Setting the Record Straight on Style Analysis

A Newsmaker Interview by Barry Vinocur

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Few subjects are more timely—or controversial—than mutual fund style analysis. And no person figures more centrally in any discussion of style analysis than Stanford University's William F. Sharpe.

Though best known for his work on the capital asset pricing model—for which he along with Harry Markowitz and Merton Miller were awarded the Nobel Prize in Economics in 1990—Sharpe is also credited with developing mutual fund style analysis. His 1988 paper, "Determining a Fund's Effective Asset Mix" is considered must reading for anyone with even a passing interest in style analysis.

Unlike some of his technique's critics, however, Sharpe refuses to make style analysis into a "holy war." As he told us recently, style analysis generally, and returns-based style analysis (the technique Sharpe uses), specifically, is a very powerful and useful tool. However, Sharpe stresses he wouldn't suggest investing in a fund based solely on style analysis. "Before I'd invest in a fund I would want to have read the Morningstar material and whatever else I could find, including the prospectus."

What role should "style analysis" play in the selection (and monitoring) of investment managers? How should you use style analysis? What are the technique's strengths and limitations? For the answers to those, as well as long list of other questions, we again went straight to the source (see Investment Advisor, October 1994, page 83) and spoke with Sharpe.

FA: Most discussions of "style analysis" begin with someone mentioning the Brinson, Singer and Beebower study. As I recall, they analyzed the performance of 82 large, multiasset U.S. pension fund portfolios from 1977 to 1987. Simply stated, they found asset allocation decisions accounted

for 91.5% of the portfolios' performance.

Sharpe: What that study said is if you put enough securities—in this case mutual funds or investment managers together—you're going to get something that's responsive to basic market factors. In other words, there isn't a lot that's going to impact the portfolio but what's going on in those basic factors.

In my practice with pension funds—using returns-base style analysis for every single manager in a very mechanistic way, asset allocation plays an even more central role than it did in the Brinson and Beebower study. Brinson's and Beebower's factors were just really stocks, bonds and cash. But when I break it down and bring in value and growth stocks, asset allocation accounts for 98% or more of the return. Those are really profound numbers. Of course,every now and then there may be one that's 97%.

FA: A lot of people use the term factor analysis interchangeably with style analysis. You make a distinction between the two.

Sharpe: Factor analysis is a bad term because factor analysis is a particular way of estimating a factor model. And it's a way that most people don't use in this domain. Factor analysis is just one way of estimating a factor model and it isn't the method I use.

So, let's replace factor analysis with a factor model. What is a factor model? A factor model says the fund's return is related— typically linearly—to the return on this factor and the return on that factor and the return on the other factor, etc. And there are a lot of those models. The kind we're talking about here — and again everybody is talking about the same thing up to this point—is what I call an asset class factor model, where the factors are the returns on asset classes.

FA: Sounds pretty tame so far. Why all the fireworks?

Sharpe: All of these methods are methods of estimating or writing numbers down for a factor model. The two things you have to do in such a procedure is that you have to first figure out what the factors are and then you have to figure out how sensitive each fund is to each of the factors. And we're all doing that. Where you start parting company is the way you do that.

As far as picking the asset classes, that's an art form and we all do it. Some of us use the same asset classes but different methods. Where the methods part company is once you have picked the asset classes figuring out how sensitive a fund is to moves in each of those asset classes.

One method, which I call just plain style analysis but which people are calling to differentiate it returns-based style analysis, looks at the way the fund's returns moved in the past with the returns of the asset classes and uses that along with some minimal prior information—such as the fund didn't hold any short positions—to estimate the fund's effective asset mix or style.

All the style is is exposure. If I say your style is 60% growth and 40% value that means you'll move 0.6 times whatever happens to growth stocks plus 0.4 times whatever happens to value stocks. Reduced to its bare essentials that's returns-based style analysis.

FA: The view from the opposing camp would be?

Sharpe: Everybody has to have some kind of a model. The major part of the opposing camp says it's not a good idea to look at the bottom line numbers the way returns-based style analysis does. That camp says you should look under the hood and see what's in the portfolio.

That's fine. But if you do that you have to have a way of estimating the exposure of everyuthing in the portfolio to the asset classes so you can add them up. So you're not absolved from having to estimate a factor model. You now have to estimate a factor model for every single security so that you can aggregate and get the portfolio exposure.

You can do that the way BARRA does with very complex factor models—in which each security can be exposed to many factors— or you can do it much more simplistically by assuming that each security is exposed to one and only one factor. So, its sensitivity to growth is 1.0 and its exposure to value is zero and everything else is zero. That's a very simple kind of model at the security level and, of course, makes it easy to add up.

There are two problems with that approach. One is that it's very hard to estimate at the security level if you're going to deal with any subtleties because there's so much noise in what happens to a particular security. Whereas with a portfolio a lot of that noise is canceled out and you get a better view of the aggregate.

FA: And the other problem...?

Sharpe: The other issue is that if you limit yourself to sort of a zero vs. one view of the world— each security is in one and only one asset class—you may just throw out a lot of reality As a practical matter most of tile security-by-security models do not cut across asset classes in the large. So, for example, you typically don't capture the sensitivity of a utility stock to interest rates because you say it's a stock. Or you use a stock model and the stock model doesn't have interest rates in it.

FA: What about the argument that returns-based style analysis is always backward looking?

Sharpe: That's another issue. One which shouldn't cause you to choose between one method or the other. However you perform style analysis—that is whether you pursue returns-based style analysis or what I'd call portfolio-based or composition-based, style analysis, you have to decide whether you want to know what the sensitivity of the portfolio is as it exists this very day to the various asset classes. Or, do you want to have some notion of what it was on average over some historic period.

For some questions you can answer one way and for other questions you can answer the other way. If what you're trying to do is benchmark a manager for the next five years presumably you want some sort of an estimate of where he'll be on average over the next five years and that may be better reflected in the five year historic average of where he was than where he is this very day. For example, he may have rotated opportunistically and may very likely rotate out tomorrow. On the other hand, if he has made a once and for all shift—he's found religion and he's decided that value stocks are it and he'll never own a growth stock again even though he used to—then, obviously, you're going to want yesterday's portfolio.

FA: Is one method "better" than the other?

Sharpe: If you look at the portfolios composition and you look at it every month for some poor style rotator you're going to track him really well. But that's not the way you want to benchmark him. Because a benchmark shouldn't rely on information that the manager gives you. Rather the benchmark should reflect how you would do if you didn't have the manager.

So you have to ask what am I doing this for? By and large what you're doing it for is performance analysis. You're doing it to figure out what benchmark you want to set. You're doing it after the fact to see if the benchmark you set was a reasonable benchmark. So, decide what question you're asking. Then, you can figure out how you want to approach it and what measure you want to use?

FA: Do you use both methods?

Sharpe: No, because I don t believe in simple taxonomy—a stock is a stock is a stock. I think that's too crude. And I don't have detail rich models— security-by-security data. So, if I wanted to use a composition-based method, I couldn't. But I don't feel any need to use it for what I do.

FA: Are there circumstances in which people should prefer composition-based style analysis?

Sharpe: It's only as good as the security model that you're using. You have to have a model at the

security level if you're going to use that. Often times, people have a model that's so implicit they don't realize it is a model.

The Morningstar model is you re in this box, that box or another box. But that's a model. It's a model in which each security gets assigned to one of nine boxes—if you include bonds and stocks they actually have 18 boxes. Each security gets assigned a one for one box as exposure and a zero for the other 17. That's a model. It's a factor model. And they use it appropriately, I'm sure. Is it a good model? Is there a better model? That's an empirical issue.

FA: It seems a limitation of that approach is that it doesn't leave room for shades of gray. A stock is either large cap growth or large cap value, or whatever.

Sharpe: That's right. Plus, you can really get fooled if you follow that approach. Let's take a fund that I know well because I'm on the board of directors— Smith Breeden Market Tracking Fund. On the surface. it looks as if the fund has a lot of bonds. But there's this "funny" little swap in there. "But, hey, it's only worth three percent. And when the fund bought it, it was worth nothing." You might conclude it's a bond fund. That wouldn't be correct, however.

FA: Morningstar's Don Phillips says he isn't worried about you, but about the popularizers of the technique who refer to "style analysis" with such catchy phrases as x-raying a portfolio.

Sharpe: There are powerful commercial forces at work here. And almost everybody who has a commercial interest in one or the other technique is going to overstate the merits of his technique and underestimate the merits of the opposing technique. In a world of infinite resources, I'd say do it all. You cannot help but be better off with more information rather than less. But there's a huge disparity in the cost. Composition-based analysis is just a lot more costly.

What often gets lost, however: is that the composition-based, or portfolio-based, methods are only as good as their security models. Every security has to be assigned a sensitivity to the asset class. It's basically a noise issue. So much impacts the price of a security that it's very hard to tell whether a security is reacting to the growth stocks or the value stocks or something else.

However, if you put 20 securities in a portfolio that noise tends to average out and you get a much clearer view of the portfolio's sensitivity to the factors.

FA: Which technique is better as an early-warning sign of a shift in style by a portfolio manager?

Sharpe: Returns-based analysis using historic returns clearly is going to take a while to pick up major changes. There's no question about that. So, if there's a major change, you'll see it a lot quicker if you re looking at the portfolio.

The next issue is whether its a permanent change. To determine that today, you'll have to talk to that portfolio manager. But in cases in which you're in touch with the manager and you have the resources and it's important enough, yes look at the portfolio. But even then, I might well prefer rather than using a very crude securities model to take that portfolio—and I've done that a couple of times—and compute the portfolio's historic returns as it now exists. That may give you a better view of what that portfolio really is.

FA: When you do returns-based style analysis you use monthly returns. Is there a case to be made for looking at returns daily or weekly?

Sharpe: The problem with daily retunns is you're getting more and more noise. There's a problem here with noise and the more noise you get the poorer your estimates are. I use monthly data because it's what's most readily available and it works so well with most of the kinds of managers and funds that I look at. But I have talked to people who have had good luck with weekly data.

FA: Critics of returns-based analysis love to tell stories about how Bill Sharpe analyzes a portfolio and says it contains this or that and then when you lift the hood, 'lo and behold, there aren't any bonds, or whatever.

Sharpe: What you're talking ahout here is predominantly risk. It's not so much a matter of how the manager did on average over the seven years but how he did in months when there was a disparity in returns.

If you have a security that says on it stock right up there at the top in nice Gothic lettering but it seems to go down whenever bonds go down, there's good reason to suspect there's something about the economics of the company or the way the instrument is written that makes it sensitive to interest rates. And if you happen to not want any more sensitivity to interest rates in terms of the risk you're taking, you better not buy that security.

FA: What are the limitations of returns-based style analysis

Sharpe: If you run into people with very concentrated portfolios. its very difficult to figure out what the core is. Say it's a sector fund, which won't work very well at all except utilities which happen to be fairly homogeneous and the analysis picks up the interest-rate sensitivity. But, if you have a chemical fund or something of that sort, you're going to get so much noise that if something good happens to that sector in a month when U.S. stocks are flat and Japanese stocks soar, the analysis is going to say you have a portfolio with some Japanese stocks in it. You can get that kind of spurious behavior. But, in practice, it's amazing how little of it you see.

FA: How do you see "style analysis" changing the role of financial advisors?

Sharpe: It has already had a pretty big impact on traditional institutional consulting. Traditional consultants charge a lot of money for saying: " I know those guys down at this or that finm, they manage bonds. And they manage long bonds and they do it well." Well, you don't have to pay a consultant $250,000 per year to do that for you.

What we're talking about is figuring out which investment products — mutual funds and such — will implement a particularly good asset allocation for the client.

To do that, the financial advisor has to talk to the client and educate the client — understand the client — to figure out what asset allocation makes sense, including changes through time. Then the advisor has to implement it.

What this technique does is give you a very efficient tool to help you in that process. It's not the only tool. And if you have other tools, you should use them. But this is a very efficient tool for performance analysis and reporting. So. I see this technique as increasing the efficiency and lowering the cost of an important part of what afinancial advisor does. But it's by no means the only thing an advisor does.

FA: What role should "style analysis" play in choosing managers or retaining managers?

Sharpe: I would never suggest investing in a mutual fund based solely on style analysis. Before I'd invest in a fund I would want to have read the Morningstar material and whatever else I could find. including the prospectus.

I would never say that style analysis is enough. Maybe it's enough to help you pick some funds that you want to look at more carefully. But once you look at style analysis and you decide that a fund is interesting to you, then you go further.

FA: How should financial advisors make use of this technique?

Sharpe : What I tell my students is that you work, to begin with, on the asset allocation. Then you have

to figure out a suite of investment products that give you that allocation and then if you're so inclined will hopefully add some value through active management. To do that you have to know which product gives you exposure to which asset classes and how much. You have to estimate it as best you can. The simple way of saying "hey he's a value manager or a growth manager" is a little bit too crude. Even if he's a value manager maybe he's a value manager with cash or without cash. You need to know that. You need to have some sort of system that adds it all up.

FA: Product vendors like to mention your name, though I have to say that no one I have run into comes right out and says: "Sharpe endorses our product." But you have already acknowledged that there are powerful commercial forces at work in this arena. So, whose product do you use?

Sharpe : I have been very careful. I have spoken at the BARRA conference, the Ibbotson conference and the Zephyr conference. I'm an equal opportunity speaker and those are the three major vendors at this point as I see it. I have no financial stake in any of them. They all give me software and/or databases for my research for which I am very grateful. For all of my regular work, however, I use various pieces of my own software .

FA: Some folks, including Morningstar's Don Philips, say they're concerned that "style analysis" may be misused.

Sharpe: It's amazing how people can misuse even the simplest tool. On the other hand, that shouldn't be taken as an argument against using a technique that has a great deal of value.

FA: Thanks, Bill.

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