

Financial Planning

Equities Decoded

Fama and French's famous three-factor model gives advisors a clear view of stock prices. Here's how it works.

By Gene Fama Jr.

September 1, 2007- Nobody hires an advisor to gamble on his or her behalf. There's a reason you're called an investment advisor and not a "speculation advisor." Yet the industry is festooned with advisors that do little more than speculate, using irrelevant criteria to trade actively.

Rather than betting, it's high time advisors invested. The field of finance points us in the right direction via "asset pricing," the scientific study of risk and return in capital markets. The basic premise: Investors get paid for taking inescapable risks—risks that stick around even after you diversify into as many securities and asset classes as possible. Here's an overview of an investment model that will get you started.

THREE SOURCES OF RISK

Few dispute that risk and return are related. But what risks does the market systematically reward? Fifty years of research by asset pricing scientists culminated in a multifactor model of risk developed by my father, Eugene Fama, and Kenneth French at the University of Chicago a little over a decade ago.

These finance professors were looking to build on the work of Nobel Prize winner William Sharpe, who developed the single-factor capital asset pricing model. According to Sharpe, the one risk that compensates investors is market risk. Investors can buy a short-term Treasury bill and take no risk, or they can invest in the stock market and take full-on equity risk. The stock market is riskier than T-bills, so the market exacts a premium over T-bills. In Sharpe's model, a portfolio's expected return varies singularly with its beta. Every stock portfolio is a subset of a greater opportunity set: the market. Every portfolio carries its proportionate share of the total market's risk, and is compensated with a proportionate share of the market's expected return.

The single-factor model did a good job of explaining the performance of portfolios that were essentially managed versions of the market. But as portfolios moved farther from the market, the model failed to fully explain their returns. Finally, Fama and French determined that there are two other sources of risk to go along with market risk which, together, form a "three-factor" model. Those sources are:

- **Firm size.** Stocks with smaller market capitalization are riskier than large-cap stocks, so they have a greater expected return.
- **Book-to-market equity.** Stocks with high book-to-market ratios (value stocks) are riskier than stocks with low book-to-market ratios (growth stocks). Value stocks therefore have greater expected returns than growth stocks.

Investors generally agree that small caps are riskier and offer greater return potential than large caps. But the idea that value stocks are riskier than growth stocks is harder to digest. What's special about book-to-market? It's just an accounting fundamental, not a source of risk. If anything, many investors assume the opposite—that because high-flying and innovative growth companies take bigger chances than do stodgy value companies, they're riskier and more likely to reward investors.

This sounds credible until you think about what book-to-market represents. Sorting stocks based on book-to-market utilizes the measure that most reflects all known information about their prospects—their prices. High book-to-market stocks are stocks with low relative prices because the market discounts their prices to compensate for risk. Value stocks have had much greater uncertainty surrounding their earnings streams than growth stocks; and in the face of this uncertainty, the market has to assign them lower prices to attract investment.

So the next time someone tells you growth is riskier than value, ask them why growth stocks are so much higher in price than value stocks. Stocks are priced to transact, and riskier stocks

need to be discounted in order for the market to clear. All other things being equal, the less you pay for a stock, the greater your expected return.

As counterintuitive as this might seem, it makes perfect sense when you consider how capital markets function. To operate and grow, companies need capital. One major way they obtain it from investors is by issuing stock. The return the investor earns on the stock is return the issuing company forever surrenders—it's the cost the issuer pays to obtain capital in the equity market.

For example, a financially distressed company like Ford will have a higher cost of capital than a financially thriving company like Apple. In practice, this means investors demand a higher return from a Ford-like stock than from an Apple-like stock. In the end, you might prefer to work for a company like Apple or buy its products, but on average and over the long term, you'd expect better investment returns from the Fords of the world.

But this is just anecdotal. When the three-factor model is put to the test using nearly 80 years of data, it holds up. In the chart "Risk That's Rewarded" (see September 2007 print edition, page 128), small-cap stocks outperform large-cap stocks. Value stocks also outperform growth stocks, whether they are large or small. What's more, the three-factor model has been shown to work in virtually every observable non-U.S. market around the world, including emerging markets.

IMPLICATIONS FOR ADVISORS

Where advisors are concerned, a few major decisions fall out of the three-factor model. First, you must decide how much overall equity risk you want to take. This is accomplished with your allocation to stocks versus bonds, T-bills and cash. Within the equity portion of the plan you must decide: Do you want the stocks to be larger or smaller in market cap than the total market; and do you want them to be more value or growth oriented than the market? Investors who want to take on more risk and have a chance of earning greater returns can increase their exposure to smaller-cap stocks, value stocks or both. Investors who want more safety can increase exposure to large-cap and growth stocks. And other investors may opt for a total market portfolio.

The advisor's job, as ever, is to determine with the client an appropriate level of risk and execute a plan in a sensible, cost-effective way. But whether you believe that the size and value effects are rational risk compensation or the result of systematic mispricings, small-cap and value stocks probably deserve a spot in your clients' portfolios.

In the end, the most important benefit of the three-factor model is that it brings an understanding of the sources of economic risk and return. As such, it can shape your practice and distinguish you from the speculators that overpopulate the investment industry.

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