

You Earn What You Learn

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The views expressed are my own and do not necessarily reflect official positions of the Federal Reserve System.

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I am delighted you have invited me back to this symposium, particularly in light of my rather pointy-headed presentation last year on the nitty-gritty of how central bankers measure inflation. I want to avoid any possibility of injuries in a stampede for the exits, so I promise not to inflict a lot of mind-numbing economist jargon on you today. I am going to speak this morning on the importance of having first-class institutions of higher learning in Dallas and in Texas.

I am guessing, however, that you, being in the real estate business, probably know that last Tuesday the Federal Open Market Committee (FOMC) held a meeting and decided to cut the federal funds rate by one-half of 1 percent, an event that seems to have given rise to almost—but not quite—as much chatter as recent developments affecting the sports memorabilia collection of O.J. Simpson. I also suspect you are eager to hear about the current state of the housing and money markets and the health of the economy. I will indulge your interest briefly and then get on to a message about education that I would like you to listen to very carefully.

What I say today, as always, represents my personal views and mine alone. I make no pretense—and never do—of speaking for my colleagues on the FOMC or of representing the views of any other senior Federal Reserve official.

To put last week's FOMC decision in a broader context, it is important to understand that the Fed operates under a dual mandate. That dual mandate can be summarized in one sentence: We are charged by Congress with conducting monetary policy in a way that enables sustainable, noninflationary growth of the American economy and its employment base. It goes without saying that we must use our franchise to ensure a smoothly operating financial system. Money is the blood of the body of capitalism. It must be pure and free of the virus of inflation, and the cardiovascular system through which this lifeblood of the economy flows must be in good working order.

As we sat down to the FOMC table on Tuesday, we were faced with a situation that, drawing on my Naval Academy days, I would liken to a ship navigating a narrow passage between two shorelines.

On one shore, we have an otherwise healthy economy weakened to an unknown degree by a correction to excessive speculation in its housing sector and related financial instruments. On the price front, the economy has been experiencing mitigation in inflationary tendencies, thanks, I believe, to prudent monetary policy—albeit against a background of an energetic global economy that continues to create upward price pressures on all sorts of commodities, on transportation costs and even on what was once assumed to be an endless supply of cheap imports from China.

If we had maintained the anti-inflationary course we had been following for more than 14 months by holding the fed funds rate at 5.25 percent, I believe we would have risked oversteering our course and potentially run afoul of the shoals of unacceptably slow economic growth. Those of you who know me are aware that I am a compulsive worrier about inflation—I

do not know any central banker in the world worth his or her salt who is not—because I see inflation as the *bête noire*, or bugbear, of any successful economy. Recent trends in inflationary impulses and expectations, however, appeared to me to provide some wiggle room to adjust our tiller and steer a more growth-oriented course.

Looking to the other shoreline, we were confronting the rocky outcropping that economists call moral hazard. From these rocks, one could hear the siren call of market operators and institutions that had made imprudent decisions and now hoped the Fed would rescue them with easy money. Overcorrecting our course with too aggressive a shift in the fed funds tiller would have, I believe, undermined the discipline that market forces impose upon wayward financial institutions and investors. Moral hazard is a dangerous predicament for any central bank. Yet we had an unsettled money market riddled with angst—a money market that, in my view, was going into a defensive crouch in which even the best and most careful depository institutions and market operators feared that the positions taken by their less prudent brethren may come up a cropper and seize up the entire financial system.

Those were the conditions on the financial seas when we met last Tuesday. As with any navigator of turbulent seas, the FOMC relies on an impressive array of instruments; we are blessed with a rich complement of superb economists and a fulsome dashboard of databases. But in the end, no models or formulas substitute for judgment in making monetary policy. The course of monetary policy is a matter of discernment—akin to the decisions made by a ship captain who knows that steering through a turbulent sea requires drawing on more than just charts and computerized navigation equipment. Drawing upon its best judgment, the committee chose to navigate the passage with a 50-basis-point reduction in base rates, following its Aug. 17 action to reduce the spread between the discount rate and the federal funds rate.

With any publicly visible decision made at an important juncture, second-guessers pop up everywhere. Market operators and countless others, among them somber as well as bombastic television commentators—armchair navigators, if you will—have been eager to discuss the course we have chosen. This is the nature of a free market for commentary. Personally, I welcome it, as it sharpens our wits.

Central banking is not and never should be a popularity contest. It is a serious duty undertaken by earnest public servants for the greatest good of the nation. Thus, FOMC members will continue taking in-depth soundings on the progress of the economy and the financial markets as we evaluate the impact of the 50-basis-point course correction. Should further correction—either to port or to starboard—be needed to stay on the course toward sustainable, noninflationary growth over time, we will make it.

Enough about navigation and last Tuesday's FOMC meeting. I will happily take any questions about policy during the question-and-answer period and, in classic Federal Reserve style, do my best not to answer them.

Today, I want to talk about a subject that is of the utmost importance to Dallas' future—higher education and why we need to focus on developing the academic and intellectual excellence needed to make this the great city we all want it to be.

The vital capital stock of our modern economy is not our buildings or our factories or our farms. It is our brains. It is our ability to conjure new and better ideas, inventions and solutions. It is our commitment to exceptional customer service. It is our designs for better buildings, faster computers and more successful space flights. It manifests itself in new financing products and medical breakthroughs, in mathematical formulas and biochemical experimentation, in physics and engineering and design.

Education and knowledge are the driving forces of a U.S. economy. Remember that agriculture represents less than 2 percent of our national economy and manufacturing employs just 11 percent of our workforce. Only 5 percent of our fellow Americans work in the mining and construction sectors.

Eighty-two percent of American workers are employed in services, a sprawling sector that includes some of the nation's most prestigious and highest-paying jobs—jobs very much like yours. In Texas, for example, average hourly wages in 2005 were \$77.23 for doctors of internal medicine, \$44.81 for geological engineers, \$39.53 for computer software engineers and \$26.35 for registered nurses.¹

Jobs like these can be done only by workers with highly specialized skills, nurtured by our educational system and honed by years of experience. Physical strength and manual dexterity, workers' primary input for so much of what was produced in the agricultural and manufacturing eras, have been replaced by creativity, reasoning and emotional intelligence. We prosper by the work of our brow, not the labor of our muscle.

Let me give you a stark example: At the end of 2005, the U.S. auto and auto parts manufacturing industry employed about 1.1 million workers and added 0.8 percent of the value to our gross domestic product. The legal services sector employed nearly the same number but contributed 1.5 percent of the value added to GDP. In other words, lawyers produce twice as much as automobile workers. Granted, that may not come as much consolation when you open your attorney's bill, but those are the facts. There is no more vivid demonstration of how services have replaced manufacturing as the engine of our economic prosperity.

My friend Stanley Fischer, governor of the Bank of Israel, once quipped that “there are three kinds of economists: those who can count and those who can't.” Yet even mathematically challenged economists are united on this: In the service sector-driven Knowledge Age, education pays huge dividends.

In today's economy, you earn what you learn. Spending time and money learning—in gathering knowledge and skills—remains one of the best investments you can make. In 2006, an average 25-year-old high school graduate made \$6,100 a year more than someone the same age who dropped out. A high school graduate who went on to college but didn't get a degree saw earnings rise by another \$4,160. Earning an associate's degree added another \$3,100. A bachelor's degree was worth an additional \$15,260. A law, dentistry or other professional degree added \$32,300 to earnings. The total, the difference in earnings between a 25-year-old high school dropout and a 25-year-old degreed professional, was almost \$61,000 a year.

Just as impressive is the way experience in the workplace compounds the benefits of higher education. The \$61,000 earnings gap between high school dropouts and professional degree

holders jumps to more than \$100,000 by the time these 25-year-olds reach age 60—a 66 percent widening.

We also see links between educational attainment and job stability, with the best educated among us enjoying the lowest unemployment rates.

You earn what you learn.

Of course, intellectual capital, like its physical counterpart, can depreciate over time. Skills can fade or be replaced by new technologies and as our economy evolves. Think back just 30 years and you'll remember that our labor pool included a profession called "typists." My mother was one of them. Thousands like her earned their livings at clattering keyboards, producing the documents needed in business and government, but their once-rare skills have become nearly universal among computer users worldwide. Or consider medicine. Who among you would feel comfortable with a doctor who stopped learning after medical school and treated you with the principles and procedures of decades past? You expect doctors to be up on the latest research, newest procedures and best medicines to treat you. In today's knowledge-driven world, none of us can ever claim to know enough. We must embrace lifetime learning if we are to prosper.

In a modern economy, we can no more deny the link between brainpower and income than we can deny that the Federal Reserve is subject to scrutiny. We see the link between education and earnings appear across countries, among individuals and among states. Little old Massachusetts, for example, with a third-place ranking in college graduates per capita, has lifted itself up to first in per capita income. California's 11th-place ranking in education gets it 10th in per capita income. And Texas? Texas ranks 29th in college graduates and 29th in per capita income, well below the national leaders.

Our neighbor, Arkansas, ranks 49th in both education and income. Mississippi is 50th in income, a few notches below West Virginia, which is 50th in education. Imagine that: We are closer to Arkansas, Mississippi and West Virginia in educational attainment and income than we are to Massachusetts. I've got nothing against the Razorbacks, Ole Miss or the Mountaineers, but that is not where I want Texas to be.

What does this have to do with the Dallas metroplex? Well, let me paint a picture for you. The Dallas–Fort Worth area is the country's eighth-most-populous metropolitan region and its fifth-most economically productive. Texas ranks second in the nation in population, surpassed only by California.

Texas has six public university systems. The University of Texas System is the granddaddy of them all, with 190,000 students in nine universities and six health institutions. Its flagship is UT Austin. The Texas A&M System has nine universities, with 103,000 students and a multicampus health science center. The remaining students are spread over the campuses of the Texas State University System, the University of North Texas System, the University of Houston System and the Texas Tech System. Stephen F. Austin, Midwestern State, Texas Southern and Texas Woman's are independent public universities. All told, we have about 520,000 students attending the more than 40 public universities in our state.

By contrast, California has more than 600,000 students enrolled at just 33 public universities. The pinnacle of the state's educational system is the University of California, with 209,000 students spread over 10 universities. The system includes some of the best universities in the world—UC Berkeley, UCLA, UC San Diego, UC Irvine, UC Davis and UC Santa Barbara.

How do our institutions of higher learning stack up against California and the rest of the nation? According to the latest *U.S. News & World Report* survey, UC Berkeley, UCLA, UC San Diego and UC Davis all outranked UT Austin for overall educational excellence. UC Irvine and UC Santa Barbara were tied with UT—at 44th. And the rest of our universities? Texas A&M fell two spots to 62nd, tied with Worcester Polytechnic in Massachusetts. Worcester Polytechnic. Ever heard of it? Southern Methodist University ranked 67th, Baylor University 75th and Texas Christian University 108th. Rice University came in 17th, right up there with Emory University and Johns Hopkins and above Berkeley and Notre Dame.

Imagine that! The “overtaxed, over-regulated, left-coast state” of California has within one fleet six universities that are ranked equal to or better than UT Austin, our top public university.

Now let's broaden our aperture a little by looking at membership in the Association of American Universities, regarded by most scholars as the imprimatur of the cream of the crop of research universities. The AAU is an exclusive group of the top 60 research universities in the United States. Those 60 U.S. schools garner about 60 percent of all federal R&D dollars and are home to 82 percent of all elected members of the National Academy of Sciences, the National Academy of Engineering and the Institute of Medicine—the highest recognition in each of those fields. Since 1999, three-quarters of all Nobel Prizes were won by faculty members at those AAU universities. No doubt, everyone in this room would like to have many of our Texas universities included in this prestigious group.

California has nine AAU members: UC Berkeley, UCLA, UC Davis, UC San Diego, UC Santa Barbara, UC Irvine, Caltech, Stanford and USC. Four of those are in the greater Los Angeles area alone. New York has seven: Columbia, Cornell, New York University, Syracuse, Stony Brook University, the University of Rochester and the University of Buffalo. (You actually should add an eighth by including Rutgers, which is within arm's reach of New York City.)

And within the 262,000 square miles of Texas? We have three: Rice, UT Austin and Texas A&M.

Think about that. The great state of Texas—the state you and I love to brag and boast about, a state of 24 million people that has a glorious history second to none—has the same number of AAU member universities as the city of Boston. And Dallas, my hometown, has none. Dallas, the eighth-largest metropolitan area in America, doesn't have a single top-ranked academic institution. We do have UT Southwestern Medical Center, a top-tier medical school, of course. But a medical school standing alone, no matter how good, is not enough in a world that is built on advanced technology and in-depth knowledge across many fields.

When a university is a reputed fountainhead, the best and brightest minds flock to it and foundations, philanthropists and other agencies feel confident that their donations will be put to good use. I read a study published 10 years ago or so that found more than 4,000 companies had been started by alumni or faculty of the Massachusetts Institute of Technology. Imagine how

many more successful companies have been founded by MIT alumni in the decade since that study, a decade marked by the very sorts of high-tech innovations that many MIT grads are so well trained to master. It is little wonder that MIT attracts the highest-caliber students and teachers and substantial research funding.

Incidentally, Texas Instruments was one of those MIT companies, whose founders also founded the predecessor to UT Dallas with the explicit aim of creating “the MIT of the Southwest.”

Cecil Green and Eugene McDermott and the other founders of UTD understood that the economic value generated by a university is tremendous. Universities earn some money from licensing out their patents, but the lion’s share of the economic boom comes from the people they educate, the ideas they cultivate, the companies they start and the research they do that spills out into the economy. More often than not, it is the university’s local community that most directly benefits from these overflows.

Malcolm Gillis, a former member of the Dallas Fed board of directors and the immediate past president of Rice in Houston, shared with me an interesting fact about his university. A few years ago, he noticed that about 15 percent of undergrads were from local Harris County high schools, while nearly 33 percent of alumni lived in the county. In other words, bright and motivated people came to Houston because of the university and stayed for the job opportunities available to them upon graduation. Many of the jobs are in high-tech, knowledge-driven industries for which Rice and its alumni have laid the foundation.

Dallas does not have one university ranked in the top 60 by either *U.S. News & World Report* or the Association of American Universities. Our local university leaders—good men like Gerald Turner at SMU, David Daniel at UT Dallas, Kern Wildenthal at UT Southwestern, Victor Boschini at TCU and Jim Spaniolo at the University of Texas at Arlington—are fighting with one hand tied behind their backs. They need commitments and resources from the state and local community if they are to give this metropolitan area what California has in San Francisco and Silicon Valley, or in Los Angeles or San Diego or Santa Barbara, or what New York has in Manhattan, Rochester or Buffalo, or what Massachusetts has in Cambridge, and yes, even Worcester.

How can we expect Dallas and North Texas to prosper in the Knowledge Age—the era in which economic prosperity and wealth will be defined by cyberspace, nanotechnology, robotics and biology and mathematics-driven financial expertise—without at least one established fountainhead of advanced knowledge?

When you leave this symposium today, I want you to look around Dallas’ cityscape. You won’t see factories with smokestacks and loading docks and noisy machines. Instead, you will see glass-and-steel buildings that warehouse the capital plant of the modern era: human brains. Brains that do research and provide services in medicine, marketing, finance and myriad other fields.

Texas boomed with the discovery of vast petroleum deposits, first in the eastern part of the state, then in the west. Oil wells eventually run dry. An educated mind never does.

To be sure, we can fuel our local economy with graduates from California and Massachusetts and other states and countries—up to a point. But that is no substitute for Texas- and Dallas-bred intellectual talent, with its roots in the community and its commitment to building Big D.

We live in a globalized economy. Goods, services, money, ideas and people move across borders. How do we compete with the masses of Chinese and Indians and Eastern Europeans and Vietnamese and Mexicans and Latin Americans who will grow by making stuff so much cheaper than we can? How do we stay ahead of them as they continue up the value-added ladder into the service sector, into technology, into programming and into software and the sciences?

Here's how: We move even faster up the value-added ladder. How do we do that? By using our brains—what my father used to describe simply as “the little one-quart jar between your ears.”

Just as farming and oil and gas and manufacturing once drove Texas' economic development, an educated workforce with high earning potential will propel the future of our city, our state, our great nation and the world. The ultimate source of competitive advantage for Texas is not oil. It is not gas or the chemical industry. It is not even the Dallas Cowboys, even if they are America's Team. Our ability to compete and thrive in the future—our ability to navigate into a prosperous future—will be determined by our elementary and secondary schools, our community colleges, our medical, law and engineering schools and research centers, and by our public and private universities. Education should be the highest priority of our community. It should be the most important priority of anybody who cares about the future of Dallas.

The North Dallas Chamber of Commerce knows how to sell. The people in this audience can sell better than anybody on the planet—you do it for a living. So do yourselves a favor. Go out and sell the fact that we need a world-class university, be it public or private, right here, right now. If you cannot use your considerable talent to do so, then woe is the future of our beloved city.

Note

¹ Bureau of Labor Statistics estimates.