

My Rules of Thumb

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My assignment is to describe how I work. I take on this task with mixed feelings. One can easily become vain in the process of public introspection, and vanity is a trait best left private. It is not entirely clear to me why anyone should care about idiosyncrasies--except, perhaps, for my colleagues, students, and family, who have no choice but to live with them.

Yet when other economists write essays of this sort, I enjoy reading them. I like to think that these essays edify me in some way, but at the very least they appeal to the voyeur in me. So, I figured, others may learn from a brief essay about how I work. Or, at least, they may be amused by it.

I have organized this essay around six rules of thumb that I follow as I go about my working life. I have chosen these rules largely for their positive value-- they describe my behavior. I do not pretend that the way I work necessarily holds any prescriptive value for anyone else. But it may. If these rules of thumb ring true to others and help them to run their lives, so much the better.

Rule No. 1: Learn from the Right Mentors

I learned how to practice my trade from four distinguished economists. Perhaps the reason was good career planning on my part. More likely, it was just good luck.

In the spring of 1977, as a freshman at Princeton, I took Principles of Microeconomics from Harvey Rosen. Harvey was an excellent teacher. I remember finding the material easy and, at the same time, feeling that I was learning a tremendous amount. Each lecture was filled with insights that were novel, profound, and so stunningly obvious that it seemed I should have known them all my life. But, of course, I didn't. Principles of microeconomics was the most eye-opening course I have ever taken. All subsequent courses in economics have exhibited the property of diminishing returns.

For reasons that are a mystery to me now, Harvey hired me as a research assistant for the summer after my freshman year. I knew very little economics, for I had taken only the two principles courses. I did know something about computer programming (a fact that surprised my own research assistants, for changes in technology have made this human capital long obsolete). For whatever reason, Harvey did hire me, and the experience proved invaluable. I knew so little that Harvey had to teach me whatever he needed me to know. Spending a summer being tutored by a top teacher and scholar is the best learning experience I can imagine. To this day, I have never learned so much in so short a period of time.

Eventually, my interests drifted toward macroeconomics. As a senior at Princeton, I took graduate macroeconomics from Alan Blinder, another excellent teacher. At the same time, I wrote my senior thesis under Alan's supervision. In the thesis, I tried to make sense of the cyclical behavior of the real wage, which has puzzled macroeconomists at least since the publication of Keynes's *General Theory*. Part of my senior thesis became a paper co-authored with Alan, which we later published in the *Journal of Monetary Economics*. More important, as I worked on the thesis, I became convinced that imperfections in goods markets were at least as important as imperfections in labor

markets for understanding the business cycle. This conviction eventually led to my involvement in a line of research now called New Keynesian Economics.

When I entered MIT's graduate program in the fall of 1980, Larry Summers was a young assistant professor. Larry's enthusiasm, breadth of knowledge, and quick mind attracted me, and we spoke together at MIT during the year and at NBER during the following summer. When Martin Feldstein brought Larry to work at the Council of Economic Advisers in September 1982, Larry brought me along with him. I was fortunate to be able to work closely with Larry during the brief period when he was already a great economist but not yet a famous one.

When I returned to MIT, Stanley Fischer served as my dissertation adviser, as he did for a remarkable number of students in my class. Stan was a model of professorial balance. As a lecturer, he gave clear and even-handed presentations in a field that can be confusing and divisive. As an adviser, he encouraged students to pursue their interests with the highest standard of rigor without imposing his own intellectual agenda on them. My dissertation, like most in recent years, was a collection of loosely related papers bound together for the sole purpose of getting a degree. It bore the soporific title, "Essays on Consumption."

When I look back at these four mentors-- Rosen, Blinder, Summers, and Fischer-- I see in them various characteristics that I have developed over time. They are prolific writers. Their research tends to be empirical and policy-oriented. They take teaching seriously.

All of my mentors have shown interest in reaching a broader audience than can be found writing in academic journals. All four of them have taken time away from academia to work in policy jobs in Washington. Three out of four have written textbooks, and two of them have written more than one textbook.

It is easy to see why mentors matter. Mentors determine your professional outlook in much the way that parents determine your personal outlook. Mentors, like parents, give you your values. They teach you what kind of behavior to respect and what to avoid. And they teach these lessons indirectly, more often through their actions than through their words.

The major difference is that your parents are predetermined. You get to choose your mentors.

Rule No. 2: Work With Good Co-Workers

I have been lucky to be able to work with many talented co-authors. In approximate order of appearance, they include Alan Blinder, Bryan Boulier, Larry Summers, Julio Rotemberg, Matthew Shapiro, David Runkle, Avery Katz, Bob Barsky, Steve Zeldes, Jeff Miron, Mike Whinston, John Campbell, Andy Abel, Richard Zeckhauser, David Romer, Larry Ball, Miles Kimball, David Weil, Olivier Blanchard, Susanto Basu, Robert Barro, Xavier Sala-i-Martin, Bob Hall, Niko Canner, and Doug Elmendorf. Some of these co-authors were my mentors, others were my contemporaries (often fellow students at MIT), and

still others were students of mine at Harvard. In recent years, I have done most of my research with these co-authors.

Why are co-authors so important for the way I work? One reason is found in Adam Smith's famous story of the pin factory. Smith observed that the pin factory was so productive because it allowed workers to specialize. Research is no different--it is just another form of production. Doing research takes various skills: identifying questions, developing models, providing theorems, finding data, expositing results. Because few economists excel at all these tasks, collaborating authors can together do things that each author could not do as easily on his own. In manufacturing knowledge, as in manufacturing pins, specialization raises productivity. (The puzzle is why Adam Smith chose to ignore his own analysis and write *The Wealth of Nations* without the benefit of a co-author.)

The second reason I work with co-authors is that it makes my job less solitary. Research and writing can be a lonely activity. It is easy to spend endless hours with a pad and pencil or in front of a computer without human contact. Some people may like that kind of work, but not me. Arguing with my co-authors makes my day more fun.

The third reason I work with co-authors is the most important: a good co-author improves you forever. In the most successful collaborations, both co-authors learn from the experience. A co-author can help you expand your knowledge, improve your skills, and expose your biases. Even after the collaboration is over, you take these benefits with you to future projects. To a large extent, as I have grown older, my co-authors have become my mentors.

Rule No.3: Have Broad Interests

Throughout my life, I have been blessed with broad interests. (Or, perhaps, I have been cursed with a short attention span.)

As a child, I had numerous hobbies. I collected coins, stamps, shells, rocks, marbles, baseball cards, and campaign buttons. For pets, I had turtles, snakes, mice, fish, salamanders, chameleons, ducks, and, finally, a cocker spaniel. In high school, I spent my time playing chess, fencing, and sailing. I have long since given up all these activities (although I do have a border terrier named Keynes.)

As a college student, I committed myself to a new major several times each semester, alternating most often among physics, philosophy, statistics, mathematics, and economics. After college my path was indirect and largely unplanned. In chronological order, I spent a summer working at the Congressional Budget Office, a year studying at the MIT economics department, a year studying at Harvard Law School, a summer working at a law firm, a year working at the Council of Economic Advisers, a second year at MIT finishing my PhD, another semester studying at Harvard Law School, and then another semester at MIT, this time as an instructor teaching statistics and microeconomics. In 1985, I gave up my studies in law and became an assistant professor at the Harvard economics department, where in my first year I taught principles of economics and graduate macroeconomics.

Remarkably, I have been at Harvard now for about a decade. Harvard is a wonderful place to work. Yet I often get the itch to leave, just for the sake of doing something different. One thing that keeps me at Harvard is the proximity of the National Bureau of Economic Research. Every year the NBER holds dozens of conferences on various topics with prominent

economists from around the world. Having an office at the NBER is a bit like moving to a new university every few days.

My broad interests (short attention span) help to explain my diverse (incoherent) body of work. My research spans across much of economics. Within macroeconomics, I have published papers on price adjustment, consumer behavior, asset pricing, fiscal policy, monetary policy, and economic growth. I have even ventured outside of macroeconomics and published papers on fertility with imperfect birth control, the taxation of fringe benefits, entry into imperfectly competitive markets, and the demographic determinants of housing demand. None of this is part of a grand plan. At any moment, I work on whatever then interests me most.

Coming up with ideas is the hardest and least controllable part of the research process. It is somewhat easier if you have broad interests. Most obviously, broad interests give you more opportunities for success. A miner is more likely to strike gold if he looks over a large field than over the same field over and over again. More important, thinking about one topic can generate ideas about other topics. I started thinking about menu costs and macroeconomic price adjustment, for instance, as I sat in a law school seminar that was discussing monopoly pricing and antitrust policy. Research ideas pop up in unexpected places.

Of course, breadth has its costs. One is that it makes writing grant proposals more difficult. I am always tempted to write, "I want to spend the next few years doing whatever I feel like doing. Please send me money so I can do so." Yet, in most cases, those giving out grant money want at least the pretense of a long-term research plan.

The greatest cost of breadth, however, is lack of depth. I sometimes fear that because I work in so many different areas, each line of work is more superficial than it otherwise would be. Careful choice of co-authors can solve this problem to some extent, but not completely. I am always certain that whatever topic I am working on at that moment, someone else has spent many more hours thinking about it than I have. There is something to be said for devoting a lifetime to mastering a single subject.

But it won't be my lifetime. I just don't have the temperament for it.

Rule No. 4: Allocate Time and Crew

This is a rule of thumb I have been slow to learn. I used to go to every school that invited me to give a seminar, comment on every paper that a conference organizer asked me to discuss, referee every paper that a journal editor sent me, write every letter of recommendation that a department chairman requested of me, and sit on every committee that a dean asked me to attend.

But no more. Over time, the number of such requests have increased exponentially. Within a few years of going on the Harvard payroll, the cost of saying yes became intolerable. I came to realize that too much professional responsibility can be irresponsible, for it takes time away from the most important tasks--teaching and research. I now turn down the overwhelming majority of offers from seminar organizers, conference organizers, journal editors, department chairmen, and deans.

Deciding which research projects to pursue is the most difficult problem I face in allocating my time. I find it almost impossible to predict how any project will turn out before it is

done. And even when I have finished one of my papers, I cannot predict with much accuracy how other people (such as editors and referees) will react to it. My strategy, therefore, is to choose research topics based on what interests me most and, to some extent, on whether I have a good co-author who shares my enthusiasm. Sometimes I work on a topic for awhile and decide that I have nothing new to say. I then force myself to remember the irrelevance of sunk costs and move on to another topic.

One way that I spend quite a bit of time is writing textbooks. I have written an intermediate-level textbook on macroeconomics, which is now in its second edition, and I am now in the process of writing a textbook on the principles of economics. Writing a textbook is a lot of work, and I am sometimes asked why I choose to spend my time this way. So let me explain.

Textbook writing is form of teaching. As such, it has all the pluses and minuses of teaching. The major minus is that it takes time. And time is an academic's most valuable resource.

Despite the cost, I view textbook writing, like classroom teaching, as a good use of my time. One benefit is pecuniary. Few people in the world earn a living just creating knowledge. Most academics spend some of their time imparting knowledge as well. Giving lectures is one way of imparting knowledge; writing textbooks is another. So far, I have been able to make enough money imparting knowledge to students that I have not had to spend time on other activities, such as paid consulting, to put food on the table.

Of course, the most immediate benefit of classroom teaching and textbook writing is that they allow you to mold the minds of students. Economics is not a straightforward discipline like Newtonian mechanics or Euclidean geometry. Whenever you teach economics, you have wide latitude in choosing what material to include and how to present it. In making these choices, you give your own "spin" to the subject and help determine the views of your students. Although classroom teachers and textbook writers share this responsibility, textbook writers reach a larger audience. For those who want to bequeath their view of economics to the next generation, textbooks are the most efficient medium. Indeed, because textbooks are so important in shaping the field, many of the most prolific writers in academic journals are also textbook authors: Samuelson, Baumol, Blinder, Stiglitz, Barro, Dornbusch, Fischer, and on and on.

A less obvious benefit of classroom teaching and textbook writing is that they stimulate ideas for research. Whenever you have to explain something to someone, either in person or on a printed page, you have to think it through more thoroughly than you otherwise would. Preparing a lecture or drafting a textbook chapter reveals holes in your understanding. And, sometimes, as you try to fill these holes, you get ideas for research. Put simply, imparting knowledge and creating knowledge are complimentary activities. That is why these two forms of production take place in the same firms, called universities.

The final benefit to spending time writing textbooks is that it makes you a better writer. But that brings me to my next topic.

Rule No.5: Write Well

I think of myself as a mediocre writer. I do not come by my mediocrity naturally. It is the result of hard work and determination. This may seem like a small accomplishment, but I reassure myself with the fact that most economists do not live up to this standard.

Economists tend to underestimate the value of good writing. The reason, I believe, is that we like to think of ourselves as scientists. Scientific truths are as valid in run-on sentences as in well-written prose, so why bother trying to write well? Of course, no one would actually endorse bad writing, but this subconscious attitude pervades the profession and explains why economics is a more dismal science than it needs to be.

Despite our profession's bad attitude toward writing, good writing is in fact extraordinarily helpful to achieving success. Everyone knows that Robert Solow and Robert Lucas are important economists. But they are also superb writers, and this fact helps explain their prominence.

Whenever a person sits down to write something about economics, he is engaged in a form of joint production. Each article has two key attributes: style and substance. For producers of articles, style and substance are substitutes. The more time is spent avoiding the passive voice and replacing a "which" with a "that," the less time is left to spend thinking new thoughts about the economy. But if you want to succeed as a producer, you have to think about your consumers. For consumers of articles, style and substance are complements. When I see an article by Solow or Lucas, I want to read it, not just because I will have fun doing so. An article that offers both style and substance is far more appealing than an article that offers one without the other. So if you want to sell your substance, you have to worry about your style. In other words, if you want to be read widely, you have to write well.

Writing is a craft, like carpentry. Some people are naturally better at it than others. But anyone can get better at it by devoting enough time and effort.

The first step to writing better is deciding to write better. After that, it is like acquiring any skill. Just as you can learn how to run regressions by reading a RATS manual, you can learn how to write better by reading books on style. I often recommend Strunk and White's *The Elements of Style* to my students, and I am surprised at how many have never heard of it. (It is the perfect book to leave in the bathroom. Whenever you have a spare minute, open it to a random page and start reading.) I also recommend that students read William Zinsser's *On Writing Well* to learn how to write and Donald McCloskey's *The Rhetoric of Economics* to learn how to persuade.

Becoming a good writer also takes practice. Reading the RATS manual will tell you how to run a regression, but you cannot easily run a regression after just reading about it. You have to turn on the computer and try it several times. You see what mistakes you make, what bugs show up unexpectedly, what things the manual forgot to tell you. The same is true with writing. The more you write, the better you get. When I look back on my own education, one thing that stands out is how often I had to write in the (private) high school I attended. I always had some writing assignment hanging over my head. At the time the school's policy seemed oppressive, but now I am grateful for the oppression. It prepared me perfectly for my current job.

Writing well is hard work. It requires that you revise, revise, and revise. Then, when you think you are done, you should revise again. Good writing is fun to read, but is often not fun to do. (I once asked John Kenneth Galbraith the secret to his success as a popular writer. He said that he revises everything many times. Around the fifth draft, he manages to work in the touch of spontaneity that everyone likes.)

Fortunately, modern technology has made writing much easier. I write directly in Wordperfect. Pen, paper, and secretary are not necessary, which surely makes me more productive. But

modern technology has also made it easier for people to produce bad writing. The supply of good writing and the supply of bad writing have both increased over time. The demand for bad writing remains low, however, so in equilibrium there is not much reward for producing it.

By contrast, good writing has substantial rewards. Writing something well attracts readers and gives your ideas a better chance to be heard. But there is also another payoff: good writing brings personal satisfaction. An author should get pleasure from looking back and finding that he has presented his ideas well. I do not like writing, but I do like having written.

Rule No.6: Have Fun

A book I read long ago revealed to me the secret to a happy life: find out what you like to do, and then find someone who will pay you to do it.

I learned this secret as a teenager. At the time, I liked racing small sailboats. So, when I looked for my first summer job, I found one giving sailing lessons. (My employer charged \$15 for a one-hour lesson and paid me minimum wage of \$2.25. This was my first lesson in the economics of monopolistic competition.) Yet I knew that this advice would not always be easy to follow. I had no idea how to find someone to pay me to race sailboats for the rest of my life, and this was a source of some adolescent distress. Luckily, my tastes changed as I aged.

I now keep the secret to a happy life in mind when selecting topics for research. Editors and conference organizers often invite me to write papers on specific topics of their choosing. I turn down most of these offers. (This essay is one of the few exceptions.)

Unless the editor happens to propose a topic in which I am already interested, I will not enjoy writing the paper and, most likely, will not do a good job. My approach to research is to decide first what I want to think about, I then see if I can get someone to publish the result. If my current interests happen to coincide with a conference someone is organizing, that's great, for the conference is a convenient outlet. And a conference invitation might help me to choose among several projects that I have in the back of my mind. But the most important question for me when beginning any project is whether the topic gets me excited.

Graduate students starting work on their dissertations often ask me for strategic advice. What are the hot research areas? What topics will get them jobs at the top universities? It is easy to understand why students ask these questions, but these are the wrong questions for someone embarking on a research career. I tell students that they should be asking themselves more personal questions. What would they like to learn about? What do they observe in the world and find puzzling? What topics get them excited?

Doing research is not like digging a ditch. A person can dig a perfectly fine ditch without enjoying his job for a minute. By contrast, research requires a certain passion about the topic being studied. Passion goes hand in hand with creativity. No one can manufacture this passion for strategic reasons of career advancement.

Most people who pursue an academic career do so because they are fascinated by their subject. It is for this reason that professors report among the highest rates of job satisfaction of all professions. Professors have found what they like to do, and they have found someone to pay them to do it.