

Digits and Widgets

(With Reference to a Wise Mother, the Golden Book Encyclopedia, Winston Churchill and Hunter Lawrence)

*Remarks before the Austin Chamber of Commerce's
4th Annual State of Education in Austin*



Richard W. Fisher
President and CEO
Federal Reserve Bank of Dallas

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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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Thank you, Barry [Mayer].

There are many distinguished Texans in this room. I would like to single out one of them: my daughter, Alison. I am very proud of her. She inherited her mother's brains and graduated with honors in English literature from Harvard, where she was president of the Seneca, one of the largest women's service organizations on the Harvard campus. Alison is now a graduate student at UT–Austin, in her second year at the LBJ School of Public Affairs. She is not only smart and strong and beautiful, but she is tolerant—so much so, she is even willing to sit through one of her father's speeches. I am thrilled she is here.

Education is something I hold dear to my heart. It changed my life. Neither of my parents—Alison's paternal grandparents—was formally educated. My father never made it past fourth grade. In lieu of middle school and high school, he swept floors under the lathes at a metalworking factory in Australia. My mother, a stern Norwegian raised in South Africa, attended the equivalent of a secretarial high school. They wanted better for me. Among the many fond memories I have of my mother, God rest her soul, two came to mind as I prepared this little sermon for today. The first was our twice-monthly trek when I was 12 to a local store to get the latest installment of the Golden Book Encyclopedia—these were the only books we could readily afford in our household at the time. Golden Books issued one volume per letter of the alphabet, and she insisted I read it cover to cover in order to “earn” the next volume. The second was her admonition that I had “better do well in school and learn to love to learn” because, in her stern words, “you can't expect to get by in America just relying on your looks or your athletic ability.”

In his introduction, Barry listed all those great schools I was lucky to attend and all the fancy jobs I've had—shorthand in our resume-driven society for “he's done all right.” All that can be traced back to a determined mother and the Golden Book Encyclopedia, as well as some inspirational teachers in primary and secondary school and a pragmatic father. When I got my M.B.A. from Stanford, my dad pulled me aside and said: “Enough already. In one generation, we've gone from no education to too much! Now get a job and go to work!”

I have a job to do today, so I better go to work speaking on the topic you asked me here for: the subject of education.

The benefits we derive from the books and the buildings and the teachers and tutors that form the building blocks of our educational society don't stop at the classroom door. They spread outward, affecting our lives and the lives of others around us in innumerable ways. Today I am going to speak from the perspective of the economy and living standards, a principal preoccupation of the Federal Reserve.

There are countless studies in the economics literature that highlight the links between increases in educational levels and economic productivity and improvements in society's welfare. Employment is significantly higher among the more educated. Workers with a college degree experience lower fluctuations in employment and, if they do lose their jobs in tough times such as these, do so at a lower rate than their less-educated peers and are more likely to find new jobs.

The simple fact is you earn what you learn. Education pays off. We can see this in the wage data provided by the Bureau of Labor Statistics. Last year, the average hourly wage in Texas was \$18.90. In the same period, the average hourly wage in Texas for internal medicine doctors was \$77.22, \$42.67 for geological engineers, \$43.50 for computer engineers and \$29.70 for nurses. The more you learn, the more you earn.

In 1980, a college degree would earn you about 50 percent more than a high school diploma. In 1990, that differential jumped to 73 percent and, in 2000, to 85 percent. Today, someone who holds a college degree earns 97 percent more than his or her classmate who went no further than high school.

You earn what you learn. Higher education is the key to improved earnings and social prosperity.

This is no great mystery. We make our living as Americans less with our muscles than we do with our brains. At the beginning of the 20th century, when my parents were born, 37 percent of the U.S. workforce was employed in agriculture. Today, in Alison's world, agricultural output represents less than 2 percent of our gross domestic product and employs just over 1 percent of our workers. In 1900, 38 percent of our labor force worked in "industry," a broad category that includes manufacturing, construction and mining. Today, manufacturing employs 10 percent of our workforce, and mining—less than 1 percent.

The delivery of services has replaced ag and manufacturing and mining and oil and gas and is the engine of our growth. At the beginning of the 20th century, 26 percent of our workforce was employed in services. Today that number is about 80 percent. We are a service-driven economy. Winston Churchill used to refer in his speeches to the "superfine processes" that added value to basic raw material inputs in the era when Britannia ruled the waves of the Manufacturing Age economy. Today, we live at an ever-higher end of the value-added spectrum, with education being the stuff of our economic success.

We have the most efficient services workers in the world. Contrary to popular belief, we sell those services not just at home, but around the globe. Sales of things like computer and information services, research and development, accounting and auditing, and management and consulting earn us substantial foreign income—so much so that while we run a deficit in our trade in goods with the rest of the world, we run a surplus in our trade in services. It trims our overall trade deficit some 20 percent from what it would otherwise be.

Even lawyers make money abroad. Imagine that! Our exports of legal services in 2008 were four times our imports. In the same year, exports in advertising, finance, medical services and education exceeded our imports in these categories by a factor of three. And thanks to Brad Pitt and Tom Cruise and Angelina Jolie and Jessica Simpson—and, indeed, despite Sunday night's ignominious defeat, Jessica's ex, Tony Romo—our foreign distribution of films, TV shows,

performing arts and sports programming and products are in such tremendous demand abroad that their overseas sales exceed our imports by a factor of seven.

The point is this: The fields and factories that powered the economy of yesterday remain important in the United States and in Texas. But more important in the current economy and to our economic future is the production of high-value-added services. As some have previously noted, in the world of “superfine processes” of the Knowledge Age, digits are the new widgets. The brain is to the Knowledge Age and the mastery of digits what the engine was to the Manufacturing Age and the management of widgets. Education is the steam and the oil and the gas that propel that engine. The speed at which we move our economy forward from this point onward will depend on how well we educate our children. We cannot produce the skilled labor needed to advance this economy without a top-notch educational system—one that relentlessly pushes America farther up the value-added ladder while the Chinese and the Indians and others scurry up the lower rungs of that ladder with their billions of eager workers and ever-more agile grasp of the most basic tools of technology.

As I understand this conference, you all are here to “grade [your] own paper”—to assess your efforts to create a top-notch educational system here in this great city and state.

Gene [Austin], you wrote a comprehensive piece on this subject just last month in the *Austin American-Statesman*. I agree that many efforts undertaken at the state and local levels—like the “20,010 by 2010” initiative—are producing real results. But we cannot declare victory yet. We have many, many miles to go before we sleep.

Personally, I will not sleep until we get our higher education house in order. For a state as great as Texas, we are woefully lacking in tier-one universities.

I want you to consider the following. It is fashionable in economic and financial circles to talk about the “BRIC” nations: Brazil and Russia, India and China. Yet, in the second quarter of this year, Texas produced more than two of those four countries did: more than Russia and more than India. And we were not all that far behind Brazil. You heard me correctly. The 24 million people of the Lone Star State, in the second quarter of this year, produced more in dollar-denominated economic output than the 1.1 billion people of India or the 140 million of Russia, at then-current exchange rates, and about 81 percent of what Brazil produced with half of South America’s population and just under half of South America’s land mass.

Texas is a global economic power, surpassed in the United States only by California. So far, so good. But as you look into the future of the Knowledge Age and contemplate the ambition of the BRIC countries and others that will compete with us for a piece of the global economic pie, the picture darkens.

Consider this: Texas has six major public university systems. The University of Texas System, whose home is right here in Austin, is the granddaddy of them all, with just under 200,000 students in nine universities and six health institutions. The Texas A&M System has 11 universities with 100,000-plus 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 each independent public universities. Together, these institutions house over 530,000 students.

By contrast, California has more than 650,000 students enrolled at just 33 public campuses. The granddaddy of that state educational system is the University of California, with 220,000 students spread over 10 universities.

How many people in this room think that Berkeley is the only center of excellence in the University of California System? Not one of you. That is because you know that in addition to Berkeley, the University of California System has UCLA, UC-San Diego, UC-Irvine, UC-Davis and UC-Santa Barbara. All that before you take into account Stanford, USC, Caltech and the Claremont Colleges.

Now here is a fact we must face up to. According to the latest *U.S. News & World Report* survey, Berkeley, UCLA, UC-San Diego, UC-Davis, UC-Santa Barbara and UC-Irvine all outranked our beloved UT-Austin—which placed 47th—for overall educational excellence. And the rest of our universities? The Aggies in College Station ranked 61st. The Mustangs of SMU ranked 68th, the Baylor Bears 80th and the Horned Frogs of TCU, 110th. The shining stars of our higher education galaxy are the appropriately named Owls of Rice, ranked 17th behind Johns Hopkins, tied with Vanderbilt and above Berkeley.

It galls me that the “overtaxed, overregulated, left coast state” of California has within one fleet six universities that are ranked better than UT-Austin, our flagship. It bothers me to no end that we have only one university in our state that ranks in the top 20 in the nation.

When you get a chance, take a look at the membership list for the Association of American Universities (AAU), which is regarded by most scholars as the definition of the cream of the crop of research universities. The AAU consists of 60 U.S. and two Canadian universities. These 60 U.S. schools garner about 57 percent of all federal R&D dollars to colleges and universities; they are home to 81 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 1901, 35 percent of all Nobel Prizes have gone to individuals affiliated with AAU universities. It is fair to say that everyone in this room would like to have our Texas universities included in this prestigious group of 60.

California has nine AAU members, with four of those 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 Texas? We have three: Rice, UT-Austin and Texas A&M.

Think about it. The great state of Texas—the state I love to brag and boast about, a state that has a glorious history second to none—has the same number of AAU member universities as Boston. The Dallas-Fort Worth metroplex—my hometown—has ... none. Think about that: The fourth-largest metropolitan district in America does not have a single top-ranked academic institution. We do have UT-Southwestern, 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.

Now, how can we expect to navigate our way into the economic future in a fiercely competitive globalized world without a single elite university in Dallas? Or with only one in the great city of Houston? With a university ranked 47th in Austin? And with none of the top 50 in any other city in Texas? How can we expect Texas to continue to outproduce India and Russia and other hungry competitors and excel in the Knowledge Age—an era in which prosperity and wealth will be defined by cyberspace, nanotechnology, robotics and biology and mathematics-driven financial expertise—with so few established fountainheads of advanced knowledge? How can we reasonably expect to prepare the youth of today—a group that I know you all care about, or else you would not have sacrificed your time to be here—if we aren't providing them with top-notch preparation for the economy of tomorrow?

When we leave this luncheon today, I want you to look around Austin's cityscape. When you travel to Dallas or Houston or any of our other great cities, look at their skylines. How many factories will you see? You won't see any—at least none of the old-fashioned kind with smokestacks and loading docks and noisy machines. Instead, you will see glass and steel buildings that house the machines and the capital stock of the modern economy: human brains. Brains that are employed in many of the high-value-added sectors I described earlier.

We need more of that brainpower, right here in River City. We need thousands upon thousands of the world's best and brightest here in Texas, here in Austin, and in Houston and Dallas and Fort Worth and every nook and cranny of South and East and West Texas. We can fuel our economy with graduates from California and Massachusetts and other states and other countries—up to a point. But that is no substitute for Texas-bred intellectual talent, with its roots in our community and its commitment to building our state and all the benefits it would bring to our arts and civic and educational communities, on top of the economic muscle it would add.

Like everybody in this room, I swelled with pride when I watched Hunter Lawrence put that football through the uprights in the last second of Saturday night's game at the "House that Jerry Built." I delight in seeing TCU ranked among the nation's top teams. As a former high school quarterback, I love dropping in on high school games on Friday nights. And whenever I lecture these days at our universities across the state, I can't help but notice how handsome or beautiful the young men and women are in our classrooms.

But then I think back to my mother's admonition: "You can't expect to get by in America just relying on your looks or your athletic ability." We can't expect Texas to get by, let alone dominate, in a globalized economy where digits are the new widgets simply by relying on our good looks and athletic prowess.

Here is the punch line: If you are willing to leave this room today accepting the fact that we have only two universities ranked in the top 50 in the nation and only one, Rice, in the top 20, then you are not the Texans I know and love. If you are willing to accept that the Longhorns of UT–Austin, mighty as they are, are outflanked on the educational battlefield by six campuses of the UC System, then I have severely overestimated your commitment to this great state of ours. If any of you are willing to accept that Guy Bailey at Texas Tech or David Daniel at the University of Texas at Dallas or Gerald Turner at SMU or Victor Boschini at TCU or Ricardo Romo at UT–

San Antonio or Diana Natalicio at UTEP or Renu Khator at the University of Houston or Bowen Loftin at Texas A&M or William Powers here at UT–Austin is fighting with one hand tied behind his or her back because the powers-that-be here in the capital cannot rise to the cause and give to this state what California has in San Francisco and Silicon Valley, or Los Angeles or San Diego or Santa Barbara, or what New York has in Manhattan, Rochester or Buffalo, then, well, you, my friends, are suffering from a serious case of denial.

“Denying” the people of Texas the tier-one universities they deserve presents a serious barrier to our future prosperity. We face many challenges head-on in this state. This is the biggest challenge of all. Face up to it, and get on with it. Thank you.