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MARKET BEATERS

Who says the markets are efficient? Using an investment strategy built around the pioneering work of Nobel Prize-winning economist Eugene Fama, Dimensional Fund Advisors has delivered astounding results.

Eugene Fama,left, with DFA Co-CEO David Booth

Matthew Mahon for *Barron's*

(over please)

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DOW JONES

Dimensional Fund Advisors eschews stock-picking completely, and yet manages to beat the market

A Different Dimension

By Beverly Goodman

It was 7:30 on a sunny October morning in Austin, Texas, and class was about to start. Most students were finishing their coffee and chatting about how they were looking forward to hearing professor Eugene Fama, the University of Chicago economist who a week earlier had won the Nobel Prize. The program, however, wasn't your typical grad-school seminar. It was orchestrated by Dimensional Fund Advisors, a $332 billion mutual-fund firm whose investment strategy is based on Fama's early and ongoing research; the students were the financial advisors who sell their funds.

This was no boondoggle business trip. The College, as it's known, is a two-day, biannual event that draws more than 100 advisors from all over the nation for some very academic presentations, held in a lecture hall the firm built just for this purpose. The advisors are already sold on the veracity of the efficient-market hypothesis pioneered by Fama in 1965—they have to be in order to sell Dimensional's funds—but they come to hear about new research and new products and strategies, and for the chance to hear the gospel from the prophet himself.

Dimensional Fund Advisors is unusual. Its fans are true believers, bordering on evangelical, yet it is hardly a household name like other fund firms of its size. (About 85% of DFA's assets are in mutual funds, making it the eighth-largest fund family, sandwiched between JPMorgan and Oppenheimer Funds.) That relative anonymity is by design: The firm doesn't advertise; it sells its funds only through advisors who have undergone a rigorous screening; it doesn't sell its funds on most brokerage platforms; and it's privately held. Because its funds are essentially quantitative—driven by computer models, rather than by individual security selection—there are no star managers. Though it doesn't eschew the press, it's careful to work only with reporters who "get" what it does; this was the first time a reporter had been invited to the College.

And yet its overall performance is headline-worthy. More than 75% of its funds have beaten their category benchmarks over the past 15 years, and 80% over five years, according to Morningstar—remarkable for what some investors wrongly dismiss as index investing. Its process is simple and repeatable—and yet no other firm has tried emulating it. When asked why, cofounder, chairman, and co-CEO David Booth, 67, draws a surprising analogy to Star Wars, and

Dimensional Fund Advisors founder and co-CEO David Booth

Luke Skywalker's inability to harness the power of the Force until his devotion was deep and unwavering. "We are believers down to our toes," Booth says.

The force, in this case, is the theory of efficient markets, first put forth by Fama in 1965. Dimensional's funds all operate on the same principles—that it's hard to beat the market, and impossible to do it consistently, by stock-picking. There are, however, various factors that can be exploited to provide market-beating returns. That, along with sophisticated trading strategies, a keen eye toward tax-efficiency, and low expenses (the average DFA fund charges just 0.39%) has led to Dimensional's success.

But don't liken what DFA does to indexing, and definitely don't call it passive: "I recoil when people think that what we do is being passive, because it has nothing to do with being passive," Booth says. "We are trying to beat the market without forecasting in the usual sense."

Co-CEO Eduardo Repetto

David Booth met Fama while a Ph.D. student at the University of Chicago in the fall of 1969. (His alma mater is now known as the Booth School of Business, thanks to a $300 million donation he made in November 2008.) Booth took Fama's class "the very first quarter" and, in his second year, worked for him. "We've been associates for 44 years," Booth says.

Booth graduated in 1971, and 10 years later, along with Rex Sinquefield, another student of Fama's, launched Dimensional Fund Advisors from his apartment in Brooklyn, N.Y. Sinquefield served as co-CEO until 2005, when he left to devote more time to his political causes. He served on the Dimensional board until last summer, when he retired completely from DFA.

From the beginning, Booth wanted to put Fama's findings into practice. "Gene describes himself as taking an idea and beating it to death," Booth says with a laugh. "That's not me. I want to apply the idea."

Dimensional's director of investment strategy is Kenneth French, an economist and professor at Dartmouth College, and a collaborator with Fama for nearly 30 years. The Fama-French "three-factor" model is the root of Dimensional's strategy, and their ongoing work has informed the development of new strategies and products for decades. "They expect Ken and I to say exactly what we think about things, and we do," Fama says. "Other firms use our work; they just do it without our input. Dimensional is the only business that will tolerate me."

Fama and French are not the only academics on Dimensional's board, and Fama isn't even the only Nobel Prize winner. Myron Scholes of Stanford University, who won in 1997 for the Black-Scholes method for valuing derivatives, lends his expertise to the funds' board. Also on the board are Roger Ibbotson, the founder of research firm Ibbotson Associates, a current hedge- fund manager, and Yale professor, and four other academics, from Chicago and Stanford. "That lineup is unbelievable," says co-CEO Eduardo Repetto. "When you talk to the board about investments, you're not talking to marketing people. You're talking to the people who wrote the book on investing." Repetto is no slouch in the academics department himself—in fact, he's a rocket scientist. He joined Dimensional almost 14 years ago, shortly after completing his Ph.D. in aeronautics at the California Institute of Technology and, like Booth, deciding that a career in academia was not for him.

The firm takes its academic bent seriously. DFA began where Fama's research began—on the assumption that stock-picking is too inconsistent and unpredictable to be a reasonable method of beating the market. Sure, every year, some active managers will outperform; some will even outperform several years in a row. But that doesn't indicate skill, Fama says. "With 3,000-plus active managers, some are going to look good—but that's what

you'd expect as a matter of chance," he says. "It's very difficult to tell luck from skill." Even to the extent that skill is involved, stock-picking is not a repeatable process with the consistency and persistence of returns that would enable investors to anticipate which managers are likely to outperform—especially given the cost of making those bets. "Active management is a zero-sum game, and that's before costs," Fama says. "That's not opinion. That's math."

The firm began with a focus on small and micro-cap stocks, a specialty that it's still best known for. Small stocks underperformed for the first nine years of its existence, yet DFA grew to a $4 billion firm by 1990.

In 1992, Fama and French published their three-factor model, which incorporated and expanded on the established capital asset-pricing model, demonstrating that low-priced (value) stocks and small-company stocks have higher average returns. Dimensional incorporated the three-factor model into its funds right away.

Dimensional is overwhelmingly equity-driven, with 78% of its assets in stocks. Though most of Fama and French's work has been in equities, their method can be applied to fixed income—bonds have two factors, maturity and credit quality—and Dimensional offers 20 bond funds. But many advisors use other firms for their fixed-income allocation.

Dimensional's funds aim to capture the returns of an asset class—be it small or large companies, developed or emerging markets—without slavishly adhering to an index. And they do. For example, take the Vanguard Small Cap Value index fund (VISVX), which is based on the S&P 600 Small Cap Value index and is the counterpart to Dimensional's DFA US Small Cap Value (DFSVX). The DFA fund has a much smaller tilt—its average market value is $1.1 billion, versus Vanguard's $2.7 billion—and on all measures is much more value-oriented. So the Dimensional fund better captures the market-beating advantage of small and value stocks. In fact, a lot better: The DFA fund returned 42% in 2013, beating 88% of its peers in Morningstar's small-cap value category, versus the Vanguard fund's 36% return, which beat just 53%. Over 15 years, which includes periods that were less favorable to small and/or value stocks, DFA's fund returned an average of 12% a year, beating 80% of peers. The Vanguard fund returned 10% on average, beating just 37% of peers.

The Dimensional fund costs twice as much as Vanguard's—0.52% versus 0.24%—but the significant outperformance more than makes up for that difference.

Trading is also a crucial factor in DFA's outperformance. Index funds trade in baskets—whenever a stock is added or dropped from the index, it's bought or sold almost immediately, which can drive the price up or down. Similarly, active managers often want to get into or out of a stock quickly. DFA, however, takes a more methodical, opportunistic approach to trading. There's never pressure to buy or sell a fund within a certain time frame. Instead, it serves as a market-maker for the 14,000 stocks it owns, offering to sell when frenzied buying has sent the bid higher, and taking a stock off another trader's hands when the shares can be acquired cheaply. Every morning, traders get a list of stocks the firm wants to buy or sell, but instead of mandated trading orders, the trading desk determines if conditions are good for each transaction. "We go into the market and see where the most anxiety is and where we can trade at favorable prices," says Booth. "We provide liquidity."

Trade execution is critical to another factor that Fama and French added to their model more recently: Stocks that are falling tend to continue to fall, and those that are rising tend to continue to rise. "So you want to trade slowly," Booth says. "We are slow to trade most of the new names that have recently fallen into the value category, because they are negative-momentum stocks. We're also slow to sell positive-momentum stocks. We'll hold on for years."

Trading costs have also influenced portfolio construction, as have the sharp advisors that work with the firm. Dimensional's 9,000-stock World ex US Core Equity fund, for instance, was created at the behest of the firm's largest client, $22 billion Buckingham Asset Management. The fund combines developed and emerging markets, minimizing the trading costs that would occur, say when a country like Israel or South Korea "graduates" from the emerging to the developed category. Rather than one fund selling and another buying, advisors who want exposure to both asset classes can get it in one fund. "That eliminates risk and costs, and we don't have to rebalance," says Larry Swedroe, Buckingham's director of research. "That's a huge advantage, and a big innovation." Dimensional also has a 3,000-stock U.S. core fund.

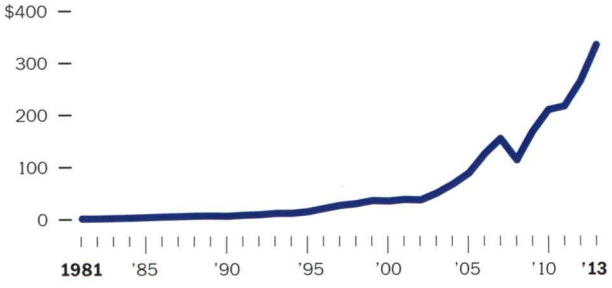
Dimensional has 76 funds, many of which overlap because of its willingness to work with advisors to meet their needs. "We have several versions of our core portfolios to accommodate advisors who want more or less of a small or value tilt," Repetto says.

The latest factor, profitability, has been steadily implemented since being introduced in four funds a year ago; it will be a factor in all DFA funds by early this year. Here, Dimensional looks for firms with higher profitability, relative to price, cash flow, or other metrics. That's essentially the secret behind Warren Buffett's success. Investors tend to pay too much for—or, in other words, not apply enough of a risk discount to—"lottery" stocks. Think of a bell curve of stock returns: You'll see far more returns to the left of the mean, and a few outsize winners on the right. That market's willingness to pay for the small chance of outsize gains means that

Three Decades of Growth

Dimensional Fund Advisors grew to a $4 billion firm by 1990, even though its focus on small stocks was hugely out of favor. The market turned and the firm started working with advisors—and assets jumped.

Dimensional Assets Under Management (bil)



The 10 Largest Dimensional Funds

Portfolio	Ticker	Expense Ratio	AUM (bil)*
DFA Emerging Markets Value Portfolio (I)	DFEVX	0.61%	$18.8
DFA Emerging Markets Core Equity Portfolio (I)	DFCEX	0.68	13.0
DFA US Large Cap Value Portfolio (I)	DFLVX	0.27	12.5
DFA International Small Cap Value Portfolio (I)	DISVX	0.71	11.2
DFA US Core Equity 2 Portfolio (I)	DFQTX	0.22	10.4
DFA US Small Cap Value Portfolio (I)	DFSVX	0.52	10.1
DFA International Core Equity Portfolio (I)	DFIEX	0.40	9.8
DFA International Small Company Portfolio (I)	DFISX	0.56	8.6
DFA One Year Fixed Income Portfolio (I)	DFIHX	0.17	8.4
DFA US Small Cap Portfolio (I)	DFSTX	0.37	7.9

*As of Nov. 30. Source: Dimensional Fund Advisors

other profitable firms, relatively speaking, have lower prices.

More than 100 advisors came to Dimensional's Austin, Texas, headquarters for two days of seminars.

Dimensional's fraternity of 1,900 advisors manages 60% of its assets. Though advisor-sold, all its funds are no-load, and Dimensional doesn't have any revenue-sharing agreements. But advisors can't simply decide to start working with DFA; they first must overcome several hurdles.

"We have a lengthy front-end process," says Dave Butler, who oversees DFA's advisor network. "Our goal is to be a consultant to the advisors." First, they attend a small conference that explains the research that the firm is based on, and how Dimensional operates. After that, DFA's regional directors make an office visit to discuss the advisor's investment philosophy, the plan for DFA funds, and how the transition will be communicated to clients.

It took Bud Kahn, a Pittsburgh advisor managing $150 million, nearly six months to be "permitted" to sell DFA funds. That was seven years ago. Now 90% of his firm's assets are in DFA funds. "DFA adds value to my practice," he says. "They serve as a board of directors. They help evaluate my models, help me plan the future of my business; they even helped with a new Website."

Advisors aren't required to sell only Dimensional funds, but they are expected to generally run their business in accordance with the broad philosophy of market efficiency, a long-term view, and an emphasis on low-cost products. That's good for the investor, and also good for Dimensional. "Advisors who have gone through our process, who have the right language, and approach the market the way we do, have a much better ability to keep client assets deployed in the market," Butler says. "Look at 2008 and 2009—we had positive cash flows in both years. I don't think there's any other money manager that can say that. I credit the advisors; they kept their clients on track."

Advisors selling DFA funds have monthly or quarterly meetings with one another, facilitated by a DFA manager, to discuss portfolio and practice management. And there's the College, held every two years. This year, as usual, Fama and French spoke, with Fama presenting 18 pages of data arranged neatly in columns (and referring to it as "pretty low-level stuff"), and French explaining it all. Behavioral-finance expert Brad Barber also spoke, as did an array of Dimensional execs to tie it all into the business. "DFA has far and away the best educational conferences," says Rick Ferri, who manages $1.3 billion, $100 million of which is with DFA. "They put Ph.D.s in front of you. Everyone else gives you marketing people."

The chief criticism—and it's a fair one—is that the very nature of the way Dimensional operates can keep their funds out of reach for investors with assets too low to pique the interest of most advisors. Booth acknowledges the problem, saying that eventually advisors will have Web-based services that allow them to take on smaller clients. "We're working with advisors to address that market," he says. "I won't hold my breath, but I think there's hope."

Even for investors who work with advisors, it's not easy to get into a Dimensional fund. There's no shortcut to the advisor-approval process, and DFA doesn't work with any full-service brokerages, though it does work with certain advisors at independent broker-dealers, such as LPL Financial and Raymond James. For many, investing with Dimensional requires hiring a new advisor.

The firm is expanding its reach, however, hoping for a larger piece of the $18 trillion 401(k) market, of which it has just $25 billion. Its 2010 purchase of SmartNest, a software platform developed by MIT economist and Nobel laureate Robert Merton and Boston University professor Zvi Bodie, serves as the engine for Dimensional's "managed DC" product.

Managed DC is a simple Web interface that takes the focus off accumulation and asset allocation and instead puts it on the likelihood that an individual's plan will generate the income he or she will need in retirement. Instead of choosing funds and making asset-allocation decisions, investors input their contribution amounts and expected income needs. Dimensional adjusts each individual's portfolio mix—made up of one global stock fund and two inflation-protected bond funds of different durations.

No matter how investors access their funds, Booth says, Dimensional's strategy requires staying the course. "Where people get killed is getting in and out of investments," Booth says. "They get halfway into something, lose confidence, and then try something else. It's important to have a philosophy." ■

An Interview With Eugene Fama and Kenneth French
Professors and economists, University of Chicago, and Dartmouth

Back to School: Fama, French Discuss Their Work

by Beverly Goodman

Eugene Fama and Kenneth French have the easy banter of two brilliant minds that have collaborated and challenged each other for three decades. Fama, 74, teaches at the University of Chicago's Booth School of Business. He just won the Nobel Prize for his theory of market efficiency, which, in 1965, argued that all available information was immediately incorporated into stock prices. In 1985, he teamed up with Ken French, who at the time also taught at Chicago, but is now a professor at Dartmouth College's Tuck School of Business. Since then, "Fama and French" has been a catchphrase, shorthand for efficient markets and the model for investing that grew out of that theory.

They're best known for the Fama-French three-factor model, the 1992 paper that built on the capital-asset pricing model, incorporating two other crucial observations: Small stocks and value stocks tended to outperform. Since then, they've revised that model to include two other factors (momentum and profitability). Dimensional Fund Advisors was founded on Fama's early work, and has modified its strategy under Fama and French's ongoing work and guidance. Both serve on Dimensional's board; French is the firm's director of investment strategy.

Though they mostly agree—and work together when they do—the fun part is watching them reach that agreement. They've collaborated consistently for nearly 30 years now and, in the course of their conversation with Barron's, might have hit upon the topic for their next paper.

Eugene Fama, left, and Kenneth French have explored the relationship between stock returns and risk for nearly three decades.

Barron's: **The Nobel Prize for economics puzzled a lot of people. You won, Gene, for your efficient-markets theory. Robert Shiller won for his work in behavioral finance—a school of thought diametrically opposed to yours. Is it odd to find yourself in that company?**

Fama: I have a stock answer. We agree on the facts; we disagree on their interpretation.

French: That's a very nice way to say it.

Fama: Everybody understands that there is some predictability in stocks. That is the reward you get for bearing the risk of whatever security you own. That risk varies from time, and there are reasons for that. The difference between the efficient-market types and the behavioralists is that we think the variation in expected returns has rational sources to it, and they think it doesn't.

The basics of market efficiency are often misunderstood. Some say that if factors such as a stock's value, size, trading momentum, and profitability—all of which are part of your multifactor model—indicate outperformance, then the market isn't really efficient.

Fama: That's a misconception. I've talked to maybe 15 journalists, and they say "You changed your mind; you came out with this three-factor model." My response is "you're mixing models of market equilibrium with market efficiency."

Can you explain that?

Fama: Market efficiency says that prices embed all available information. Models of marketing equilibrium tell you how the prices get set.

French: This is where we agree on the facts [with the behavioralists], and we disagree on the interpretation. We agree there is a value effect. But some folks say: "See, that must be mis-

pricing." If I tell you interest rates went up, you know that bond prices went down. You didn't need to ask, "Why did interest rates go up?"

So using behavioral finance to explain the "why" behind any of these relationships is irrelevant?

French: No, no, there are really interesting questions to be asked as to why there are differences in expected returns. But observing a relationship between book-to-market and expected returns doesn't help you distinguish between mispricing and risk.

It's also been said that your work ignores the notion of bubbles.

Fama: It doesn't ignore it; it says you can't document that they're there. The word bubble makes me mad because you can't predict an end. Stock-price returns are unpredictable in the short term and more predictable in the long term. But there is nothing in the long term that isn't already built into the short term.

French: I'll clarify what Gene says in terms of the persistence of expected return. Let's say I ask you to calculate the average return of a stock. If I give you one day versus 100 years, your estimate after 100 years is going to be more accurate. But if I want you to tell me what the price of this stock is going to be, would you rather guess tomorrow's price or the price 100 years from now? You'd rather guess tomorrow's price.

Critics also point to the financial crisis and market crash as evidence of inefficient markets.

Fama: That's another big misunderstanding of what efficient markets is all about. It is a characteristic of stock returns that they get much more volatile in bad times. Volatility is a characteristic of an efficient market, especially in an uncertain environment. We had a huge recession; nobody knew how it was going to turn out.

French: It's even more than that. The big hallmark of the crisis was . . . .

Fama: Well, let's be clear. The behavioral people did not fall into this trap. It was only the media and practitioners who don't like the idea of efficient markets to begin with.

French: But what was key in the financial crisis was what people call "modern bank runs." There were all sorts of instabilities in the system. And, as Gene says, normally we have lots of volatility during bad times. Well, in the crisis, we had enormous volatility because of this feedback—the bank runs—in the process.

Fama: Mmm. . .I don't think you can say that.

French: I think we can say that confidently.

Fama: No, you can't document it.

French: What, that we had bank runs?

Fama: No, there were bank runs. But that stock returns got volatile because of bank runs? That's a belief.

French: OK, I firmly believe it.

Fama: I don't think you can tell.

French: I have one foot in the behavioral camp. We'll wind up writing a paper on this.

I'd like to read that paper.

French: We have to agree on something first.

Fama: I don't think you can draw conclusions from one event.

French: Here's my argument: So banks are financing 25% to 30% of their capital every day in the overnight market. The uncertainty about whether they are going to be able to raise capital or not creates volatility. If you give me that financial institutions are a key part of the economy, and they get blown away, you lose infrastructure.

Fama: Well it was predictable that they wouldn't get blown away.

French: No, it wasn't.

Fama: Sure it was; they were either going to get bailed out or they were going to get nationalized.

French: Lehman Brothers went down. Bear [Stearns] essentially went down. So you come to the market each day not knowing whether everybody else would show up. If they did show up, that was good news, that means the economy is better than we thought. That's huge positive feedback. On the day they didn't show up, that really bad news came with a big negative feedback.

Fama: OK, but what you are saying is that investors are responding to what they perceive is news about real events.

French: Yeah, but the bank-run problem exacerbated, magnified the impact.

Fama: All right, we'll explore.

Thanks, gentlemen. ■