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**THE FORTUNE**  
How the **REALLY**  
smart money **INVESTS**

Nobel Prize winners entrust their nest eggs to DFA, where investing is a science, not a spectator sport. *by Shawn Tully*



## How the Really Smart Money Invests

**Nobel Prize winners entrust their nest eggs to DFA, where investing is a science, not a spectator sport.**

*Shawn Tully*

**S**uppose you made a list of the smartest people alive in finance--those who have done the most to advance our understanding of how the stock market really works. Somewhere near the top you'd surely place Eugene Fama of the University of Chicago, the leading champion of the efficient-market theory and a favorite to win a Nobel Prize one day.

You'd obviously want to include Merton Miller of Chicago, who earned a Nobel by analyzing the effect of a corporation's capital structure on its stock price, and Myron Scholes of Stanford, who won his Nobel by explaining the pricing of options. You'd also pencil in Fama's collaborator Kenneth French of MIT, as well as consultant Roger Ibbotson and master data cruncher Rex Sinquefield, who together compiled the most trusted record of stock market returns going back to 1926.

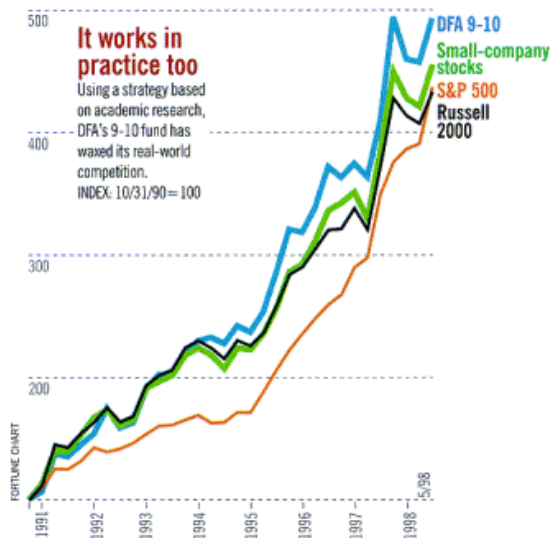
What would you give to know how these titans invest their own money? Well, don't give too much, because all you have to do is look at the funds of one Santa Monica money management firm, Dimensional Fund Advisors. Sinquefield and partner David Booth, both former students of Fama, founded DFA and now run the funds. Fama and French map out many of the investment strategies (and earn royalties for doing so). Miller, Scholes, and Ibbotson are directors. All except Miller, who believes directors should not invest in their own funds, have large chunks of their own money in DFA.

If you want to invest like these giants, however, you may have to check one of your most cherished investment notions at the door. Unlike any other money management firm, DFA insists that each of its funds follow a strategy based on rigorous academic research. And for the past three decades that research has squarely challenged the industry's fundamental assumption--namely, that a stock picker, given enough smarts and enough research, can consistently beat the market. To the Über-intellec-tuals at DFA, the genius stock picker is a myth. "I'd compare stock pickers to astrologers," says Fama. "But I don't want to bad-mouth the astrologers."

Such talk may seem harsh in these stock-mad days--when top mutual fund managers are as celebrated as sports stars--but DFA has the numbers to back it up. Sinquefield and Booth will be happy to share the reams of academic research supporting the theory that stocks are, with a few exceptions, an efficient market, in which prices fairly reflect all available information and stock pickers can't really add much value. They can also point to the wildfire spread of indexing among professional and retail investors, an investment strategy they helped pioneer.

Sinquefield and Booth might also bring up the success of their own firm. After being hooted at by Wall Street 20 years ago, the pair today manage \$29 billion in 22 funds, making their firm the ninth-largest institutional fund manager in the country. The client list includes the pension funds of PepsiCo, BellSouth, and the state of California, and the endowment of Stanford University. The firm is also the most popular choice of the mutual fund industry's fastest-growing retail distribution channel, fee-only financial planners. (If you want to invest your own money in DFA funds, you'll need to go through one of them.) DFA collects fees averaging about a quarter of a percent on that asset base, for a gross of some \$70 million a year. Which pretty much disposes of the notion that ivory-tower ideas never make you rich.

If nothing else, DFA's success is a measure of how deeply the once thorny theories of academic finance have taken hold in mainstream investment practice. And that is due in no small part to the two



founders' own tireless proselytizing. Siquefield and Booth met in 1971 at the University of Chicago Graduate School of Business. Booth, a Ph.D. candidate, was grading papers and advising students in Fama's finance course. Siquefield, an MBA student, regularly bombarded Booth with doctorate-sized questions. Both were already ardent believers in the efficient-market hypothesis, a theory that Fama first espoused in his Ph.D. thesis in 1964 and elaborated on in subsequent articles and academic confabs. Booth, a blond, Midwestern computer jock, came across Fama's thesis as a master's candidate in computer sciences at the University of Kansas. Dazzled by Fama's intellectual footwork, he gave up his IBMs to move to Chicago and study under Fama.

For Siquefield, it was a case of one theology replacing another. Raised from age 7 in Saint Vincent's Catholic orphanage in St. Louis, he earned his keep there making beds and waiting on tables. He went on to study for the priesthood but left the seminary after three years. Siquefield first encountered Fama's theories at the University of Chicago and, like Booth, had an epiphany. "It reminded me of studying Aristotle and Thomas Aquinas," he says. "The theories were so ordered and logical."

**T**he object of their devotion, Eugene Fama, is a blunt, brilliant rebel, the scion of a working-class Boston family, whose greatest love is upsetting the status quo. As restless physically as he is mentally, Fama is a fanatic tennis player and athlete who rises at dawn to work out in his basement to blaring Wagner operas. On visits to DFA's California headquarters, he wears a special beeper that goes off whenever the wind is right for windsurfing. Once alerted, the 59-year-old Fama packs up his sailboard and heads for the beach--or if he's stuck in a meeting, he exhorts the participants to hurry up. Although considered a front-runner for a Nobel, Fama refuses to shed his curmudgeonly ways, even to compete for the prize. When well-wishers gently suggested that he might help his chances by chatting up the Nobel committee, his response was pure Fama: "If they come over here, I'll chat, but I'm not dragging my behind over to Sweden."

While other thinkers had long questioned whether stock prices were really predictable, Fama's work gave the efficient-market hypothesis its most rigorous intellectual grounding (as well as its name). Fama argued that the stock market is a matchless information-processing machine, whose participants collectively price shares correctly and instantaneously. Unlike the market portrayed in mutual fund advertisements and personal-finance magazines, it is not a place where the smartest managers outwit the less smart. Instead, the market is so full of well-trained, well-motivated investors avidly gathering information and acting on it that not even Nobel Prize winners can hope to beat it consistently. Sure, some managers will outpace the market for a few years, but it is impossible to prove that those runs are more than just sheer chance.

The efficient-market theory still raises hackles on Wall Street, for obvious reasons. But in academia the debate is all but over, and among pension fund fiduciaries Fama's theories are now so accepted that an estimated 24% of the trillions of dollars in pension assets is invested in index funds.

When Siquefield and Booth joined the work force after leaving Chicago, however, the efficient market was a revolutionary idea. While working as a trust officer at American National Bank in Chicago, Siquefield evaluated the bank's money managers and discovered just what Fama had predicted: Funds that actively pick large-company stocks collectively do no better than the S&P--worse, in fact, once you count their fees of 0.5 to 1.5 percentage points a year. Why not create a fund that simply tracked the index? asked Siquefield. As long as fees were low, it would be all but certain of beating most professional stock pickers over time.

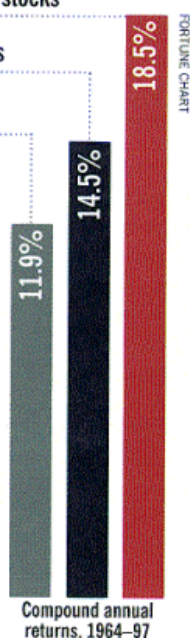
Small-company value stocks

Small-company stocks

S&P 500

### Pumping returns with small-cap value

Had you invested in small-company stocks in 1964, you'd have beaten the S&P 500's 11.9% annual gain through last year with a 14.5% annual return. Had you focused on small stocks trading at low price-to-book ratios, your return would have jumped to 18.5%.



The new concept was the ultimate hard sell. "You think John the Baptist had it tough!" recalls Sinquefeld. But he finally persuaded New York Telephone to invest in an S&P 500 fund if American National started one. So in 1975 Sinquefeld and American National launched the first index fund to mimic the S&P. (Or maybe the second--Wells Fargo, which came out with a similar fund at the same time, claims it got there first.)

Meanwhile, at investment firm A.G. Becker in New York City, Booth was advising pension fund managers on where to put their money. He noticed that almost all the managers invested in big companies. Booth pleaded to start a small-cap index fund, but his colleagues guffawed at his presentation. "They were saying, 'Don't let the door hit you on the way out,'" recalls Booth. The next day Booth started DFA in his Brooklyn apartment, ripping out the sauna to put in a Quotron machine.

As Booth began looking for clients, another of Fama's graduate students, Rolf Banz, was researching the performance of small stocks vs. large. Banz's research proved for the first time what most professional investors take for granted today: that small-cap stocks produce higher returns than big ones over long periods. The reasoning is pretty straightforward. Smaller companies are riskier than larger companies and have a higher cost of capital. No one would invest except in expectation of earning a

commensurately higher return.

Sinquefeld, who had been following Banz's research, immediately proposed a small-cap index fund at American National. The bank nixed the idea. By coincidence, Booth called shortly afterward to say his fledgling firm was hatching a product just like the one Sinquefeld's employer had deep-sixed. Sinquefeld quit his job and joined Booth. DFA was in business.

In keeping with Banz's research, the fund would own all the stocks that made up the smallest two deciles, measured by market capitalization, of the companies on the New York Stock Exchange. (The name, the 9-10 fund, derives from the two deciles.) True efficient-market believers, Sinquefeld and Booth made no effort to sort the winners from the dogs among the fund's holdings. Thus, there would be no research department or celebrity money managers, and costs could be held to a modest half percentage point, a third of what the average small-cap fund charges today. The result was a fund with the efficiency of an S&P indexer but the promise of higher returns in the long run.

One of DFA's first moves was to recruit Fama, Miller, Scholes, and Ibbotson as advisers. Fama was delighted with the idea of a fund based on his principles. "In class he kept telling us that the efficient-market theory was the most practical thing we'd ever learn," recalls Booth. "I think Rex and I were the only people who believed him." Over the years Wall Street firms, including Goldman Sachs, have tried to lure Fama away, but he always refused to leave his brainchild.

At first things went splendidly. From July 1982 to mid-1983, DFA's small-cap fund gained nearly 100%, and pension funds rushed to sign up. Then Sinquefeld and Booth experienced a corollary of Banz's research: When small stocks fall, they fall harder than big ones. From 1984 to 1990, small caps went through the worst seven years in their history, returning just 2.6% a year, vs. 14.7% for the S&P. "At least it discouraged the competition," muses Booth.

# W

hat saved DFA during this period was that Sinquefeld and Booth had not overpromised when selling the fund. They never told clients that small stocks would outpace big ones in any given period, even one lasting seven years. They did pledge that DFA would beat most competing small-cap funds, saddled as they were by high fees. And so it did: All small-cap funds underperformed the S&P, but DFA

did better than most. Moreover, since the small-stock dry spell ended in late 1990, the 9-10 fund has waxed the S&P 500, the Russell 2000 small-stock index, and the average small-company mutual fund.

Then as now, DFA owed much of its outperformance to a fierce attention to costs. After all, in an efficient market, costs are the one thing you can control. In addition to charging low management fees, DFA gains on the competition by sharp trading. Part of its advantage is size: As the nation's largest market maker in small caps, DFA is the first stop for active managers desperate to buy or sell blocks of small stocks. Says Robert Deere, the head of trading: "We make it as painful for them as possible."

While the 9-10 fund remained a moderate success, it took another breakthrough by Fama to really push DFA into the big time. The study, conducted with Kenneth French, then of Yale, confirmed Banz's small-stock effect but also showed convincingly that the lower the company's ratio of price to book value, the higher its subsequent stock performance tended to be. No other measures had nearly as much predictive power--not earnings growth, price/earnings, or volatility. While "value" managers such as Warren Buffett and Michael Price had long maintained that it was smarter to buy companies when they were out of favor--thus trading at low price-to-book ratios--Fama and French proved the point with statistical rigor. According to Fama and French's most recent data, downtrodden "value" stocks have outpaced high price-to-book growth stocks annually by an average of 15.5% to 11% over the past 34 years.

What makes the numbers so dramatic is that growth stocks--the Coca-Colas and Gillettes--are inevitably the most highly regarded issues, with the most predictable earnings streams. The only problem is that you have to pay for that reliability. That leaves less room for future appreciation. Value stocks, by contrast, have low prices but big upside potential. They have to offer investors higher return to compensate for the extra risk of owning them, just as Kmart must offer higher rates to sell its bonds than Wal-Mart. In a way, the value effect is similar to the small-stock effect: Bigger risk pays off, in aggregate, with higher returns. In fact, small stocks that also trade at low price-to-book ratios provided the best results of all in Fama and French's study, returning an annual 20.2% over 70 years, eight points more than big growth stocks.

DFA was quick to launch a small- and a large-cap value fund based on Fama and French's research. The funds buy only stocks that fall into low price-to-book deciles, and they make no attempt to distinguish "better" value stocks from worse ones. Partly on the strength of Fama's research, the two funds have proved enormously popular and now contain some \$8 billion. One believer is Robert Boldt of Calpers, which invests \$1.7 billion with DFA. "I'm convinced the value effect is real," says Boldt. "You have to expect higher returns for investing in beaten-down companies."

With a certain amount of academic prudence, the DFA sages are careful to warn that their research is no substitute for a balanced investment plan. They don't, for example, recommend that you invest only in small-cap and value stocks; the two strategies sometimes badly underperform. For stability, they recommend holding about 45% of your equities in an S&P index fund.

None of that diminishes their evangelical--some would say arrogant--attachment to their strategies. The zealots at DFA believe that their methods have not only the weight of evidence behind them but also the force of history. "Today the only people who don't think markets work are the North Koreans, the Cubans, and the stock pickers," says Sinquefeld.

Who could argue, given all the brainpower at DFA? Still, hope springs eternal in investors' hearts. The temptation to try to pick the next Microsoft or Peter Lynch is--let's face it--pretty hard to overcome. And besides, at least one DFA giant thinks it's okay to indulge such guilty pleasures as long as you recognize them for what they are. "I choose a few stocks myself," says Nobel laureate Merton Miller. "But I do it strictly for entertainment."