becomes a thick cable. At some point, you become willing to trust it. By contrast, imagine that when a test of the argument fails, the thread is cut. If there are enough failures, the rope is weakened, and ultimately severed in two.

In short, we evaluate the supporting evidence so as to weed out flawed arguments. If we are left with a single point of view, we can conclude that it is correct. Often, however, there is more than one argument left.¹² How do we choose then? When scholars face more than one argument they can choose between them on the basis of disciplinary norms, such as efficiency or equity.¹³ For example, consider the following two positions:

Free international trade is better for a nation than protectionism because under free trade a nation will have more goods and services, that is, a higher GDP.

Tariffs and quotas are necessary to protect workers and businesses because certain sectors of the economy cannot compete internationally under free trade.

Both are arguable: the first on the basis of efficiency and the second on the basis of equity.

SUMMARY

- Research is the search for or creation of valid knowledge.
- Rather than a collection of facts, knowledge is interpretation of the facts.
- The community of learners in any discipline represents a dialog between competing arguments: assertions made about the correct interpretation of the facts.

- How do arguments compete? What makes for valid knowledge?
- Valid research is research that is demonstrable and persuasive to other scholars in the field.
- Research is persuasive when it is done systematically, by design, and where the conclusions are supported by reason and empirical evidence.

NOTES

1. Booth et al. (1995, 23–25) make a similar point.
2. Ethridge (1995) defines research as “the systematic approach to obtaining new and reliable knowledge” (p. 16).
3. Truth is not created, but our understanding, our interpretation, is created.
4. Missimer (1995).
5. See Appendix 1A for a more detailed treatment of how knowledge is created in economics.
6. Chapter 2 provides specific examples of outlets for undergraduate research in economics.
7. Ethridge (1995) defines validity as “demonstrable to others based on reason and evidence.” This is a useful way to think of it. Remenyi et al. (1998, 24) argue similarly that a “researcher has to be able to convince an audience of the value and relevance of his or her research efforts. . . . In addition, the academic researcher needs to explain why his or her research should be considered important and needs to be able to point out precisely what was found and what use the findings are to the community.”
8. This view of thinking, including the labels “Dualistic” and “Multiplicity,” is from Nelson’s (1989) interpretation of Perry (1970).
9. Ethridge (1995) notes that critical thinking is an essential element for research.
10. Missimer (1995) calls assertions that are unsupported by reasons “loose arguments.”
11. Nelson (1989) characterizes this level of thinking as “Contextual Relativism.”
12. This is analogous to the concept of Pareto optimality, as demonstrated, for example, by a production possibilities frontier, where all of the



- “points” are Pareto efficient but to choose between them requires some additional criteria for judgment.
13. Nelson (1989) labels this level of thinking as “Contextually Appropriate Decisions.”

SUGGESTIONS FOR FURTHER READING

- Bean (1996)*, especially Chapter 12—Useful guide to teaching research, writing, and critical thinking to undergraduates. Chapter 12 is a re-thinking of how to use research papers as an effective tool for undergraduate education. Bean emphasizes the view of research as developing an argument.
- Booth et al. (1995)*—Classic text on college-level research. High-level research text: not concerned with mechanics, but rather research design and argument construction. Focus is on research in the humanities but is very applicable to research in the social sciences as well.
- Blaug (1992)*—Well-known book-length survey of the range of methodologies used by economists. For a similar but shorter survey, see Hausman, 1989.
- Ethridge (1995)*—Readable guide to research methodology in economics at the graduate level. Ethridge teaches agricultural economics; as such, the book is very applied and thus comprehensible to undergraduate researchers. See especially Chapters 1–4 on methodological foundations of economic research.
- Friedman (1968)*—Thoughtful article on research methodology as practiced by economists. For a similar article, with a slightly different point of view, see Machlup (1965).
- Hausman (1989)*—Survey article on economic methodology. For a more detailed survey, see Blaug (1992).
- Machlup (1965)*—Another view on research methodology as practiced by economists. Compare with Friedman (1968).
- Nelson (1989)*—Widely used summary of Perry’s taxonomy of critical thinking.
- Perry (1970)*—Classic study of the levels of critical thinking obtained by U.S. undergraduates.
- Remenyi et al. (1998)*—Guide to research methodology in business administration. Designed for master’s- or doctoral-level research, but as an applied text, it has much to offer undergraduate researchers.

EXERCISES

1. Economists have a reputation for being unable to reach a consensus on issues. You may have heard the joke that if you laid all the economists in the world end to end, they would fail to reach a conclusion. This reputation is due, in part, to the way economic knowledge is created. The reference list for this chapter includes articles by Fritz Machlup and Milton Friedman, two respected economists who address this issue. Read the articles by Machlup (1965) and Friedman (1968). According to each author, what are the major reasons for disagreement among economists? What can you infer from this list of reasons about how economic knowledge (i.e., agreement) is created?

The Range of Economic Methodologies

We observed that scholars in any discipline present competing arguments to resolve issues. This is also true of those who study economic methodology. The view presented in this chapter represents a consensus of the majority of economists, but the dialog of economic methodologists includes a range of views.

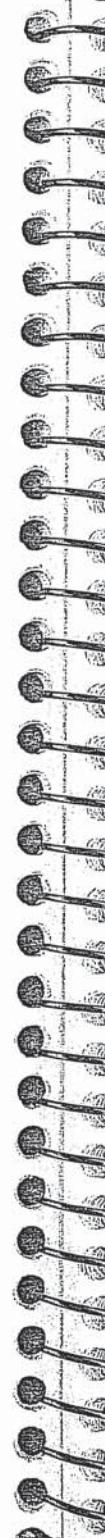
Hausman (1989) argues that real-world complexities in the social sciences, such as researchers' inability to conduct controlled experiments, preclude any chance of convincing empirical evidence. Thus, scholars should use inductive reasoning to establish the basic psychological or technological laws of economics, such as utility maximization or diminishing marginal productivity.

Then, for a specific application of such a law, one can deduce the economic implications. For example, assuming consumers maximize utility, one can deduce that higher prices result in fewer items purchased.

At the other end of the methodological spectrum is Blaug (1992), who argues for falsification. That is, not only should hypotheses be judged on the basis of empirical testing, but scientists should actively try to refute the hypotheses of their research. They should reject those that are refuted, instead of refining and retesting ad nauseam.

The view presented in this chapter is closer to Blaug than to Hausman.

One view, which is somewhat outside this spectrum, is McCloskey (1998). She argues that economists don't rely merely or even primarily on scientific forms of proof such as logic and empirical evidence, but on literary ones as well, such as introspection, case studies, and metaphor. That economists use these devices is clear; whether or not they can persuade other experts of their views without using scientific forms of proof is not.



Overview of the Research Process in Economics

"If we knew what we were doing, it wouldn't be called research, would it?"

ALBERT EINSTEIN

In the previous chapter, we defined research in fairly generic terms. While we used examples from economics, the story could have been applied to almost any discipline, from anthropology to zoology. Now let's focus more closely on the research process in economics. This chapter will provide an overview of that process, with an emphasis on the first step: developing an effective research question. Subsequent chapters will examine the remaining steps of the process in detail. At the end of the introduction to each step in this chapter, you will be referred to the appropriate chapter later in the book.

At this stage, most of the material introduced in this chapter will seem like Greek to you. Though you may have already been exposed to some of what we discuss here, until you complete your own economics research project you are unlikely to really grasp it. That's okay! Everyone in your class is in your shoes. And every professional researcher has gone through this process. You can be sure that by the end of your project, everything will make a great deal more sense.

Research in Science and Nonscience Disciplines

Academic knowledge can be divided into two classes: science disciplines and nonscience disciplines. The difference between science and other disciplines lies both in the types of questions they explore and the kinds of proof they accept as convincing. Scientific questions are fundamentally questions of objective fact: what causes earthquakes or how do catalysts work? Nonscientific questions are questions about the affective realm:

what is the meaning of life or how does a sunset make you feel? Science is research that is empirically testable, at least in principle, while research in the nonscientific disciplines is not empirically testable. This is not to say that there are no standards of proof in nonscientific disciplines, merely that the proof is normative and not based on empirical facts.

Scholars in the sciences perform research using the scientific method. The **scientific method** is a set of procedures for drawing valid, reliable, and objective conclusions. These procedures include the following steps:

- Select a scientific problem or question;
- Apply a theory to derive a hypothesis about the problem or question;
- Test the hypothesis by comparing its predictions to evidence from the real world;
- If the hypothesis fails the test, modify it (and retest) or reject it;
- If the hypothesis passes the test, provisionally accept it;
- Test the hypothesis in a new context.

The scientific method is not an arbitrary set of procedures. Rather, for research to be valid it needs to be done systematically. Spector (1981, 7) observes, “It is not necessary to use scientific methods to answer [research] questions. One might rely on intuition or educated opinion.”¹ Isn’t this how most people answer questions, especially those for which they lack specialized knowledge? The problem with such nonscientific methods is that they are subject to one’s biases and other subjective factors. Psychologists have identified the “fallacy of personal validation,” in which people tend to “see” what they hope or expect to see in evidence. The scientific method, while not infallible, is designed to avoid or at least minimize these biases, and result in objective findings.

Steps of the Research Process for Economics

Researchers in economics, as a social science, use a version of the scientific method. This research process in economics can be broken down into six steps, shown in Table 2.1.

As we discuss these six steps, you will see that a research project is not a linear process; rather, the steps are overlapping and iterative. Instead of completing the steps one by one until the end, often the researcher finds it necessary to return to an earlier step in the process as he or she revises his or her thinking.² For example, though you need to begin thinking about the research question early in the process (Step 1), after you have reviewed what other scholars have done in the area (Step 2) you may need to revise the question. Similarly, in determining how to perform the empirical testing (Step 4), you may need to consult previous testing method-

NOTES FOR NOVICE RESEARCHERS

Requirements for a Good Research Project

There are a number of things necessary for completing a good piece of research. These include:

- A Good Research Question (Chapter 2)
- A Testable Hypothesis (Chapter 7)
- A Good Data Set (Chapters 8–9)
- An Empirical Methodology that Adequately Tests the Hypothesis (Chapters 10–11)

(Each of these is discussed in detail in the chapters indicated in parentheses.)

If your project lacks any of these four items, the best you can hope for is a mediocre outcome in your research. It makes sense then, at least early on in your project, to think about these items in parallel, rather than sequentially, since any one of them can trip you up. For example, as soon as you identify a research question, you should begin looking for data in that area, even if that means reading ahead in the appropriate chapters of this book.

Note also that these four things are necessary, but not sufficient, for a good project. In other words, they don’t guarantee a good project will result. In addition, you will need to correctly interpret your empirical results as well as persuade the reader of your conclusions.

Table 2.1 The Research Process in Economics

1. Developing an Effective Research Question
2. Surveying the Literature on the Topic
3. Analyzing the Issue or Problem
4. Testing Your Analysis
5. Interpreting the Results and Drawing Conclusions
6. Communicating the Findings of the Research Project

ologies (Step 2). Additionally, lack of adequate data for testing (Step 4) may require you to reconceptualize the problem (Step 3) in a way that is testable. Finally, it always makes sense to begin writing the research report (Step 6) as you progress through the research process, while the various steps are fresh in your mind, rather than waiting until the end. In short, it may be more accurate to describe research as a looping process. Indeed, Ethridge (1995) observes, “Research is a creative process. . . . There is no ‘magic formula’ for accomplishing or producing good economic research. If it were that simple, anyone could do it.” In this respect, performing research cannot be reduced to following a recipe. Nonetheless, it is helpful to think about the process in terms of discrete steps.

Step 1: Developing an Effective Research Question

At the start of the process, the researcher must define the scope of the project. This requires answering, at least tentatively, three questions:

1. What is the research topic?
2. What is the research question?
3. What is the research hypothesis?

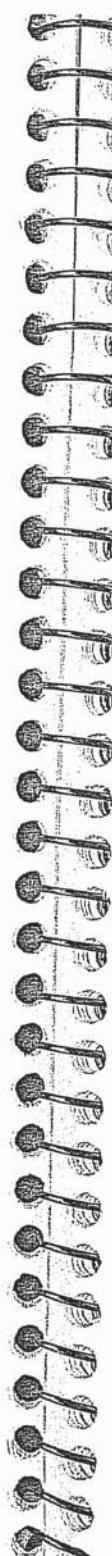
Let’s define these terms. The **research topic** is the general area the project will cover. For example, the topic might be “unemployment in the United States.” The **research question** is the specific focus of the research. For example, “How do different levels of education affect unemployment rates?” The **research hypothesis** is the researcher’s proposed answer to the research question or the researcher’s principal assertion about the topic, which will be supported by the paper.³ For example, “Individuals with higher levels of education will tend to have lower levels of unemployment.” You may have to start with a tentative hypothesis until you get further into the research. That is normal. The procedure for determining a research hypothesis is explained below in Step 3.

Notice that, grammatically speaking, a research topic is a subject, while a research question must be a complete sentence. The same is true of the research hypothesis, which must also be a complete sentence. This is not merely grammar—a subject may indicate only a vague, general idea of the research, while a complete sentence shows a greater depth of thinking about it.

During the planning phase, the most important of these three concepts is the research question. A good one will make the research project much easier and more likely to be successful. A poor one will, at best, make the project more difficult. A good research question has several characteristics, listed in Table 2.2. Let’s elaborate on each of these.

Table 2.2 Characteristics of a Good Economic Research Question

- Problem-oriented
- Analytical (rather than descriptive)
- Interesting and significant
- Amenable to economic analysis
- Feasible, given the time and resources available



A research question is almost always better when it is framed in terms of a problem or concern to be addressed. This tends to focus the question in a useful way, which is less likely to happen otherwise.⁴ Closely related to the problem orientation is a second characteristic: a good research question should be analytical rather than factual. That is, its purpose should be to explain some aspect of the problem rather than describe it. For example, instead of asking a question like “What is poverty?” one should ask something like, “Why is the poverty rate among children so much higher than the average poverty rate among Americans?” Bean (1996) calls descriptive papers “all about” papers. In other words, they discuss “all about” a topic without necessarily having a clear point or argument. Booth et al. (1995) observe that factual questions tend to ask who, what, when, or where, while analytical questions tend to ask why or how?

Readers tend to react to descriptive papers by asking “So what?” In other words, they don’t find the papers interesting or significant. Let’s turn to these two concepts next.

A research question should be interesting both to the researcher and to the audience. It should be interesting to the researcher because if it is not, he or she will find it difficult to become engaged by the problem.⁵ Booth et al. (1995, 36) state, “Nothing will contribute to the quality of your work more than your sense of its worth and your commitment to it.” Your interest will help you stay motivated until the project’s completion, especially if it is a long project.

More importantly, a good research question should be interesting to one’s audience. To grasp what this means in the context of research, you need to understand the concept of a research community. Booth et al. (1995, 17–18) provide a very helpful definition: A research community is the collection of scholars who perform research on a topic. These are the experts in the field who teach courses as well as publish books and papers

NOTES FOR NOVICE RESEARCHERS

Can Undergraduates Perform Real Research?

Your instructor knows that you are not a professional researcher and so he or she won't hold you to that high a standard. At the same time, undergraduates can and do perform real, original research. In short, they can contribute to the conversation of scholars on a topic, so you shouldn't sell yourself short or set too low a bar for yourself.

on the subject.⁶ These scholars may be at your university or at other institutions anywhere around the world. They know one another by virtue of hearing each other's research presentations and by reading each other's published work. A research question should be of interest to this audience because if it is not, the research project is not worth doing. Remember, the point of research is to contribute to the conversation of scholars on an issue.

At this point, student researchers face a real problem. They actually have two audiences: the theoretical audience just described and a practical one consisting of their classmates, their instructor, and anyone who might read their paper if it is submitted for publication. We will make some suggestions about how to deal with this problem later, but for now, suffice it to say that a good research question is one that interests your readers.

When we talk about scholars being "interested" we mean more than that they think the question is entertaining. In a research context, interest is closely related to the concept of **significance**. Is the question a "hot topic," an area of current interest to the research community? Booth et al. (1995, 18–19) note, "If your question is already a live issue in your community, most readers will care about it when you pose it. . . . [Indeed, they] will be especially interested if you can convince them that they don't understand [it] as well as they thought they did." However, if your topic is not a "live issue," you will have to actively convince your audience that the question is worthy of study.

Booth et al. (1995) define significance by asking how weighty is the problem on which the research focuses. The greater the weight of the problem, that is, the higher the costs of leaving it unresolved, then the more significant the problem is from a research perspective. Consider three examples. Poverty among able-bodied individuals who choose not to work is not considered to be a very significant problem. Poverty among the elderly who



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Example of a Good Research Question: To What Extent Does Parental Employment Adversely Affect Children's Cognitive Development?

This is an example of a good research question. To understand why, consider how the criteria from Table 2.2 apply:

- **Problem-oriented**—In the last generation, the labor force participation rate among women has increased dramatically. As a result, the typical U.S. family is no longer characterized by one parent (usually the father) working, while another parent (usually the mother) stays home with primary responsibility for child rearing. Rather, it is increasingly the case that both parents are employed, and the children are placed in child-care. Given that more and more children are receiving child-care by someone other than a parent, does this adversely impact children's cognitive development? If so, perhaps families will need to revisit the issue of employment by both parents.
- **Analytical**—To address this research question, one would need to study the process of children's cognitive development and, in particular, the role that parents or other child-care providers play. This requires an analytical approach.
- **Interesting and Significant**—Past studies have indicated the possibility that children's cognitive development is adversely affected by the lack of parental input. However, these studies have not developed a consensus on either the magnitude or permanence of this effect. Clearly, researchers have more to learn about this question, which affects many American families.
- **Amenable to Economic Analysis**—Noneconomists may wonder about the relevance of economic analysis to children's cognitive development, a topic that is more normally associated with the field of educational psychology. However, this topic is a straightforward application of labor economics and human capital theory. In particular, economists studying this issue have applied the theory of an educational production function, by which parental care and other inputs such as spending on food, shelter, health care, and the like are combined to "produce" educated children.

- **Feasible**, given the time and resources available—The issue of feasibility obviously depends on the researcher and the context in which the research is being done. Suffice it to say here that there are a number of excellent data sets that can be used in this research, including the National Longitudinal Study of Youth and the Panel Study of Income Dynamics—Child Development Survey.

were not able to save adequately for retirement could be considered a significant problem. Poverty among children, for which they are not responsible and which may continue into their later lives, is probably a very significant problem. The ultimate test of significance, say Booth et al. (1995), is the extent to which a research paper asks readers to change their beliefs.

What makes an **economic** research question? Recall from your first-principles course that economics was defined as a content area (i.e., involving questions that originate from the general condition of scarcity), but more importantly as a way of thinking. Is the question or problem that the research will examine amenable to economic analysis? In other words, can economic analysis give us some insights into the problem? For example, does the question deal with choice under constraints? Does it involve demand or supply, needs, wants, availability? If the answer to any of these questions is yes, then you have an economic research question.

Finally, a researcher should be able to complete investigation of the research question in a reasonable period of time, for example, a semester or an academic year, given the resources available. A primary consideration here is the availability of adequate data to assess the hypothesis. Some researchers are fortunate enough to begin their project with a rich data set. For them, the challenge is determining an interesting and significant research question they can explore with that data. Most researchers, however, start with the question and then need to search out suitable data. For further information on obtaining data, see Chapters 8 and 9.

Students doing a research paper for a class often find it a bit difficult to select a research question—and for good reason: the assignment is artificial. In the real world, a business economist is told, “Here is a problem—research it!” Similarly, an academic economist does not say, “Gee, I have to do a research project, so let me think of a topic.” Rather, as an expert in some field(s), he or she is aware of where the research frontier is, what is

known, and what issues or problems in the field have yet to be satisfactorily explained. Those are the research questions he or she is likely to choose. This suggests a strategy for selecting student research questions:

1. Pick a general topic area that interests you, ideally one in which you have some background (e.g., an area in which you have taken a course).
2. Start reading the literature, not merely to see what has been done, but also to identify what questions remain to be answered or what problems remain to be solved.
3. Select a promising research question from what you have found in the literature. For example, could an interesting previous study be applied to a new place or time? Alternatively, are there conflicting findings on some question? If so, you might try to reconcile the conflict by examining the issue again, using a different set of data or a different methodological approach. Studies conclude by suggesting questions for further research. Perhaps one of these questions would be feasible. Finally, the literature survey may reveal gaps in the literature that you could explore.

Examples of good research questions that undergraduates have investigated in recent years include:

- What factors determine the demand for blood in the Fredericksburg, Virginia, region?
- Do union jobs systematically pay higher wages than nonunion jobs when disaggregated by occupation?
- Does class attendance influence student performance in macro principles courses?
- How much of a premium are consumers willing to pay for organic vegetables?
- How much are consumers willing to pay for cleaner streams in the Enoree watershed of South Carolina?
- Do nearby polluted streams affect housing prices?

Step 2: Surveying the Literature

The literature on a topic refers to the research that has been completed on that topic. When a researcher reviews or surveys the literature, he or she is asking the following questions:

- What is currently known?
- What has been discovered to date on a given topic?

Thus, the objective of a literature survey is for the researcher to identify and become familiar with the major studies that have been published on

a topic. Only after completing the literature survey can he or she finalize the research question. We will discuss surveying the literature in more detail in Chapter 3.

Step 3: Analyzing the Problem

The objective of a research project is to explain some aspect of a significant issue or problem. This step is that explanation. It is the conceptual or theoretical analysis of the issue or problem, where theory is applied so as to shed light on the problem.

Many students find this to be the hardest part of the research process—indeed, some students explicitly omit this part of the project. This is a significant flaw in their research, since the “analysis” is the central part of the process. What does it mean to “apply theory to an issue or problem”? Theorizing sounds abstract and difficult, but this step need not be. By definition, a theory is a simplified version of reality that allows the researchers to more easily analyze the issue or problem. As a researcher, you need to ask yourself: what are the essential concepts comprising the problem being researched? (The nonessential concepts can be ignored.) How are the essential concepts related? What do these relationships imply? The result of this process of analysis or conceptualizing is the research hypothesis.

Probably the single most important determinant of how successful your research will turn out is the hypothesis you work with. Recall that the hypothesis is the proposed answer to the research question. This suggests a way to start.

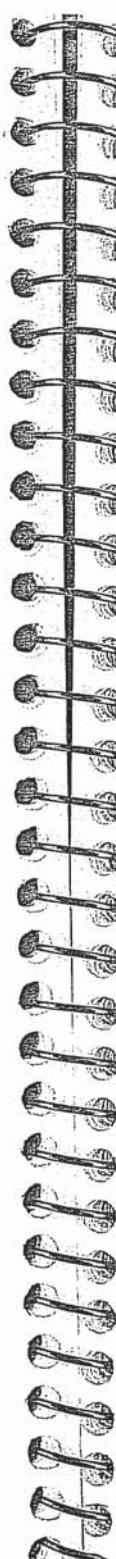
If the research question is:

What caused U.S. consumer spending during the 1990s to increase at a faster rate than income?

A tentative hypothesis could be:

U.S. consumer spending during the 1990s increased at a faster rate than income because . . .

So how does one fill in the dots? How does one figure out a reasonable hypothesis? One way is to derive the hypothesis from theory, possibly with ideas derived from the literature. What economic theory or theories are applicable to the current problem? There is a well-developed theory of consumer spending. What does this consumption theory suggest affects consumer spending in addition to income? Theory suggests that household wealth and interest rates influence consumer spending. How did those factors change during the 1990s? Interest rates were roughly stable over the last half of the decade; stock markets, however, boomed. Does it appear that one or more factors can explain the change in consumer spending? If so, that could be your hypothesis:



U.S. consumer spending during the 1990s increased at a faster rate than income because of the increase in household wealth caused by booming stock markets.

We will discuss conceptualizing the model in more detail in Chapter 7.

Step 4: Testing Your Analysis

In terms of research methodology, there is a major divide between science and nonscience disciplines. Science is research that is empirically testable, at least in principle, while research in the nonscientific disciplines is not empirically testable. This is not to say that philosophy, literature, or any of the other humanities is less valuable or less valid than biology, chemistry, or other sciences. All this implies is that the humanities use nonempirical methods to validate their scholarship.⁷

Economics as a social science uses a version of the scientific method in research.⁸ What does it mean to test a theory empirically? The researcher asks the question, If the theory is correct, what evidence should there be of it in the real world? For example, if the theory of supply is valid, then if the price of some product rises, producers should supply greater quantities of output. In other words, testing a theory means comparing the implications or predictions of the theory with appropriate real-world evidence. The data are collected and analyzed. If the theory fails, then it is modified and retested, or it is rejected. If the theory does not fail, it is provisionally accepted.

Take, for example, what happened to unemployment during the Great Depression. By 1933, the unemployment rate had increased to 25 percent. What did the existing theory suggest? The microeconomic theory of labor markets predicted that when faced with a decrease in demand, unemployment would be only temporary until real wages fell. Though nominal wages fell, so did the price level. As a result, it is not clear whether real wages fell or not, but unemployment remained above 10 percent until 1942! Since the prediction of the theory (only temporary unemployment until real wages fell) was contradicted by the real-world evidence (significant unemployment for over a decade), the theory was shown to be inadequate.

For this step in a research project, there are really several elements. The first is deciding how you will go about assessing the validity of the hypothesis. This is an important part of designing or planning the research. Research design has two parts. The first is locating a good data set, one that is large, rich, and accurate enough to adequately test your hypothesis. We noted earlier that failure to find a good data set would compromise your ability to complete your research successfully. For this reason, it is important to begin looking for data early in the planning process. A detailed explanation on data sources will be found in Chapters 8 and 9.

The second part of research design is selecting a statistical method to adequately test your hypothesis. A key question is the following: if the statistical test you employ yields the best possible results, how confident can you be that your hypothesis is confirmed? In other words, will the test adequately discriminate between your hypothesis and alternatives? If not, then you should consider a more powerful test. Oftentimes, however, lack of adequate data will limit your ability to use a more powerful test. This underscores again the importance of finding a good data set. A discussion of statistical methods for testing hypotheses will be found in Chapter 10.

Once you have collected your data and settled on an appropriate statistical test, the next element is *doing* that assessment. This typically requires no more than running a computer program.

Step 5: Interpreting the Results and Drawing Conclusions

This step is closely related to the previous one, but it is sufficiently important that it needs to be emphasized separately. Ethridge (1995, 29) argues that this step “is the one most often overlooked or underestimated by students as they are being initiated to the research process. They often see the empirical computer results as the end product of the process. Actually, the interpretation of those results may be more challenging, and more important, than the process of obtaining the numbers.”

What are the results of the empirical testing of the research hypothesis? Are they consistent with the predictions of the theory? Are there any problems in the testing protocol that need to be corrected to obtain valid results? What are the shortcomings of the testing methodology that limit or weaken the results? In light of the answers to these questions, what can be concluded about the results? To what extent do they support the hypothesis? How do the results compare with those of earlier studies? More generally, what can be concluded about your analysis and about the research question more broadly?

To be sure, there are numerous additional details to consider when interpreting statistical results. These details will be discussed in Chapter 11.

We need to speak to one final but often misunderstood point. What is good research? Good research is research that follows the scientific method, wherever the results lead, even if they reject the hypothesis. Recall that research is the search for valid knowledge. Ethridge (1995) observes that honest research is open minded; looking for a preconceived conclusion is not honest research. A research project that rejects the hypothesis is not a failed project because it still advances our knowledge—in this case, by eliminating one hypothesis as an explanation for the problem.⁹



Step 6: Communicating the Findings of the Research Project

The final step in the research process, and in many ways the most important one, is communicating the results. This is how knowledge progresses. The communication begins with the researcher's written report of the research. This is where the researcher makes a case for the validity of his or her hypothesis based on the logic and empirical evidence of the research. At one level, the research paper really does no more than explain what the researcher discovered from each of the steps in the research process. It is important to remember, however, that the research does not stand on its own; in other words, the evidence is not self-evident. Rather, the purpose of the research report is to present a convincing answer to the research question, in a way that persuades other researchers in the field.

Again, like everything else in the research process, the research report is done in several stages. Typically, a draft is written. The researcher asks colleagues to review it and provide suggestions for improvement.

The researcher may present an oral version of the paper at a professional conference, again to receive comments from other experts. For example, economics students have the opportunity to present their research at a number of venues, including the annual meetings of the Virginia Social Science Association, the Eastern Economic Association, and the National Conference on Undergraduate Research. After each of these stages, the researcher's paper is revised to incorporate what has been learned from the feedback received.

Finally, the paper is submitted to a journal for publication. For example, several journals exist to publish undergraduate economics research. These include *Issues in Political Economy* and *University Avenue Undergraduate Journal of Economics*. Usually, the journal editors ask for still more revisions before a researcher's paper is published.

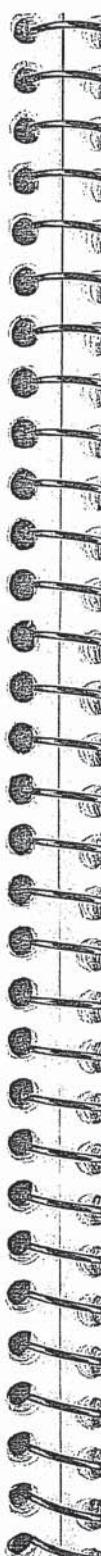
SUMMARY

The research process in economics has six major steps:

1. Developing an Effective Research Question
2. Surveying the Literature
3. Analyzing the Problem
4. Testing the Analysis
5. Interpreting the Results and Drawing Conclusions
6. Communicating the Findings of the Research Project

NOTES

1. Ethridge (1995) makes the same point when he observes that there are six ways to gain knowledge: through the senses, experience, intuition, revelation, measurement, and reasoning. Of these, only the last two are sources of reliable data.
2. This book is designed to be used this way too. Though laid out sequentially, it includes many references backward and forward.
3. Note that the hypothesis of your research will become the thesis of your research paper.
4. Note that a research problem is not necessarily a social or other problem in the real world. For further elaboration of this point, see Booth et al. (1995), especially Chapter 4. Bean (1996, 30) describes how scholars identify a research problem: "Expert[s] feel an uncertainty, doubt a theory, note a piece of unexplained data, puzzle over an observation, confront a view that seems mistaken, or otherwise articulate a question or problem."
5. On a project such as an honor's or master's thesis or a doctoral dissertation, it is critical to choose a research advisor whose interests are in your topic area; otherwise, they will find it difficult to give you the commitment you need.
6. Members of a research community can be identified by reviewing the published literature.
7. Missimer (1995) describes these methods as "speculation." This term is not meant to be dismissive; it merely means a type of reflection similar to the conceptualizing that occurs in the theoretical sciences, where validity is based on logic and normative standards, but not empirical evidence.
8. We will discuss the difference between the social and physical sciences in Chapter 10 on empirical methods.
9. This is also consistent with Blaug's (1992) doctrine of falsification.
10. Another analogy that might make sense to undergraduates is your plan for completing degree requirements.
11. In a class setting, the audience consists of your classmates and the instructor; in a professional setting, the audience may consist of a funding agency.



SUGGESTIONS FOR FURTHER READING

Booth et al. (1995), Chapters 2–4—Excellent discussion of what makes a good research question.

Ethridge (1995)—Readable guide to research methodology in economics. See especially Chapters 5–9 on designing and carrying out a research project.

Ramanathan (1995), Chapter 14—Good summary of the major steps involved in completing an empirical research project, from choosing a topic to writing the report.

Siegfried et al. (1991), the section titled "Purpose of the Economics Major," pp. 199–202—Concise but complete statement of the research methodology of economists, which they label the "economic way of thinking."

Wyrick (1994)—Guide to economic research for undergraduates. Published just before the Internet revolution, but much of the book is useful. See, especially, Chapters 9–12.

EXERCISES

1. Consider the following sample research questions. Using the criteria discussed in this chapter for a good research question, determine which are good research questions and which are poor research questions. Explain your reasoning.
 - a. Why is the supply of hospitals low in certain areas, and how does this affect the quality and price of the hospitals and doctors in these areas?
 - b. Why do consumers buy over-the-counter dietary supplements that are said to promote weight loss despite the health risks, and what factors influence these purchases?
 - c. What were the causes of the Great Depression?
 - d. What is the effect of foreign direct investment on a nation's economic growth rate?
2. Design a good research question. Explain how it meets the criteria for a good research question.
3. Write a complete research proposal, following the model described in Appendix 2A. You will likely have to read ahead in this book to complete a good proposal.

Writing the Research Proposal

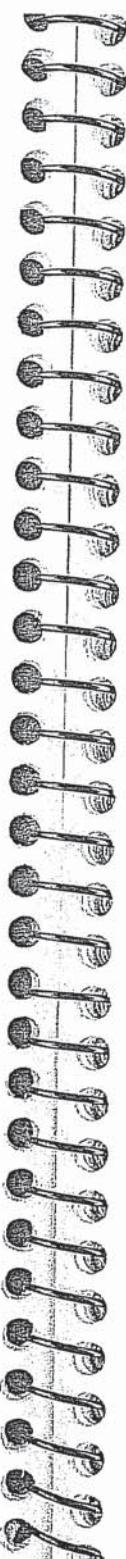
A successful research project requires planning. This is particularly true for inexperienced researchers, who often find planning the project difficult. This difficulty is all the more reason to spend time and effort on it.

Your research plan should be flexible. You can't expect the project to go exactly according to the plan, but without a plan it's hard to know where you will end up. Think of it as the blueprints for a house you are building.¹⁰ It is not that you can't or won't make changes as you go along, but you don't want to start the project without a plan. To develop a plan, a scholar must think about the research process.

The research plan becomes tangible in the form of the research proposal. A proposal is an exercise in persuasion, whereby you seek to convince your audience that you can complete a meaningful and interesting piece of research on the topic you have selected.¹¹ In the proposal, you sketch out in detail *how* you propose to do that. Thus, the proposal describes the research plan. Ethridge (1995, 85 and 89) points out that "The more thorough and complete the proposal, the clearer and more complete the plan" and also that "The proposal is evidence of the quality of thought that has gone into the project, and the whole research plan . . . will be judged by the quality of the project proposal."

A research proposal should have five components:

1. **Statement of the Nature of the Problem:** What is the issue or problem this research will address? Why is it interesting, significant, and amenable to economic analysis?
2. **The Research Question:** What is the question that is the focus of the research?
3. **Survey of the Literature:** Outline the major studies in the literature that have a bearing on the research question. Explain clearly how they are relevant to your research question. (For a more extensive discussion of the written literature survey, see Chapter 12.)
4. **Research Design:** What is the analytical framework of the model? For example, "This research will apply the theory of demand to study consumer spending on Hula-Hoops." Note that the research hypothesis should follow from this conceptual analysis.



In an ideal world, what data would you need to test your hypothesis? For example, sales of Hula-Hoops, their price, personal disposable income, some measure of their appeal to consumers.

What data have you found to test your analysis, and what is the source of that data? For example, "I plan to test the hypothesis using data on Hula-Hoop sales and prices, as well as disposable income obtained from the National Income and Product Accounts, Survey of Personal Consumption Expenditures. I was unable to find a measure of coolness."

How will you test your analysis empirically? For example, "This research will conduct a regression study over the time period of 1972–1999." Explain how this design should produce reliable and valid results.

(Detailed explanation of these topics will be found in Chapters 7, 8, 9, 10, and 11, respectively.)

5. **References:** List all the references *you have read so far and plan to use in your paper*. Do not list references you have not read or references that provide background information but do not have a clear bearing on your research question. Use the appropriate bibliographic style.

In sum, the proposal should answer four questions. What is the issue or problem your research will investigate? What specific question will you attempt to answer? How will you attempt to answer it? Do you have adequate sources to do the job? If the proposal does not convince the reader that it answers all four questions sufficiently, it is not an acceptable proposal.

If you have a good research proposal, completing the research project will be straightforward—you just need to follow the plan. Even if the plan changes, the project should be doable with a minimum of problems. If you have an incomplete or otherwise poor proposal, it is a signal that the project will be difficult or impossible to accomplish successfully.

Questions for Evaluating a Research Proposal

We observed above that a key purpose of a research proposal is to convince the reader that the researcher can complete a solid piece of research on an important topic. When you evaluate a research proposal you should consider the following questions and issues:

- Does the proposal explain the problem or issue sufficiently to make it interesting and worthy of a reader's time? Why or why not? Is there anything in the introductory section of the proposal that ought to be explained in more detail?
- Do you understand the research question? In other words, can you explain what the research will attempt to do or prove? Is there a clear statement of this? If so, identify it. If not, say so.
- Does the author appear to have identified the major studies previously done on the topic? Has he or she identified those studies' contributions and shortcomings? (The proposed research should build on the contributions and/or correct one or more of the shortcomings.)
- Do you understand *clearly and exactly* what the author intends to do to complete this research? Are there any details missing from the description? If so, what are they? Has the author identified a reasonable data set with which to test his or her hypothesis? Has he or she adequately explained his or her testing methodology?
- Are there enough sources to write a convincing paper?
- In sum, what do you see as the proposal's strengths, and what do you see as its weaknesses?

Your commentary should conclude with an explicit statement about whether the proposal is acceptable as is or not. If it is not, you should provide specific guidelines for what needs to be done to make the proposal acceptable. Again, remember that your feedback should be supportive but honest.

Surveying the Literature on a Topic in Economics

"If I have seen further, it is by standing on the shoulders of Giants."

SIR ISAAC NEWTON



Earlier we noted that scholars engage in a kind of conversation or dialog of competing arguments as they attempt to increase humankind's knowledge about a topic. This conversation manifests itself as published research, which is described as "the literature" on the subject. When you survey the literature on a subject, you are trying to identify the major studies that have been published to date. But more importantly, you are trying to understand what the studies say and how they relate to one another. We will explain how to read and understand scholarly publications in Chapter 6. In this chapter we will explain why and how researchers perform a literature survey as a key component of the research process. In Chapter 12, we will explain how to write a literature survey as part of a research paper.

Why Is a Literature Survey Necessary?

Ethridge (1995, 115) observed that before you can "advance the state of knowledge," you need to know what the state of knowledge is. So when you survey the literature, you are trying to create your own sense of what is known and what is not known about the subject. This is important for several reasons. Early in the research process you can get ideas for possible angles for your research. Later in the process you can show how your research fits into and contributes to the larger conversation on the subject. This serves to establish your credentials as a researcher by showing readers that you are knowledgeable about the field.