

Writing As a Product of Economic Analysis

*"Planning to write is not writing.
Outlining . . . researching . . . talking to
people about what you're doing, none of
that is writing. Writing is writing."*

E. L. DOCTOROW

In Chapter 4, we explained how the writing process could be used as a tool for developing one's argument. In this chapter we discuss the use of writing as a product of the intellectual process.

Writing as a product is different in several ways from writing as a process. Writing as a process is a tool the author uses to determine what he or she thinks about a question. As such, issues like format, style, and grammar are largely irrelevant, since you are writing to yourself. Writing as a product is the report of that inquiry. Thus, the audience is someone other than the author. We observed earlier that scholarly writing embodies an argument that attempts to persuade experts in the field. Thus, the writing needs to be more explicit and formal. This means that everything needs to be spelled out clearly and in sufficient detail to get your point across. Additionally, you must follow proper standards of punctuation and grammar.

What Is Economic Writing?

Students often tell me that they don't know how to write an economics paper, or that they don't know what makes a paper economic in character. Palmini (1996) identifies at least four different types of writing done by economists: Research Studies (including senior theses, dissertations, journal articles, monographs, and scholarly books); Social Criticism (including

op-ed pieces and books for educated lay audiences); Policy Analyses (including technical reviews of legislative or regulatory proposals and other government reports); and Business Analyses (forecasts, market analyses, cost analyses, and similar analyses).

Though many features of writing are common across all disciplines, certain aspects are discipline-specific. Petr (1998, 229–230) points out that “Good academic writing . . . rel[ies] on a unique blend of vocabulary, concept, method, precedent and history, typifying that discipline and reflecting its thought-patterns (its metaphors, if you will).” Good disciplinary writing requires more than the ability to cut and paste phrases together from the vocabulary of the field. What is required is a higher order of cognition: understanding the appropriate disciplinary context for those phrases. Bean (1996) observes that each discipline asks certain types of questions and has its own way of analyzing them. Each discipline uses its own types of arguments, proofs, and empirical evidence.¹

What fundamentally distinguishes economic from other disciplinary writing and what all types of economic writing share is the use of economic analysis. We introduced this concept in Chapter 2 when we discussed what makes for a research question in economics. In other words, all economic writing applies economic theory to derive insights about and explain answers to a question or problem. The types of theoretical arguments and empirical evidence economists use will be explored in Chapters 7, 10, and 11.

Writing Steps

Writing experts have identified four steps necessary to complete a finished paper:

1. **Pre-writing or Exploration**
2. **Writing the First Draft**
3. **Revising**
4. **Editing**

The first step was the subject of the last chapter. The last three will be the subject of this one. Though we describe this process as four steps, writing, like research more generally, isn’t usually a linear process. Instead, it’s iterative; many writers loop through the steps more than once. Thus, you can expect to read about many of the same issues in the later section on “Revising” that you do in the following section, “Writing the First Draft.”

Writing the First Draft

One of the hardest steps in completing a paper is writing the first draft. Even professional writers find this to be the case. How do you start this

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Allocating Your Time Between the Writing Steps

Inexperienced writers spend most of their time and effort on drafting, relatively less on pre-writing, and relatively little on revising and editing. Experienced writers reverse those proportions. They spend the most time on pre-writing and revising and the least time on drafting. You would be well served to follow the practice of experienced writers.

step? You can prepare for the first draft by writing throughout the research process: taking notes as you research your topic, writing critiques, drafting your own ideas (Booth et al., 1995, 149).

The first draft really begins in the pre-writing or exploration stage. It is at this stage that the writer identifies and develops the argument to be made in the paper. This is done, as we described in Chapter 4, by reviewing and attempting to organize your research materials.

Before you start writing, there is one key question you need to address: who is the audience for your paper? We noted at the beginning of that chapter that one significant difference between writing as a process and writing as a product is the audience. We also noted that this is not a trivial question since a research paper really has two audiences: the scholarly community for your topic and the instructor and classmates who are likely to read your paper. It is a good idea to ask your instructor who your audience should be. I encourage my students to write to economics majors who are at the same level as they are. In any case, this question is not one you should ignore. As McCloskey (2000) observes, if you fail to identify your audience, your paper will almost certainly miss the target.

Features of Good Economic Writing

Once you have your argument sketched out, you are ready to write. What are you aiming for? What does a well-written paper look like?

Good economic writing has several features. These are illustrated in order of importance in Figure 5.1. First, good writing should be *focused*, not fuzzy. Early in your paper, you should make clear to the reader exactly what the paper is about. You can do this by inserting a thesis sentence that describes the principal assertion of the paper. Experts differ on what construction this sentence should take. Wyrick (1994) suggests, “The purpose

Figure 5.1 Features of Good Economic Writing

1. Good writing should be *focused*, not fuzzy;
2. Good writing should be *organized*;
3. Good writing should be *solidly developed*;
4. Good writing should be *clear, concise, and precise*;
5. Good writing should be *free of grammatical errors*.

of this paper is . . .” McCloskey (2000) considers this poor style. Perhaps it is, but my advice to writers is to first communicate clearly; then worry about style. If you need to use Wyrick’s construction to get your point across, that’s fine. As you become a more experienced writer, you’ll be able to get beyond this.

Figure 5.2 contains passages from two undergraduate papers. Read each one and see if you can tell which one is more focused.

What is the primary difference between the two passages? Can you identify the thesis sentence for the passage on the left? Can you do it for the passage on the right?

Most readers conclude that the passage on the right is more focused, primarily because of the clear thesis sentence at the end.

The second feature of good economic writing is that it should be **organized**. This is far more than a question of format (e.g., introduction, body, conclusion). Rather, scholarly papers should follow a logical, hierarchical structure in which the thesis is supported by a series of nested arguments that lead logically to the thesis as a conclusion. This was the subject of Chapter 4. Recall the pyramid structure of a well-developed argument illustrated in Figure 4.1? The structure of an argument may be a pyramid, but a written document is by its nature a linear structure. We can see this in Figure 5.3, which converts the argument from Figure 4.1 into the linear organization of a paper.

To determine the organization for your paper, you should ask several questions: What are the major points that you want to make that lead logically to your conclusion (i.e., that prove your thesis)? These points will be the principal pieces of evidence to support your argument. What is the best order for those points in the paper? Are there any weak or missing links in the logic? If so, fix them. Are there any superfluous points (i.e., points that don’t lead to the conclusion)? If so, omit them!

These guidelines for an argument are true regardless of its length. In a short essay of one hundred words, the thesis is likely to be either at the be-

Figure 5.2 Examples of Focus

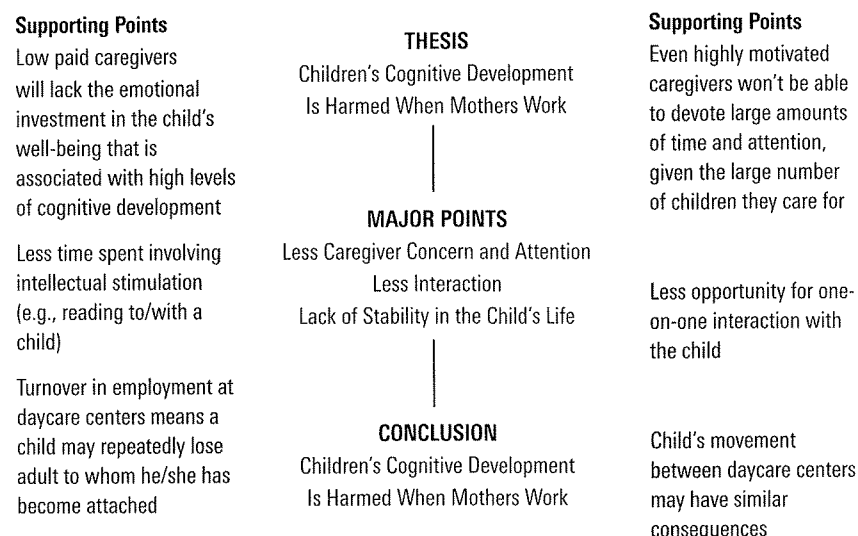
In the postcolonial period, several new African nation-states experimented with economic development ideologies. Tanzania began to ostensibly establish regional hegemony in the postcolonial period, under the auspices of the socialist world, immediately after independence in 1963. The Arusha Declaration of 1967 formalized the state’s ideological orientation toward “Ujamaa,” the collective (state-owned and centrally controlled) ownership of state-granted monopolies (Bagachwa, 1990). This declaration, however politically and rhetorically laudable, did little to increase the productive capacity of the country. With a quickly decaying infrastructure, nationalistic development policies, high levels of regional political and investment risk, numerous investment complications and capital flight, Tanzania’s socialist legacy has left a microcosmic wake of typological economic development problems for the world’s less developed countries (LDCs) (Bagachwa, 1990).

Growing concerns over the increasing juvenile crime rate have sparked extensive research into the socioeconomic and psychological factors that lead young adults to engage in illegal behavior. Over the past forty years, the number of juvenile court cases handled has more than doubled. The rise in destructive acts among youths is evident in school dropout rates, teenage pregnancies, drug abuse, and quite apparently, in the substantial increase in teenage crimes committed. Over the past several years, attempts have been made to link this growing propensity toward crime with the breakdown of the American family. According to a 1988 survey by the National Center for Health Statistics, children in single-parent families, many of whom are products of divorce, are two to three times as likely to have emotional or behavioral problems as children in two-parent families. This paper is an attempt to solidify the correlation between divorce and juvenile crime.

ginning or end, with the remaining sentences devoted to presenting the reasons. In an essay of several pages, each paragraph would have a thesis sentence, with the remainder of the paragraph devoted to explaining and supporting that thesis. Each paragraph’s thesis sentence would represent a point in support of the paper’s overall thesis.

In an essay that has several sections or in a book with multiple chapters the organizational structure will follow this same hierarchical pattern.

The third feature of good economic writing is that it should be **solidly developed**. Once you have determined your major points, you need to explain each of those points in detail and support them with evidence. In

Figure 5.3 Structure of a Written Paper

other words, the same hierarchical structure that organizes the overall paper should also be present at the micro level. Each section of a paper should have its major point stated in a single sentence. The remainder of the section should explain the reasoning for that major point. This is illustrated in Figure 5.3, where each major point is supported by several minor points.

The remaining two features of good economic writing will be explained in the later sections of this chapter on revising and editing your paper, since they are not critical for writing the first draft.

Getting the Ideas Down on Paper

When you start writing your draft, don't worry about grammar or mechanics; don't worry about getting the details right or fixing mistakes. In fact, concerning yourself with those is a good way to get bogged down. Rather, focus on just getting your basic ideas down on paper. Indeed, it is best to do this in one sitting (or for a longer paper, one complete section at a time). McCloskey (2000) suggests that if you can't draft the paper in a

single setting, it is helpful to write yourself notes about what you have done and where you are going next, before you end your work session.

The idea is to prevent yourself from running into "writer's block." All writers experience this at some point, but if you can put this off until the revising stage you will be ahead of the game. (See Figure 5.4 for some practical suggestions for getting over writer's block.)

Many writers find it useful to create an outline of what they are trying to say. This is not a formal topic-based outline with roman numerals like you were taught in high school. Rather, Booth et al. (1995) argue that point-based outlines, which are organized as a series of points or assertions, tend to be more useful since they illustrate your argument. Note also that this step overlaps somewhat with the earlier one about developing your argument.

Sometimes it makes sense to develop the outline after you've written an initial draft of your ideas. For example, I usually find it easier to brainstorm about the first draft, writing down my ideas, and only then creating an outline to organize them. Writing is a personal process. There is no one right way to do it! We noted in Chapter 4 that the outline function of your word processing software is a helpful way to proceed regardless of the outline format you choose.

Booth et al. (1995) identify several poor schemes for organizing a paper, which you should avoid. The first is repeating the assignment: providing exactly and only what is asked for in the assignment, and in the order it was asked for. The second is merely summarizing your sources. Remember, a good paper should analyze rather than just report what others have said on a topic. The third is explaining the steps in the process that you went through to write it. A research paper should explain what you found, not what you did.

Giving Credit for Intellectual Property

All writers know to avoid plagiarism. What may not be clear is exactly what plagiarism is. Plagiarism is taking credit for someone else's words or ideas, even when it's unintentional. It is a form of academic dishonesty.

There are two types of plagiarism. The first is using someone else's words as if they were your own. That is, it means directly repeating words from another's work without including quotation marks. This occurs if someone copies directly from another's work or if he or she submit as their own a complete paper they obtained from the Internet or from some other supplier. Plagiarism can also occur if you don't keep careful records as you put together your research materials and mistake a quotation as your own paraphrase. This is plagiarism even if you reference the original source.

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A Caution About Quotations

You should use quotations cautiously, and only if you cannot possibly paraphrase without losing either meaning or impact. Excessive use of quotations suggests to the reader that you do not understand the source well enough to paraphrase and so you must rely on the words of the author. As McCloskey (2000, 45) states, "No college [or higher-level] paper can be fashioned by stringing together passages from other writers." In short, use quotations like spices, in moderation, to enhance but not overwhelm the flavor of your dish.

The second type of plagiarism is using someone's unique idea without attribution. By unique I mean something that is not common knowledge in the discipline. The key question here is what is known in the discipline. Even if something was unknown to you before your research, if it was known by experts in the field, it is considered common knowledge. You do not need to cite it to avoid plagiarism. A rule of thumb is that an idea that occurs in the publications of three different authors is considered common knowledge. Note, however, that in a literature survey you may wish to cite important studies, even if they are widely known, since showing your knowledge of important works in an area establishes your credibility. Booth et al. (1995, 167) state: "You also plagiarize when you use words so close to those in your source, that if you placed your work next to the source, you would see that you could not have written what you did without the source at your elbow." This is a strict standard, but Booth et al. provide some helpful suggestions for how to practice it.

For example, when you use someone else's work, say so early on in your discussion, rather than in a footnote at the end of the section. It is a common practice to place a footnote at the end of the first sentence of a section, using wording such as "This section draws heavily from Booth et al. (1995)."

The key to avoiding plagiarism is keeping careful track of what your sources say and what you've interpreted from those sources, and giving credit where credit is due. When you are going to cite an idea in a scholarly work, you should reference it briefly in the form of a note, then in more detail at the end of the work in the reference list or bibliography. Appendix 3A outlined the major citation styles used in academia. You should

find out from your instructor what style he or she wishes you to use, and then follow that carefully.

Revising the Paper

No one, not even a Nobel laureate, can write a perfect paper on the first try. Every first draft can be improved by revision. In fact, Booth et al. (1995, 171) observe that

Perhaps the biggest difference between experienced writers and beginners is their attitude towards th[e] first draft. The experienced writer takes it as a challenge: *I have the sketch, now comes the hard but gratifying work of discovering what I can make of it.* The beginner takes it as a triumph: *Done! I'll change that word, fix this comma, run the spell-checker, and <Print>!* A first draft is indeed a victory, but resist that easy way out.

We commonly make a distinction between a first draft and the final draft. In practice, good writers go through more than two versions of their papers, usually many more. Each major draft may be the result of several revisions or minor drafts. For example, consider the first rough draft you write versus the more polished "first draft" you're willing to have a friend read. This is analogous to the way software releases are named: WordPerfect 5 versus WordPerfect 6 are considered major revisions, while WordPerfect 6.1 versus WordPerfect 6.2 are minor revisions. In the same way, it makes sense to differentiate between major drafts of your paper, on the one hand, and revisions or versions of a major draft, on the other.

As students of economics, we should understand that the marginal benefit of revision is positive, but diminishing. The second major draft is usually much better than the first. The third major draft is even better than the second, though the improvement may not be as great. If you only write one draft, you forgo those substantial improvements. One of the most disappointing comments I write on students' final papers is "This would make an excellent first draft." In other words, it has great potential but that potential was not realized. Of course, to attain this potential you need to start drafting far enough before your deadline to have the time for multiple revisions. You know this! But here is something you may not have thought seriously about: Your instructor gives you a month to complete a writing assignment, not because she wants you to wait three weeks to start, but because a month is how long it takes to do the assignment well, by writing multiple drafts and revisions. Would you intentionally show up late to an examination and so leave half the questions unanswered because you ran out of time? Of course not, but that is effectively what you do when you wait until the last minute to begin writing the paper. Think about it.

Is the Thesis Clear?

The purpose of revision is to craft your paper so it better embodies the features of good writing listed in Figure 5.1, in order of importance. Start with focus. If the paper has no focus, then the remaining issues are irrelevant. Is the thesis or principal assertion of the paper clear? Can you underline the thesis sentence in the paper's introduction? If not, the most important thing you can do to improve the paper is fix that. Can you underline the corresponding sentence in the paper's conclusion? If not, the reader may find that your paper lacks closure, that it did not do what it set out to. Booth et al. (1995) point out that these two thesis sentences should match each other, or at least not contradict one another. If the first is framed in terms of a question, then the second should answer the question. If they do not match or if the second does not answer the question posed in the first, they need to be reworded. For example, the thesis expressed in a paper's introduction could be:

This study will attempt to determine the major factors that influence the retail demand for diamond jewelry.

The corresponding sentence in the paper's conclusion could be:

This paper has found that the demand for diamond jewelry is highly sensitive to the price, but highly insensitive to income.

Note that it is not unusual for authors to have to make this kind of correction, since when they drafted the introduction they may not have known exactly how the paper would end up. But it's important to make sure the introductory and concluding thesis statements match by the time the paper is completed.

Is the Paper Well Organized?

The next step is to review your paper's organization, which is another way to think about the paper's argument. Whether you are revising a relatively short paper, no more than a few pages in length, or a longer paper, the principles are the same. One way to check your paper's organization is to create a paragraph outline. A paragraph should be the explication of a single thought or idea or theme. Each paragraph should have a thesis sentence, typically the first sentence. If a given paragraph discusses two or more themes, you should split it into two or more paragraphs. Identify the thesis sentence of each paragraph, and copy each one into a new document in the order in which they occur. Now read the sentences and check to see if they make sense in that order and lead logically to the thesis as a conclusion. If they do not, then re-organize the order of the sentences until they do. If any sentence does not seem to contribute to the argument,

omit it. When your paragraph outline makes sense, then reorganize your paper to match the paragraph outline.

Let's try this with an example. Suppose we develop the following paragraph outline from a draft of a paper:

1. HIV/AIDS infection reduces people's ability to work when they become ill.
2. The deaths caused by HIV/AIDS reduce a nation's human capital, since not only is the labor force reduced, but the investments in those workers' human capital are also lost.
3. Immigration has been increasing into many developing nations that have high rates of HIV/AIDS.
4. A nation's labor supply depends on its birthrate, immigration rate, labor force participation rate, health expenditures, life expectancy, and investments in education.
5. The rate of HIV/AIDS infections tends to reduce labor supply.
6. The HIV/AIDS illness requires that resources be used to treat HIV/AIDS patients that could otherwise be used for disease prevention.

The principal assertion of this paper is sentence 5. How might we reorganize the sentences to support this thesis? Though there may be more than one way to do this, the following is one organizational scheme that works:

1. The rate of HIV/AIDS infections tends to reduce labor supply.
[Thesis sentence]
2. A nation's labor supply depends on its birthrate, immigration rate, labor force participation rate, health expenditures, life expectancy, and investments in education.
[Since labor supply is the key issue, what affects labor supply?]
3. HIV/AIDS infection reduces people's ability to work when they become ill.
[Reducing labor force participation]
4. The illness requires that resources be used to treat HIV/AIDS patients that could otherwise be used for disease prevention.
[Reducing the labor force participation of workers who get other diseases]
5. The deaths caused by HIV/AIDS reduce a nation's human capital since not only is the labor force reduced, but the investments in those workers' human capital are also lost.
6. [Therefore,] the rate of HIV/AIDS infections tends to reduce labor supply.
[Restatement of the thesis as a conclusion]

Note that sentence 3 in the original outline did not lead to the thesis and so was omitted.

Are Your Points Supported with Evidence?

The third step is to examine the development of each major point in your paper. Each point is itself an assertion that needs to be supported with evidence. If the first sentence in a paragraph spells out the main point of that paragraph, the remaining sentences should flesh out and support that main point. Does the main point need to be explained in more detail? Can you provide examples of what the main point says? What makes you think that the main point is valid? What evidence can you provide to bring the reader to that conclusion? Any sentences that do not contribute to this task should be omitted or moved to another paragraph where they are appropriate.

Take the second sentence in the revised paragraph outline as an example:

A nation's labor supply depends on its birthrate, immigration rate, labor force participation rate, health expenditures, life expectancy, and investments in education.

This could be fleshed out as follows:

Labor supply depends on population, which is a function of the birthrate, the immigration rate, and the death rate. The labor supply also depends on the percentage of the population that is working. This labor force participation rate depends on cultural factors, as well as expenditures on health, which help people avoid illness. Health expenditures also affect life expectancy, which influences the death rate. Though these factors determine the number of workers, the effective labor supply depends additionally on the amount of education that workers receive.

We need to address one last topic before we move on to discuss issues of style. Writer's block is a problem that afflicts all writers at some point. Figure 5.4 lists some practical tips for overcoming it, once you have a first draft to revise.

Writing Style

Once your paper has a well-defined focus and organizational structure, you can address the remaining features of good writing: clarity, conciseness, and precision. This is where you polish your argument to make it as persuasive as possible. A good writing style enables your reader to easily comprehend your writing without having to work at it.

Figure 5.4 Practical Tips for Overcoming Writer's Block

1. Copy the section of your paper where you find yourself stuck onto a separate standalone document. Edit that document, in any way that makes sense, even by radically revising it. The fact that it's a different document from the source will free you to consider radical revisions. Revise the paper until it's completely to your satisfaction. Then paste it back into the source paper, replacing the original section.
2. Print your paper (double-spaced), and review it. Changing the format from computer screen to paper helps to make ideas for improvements leap out at you.
3. Put the paper aside for a few days or a week. Let your subconscious work on it. Almost always, when you come back to it you will be able to proceed effectively.
4. Construct a paragraph outline for the paper. Summarize each paragraph using a thesis sentence. Revise the list of thesis sentences as necessary, either by adding to them or splitting them into separate ideas. Review your revised list of thesis sentences for order, redundancy, missing links, and dead ends. Use what you've learned to revise the original.

Strive for Clarity

The most important feature of good writing style is clarity. Imagine listening to a radio station that you can't quite tune in. As McCuen et al. (1993, 2) note, "You listen intensively for a short while, but you keep missing words; you can't quite understand [what the announcer is trying to say]." Unclear writing is exactly like that.

To write clearly, you should follow a few simple rules. A sentence consists of a subject and a verb. Compose each sentence so the subject is the main actor of the story, and the verb is the main action. In addition, whenever possible choose strong verbs over weak ones. You might think this would be obvious, but for some it is not. Here is an example from a research paper:

"Noticeably different is the negative coefficient of CPI."

Note how much clearer the sentence reads when the subject, *Noticeably different*, and the object, *negative coefficient of the CPI*, are reversed:

"The negative coefficient of CPI is noticeably different."

This improvement results because the main actor in the sentence is the “negative coefficient,” but originally it was shunted to the end of the sentence. This sentence also employs a weak verb: *is*. Novice writers tend to overuse *to be*, which generally only lengthens a sentence without adding anything. Verbs like *to be* tend to convey less information than stronger verbs. Suppose we replaced *is* with the stronger verb *differs*:

“The negative coefficient of CPI differs noticeably.”

Subject: “negative coefficient”

Verb: “differs”

How?: “noticeably”

Most readers would find this version much clearer than the original.

Scholarly writing has a reputation for being difficult to understand. Though it is true that scholarly writing makes use of specialized vocabulary and specialized forms of argument and evidence, it should not and need not follow the turgid academic style we see too often in scholarly works. This style has many labels, none of them complimentary. McCloskey (2000) describes it as the author posing as “The Scientist” or “The Scholar.” Lanham (1992) calls it “the Official Style.” Harvey (2000) describes this style as employing “obfuscation, nominalization, passive voice, [and] long, wordy passages which muddy up the question of who did what.” Consider, for example, this passage from a research paper:

“Even though the numbers show sustained growth the opinions of many scholars are still conflicting.”

What does this mean? I don’t know.

Researchers write this way for several reasons. First, they think they are supposed to. They think it sounds more formal or scientific than plainer prose. They think it makes them appear more knowledgeable about their subject. This is especially true of novice researchers.

Second, they may be trying to express complex ideas that they do not fully understand. McCloskey (2000) labels this the “This-Stuff-Is-So-Complex-I-Can’t-Make-It-Clear” approach to writing. The solution to this problem is straightforward, though not necessarily easy. You must think through the ideas until you understand them well enough to explain them clearly. You may need to do more research to see how other authors have explained these ideas. You may also need to discuss the ideas with colleagues or your instructor. In short, the solution is to put more work into the project.

Third, as Harvey (2000) points out, researchers may be trying to avoid taking responsibility for what they write. Writing is risky, as we noted in

Chapter 4. Writers worry that what they say might be wrong. If they write in a vague, incomprehensible style using words and phrases that they have seen in scholarly writing (e.g., *rational expectations*, *first-order conditions*, *statistical significance*), then the reader won’t be able to criticize what he or she doesn’t understand. This is like the student who, unsure how to spell a word, hedges his or her bets by spelling it several ways in an essay. In fact, the only thing that is certain is that the student will spell the word wrong. Writing without clarity is going to be criticized not for what it says, but because it says nothing. Indeed, Harvey (2000) observes that “Without clarity, you’re not really communicating, just going through the motions.”

Do not waste your efforts trying to write this way. If you focus on clarity, conciseness, and precision, your style will take care of itself.

Use the Active Voice

Academic writers often use the passive voice. Booth et al. (1995) suggest that they do this because they think it makes their writing sound more objective. The passive voice occurs when writers make the subject the recipient rather than the performer of the action (Harvey, 2002). Usually, this is done by replacing an active verb with a form of the verb *to be*. Consider the following examples:

“Next, the data were analyzed.”

“It is expected that price will increase with disposable personal income.”

“It is argued that . . .”

The solution is to rephrase the sentences using an active voice, where the subject performs the action:

“I analyzed the data.”

“We expect that price will increase with disposable personal income.”

“We argue that . . .”

Notice that the active voice is more precise in meaning. With the passive voice, the reader needs to figure out *who* is analyzing the data, *who* is expecting the price to increase, *who* is arguing. To write more precisely you must refine your thinking. For example, why do you expect that prices will increase? A likely reason is because economic theory predicts it. If so, you should explicitly say that, something our author did not. Consider the third example: who or what is arguing that . . . ? Is it the researcher? Is it the results of the analysis? Again, by thinking about subjects and verbs as you refine your thinking, you also refine your writing.

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Using the First Person

Researchers are often reluctant to use the first person in their writing. Frequently, the result is that they use the passive voice. In fact, there is nothing wrong with using the first person, especially when you are describing your interpretations and conclusions. If you can make your writing clearer by using the first person, then do so.

Passive voice is not incorrect per se, but by disguising the subject of the sentence, it makes the reader work harder to figure out what exactly you are saying. For this reason, until you become a skilled writer you should probably avoid the passive voice.

Describe Action with a Verb

Academic writers also tend to nominalize, that is, turn verbs into nouns. Again, their motivation seems to be to make the writing sound more scholarly. In fact, it merely makes it sound more pretentious and harder to read. Here are some examples:

"There *was a failure* of the results to confirm the hypothesis."

"The growth of an economy *is somewhat fluctuated* due to the amount of technological increase."

"Next, the data *were subjected* to analysis."

Nominalization tends to add words to a sentence without adding meaning. Thus, the sentence is harder rather than easier to read. Additionally, like the passive voice, nominalization obscures the subject of the sentence.

The solution to nominalization is to describe the action with a verb.

"The results *failed* to confirm the hypothesis."

"The growth of an economy *fluctuates* due to the amount of technological increase."

"Next I *analyzed* the data."

In sum, to write clearly choose strong verbs to describe the actions in your sentences, and make the main actors the subjects of your sentences.

Be Precise and Concise

Most of our discussion of style has focused on clarity, which is its most important feature of style. Now, let's discuss precision and conciseness. Dis-

cussing complex issues often requires nuance. Thoughtful writers understand that word choice matters and that synonyms have slightly different meanings. If you want readers to understand you, choose the word that means exactly what you wish to say. Precision, like clarity, suggests to the reader that you know what you are talking about. Vagueness conveys the opposite impression. Consider the following sentence:

"Some areas that enforce affirmative action are helping those who are at a disadvantage to overcome discrimination."

Think about this sentence. It begins with a vague subject: *Some areas*. One cannot easily tell whether this refers to areas of law, areas of culture, or geographic areas. The verb in the sentence (*are helping*) is weak. The next phrase (*those who are at a disadvantage*) doesn't really add any information for the reader. Compare the original with this revised version:

"The states that enforce affirmative action help individuals overcome discrimination."

Another characteristic of good writing style is conciseness. Try to make every point as concisely as you can. Avoid empty words that don't add information for the reader. Never say more than you need to.

Occam's razor is a well-known corollary to the scientific method. It proposes that when choosing among alternative theories, one should select the theory that explains the phenomenon being studied with the least complexity. The same rule is true for writing. Less is more as long as the explanation is complete.

In the real world, a supervisor will never ask you to write a report of *at least* twenty pages. Time is a scarce resource and people prefer brevity, so long as they still get the point. The same is true of academic readers.

Don't worry about the length of your paper. Never add "filler." If you go through the writing process described here, you will have enough to say to satisfy your assignment. Of course, this assumes that you have thought through your topic carefully and completely during the drafting and revision steps. If you haven't, filler won't help.

If you want your writing to be persuasive you should avoid emotion-laden phrases. Good writing is hard work. If you don't take your writing seriously, why should the reader?

Writing Mechanics

The last step in completing a paper is editing. Now is the time to worry about correcting grammar, mechanics, as well as spelling and typographical errors.

Use Complete Sentences

Serious writers employ complete sentences. A complete sentence implies a complete thought, while a sentence fragment implies fragmented or incomplete thought. As we noted previously, a complete sentence consists of a subject and a verb. A sentence fragment is a subject without a verb or a verb without a subject. Few of us would write “An economist” or “Tested the hypothesis” by themselves. Yet sentence fragments are common among novice writers.

Often novice writers will use a phrase as a sentence, when grammatically it is not. Take the following, for example:

“The key question for determining whether you have statistically significant results.”

In this phrase, *The key question* is a noun, and *for determining* sounds like a verb, but grammatically it isn’t. Compare the phrase with this sentence:

“The key question for determining whether you have statistically significant results is does your estimated t-statistic exceed your critical t.”

You can see that the original phrase, even though it has a noun and a verblike word, serves only as the subject of the full sentence. Since the original phrase includes a subject but no verb, it is not a complete sentence.

Alternatively, a phrase may include both a noun and a verb, but they are subordinated by another word: “Although the estimated coefficients were negative.” In this phrase, *the estimated coefficients* is a noun, and *were negative* is a verb. The phrase *the estimated coefficients were negative* is therefore a complete sentence, but by preceding them with *Although* you create a dependent clause, which is not a complete sentence because it needs additional wording to complete its meaning. Compare the original with the following sentence:

Although the estimated coefficients were negative, they were not statistically different from zero.

You should be able to see that the dependent clause was an incomplete thought, and thus an incomplete sentence.

The last type of sentence fragment occurs when a phrase has both a noun and a verb, but the verb isn’t properly conjugated for the noun: “A software package generating statistical results.” *A software package* serves as a noun, and *generating* serves as a verb, but the entire phrase isn’t a complete sentence. To determine whether you have a complete sentence ask yourself whether the phrase standing alone is a complete thought. If so, you have a complete sentence. If not, you need to fix it.

Don’t Let Sentences Run On

A run-on sentence is two or more independent clauses that are not separated with the proper punctuation. In a run-on sentence several complete thoughts are jammed together, making it difficult for the reader to determine where one ends and the next begins:

“An increase in the price of seed caused an increase in the price of corn an increase in the price of corn caused a decrease in the quantity demanded.”

A run-on can be fixed in several ways. The two clauses could be connected with a semicolon:

“An increase in the price of seed caused an increase in the price of corn; an increase in the price of corn caused a decrease in the quantity demanded.”

They could also be connected by a conjunction such as *and*:

“An increase in the price of seed caused an increase in the price of corn, and an increase in the price of corn caused a decrease in the quantity demanded.”

Alternatively, the two clauses can be divided into two complete sentences:

“An increase in the price of seed caused an increase in the price of corn. An increase in the price of corn caused a decrease in the quantity demanded.”

Given the widespread availability of spell-checking software, there is no excuse for misspelled words in a paper. McCloskey (2000, 27) points out that spelling errors and typos make you “look like a careless dolt.” At best, readers will think you are careless. At worst, they will question your entire paper. Note, however, that the spell-checking software is not sufficient to catch all typos. For example, it will not find missing words. For that you need to review the document closely. Also, it is a good idea to have someone else read the final document. A friend is more likely to catch errors than you are, since you are (too) familiar with your writing.

It is true that content is more important than mechanics in a paper. But in practice, failure to write well, that is, failure to use proper style and mechanics, inhibits your ability to communicate. This is not “mere grammar” but rhetoric and argumentation, the art of using words to persuade. If you can’t communicate, you can’t persuade the reader that your argument is correct.

SUMMARY

- Economic writing is writing that applies economic analysis to derive insights about an issue or problem.
- Writing a first draft is hard, even for experts. The key is to sit down, organize your research materials, and do it.
- Well-written papers are focused, clearly organized, fully explained, polished, precise, and concise. Additionally, they are free of grammatical and typographic errors.
- Plagiarism means taking credit, even unintentionally, for the words or ideas of others.
- No one can write a perfect paper in one draft. Good writers write many drafts, revising and revising again, until they get it right.

NOTES

1. Note that the humanities, since they are nonscience disciplines, do not use empirical evidence.

SUGGESTIONS FOR FURTHER READING

Booth et al. (1995)—Chapters 11–15 explain virtually every aspect of writing a college-level research paper, from pre-writing to revising for organization and style.

Harvey (2000)—Excellent guide to writing that is very readable, even enjoyable. Harvey includes numerous excellent examples.

McCloskey (2000)—Classic monograph on writing for economists. Readable in one sitting. Originally published in 1987 under the title *Economical Writing*.

McCloskey (1999)—Four-page executive summary of McCloskey (1987). It's better than nothing, but read the original.

McCuen et al. (1993)—Excellent guide to technical writing and speaking for engineers and other scientists.

Thomson (2001)—Useful guide for young Ph.D.s or others who are writing about theoretical economics. Quite technical, but other researchers may find it of value as well.

EXERCISES

1. Find an example of “social criticism” written by an economist (e.g., Milton Friedman, Paul Krugman, Robert Heilbroner). Find an example of a research report written by the same author. In what ways are the two types of writing similar? In what ways are they different?
2. Using the sources you have discovered so far on your research topic, draft a survey of the literature of no more than two pages in length. The focus of your survey should be to summarize the consensus in the literature on your research topic. Briefly summarize the major studies that have contributed to this consensus. Be sure that your survey illustrates the first three features of good economic writing: focus, organization, and solid development of the main points in the survey.
3. Write a clear thesis for your research paper. The thesis may well be a tentative one at this point.
4. Find a paper you have written for another class. Underline the thesis of the paper. Is the thesis clear? If not, revise it to make it clearer. Construct a paragraph outline of the paper. Evaluate the outline. Is the outline organized in the best way to lead logically to the thesis as a conclusion? If not, reorganize the outline. Are there any points that are extraneous? If so, delete them. Are all the major points in the paper explained fully and clearly? If not, correct them.
5. Print a copy of the literature survey you wrote for Exercise 2, or another short paper. Circle every usage of the passive voice with red ink. Rewrite each using active voice. Compare the passive version with the active one. Next circle every nominalization with blue ink. Rewrite each using a verb to describe the actions. Print a copy of the revised paper and compare it to the original. Which do you think is clearer? Why?

Critical Reading or How to Make Sense of Published Research

*"The difficulty you have in reading
doesn't necessarily reflect on your mental
ability. Serious reading is hard work."*

SUSAN WISE BAUER

Professional writing in any discipline can be daunting to decipher. It's kind of like your first course in a foreign language. Remember how lost you felt at the beginning? That feeling is completely understandable. Addressing this issue for students, Schroeder et al. (1985) observe, "You are typically confronted with terminology and analytical techniques with which you are at best unfamiliar, or at worst totally ignorant. There is no reason for you to feel badly about this state of affairs; as a neophyte in the world of research, you cannot expect mastery of all phases of research from the start."

Research papers tend to be written in a formal style that is designed to provide clarity and precise meaning in as concise a way as possible. This implies, however, that authors may leave out descriptions of common steps in the research process. This adds to the difficulty for novice readers, who are not (yet) members of that particular research community.

Fortunately, like a foreign language, once you learn the basic vocabulary and syntax, professional economics writing will begin to make sense. In other words, once you learn the "code," you will find it much easier to decipher published research.

Making Sense of Published Research

There are at least two ways to think about how to make sense of published research. We can call them **format** and **argument**. Let's consider them in order.

Understanding Format

What's the difference between an essay you write for an English composition class on what you did on your summer vacation and a lab report for chemistry? The answer is: specific format. The scholarly writing for each discipline uses a somewhat different format, with the physical sciences using the most structure (e.g., the lab report), the humanities using relatively less structure, and the social sciences lying somewhere in between. Even within the social sciences formats vary, though relatively less than the formats of the sciences and the humanities differ.

Economics research papers tend to follow a common format that illustrates the scientific method. This specific format allows experts to look quickly at a paper to see if they want to spend the time to read it more closely. For example, Thomson (2001, 2) states:

A reader who has found your central point interesting and wants to know more about it but has little time to invest in your work . . . should be able to grasp the novel aspects of your [research] without actually reading the paper. A lot can be learned from a well-written argument by just glancing at the way it is structured.

In economics, there are three types of scholarly works. The first is a survey of the work of others. You can think of this as an entire paper devoted to reviewing the literature on a topic; its objective is to summarize for readers what is known on a subject to date. Survey papers, unlike the other two types, are secondary literature.¹ We noted in Chapter 3 that the *Journal of Economic Literature* tends to publish survey articles. For example, the March 2002 *JEL* includes an article entitled "Looking Inside the Labor Market: A Review Article." The second type of scholarly work in economics is the purely theoretical study. It creates or modifies a theory and discusses its implications, but contains no empirical testing. An example of a purely theoretical article is Krugman's (1979) seminal article on the possibility of governments effectively practicing strategic trade policy. The third type of scholarly work in economics—and the one we will focus on—is the empirical study. The majority of research projects in economics are empirical studies. This type offers a particular advantage, especially for beginning researchers: when you do an empirical study, whether your empirical testing confirms your hypothesis or rejects it, you have results that enable you to

satisfactorily conclude your study. By contrast, when you attempt a purely theoretical project, if you can't get the theory to work the study has failed. For this reason, purely theoretical works are best left to experienced researchers.

Let's examine the format for the typical empirical research study. The typical study in economics has four essential components: an introduction, an analysis of the problem, an empirical test of the analysis, and a conclusion. An actual paper (or book) may have more formal sections, but to be credible to experts in the field the study, it must cover these four components. Let's examine each of these in turn.

The introduction should define the general topic and the specific research question, as well as explain the motivation for the research. The introduction should also include a review of the work of previous researchers on the topic, especially what is lacking in the existing literature and how the current study proposes to address that shortcoming. In a thesis or book, the literature review is usually placed in its own chapter, separate from the introduction. In a paper it is more often combined with the other introductory material.

The second section in an economic research report is the heart of any economics study: the application of economic analysis to shed light on the research question. It may be labeled "Theoretical Analysis" or "Theoretical Model." (Exactly how one applies economic analysis to a problem is the subject of Chapter 7.) This section develops the theoretical model used by the study, and derives the testable implications or hypotheses of the model.

The third section explains how the proposed analysis from section two is tested. (This will be the subject of Chapters 10 and 11.) This section could be labeled "Empirical Analysis," or "Empirical Model." It explicitly states what results would confirm the theory. It presents the results obtained from the testing procedures and interprets them. To what extent is the theory confirmed?

The concluding section in an economic research report explains the insights learned from the research. What answer did economic theory suggest for the research question? Was this answer confirmed by the empirical evidence? If not, why not?

Economics studies may also include several other parts, such as an abstract, references, and appendices, but these four components are the principal parts of the work.

Evaluating the Argument: Reading Critically

Once you realize how a research report is laid out, you are part way to understanding it. To complete that understanding, you will need to learn

how to read deeply and critically. And this requires that you understand the article's argument.

Reading critically is challenging. The purpose of reading scholarly texts is not simply to get through the pages while recording the facts the author presents. Rather, the task is the more complex one of discerning and evaluating the author's argument. Mursell (1951, 58) describes this process as follows:

When you read properly [i.e., critically], you are not merely assimilating. You are not automatically transferring into your head what your eyes pick up on the page. What you see on the page sets your mind at work, collating, criticizing, interpreting, questioning, comprehending, comparing.

To this end, scholars don't merely read texts; they study them. First, they may skim an article to see if it is going to be useful to them, paying particular attention to certain sections. For example, some scholars focus on the introduction and the conclusion; others focus on the introduction and the empirical results section. If they decide the article may be useful, they read it again more carefully, often several times. Scholars read slowly, and try to discover the meaning. They attempt to interact with the text, essentially engaging in a "conversation" with the author. This conversation takes place partly in the reader's mind, and partly through the notes the reader makes (e.g., in the margins of the text) as he or she works through the text. (How to take research notes effectively is the subject of the last section of this chapter.)

The text presents an argument. The reader responds by asking questions and expressing tentative ideas about meaning: "Is this what you mean?" "But what about this?" "Okay, I understand the previous part, but I'm not sure I fully understand this one yet."

In Chapter 4, we explained how writers develop arguments through the process of composition. Readers analyze texts in the same way, by writing ideas down, rearranging them, thinking about them, and asking questions about the tentative meaning. The meaning becomes clear after you reread an article several times, sometimes over what may be an extended period.

Bean (1996, 136) asserts that readers play two opposing roles in this process: "the open-minded believer who can succumb to the text's power and the skeptical doubter who can find weaknesses in the text." Since an argument is an assertion rather than a fact, and since, as a consequence, "every author necessarily distorts his or her subject," healthy skepticism is

NOTES FOR NOVICE RESEARCHERS

Several Important Distinctions for Critical Reading

Ruggiero (1998) suggests several important distinctions that are important for reading critically. The first distinction is between the person speaking and the idea he or she is expressing. (This is related to the ad hominem attacks we mentioned in Chapter 4.) Critical reading requires that you give a fair hearing to the ideas, even if you have a poor opinion of the author. The second distinction is between matters of taste (i.e., pure opinion) and matters of judgment. There are no grounds for criticizing the former but may be many for criticizing the latter. The third distinction is between fact and interpretation. Often, writers will present an interpretation as a fact so as to lend it more weight. Careful readers can distinguish between the two. The fourth is between literal and ironic statements. The latter are intended to provoke a strong reaction for rhetorical purposes. Fortunately, you are not likely to run into this very much in scientific writing. The last distinction is between an idea's validity and the quality of its expression. In principle, you should evaluate the validity of an idea independently of how well or poorly it is expressed. In practice, however, the quality of written or oral expression almost certainly colors your impression of the validity of one's thought. Note that this is a point raised by McCloskey (1998), as discussed in Chapter 1.

called for (Bean, 1996, 140). Careful reading of a text requires you to give adequate attention to both roles. Making sense of scholarly writing is a lot like peeling an onion: it has many layers. You shouldn't expect to discern all the levels of meaning without reading the work many times.

Questions to Guide Critical Reading

Though reading scholarly writing is rarely easy, one's ability to do it successfully does improve with practice. Critical reading is a learnable skill.

Recall that we defined an argument as an assertion supported by logical or empirical evidence. Table 6.1 lists a series of questions to guide your reading and help you identify an author's argument. Note that there may be more than one interpretation of the argument in a published work.

NOTES FOR NOVICE RESEARCHERS

Tips for Getting Through a Scholarly Journal Article

Novice researchers run into three common roadblocks that inhibit their ability to get through a scholarly journal article. These are: unfamiliar terminology or jargon, mathematical reasoning, and econometric issues and methods. Reading journal articles is difficult enough that the reader who confronts any of these roadblocks may be persuaded that he or she won't be able to understand the article. Don't let this happen to you.

When you run across terminology or concepts that you don't understand, write them down. Locke et al. (1998, 69–70) observe, "It may sound unlikely to you but we find that there are few instances when a single unfamiliar technical term brings reading to a complete halt. Just remember that in reading a technical text that is not your own, it is inevitable that there will be problems of comprehension. You have to puzzle them out or, failing that, flag them and get on with the task."

Sometimes the jargon is explained elsewhere in the paper. Alternatively, you should try to look up the terms. An obvious place to look is your research methodology or econometrics book. Another useful source is Peter B. Meyers's "Online Glossary of Research Economics" terms, which is available at <http://www.econterms.com>. If all else fails, you should not hesitate to ask your instructor for help.

Unfamiliar mathematics or econometrics should not prevent you from getting the gist of an article. Mathematical methods are used to develop a conclusion. You can think of them as "proofs." The mathematics shows the reader *how* the author arrived at the finding. But you don't need to understand the proof to grasp *what* was being proven. Almost certainly, if the paper is published someone will have checked the math to ensure that the proof works, so you don't need to worry about that. What you may not realize is that many readers, including professional researchers, bypass the mathematical details the first few times they read a paper.

These same points can be made about econometric issues. The purpose of statistical methods is to test hypotheses. Whether or not

you understand the particular techniques used, you should be able to determine if the results confirm or refute the researcher's hypothesis. Locke et al. (1998, 70) point out, "In any sound report, somewhere will be found a plain language description of anything found in the analysis that really mattered. . . . In many cases, that bit of text should allow you to proceed with intelligent reading—even if not with full appreciation of the elegance (or appropriateness) of the researcher's statistical analysis."

Table 6.1 Identifying the Author's Argument

- 1. What question is the author asking?
- 2. What answer does the author propose (i.e., what is the principal assertion of the study)?
- 3. In what ways does the study improve upon previous research?
- 4. How does the proposed answer compare with that provided by previous research?
- 5. What are the major logical or theoretical reasons for the author's argument?
- 6. What empirical evidence does the author provide?
- 7. What assumptions is the author making in his or her reasoning?

Let's work through a sample scholarly article from a professional economics journal. The article is David Romer's "Do Students Go to Class? Should They?" (1993), which is reproduced on the following pages. Read the article through at least once.

Now, reread the article carefully. As you read, think about the questions in Table 6.1 and write down tentative answers as they come to you. (The answers that I provide for each question are exact quotations from the article to demonstrate where I found the answers. When you write your own answers to these questions, you should put them in your own words. For the reasoning behind this, see the section "Taking Research Notes and Writing Abstracts and Critical Reviews" later in this chapter.)

Do Students Go to Class? Should They?

David Romer

Lectures and other class meetings are a primary means of instruction in almost all undergraduate courses. Yet almost everyone who has taught an undergraduate course has probably noticed that attendance at these meetings is far from perfect. There is surprisingly little systematic evidence, however, about attendance and its effects. There are three natural questions. What is the extent of absenteeism? How much, if at all, does absenteeism affect learning? Should anything be done about absenteeism?

This article presents quantitative evidence on the first two of these questions, and speculative comments on the third. First, attendance counts in economics courses at three relatively elite universities indicate that absenteeism is rampant: usually about one-third of students are not at class. Second, regression estimates of the relation between attendance and performance in one large lecture course suggest that attendance may substantially affect learning: considering only students who do all of the problem sets and controlling for prior grade point average, the difference in performance between a student who attends regularly and one who attends sporadically is about a full letter grade. In light of these results, steps to increase attendance, including making attendance mandatory, may deserve serious consideration.¹

¹ I have been unable to find any previous investigations of the extent of absenteeism. There have been a few other studies of the relation between attendance and performance (for example, Schmidt, 1983; Park and Kerr, 1990). These studies generally confirm the findings here that attendance and performance are related even when a variety of student characteristics are controlled for. The present study differs from this earlier work in focusing on the quantitative magnitude of the relationship and on the issue of the extent to which the relationship reflects a genuine effect of attendance.

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Do Students Attend Class?

Counts were made of the number of students attending one meeting of every undergraduate economics class during a "typical" week of the spring 1992 semester at three schools. School A is a medium-sized (6000 undergraduates) private university; School B is a large (20,000 undergraduates) public university; and School C is a small (2500 undergraduates) liberal arts college. The schools are intended to be representative of the upper echelons of American colleges and universities. All three are classified by *Barron's Profiles of American Colleges* (1991 edition) as "highly competitive," the second highest of their six categories.²

The attendance counts were made a few weeks before the end of the semester at each school. This choice avoided both times when attendance is generally thought to be unusually low (such as just after exams and immediately before and after vacations) and times when it is generally thought to be unusually high (such as just before exams). Individuals at all three schools independently suggested that attendance a few weeks before the end of the semester was likely to be representative of average attendance. Attendance was taken at one meeting of each class during the sample week. Current enrollment figures were obtained from departmental offices.

Table 1 reports the results. The first row shows the overall absenteeism rates at each school. At School A, 34 percent of students were absent; at School B, 40 percent; and

² A total of 127 schools, enrolling about 675,000 undergraduates, are classified by *Barron's* as "most competitive" or "highly competitive." Of these, 24 schools, with 140,000 undergraduates, are private universities with between 4000 and 10,000 undergraduates; 14, with 270,000 undergraduates, are public universities with over 10,000 undergraduates; and 56, with 100,000 undergraduates, are colleges or universities with minimal graduate programs and fewer than 3500 undergraduates. The remaining schools are small and medium-sized public colleges and universities (15 schools, with 70,000 undergraduates), large private universities (5 schools with 70,000 undergraduates), and small private universities (13 schools with 30,000 undergraduates).

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Table 1 Absenteeism Rates in Economics Classes

	<i>School A</i>	<i>School B</i>	<i>School C</i>
All Economics Courses	34.0%	39.7%	24.8%
By Size of Course:			
Small (bottom 33%)	27.0	37.7	21.5
Large (top 33%)	38.8	42.9	30.4
By Mathematical Content:			
Mathematical	10.0	17.6	16.7
Non-Mathematical	34.3	41.5	25.5
By Type of Course:			
Principles & Intermediate Theory	37.3	40.5	29.7
Upper Level, Only	26.4	41.1	17.7
Principles Required			
Upper Level, Additional Requirements	33.3	35.2	20.7

at School C, 25 percent.³ In short, on a typical day at a typical elite American university, roughly one-third of the students in economics courses are not attending class.

The remaining rows of the table break down the overall figures along various dimensions. Course size appears to have an important effect on absenteeism. At all three schools, absenteeism is considerably lower in the smallest third of classes than in the largest third. In addition, average class size is lowest at School C and highest at School B, which is consistent with the fact that absenteeism is lowest at C and highest at B. Absenteeism is also lower in courses with a significant mathematical component (such as econometrics, honors sections of intermediate theory, and field courses in theory). This pattern holds at all three

3 Attendance counts were inadvertently not made in a handful of classes at School C. These classes do not appear to differ in any systematic way from the classes at which attendance was taken.

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schools.⁴ Similarly, at all three schools absenteeism is somewhat higher in core courses than in field courses.

Finally, it is generally perceived, not surprisingly, that students attend class more often when the quality of instruction is higher. At School B, for example, absenteeism is 34 percent for courses taught by regular faculty and 47 percent for courses with other instructors. To investigate this issue more systematically, course evaluation data for all undergraduate economics courses for one term were obtained from a fourth school, School D. This school, like School B, is a large public university. The two variables of interest are students' average rating of the overall effectiveness of the instructor and the fraction of the students enrolled in the course who returned the course evaluation form (which is a reasonably good measure of attendance at one of the last class meetings of the term). The point estimates from a simple regression of the fraction of students attending the class on the average rating imply that raising the average rating from the 25th percentile to the 75th lowers absenteeism by 10 percentage points; the *t*-statistic on the rating variable is 3.4. Thus the quality of instruction (or at least students' perception of that quality) appears to have an important impact on attendance.

Other features of the data from School D generally confirm the findings for the other schools.⁵ Absenteeism is high (45 percent across all courses), and lower in small courses than in large (31 percent in the smallest third of courses and 54 percent in the largest third). Again, absenteeism is lower

4 The figures for mathematical courses at School A are based on only one course. Thus this figure should be given little weight.

5 The data from School D are not strictly comparable with those from the other schools, because they reflect class meetings at the end of the term and because a few students are present but do not return the evaluation form. It seems unlikely that these differences have any substantial effect on the results.

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in courses with a mathematical emphasis (39 percent, versus 47 percent for other courses), and higher in core courses (52 percent, versus 31 percent in field courses that only require principles and 37 percent in advanced field courses).

A straightforward regression confirms these patterns of differences in absenteeism across different types of courses. Specifically, using the data from all four schools, I ran a regression (across courses) with the fraction of students absent as the dependent variable, and a constant, the log of enrollment, and dummies for mathematical content, for the two types of upper level courses, and for three of the four schools as independent variables. The resulting estimates imply that a doubling of enrollment is associated with a rise in absenteeism of 4 percentage points; that mathematical content is associated with a fall in absenteeism of 3 percentage points; and that moving from a core course to either type of field course is associated with a fall in absenteeism of 5 to 7 percentage points. The coefficient on the enrollment variable is highly statistically significant; those on the field course dummies are marginally so; and those on the dummy for mathematical content and the three school dummies are insignificant.

Should Students Attend Class?

These findings raise the question of whether absenteeism has a substantial effect on learning. It is possible that students do not attend class because they would learn relatively little if they did—because the instruction is of low quality, or because they have already mastered the material, or because they can learn the material better by spending the same time studying in other ways. Alternatively, it is possible that learning is severely adversely affected by absences, but that many students are absent anyway—because they have genuinely better uses of their time, or because they mistakenly believe that attendance is not important to learning, or because they attach relatively little importance to learning.

Because student attendance is not exogenous—students *choose* whether to attend class—it is not possible to isolate definitively the impact of attendance on learning.

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But this section presents some suggestive evidence. In the fall 1990 semester, I took attendance at six meetings of my large intermediate macroeconomics course. The resulting data can be used to investigate the relation between attendance and performance.

As in other courses, overall absenteeism was high (25 percent). Twelve percent of the students missed four or more of the meetings where attendance was taken; 28 percent missed two or three; and 59 percent missed none or one. Thus, absenteeism appears to be a mixture of some students missing most classes and many students missing a smaller number of classes.

Student performance is measured as the overall score on the three exams in the course. For ease of interpretation, the scores are converted to the usual 4-point grading scale: 3.84 and above represents an A; 3.50 to 3.83 an A−; and so on down to 1.50 to 1.83 for a C−. Because no D+’s or D−’s were assigned, 1.17–1.49 represents a D and 1.16 and below an F.

The first column of Table 2 reports the results of a simple regression of performance on the fraction of lectures attended.⁶ The regression reveals a statistically significant and quantitatively large relation between attendance and performance. The *t*-statistic on attendance is 6.2; the point estimates imply that a student who attends only a quarter of the lectures on average earns a 1.79 (C−), while a student who attends all of the lectures on average earns a 3.44 (B+). Attendance alone accounts for 31 percent of the variance in performance.

6 There is one econometric complication worth mentioning: because attendance was not taken at every class meeting, some of the variation across students in measured attendance is due to measurement error rather than to true differences in attendance over the whole semester. If the class meetings at which attendance was taken were a random sample of all the meetings—which appears to be a good approximation—it is straightforward to estimate the size of the measurement error. This procedure implies that 38 percent of the variation in measured attendance represents measurement error. This estimate can be used to correct the regression coefficients, standard errors, and R^2 ’s for the bias that would otherwise be introduced by the measurement error. All of the results reported in Table 2 have been corrected in this way.

*Journal of Economic Perspectives***Table 2** The Relationship Between Attendance and Performance

	(1)	(2)	(3)	(4)	(5)
<i>Sample:</i>	<i>Full</i>	<i>Restricted</i>	<i>Full</i>	<i>Full</i>	<i>Restricted</i>
Constant	1.25 (0.27)	1.02 (0.58)	1.07 (0.23)	-0.67 (0.32)	-0.78 (0.43)
Fraction of Lectures Attended	2.19 (0.35)	2.47 (0.70)	1.74 (0.46)	1.52 (0.32)	1.38 (0.58)
Fraction of Problem Sets Completed			0.60 (0.32)		
Prior GPA				0.78 (0.12)	0.86 (0.14)
Sample Size	195	116	195	195	116
R^2	0.31	0.26	0.33	0.47	0.48

Standard errors are in parentheses. The restricted sample consists of the students who completed all of the problem sets.

Students who are more interested in the material, or more skilled academically, or more focused on academics are almost certain to attend class more often than students who are less interested, less skilled, or less focused (other factors held constant). If this is the case, then the results in Column 1 of Table 2 to some extent reflect a general impact of motivation on performance rather than a true effect of attendance.

I attempt to address this problem in three ways. First, I restrict the sample to the 60 percent of the students who did all nine problem sets. It seems likely that most of the students who were not devoting serious effort to the course did not complete all of the problem sets. In addition, the lowest problem set score was dropped in computing the course grade; thus the students who completed all nine may have been especially motivated. On both grounds, this restricted sample may be more homogeneous in terms of general motivation than the full class. But as the second column of Table 2 shows, the relation between attendance

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and performance in this sample is actually slightly stronger than for the class as a whole.

Second, doing the problem sets is arguably as good a proxy as attending the lectures for motivation. But Column 3 shows that there is a much stronger relation between attendance and performance than between doing the problem sets and performance: when both variables are entered in the regression, the coefficient on the fraction of lectures attended is almost three times as large as the coefficient on the fraction of problem sets completed. Thus, either attendance is a much better proxy than completing the problem sets for motivation, or attendance has a large additional impact on performance.

Third, data were obtained on students' grade point averages as of the beginning of the semester. Including GPA as a control variable in the regression serves to control for some of the differences across students in general ability and motivation. In fact, because students' academic performance in previous classes depends in part on their attendance in those classes, the coefficient on prior GPA will capture some of the effect of attendance on performance; as a result, including GPA as a control variable could cause the coefficient on attendance to *understate* the true impact of attendance on performance.

Column 4 of Table 2 shows the effects of including grade point average in the regression. Prior GPA has an extremely strong relation with performance. But the inclusion of GPA has little impact on the relation between attendance and performance. The coefficient on attendance is two-thirds as large as it is in the basic regression in Column 1, and it remains highly significant. The point estimates imply that a student with the mean prior GPA earns on average a 2.13 (C) if he or she attends a quarter of the lectures but a 3.27 (B+) if his or her attendance is perfect.

Finally, Column 5 shows the results of both restricting the sample to the students who did all nine problem sets and controlling for prior GPA. Even in this case, the

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relation between attendance and performance remains large and significant. The estimates imply that a student with the mean prior GPA earns on average a C+ if he or she attends only a quarter of the classes, compared to a B+ if attendance is perfect.

None of these ways of attempting to address the problem that attendance is not exogenous is definitive. Nonetheless, they all give similar results: simple ways of controlling for motivation and other omitted factors have only a moderate impact on the relationship between attendance and performance. Thus, although the possibility that the relationship reflects the impact of omitted factors rather than a true effect cannot be ruled out, it seems likely that an important part of the relationship reflects a genuine effect of attendance.

Should Attendance Be Mandatory?

Absenteeism is rampant in undergraduate economics courses at major American universities. In addition, there is a very strong statistical relationship between absenteeism and performance, and the evidence is consistent with the view that this relationship has an important causal component.

These results raise the question of whether measures should be taken to combat absenteeism. At the very least, exhortations to attend class seem called for, and those exhortations can be backed up with data. But stronger measures might be preferable. A generation ago, both in principle and in practice, attendance at class was not optional. Today, often in principle and almost always in practice, it is. Perhaps a return to the old system would make a large difference to learning. There is no way to find out but to try. I believe that the results here both about the extent of absenteeism and its relation to performance are suggestive enough to warrant experimenting with making class attendance mandatory in some undergraduate lecture courses.

One could also use mandatory attendance to perform a genuine controlled experiment that could isolate the true

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impact of attendance on mastery of the material. Specifically, one could randomly divide the students in a course into two groups, an experimental group whose grading was based in part on attendance and a control group whose grading was not. By comparing the attendance and the performance of the two groups, one could learn both the impact of mandatory attendance on absenteeism and the impact of attendance on performance.⁷ Unless either the impact of mandatory attendance on absenteeism or the size of the class were very large, the results of carrying out this experiment for a single class would not allow one to estimate the impact of attendance on performance with much precision. But the pooled results from several such experiments could.

■ I am grateful to Caroline Fohlin, Matthew Jones, and Costas Tsatsaronis for excellent research assistance, and to Robert Cox, Roger Farmer, Steven Fazzari, Alan Krueger, Christina Romer, Paul Ruud, Joseph Stiglitz, Timothy Taylor, and Robert Turner for useful comments.

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- From David Romer, "Do Students Go to Class? Should They?" *Journal of Economic Perspectives*, 7 (Summer), pp. 167–174. Reprinted with permission.

7 Such an experiment would presumably require appropriate approval. Students could be given the right to opt out of the experiment by being allowed to choose (before the class is divided into the experimental and control groups) to have their grade based on a formula that gave attendance half the weight used in the grading formula for the experimental group. Fairness could be ensured by assigning grades to all students using all three procedures (experimental, control, and opting out), and making the mean grade for the full class the same under all three procedures, before the allocation of the students to the three groups was known to the person assigning grades.

As you go through the Romer article, ask yourself what role each part of the text plays in the author's argument. For example, what is the author's principal assertion? What are the major pieces of evidence he uses to support the assertion? Note that, just as in many economics papers, the sections of Romer's paper are not labeled "Introduction," "Theory," "Empirical Testing," and "Conclusions," but those pieces are in the paper nonetheless.

1. **What question is the author asking?** This may be the most important question in Table 6.1. If you can't determine this, you are probably wasting your time reading the paper. The research question should be found in the introductory section of the paper. Romer's paper is a complex argument consisting of three assertions, each of which leads logically to the next. He summarizes his argument in the opening paragraph, where the key question is:

"How much, if at all, does absenteeism affect learning?"

2. **What answer does the author propose?** The author's proposed answer, that is, the principal assertion of his or her argument, can often be found in the introduction to the paper. Romer states this in the second paragraph:

"Regression estimates of the relation between attendance and performance in one large lecture class suggest that attendance may substantially affect learning."

If the author's proposed answer isn't in the introduction, it should always be clearly stated in the concluding section of the paper. In the final section, Romer recapitulates:

"[T]here is a very strong statistical relationship between absenteeism and performance, and the evidence is consistent with the view that this relationship has an important causal component."

3. **In what ways does the study improve on previous research?** The introduction to the paper should indicate how the current research is an improvement over its predecessors. In this case, the author indicates on page 1 (in a footnote):

"The present study differs from . . . earlier work in focusing on the quantitative magnitude of the relationship and on the issue of the extent to which the relationship reflects a genuine effect of attendance."

Often, though not in this case, the distinctive features of the present research are also noted in the concluding section of the paper.

4. **How does the proposed answer compare with that provided by previous research?** The answers provided by previous researchers are usually found in the literature survey in the paper's introduction, which in this case is limited to a footnote on page 1:

"These [previous] studies generally confirm the findings here that attendance and performance are related even when a variety of student characteristics are controlled for."

Additionally, the conclusion often indicates how the present results were either comparable to or different from those of previous researchers.

5. **What are the major logical or theoretical reasons for the author's argument?** The author's argument consists of the principal assertion (i.e., the author's proposed answer to the research question), along with logical and theoretical reasoning, empirical evidence, and underlying assumptions. The theoretical reasoning can be found in the paper's analytical section. Romer's theoretical argument, since it deals with a topic we are all familiar with, is largely implicit:

"Lectures and other class meetings are a primary means of instruction in almost all undergraduate courses."

This is the first sentence of the paper. It implies that class attendance leads to learning.

6. **What empirical evidence does the author provide?** Empirical evidence is found in the section of the paper on empirical testing. This includes the overall testing methodology, the results, and their interpretation. The first part of Romer's empirical argument is to estimate the extent to which absenteeism occurs:

"In short, on a typical day at a typical elite American university, roughly one-third of the students in economics courses are not attending class."

Romer then goes on to expand on this point:

"Course size appears to have an important effect on absenteeism. . . . [A]bsenteeism is considerably lower in the smallest third of classes than in the largest third. . . . Absenteeism is also lower in courses with a significant mathematical component. . . . Similarly, . . . absenteeism is somewhat higher in core courses than in field courses. Finally, . . . students attend classes more often when the [perceived] quality of instruction is higher."

In the second part of Romer's empirical argument, he reports on a series of regressions to estimate the relationship between attendance

and performance in class when controlling for a number of outside variables, including students' prior GPA and student motivation.

"A simple regression of performance on the fraction of lectures attended . . . reveals a statistically significant and quantitatively large relation between attendance and performance. . . . Simple ways of controlling for motivation and other omitted factors have only a moderate impact on the relationship between attendance and performance."

7. **What assumptions is the author making in his reasoning?** Romer, like all researchers, makes a number of assumptions in his argument. These include that GPA is a good measure of student learning, that the results he observed at the "elite" universities he studied are generalizable to all institutions of higher education, and that economics students and courses are similar to other college students and courses.

When you find it difficult to dissect a scholarly article, you may take heart from the following observation by Trelogan (2001):

Why did it take so long to identify the arguments and to get clear about their premises and conclusions? The answer is that there is no mechanical procedure for doing this and that quite in general, reading—really reading—is a difficult art. We had to read carefully and analytically, and we had to do some serious thinking about the content and the structure of the passage we were examining.

An additional complication, as a number of commentators have noted, is that many scholarly works are not well written.

Evaluating Published Research

Once you've identified the argument in a published work, the next step is to evaluate the argument, that is, to assess its validity and reliability. This is not a trivial task, so let's begin with the easy questions.

Does the author have an apparent conflict of interest? For example, is the research funded, sponsored, or published by an organization that might be considered less than objective about its findings (e.g., research funded by the tobacco companies that finds no adverse health effects from smoking)? A somewhat milder version of this concern: does the author or the journal promote a particular point of view (e.g., liberal views, conservative views)? If so, you should factor this into your evaluation of the work.

Is the study published in a refereed journal? We noted in Chapter 3 that scholarly articles published in professional journals are likely to have un-

dergone a formal evaluation process. Multiple experts in the field review the articles blindly, that is, without being aware of the identities of the authors so as to keep their evaluations objective.² The more prestigious the journal, the more rigorous the evaluation, and the more likely the author's argument is to be valid. Thus, articles published in the *American Economic Review* are likely to be of higher quality and greater importance than articles published in, for example, a regional journal. A similar review process takes place for academic books before they are published. Thus, when a study is published, novice researchers can assume that it has a certain amount of validity.

Another thing to remember is that the usefulness of a published study depends on more than the ostensible quality of the journal in which it is published. For example, James Tobin (1978) published an important, very widely cited article ("A Proposal for Monetary Reform") in the *Eastern Economic Journal*, a relatively minor journal. By contrast, numerous articles have been published in top journals and were never cited again, or, if they were, they haven't stood the test of time. In short, the ultimate validity of a piece of research comes only after time, when many other researchers have tested that theory in numerous different ways. Thus, when a scholar reads a research study, especially a recent one, he or she will need to critically evaluate it for him- or herself.

More Questions to Guide Critical Reading

Table 6.2 lists a series of questions to help you evaluate an author's argument. Naturally, evaluating a scholarly argument is inherently more difficult than simply identifying it in a published study. Several of the issues discussed here will be dealt with in much greater detail in the remaining chapters of this book. Here, we just introduce them.

Table 6.2 Evaluating the Author's Argument

1. Does the theoretical analysis make sense?
2. Are the data used adequate to the task?
3. Does the empirical methodology adequately test the hypothesis?
4. Are the assumptions reasonable?
5. Is the analysis (theoretical and empirical) clearly explained?
6. Do the conclusions follow from the evidence presented?
7. On balance, is the author's argument convincing to you?

As we discuss these questions, let's use them to assess Romer's (1993) article.

1. **Does the theoretical analysis make sense?** Do the reasons adequately lead to and support the hypothesis? Is the argument deep enough? Is the argument broad enough to be convincing? Are there other reasons that need to be brought into the analysis? Is there an alternative explanation of the research problem that makes as much sense as that proposed by the author?

We identified Romer's argument in the answers to questions 2, 5, 6, and 7 in Table 6.1. Paraphrasing those answers gives us:

"Lecture remains the primary pedagogical tool in undergraduate economics. Estimates of attendance in undergraduate economics courses at three top universities indicate that on average one-third of students are absent from class. Regression results on the effects of attendance on GPA, when controlling for motivation and student quality, indicate that attendance has a large and significant positive effect on student performance."

This reasoning makes sense, since each point leads to the next and ultimately to the conclusion. The theoretical foundation—that class attendance should be important to learning—is logical. (Note, however, that valid reasoning doesn't rule out the possibility that there's a contrary logical argument—for example, that students could use the textbook to substitute for class attendance.)

2. **Are the data used adequate to the task?** Are the data completely documented? Is the data set from an authoritative source? Are the data a representative sample or a special case? If the latter, are the results applicable to the situation you care about (e.g., does a study using Virginia data generalize to the United States as a whole)?

The data on class attendance were taken during one meeting of a "typical" week in all undergraduate economics courses at three "relatively elite" institutions. Though he did not identify the specific schools, Romer described one as a "medium sized private university," the second as a "large public university," and the last as a "small liberal arts college." More detailed data were obtained from another "large public university." Romer also pointed out several small shortcomings in the data.

The data used to assess the relationship between class attendance and performance were obtained from Romer's intermediate macro course. The data on attendance were taken from a sample of six class meetings.

The data were adequately documented, but it is reasonable to question how representative they might be for undergraduate economics students at schools nationwide. On the other hand, it is important to recognize that data are never perfect.

3. **Does the empirical methodology adequately test the hypothesis?** If you obtain the best possible results, how confident are you that the hypothesis is correct? Does the methodology clearly discriminate between the hypothesis and alternative interpretations of the evidence?

Subject to the possible shortcomings of the data just described, the regression analysis is a reasonable and commonly used methodology for testing questions such as the ones Romer posed. He attempts to control for motivation and student quality, which is an improvement over previous work. It is to his credit that Romer points out that his approach does not definitively deal with the problem that class attendance is not exogenous.

4. **Are the assumptions reasonable?** If the assumptions are factual, are they true? If they are empirical (e.g., perfect competition) how critical are they to reaching the author's conclusion? If they are critical, are they reasonable? For example, are they commonly made in this literature? Do the data satisfy the assumptions of the testing methodology (e.g., if the author uses an ordinary-least-squares (OLS) regression, are the requirements for OLS satisfied)?

Most researchers would accept that GPA is a reasonable, if imperfect, measure of student learning. Romer's sample of data is a special case, and thoughtful researchers will be concerned about how representative it is. However, lacking evidence to the contrary, most would accept it provisionally.

5. **Is the analysis clearly explained?** Does the description omit any steps that are necessary to reach the conclusion? (Recall that this may be a result of space limitations or instructions from the editors about omitting generally accepted warrants.) What is it that isn't clear? Is it terminology? Are all tables and graphs discussed and explained? Ruggiero (1998, 65) indicates that well-written books or articles state their principal argument clearly and visibly. Then he observes, "Not every article or book, unfortunately, is well written."

Romer's article is well written, and clearly organized, even though it does not use the typical format for a scholarly article. The main points in his argument are clearly explained; the tables serve to illustrate the argument.

6. **Do the conclusions follow from the evidence presented?** Does the author correctly interpret the empirical results? How well does the empirical evidence support the conclusion? Does the author address conflicting evidence or views? Is there an alternative explanation that fits the evidence? How do the results of this study compare with previous ones? If they are comparable, that is a point in favor of this study. If they are not, are convincing reasons supplied for why this is so? Such reasons might include that the current study has better experimental controls, a different data set, or more complete or otherwise better data.

This paper is more empirical than theoretical. The regression results strongly support the assertions that a significant portion of students do not attend class regularly and that class absences adversely affect student performance. The conclusion that faculty should seriously consider stronger measures to encourage class attendance follows directly from this evidence. Additionally, the findings are consistent with earlier studies.

7. **On balance, is the author's argument convincing to you?** In light of the reasons and evidence provided, is the argument persuasive? In other words, is the supporting evidence consistent with the hypothesis? If so, the argument may be considered valid. Does the study actually answer the research question(s)? For example, was there anything you expected to see, but didn't? Did the paper show signs of carelessness, such as failing to provide full references to all citations? Are there significant studies on this topic that the author does appear unfamiliar with? Did the author identify limitations of the study?

Romer's argument is very well done. We can conclude that the article is convincing, subject to the limits of its methodology.

Though evaluating scholarly work requires that the reader make a judgment about its quality, Ruggiero (1998, 67) points out that it is not always necessary to agree or disagree in total with an author's argument:

If you agree in part and disagree in part, explain exactly what your position is and support it carefully. . . . If some vagueness or ambiguity in the author's argument prevents you from giving a flat answer, don't attempt one. Rather, say, "it depends," and go on to explain. . . . If you must deal with conflicting testimony and cannot decide your position with certainty, identify the conflict and explain why you cannot be certain.

Evaluating published research is as much an art as a science, and we will continue to discuss it in the remainder of this book. As Locke et al. (1998,

71) clearly state, "To be honest, it takes years of experience to quickly discern flaws of logic and imperfections of analysis in a complicated investigation." Undergraduates are sometimes reluctant to commit themselves definitively, especially when they feel they don't fully understand something. You shouldn't use either Ruggiero's or Locke et al.'s points as an excuse to avoid drawing a conclusion about a published work.

Taking Research Notes and Writing Abstracts and Critical Reviews

Earlier in this chapter, we briefly discussed the note-taking process. Let's consider it in more detail now. When you take notes on a reading you read it more carefully. The first time you read an article, you should focus on the big picture. Instead of taking notes on each paragraph, force yourself to read the entire section, then ask yourself: what did it say? Only after you can articulate the point of the section should you go back and take notes on the details.

This suggests a related point. Good readers vary their speed and depth of reading to match their purpose—whether they are interested in getting the main ideas or all the details. For example, as we noted previously, you don't need to grasp all the nuances of the particular statistical technique an author uses to get a basic understanding of the results.

The notes you take while reading a scholarly article are really addressed to you. After you finish the article, it is a good idea to transcribe your notes onto paper (e.g., index cards) or a computer file. Always start by recording the *complete* bibliographic information using the appropriate citation style. You will be amazed how much harder it is to track down an article to obtain citation information the night before a paper is due. Save yourself the trouble and get it right the first time.

Indeed, it is good practice to make copies of all articles (or chapters of books) that are important to your research project. Though this costs a bit for duplicating or printing fees, it is a small price to pay to avoid time and aggravation later. This is especially true for those articles you need to read more than once. When you copy an article, make sure you include the whole article, including references and appendices. You should also include a copy of the title page of the journal, indicating journal title, volume and issue number, and date.

As a general rule, it is better to paraphrase what you read than to record it verbatim. Notes that are collections of direct quotations suggest that you don't understand what you read or you haven't made the effort to understand. Paraphrasing requires you to process the information, which means that you will learn it better. In addition, as you paraphrase you prepare the

ideas for inclusion in your own writing. If you use a highlighter when you read, and you find yourself highlighting a great deal of the text, it might be useful to make an effort to think more about what you're reading and use the highlighter less—for example, only on the truly important aspects of the text. Finally, if you need help getting through an article, talk to your instructor.

You can make the notes you write on a scholarly work more formal by turning them into an **abstract** or a **critical review**. Both are natural products of the critical reading process. Most people think of an abstract as a summary of a scholarly article or book, but a better way to think of it is as a summary of the author's *argument* (together with complete citation information). As such, as Cohen & Spencer (1993, 223) point out, an abstract may present the material in a different order than that of the original article. Scholarly works often include an abstract, but it is good practice to write your own. If you can do it well, you clearly understand the article or book.

Let's write an abstract for Romer (1993), the article we read critically earlier. Every abstract begins with complete bibliographic information for the work. You should consult your instructor (if your paper is an assignment for a course) or the style guide (if it is a submission to a journal) to determine the correct citation style. The style used in Table 6.3 is Style B of the *Chicago Manual of Style*, Fourteenth Edition.

Recall from Chapter 4 that an argument is a thesis supported by major theoretical and empirical reasons, which are themselves fleshed out by minor reasons and other details. In an abstract of one hundred to two hundred words, you only have enough space to state the thesis and the major reasons. Based on the answers to the questions in Table 6.1, it should be easy to identify these. The thesis of the article is the answer to question 2 in the table: What is the author's proposed answer to the research question? The theoretical reasoning is the answer to question 5. The empirical evidence is the answer to question 6. Putting this all together and condensing it yields the sample abstract in Table 6.3.³

A critical review is an abstract augmented with a critical evaluation of the work. Thus, it includes complete citation information, a summary of the author's argument, and an assessment of that argument. Such an evaluation can be easily written by summarizing the answers to the questions in Table 6.2, as shown in Table 6.4.

A related research product is called an **annotated bibliography**. This is a list of references that includes a few sentences summarizing and critiquing each item. In other words, it is something like a collection of critical reviews on a single research topic. An annotated bibliography is a good

Table 6.3 Sample Abstract

Romer, David. 1993. Do students go to class? Should they? *Journal of Economic Perspectives* 7 (Summer): 167–174.

Estimates of attendance in undergraduate economics courses at three top universities indicate that on average one-third of students are absent from class. Regression results from a large intermediate macro course of the effects of attendance on GPA, when controlling for motivation and student quality, indicate that attendance has a large and significant positive effect on student performance. Romer argues, as a consequence, that faculty should seriously consider ways to increase student attendance.

Table 6.4 Sample Critical Review

Romer, David. 1993. Do students go to class? Should they? *Journal of Economic Perspectives* 7 (Summer): 167–74.

Estimates of attendance in undergraduate economics courses at three top universities indicate that on average one-third of students are absent from class. Regression results from a large intermediate macro course of the effects of attendance on GPA, when controlling for motivation and student quality, indicate that attendance has a large and significant positive effect on student performance. Romer argues, as a consequence, that faculty should seriously consider ways to increase student attendance.

The theoretical reasoning in this paper makes sense. The empirical methodology seems appropriate, and the results are consistent with the hypothesis. The principal shortcoming is the possibly nonrepresentative data sample. On balance, however, the article is convincing, subject to the limits of its methodology. Any researcher doing work in this area should be familiar with this article.

way to determine how complete your literature review is. It is also very useful for preparing the written literature survey for a research report. The Suggestions for Further Reading at the end of each chapter in this book are examples of annotated bibliographies. See also the annotated list of articles in Appendix 6A.

The only way to learn how to read and understand scholarly research is to practice this important skill. Reading through this chapter is not

enough! The more you practice, the sooner you will become adept at reading critically. To that end, in addition to the paper reproduced later in this chapter, another paper is also included on the website for your review. Please be sure to read it as well.

SUMMARY

- Scholarly literature is challenging to read.
- Scholarly writing follows a specific format like a lab report.
- You must read critically to discern and evaluate an author's argument.
- Critical reading requires judgment on the reader's part.
- A research abstract is a summary of an author's argument.
- A critical review is an evaluation of an author's argument.

NOTES

1. There is another type of scholarly work, called a meta-analysis, that is similar to a survey paper but includes original research. A meta-analysis uses sophisticated statistical techniques to analyze the separate results of previous studies. It does this to discern insights that may not be apparent from any individual study, similar to the way a mathematical average provides a single measure that summarizes a broad sample of data. Meta-analyses are much more than mere averages, however, and lie outside the scope of this book.
2. Note, however, that not all journals have a peer-review process. If an article is peer-reviewed, it is probably of high quality. If an article is published in a non-peer-reviewed journal, it may still be of high quality, but you can't assume that as easily.
3. Note that since the answers to the questions from Table 6.1 were exact quotations from the article, I also paraphrased to produce the abstract shown in Table 6.3.

SUGGESTIONS FOR FURTHER READING

Bauer (2003)—A guide to “the great books,” the first four chapters provide an excellent discussion of how to read scholarly texts critically.

Bean (1996)—Chapter 8, “Helping Students Read Difficult Texts,” is addressed to instructors teaching critical reading, but students can benefit from it as well.

Locke et al. (1998)—Monograph on understanding scholarly writing. The best parts are Chapter 4 on reading research reports, Chapter 5 on taking notes, and Chapter 7 on critical reading per se.

Ruggiero (1998)—Introduction to critical thinking. Chapter 4 provides thoughtful suggestions for critical reading.

Schroeder et al. (1985)—Useful survey of how to understand scholarly articles in psychology, but applicable to studies in the social sciences more generally.

Trelogan (2001)—Helpful web-based introduction to critical thinking and reading.

Wyrick (1994)—Chapter 9, on the economic content of published research, is quite good though it emphasizes the format of economic writing, rather than the argument.

EXERCISES

1. Find a scholarly article on your research topic. Read it critically, and using the article write down answers to the questions in Tables 6.1 and 6.2.
2. Write an abstract for the article you used in Exercise 1.
3. Write a critical review of the article.
4. Choose two articles on the same topic but with conflicting conclusions. Write a critical review of the two articles, and explain which article's conclusion you found the most persuasive and why.
5. Prepare an annotated bibliography for your research topic. The bibliography should include at least three sources: an article from a scholarly journal, a book, and an article from the Internet. Each item should have the three elements required for a critical review:
 - The complete bibliographic citation in the citation style required by your instructor;
 - A brief summary of the argument; please note if the source is theoretical, empirical, or a survey; and
 - An assessment of the quality of the item.

Reading and Evaluating a Theoretical Article

Reading and understanding a theoretical journal article is a little different than doing so for an empirical article. Typically, in a theoretical article, the analysis is more abstract or more in depth, which makes reading and understanding even more challenging. Before continuing, you may wish to read Chapter 7 for help in understanding theoretical analyses. Try reading the following theoretical articles, which I have annotated. In recent years, purely theoretical articles have become highly mathematical. For that reason, the following selections are taken from earlier decades.

Sample Theoretical Journal Articles

Krugman, Paul. 1979. Increasing returns, imperfect competition, and international trade, *Journal of International Economics* 9 (November): 469–479.

This article demonstrates that international trade can result from economies of scale, even when both countries have identical preferences and factor endowments. This article offers much to commend it to researchers new to theoretical studies. First, it is well written; even the analytical parts are clearly explained verbally. Second, though the details of the analysis require an understanding of constrained optimization using calculus, the analysis itself should be readily understandable to anyone who has taken intermediate theory. More precisely, the analysis consists of utility and profit maximization. Finally, the article is short, less than ten pages long.

Becker, Gary. 1962. Irrational behavior and economic theory, *Journal of Political Economy* 70 (February): 1–13.

This article established that maximizing behavior is sufficient but not necessary for obtaining downward-sloping demand curves. Indeed, several forms of irrational behavior also lead to downward-sloping demand curves as long as economic agents are subject to a budget constraint. The article uses graphs and logic but no higher math.

Tobin, James. 1956. The interest elasticity of the transactions demand for cash, *Review of Economics and Statistics* 38 (September): 241–247.

This classic article demonstrated that the transactions demand for money is a function of interest rates as well as income. Previously, only the speculative demand for money was thought to be interest sensitive.

Leibenstein, Harvey. 1950. Bandwagon, snob, and Veblen effects in the theory of consumers' demand, *Quarterly Journal of Economics* 64 (May): 183–207.

This study makes a graphical and verbal argument for nontraditional effects of price on quantity demand—for example, that high prices can induce consumers to buy because of the snob effect, which is shown by a shift in the demand curve.