

WILLIAM SHARPE

By the time we can say someo

Investment Adviser: Several trends seem to be taking shape in terms of asset allocation. On the one hand, there is an increased focus on risk and capital preservation rather than return, and on the other there is a rising demand for absolute return investing and high alpha products or hedge funds. But in the world of the capital asset pricing model (CAPM), only beta risk is rewarded. Is beta alive and kicking?

William Sharpe: Let me take that in pieces. About the first question, there is a point in this observation, which sometimes gets lost, that collectively we hold what is available. At the end of the day, if you add up all the portfolios no matter how exotic they may be, and add up the longs and the shorts, you end up with the market. That is just arithmetic, so in a sense the aggregate of all the portfolios will equal what is available. For example, for 3m shares of Company X there may be hedge funds that have short positions, while others may have long positions, but you add them all up and you get 3m shares. So a lot of it is just shifting assets around among the players and a proliferation of various kinds of active strategies. But for every negative position there is a positive position and the positive positions add netting out the negatives to what is available, so that has not changed and nor can that ever change.

IA: What about price charges?

WS: As for the changes in dollar value, if Company X goes up in value, and Company Y goes down, then you get changing asset allocations when you use dollars as your measure, but that is price changes. This is not to demean price changes of course – but it is important to understand this.

As far as risk is concerned, there is the risk of the economy, or if you will, all the securities issued by all the issuers. Whatever that risk is, it will be borne collectively and you will in no way avoid that. So while we all might decide that we are more risk averse

Ayse Ferliel speaks to William Sharpe about the trends in relation to asset allocation and the debate surrounding fund manager skill against luck. He also discusses behavioural finance and the concept of ill-informed crowds making sensible decisions and what he believes his greatest achievement to date is

the net result of that, the total risk, does not change – it is basically the increased expected return.

Let us say there is a given risk in the economy and we all wake up and say “We are all more risk averse than we used to be”, then what happens is that the price of risky assets will fall sufficiently, so there is enough of a higher expected return. Despite our higher risk aversion, we are willing to hold what is out there taking the risk that has to be borne, so again you cannot change the aggregate. In the long run you can, in that when people become more risk averse there will be less new investment in high risk benchers, but at least in the short run – and it can be a long time when we are talking about changing the whole stock of productive investments in the world – all that happens when the aggregate, or what I would like to call societal risk tolerance, changes is that you get changes in prices which affect the expected returns predominantly. So you have to keep all that in mind.

IA: And absolute returns?

WS: On the issue of absolute returns, what proportionately lowers expected nominal returns is probably associated with lower inflation and may be the same expected real return, which for most people matters a lot more. If you think you have someone who is a better predictor than the market, then you either have to manage money in a traditional active manner or in a hedge fund format and take long and short positions.

There is an argument that if they do not charge you too much it is better to do the latter because it gives them more ability to use their superior information. So, there is an argument to be made for doing your active management more in a hedge context than a long-only traditional context, but again that is premised on the assumption that you can find the manager who is not only better than the market, which is the average, but better enough to offset added costs. Only a small minority of managers can have that characteristic.

IA: In your article in Wealth Management Fall 2004, published by UBS, you have pointed to a strategy that chooses to concentrate on a smaller number of securities with a broad asset class and argued that such an approach, which will have added risk, will not have added expected return (or alpha). But in the UK we see the rising popularity of the so-called focus funds which have a similar structure, where managers claim their alpha risk can be rewarded?

WS: For a minority of people who are truly superior to the average prediction, that can be true. But it will be a minority and you have to decide how

many of these people you think there are and how you can find them and nobody else can. But again, the average cannot beat the average. That is just arithmetic.

IA: There are two key concerns with respect to investment fund analysis: the question of predictability, and the question of how much skill fund managers have. Can they really beat the market? What about luck versus skill?

WS: It is important to measure the performance correctly so you do not want to use just a traditional Sharpe ratio which compares against Treasury bills. You want to use a measure that compares against a relevant benchmark, so if you have a growth stock manager in the UK you may want to measure against the passive growth stock index. Otherwise, your results will be so confounded by how growth stocks are doing, you do not stand a chance of figuring out if the manager has truly superior skills. So it is important to use the right benchmark.

Assuming you have the right benchmark, and if you do use something equivalent to a Sharpe ratio but you use the benchmark rather than the Treasury bill as a comparison, often called now an information ratio (IR), even then you need to add back the costs so you are not confused by the cost aspect. So it is gross performance before cost, for superiority you need to look at both the numerator of the ratio – how much did you beat the benchmark on average by – and the denominator for the variation of the difference between you and the benchmark. But the vast majority of managers who have come up superior on that measure, that majority of superiority even if it is historic periods, it will be luck. Maybe 10 per cent might be skill, if you are lucky.

So, the fewer the number of securities, the greater the denominator will be in that ratio, which will point out the fact that even if in the numerator the average outperformance is large it could easily be due to luck. I would be the last to say there are not superior predictors out there because there are, but it is just that there are not a whole lot of them, they are not spectacularly superior and they are hard to find.

IA: There is overwhelming evidence that markets are not efficient, and following up from this the popularity of behavioural finance seems to have increased. Is this notion not oversold with several companies using it, assuming individuals are irrational? Also, to what extent does behavioural finance make a positive contribution to the discipline of financial economics?

WS: It is making – and will continue to make – a significant contribution, but it is important to differentiate

between the two aspects of what we are talking about, which I term as asset pricing prices and portfolio choice. I have a whole draft book on this. The basic idea is that there are asset prices – or if you will, risk and return and all that – and there are the portfolios people hold.

Do you know the book *Wisdom of Crowds*? It is a fun book by James Surowiecki who writes a financial column in the *New Yorker*. In it, he sensibly refers to a lot of behavioural work and efficient markets work and others. The basic argument is that if we have enough people even though they may be ill-informed and irrational coming to market, it is entirely possible the prices of assets, thereby true risks and returns, are what you would get if they were all rational and well informed.

Bob Merton and Zvi Brodie have been writing quite a bit on this recently making the same point that capital markets can give you results that are consistent with these sort of almost silly models in which everyone knows everything and everybody is perfectly rational. And that those models can be good in terms of prices, risk and returns and betas and all the rest.

Even though people's portfolios are widely divergent from the market I think where behavioural research can really help – and I have been a fan of behavioural research long before it was popular, going back to the 1970s – is in understanding what people do.

In a practical way at Financial Engines, the firm that I helped found, we spend a lot of time using behavioural research to help people make sensible portfolio decisions. But what you have alluded to, which I think is using behavioural research to beat the markets, my term not yours, I am sceptical about, partly because there are so many aspects of behavioural finance, behavioural economics and behavioural research, cognitive psychology that you can justify almost any investment decision by using one of them. There is not a body of agreed upon behavioural finance principles which tells you “Buy this stock and sell that one”. So people who use this say “There is evidence of excessive extrapolation, okay so we will use that to avoid growth stocks and buy fallen angels”. But there are other behavioural principles that would tell you to do just the opposite. So the idea that we are going to decide that expected returns

are related to all kinds of things other than beta or, more broadly, the risk of doing badly in bad times, I am sceptical.

We are learning a lot still and I have ongoing research with a couple of behaviourists myself, experimental work, where we are finding out quite a bit about people's decisions under uncertainty in a portfolio context. So yes, behavioural finance is fascinating and it is an active and promising and already crucial area of research.

IA: The CAPM has evolved a lot since the 1960s, but also it seems after an extended period of “irrational exuberance” we may now have a sense of pervasive pessimism. Do you not feel the concern with risk has gone too far in any area, considering the fact that risk aversion is not only a phenomenon in financial markets, but is also widely emphasised in the area of politics and sociology, as in the so-called risk society or the culture of fear?

WS: The whole culture of fear thing is pretty close to American politics...

CV

- 1955 BA University of California, Los Angeles: Economics
- 1956 MA University of California, Los Angeles: Economics
- 1961 PhD, University of California, Los Angeles: Economics
- 1970 Joined the Stanford faculty, having previously taught at the University of Washington and the University of California at Irvine
- 1990 Received the Nobel Prize in Economic Sciences together with Harry Markowitz and Merton Miller
- 1996 Co-founded Financial Engines, a firm that provides online investment advice and management for individuals, and currently serves on its board

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IA: Well it is quite similar in the UK, but I am referring to a more general phenomenon.

WS: I guess there are two issues about risk aversion. One is being averse to a good assessment of what the risk really is and the other is wildly overstating the risk. I think I will stay away from the political sphere, you can guess which side I am on, but with fear-mongering, trying to convince people there is more risk than perhaps a rational assessment might indicate there is, obviously people will make wrong decisions if they do not estimate correctly the amount of risk.

IA: In your paper, *The Arithmetic of Active Management*, you said: "Properly

measured, the average actively managed dollar must underperform the average passively managed dollar, net of costs. Empirical analyses that appear to refute this principle are guilty of improper measurement. This need not be taken as a counsel of despair. It is perfectly possible for some active managers to beat their passive brethren, even after costs."

But how much potential do active fund managers really have to beat their passive counterparts?

WS: The honest answer is we do not know and we probably never will know because the element of luck provides enough noise in the data. We know what the averages have to be, because it is all arithmetic, but we will never know how many truly skilled fund managers there are because by the time we have enough data to say "There is a truly skilled fund manager for sure", no chance of any sides that will flock – she will be dead.

I have been involved with a couple of actively managed mutual fund families on boards over the years, so it is not as if I do not think that there are people who cannot be skilful and it is worth putting some money with them if you are convinced that they may be skilful. But again you will never know for sure whether your performance has been good or bad, and I would be cautious about recommending people put too much money with a concentrated active strategy.

IA: You have covered a great deal of ground in the first lecture of the Princeton Finance Lectures, which will be published as a book, and concluded that the market risk theorem – in that only

THE SHARPE RATIO

The Sharpe Ratio is a risk-adjusted measure calculated using standard deviation and excess return to determine reward per unit of risk. The higher the Sharpe ratio, the better the fund's historical risk-adjusted performance.

$$\text{Sharpe ratio} = \frac{\text{fund's return in excess of a risk-free investment}^*}{\text{standard deviation of fund's excess return}}$$

* for example, a 10-year Treasury bill

market risk, the performance of the market as a whole, is rewarded with higher expected return – holds. I cannot wait to read your second and third lecture.

WS: I am currently doing simulations. I do simulations when there are superior predictors, so you will find some superior active managers in there. In my third lecture I get into behavioural. I have to rework that book significantly before publication, but at the end of the day, I have come away from all that work with conviction that you do not want to stray too far from strategies that take little non-market risk. Maybe it is good to take some. You can have a non-linear strategy where your return is not a linear function of overall large market return, but whatever that curve looks like it ought not to be too fuzzy.

IA: But why do investors take non-market risk, is it not the case in the real world?

WS: If that is the case in the real world, and that is what behaviourists tell us, hope springs eternal or people do not understand the adding up process. Again, it is the wisdom of crowds argument that everybody can be crazy but selectively can be very rational.

Another story in the book, which I have used in one of my recent presentations, is that back in 1906 scientist Francis Galton was at the annual West of England Fat Stock and Poultry Exhibition – I am not making this up – and came upon a weight-judging competition. There was a fat ox placed on display and people could place wagers on what the weight of the ox would be after it had been slaughtered and dressed. Some 800 people tried their luck and the person whose guess was closest to the real figure got the prize. Mr Galton believed it was a great chance to prove how stupid people were. So he added all the contestant's guesses and calculated the mean. He found that the crowd had guessed that the ox, after it had been slaughtered and dressed, would weigh 1197 pounds – too close to the real figure of 1198 pounds.

He had realised that a bunch of ill-informed and maybe not intelligent people making independent guesses based on possibly independent experiences could on average come up with something close to what the best scientists would come up with. And, of course, efficient and competitive capital markets are close to that kind of experiment where the price is really an average of people's opinions.

IA: You were among the several economists who have criticised the Bush administration's policies in relation to the budget deficit and argued against cutting taxes, in

an open letter to the president. How important is the crowding out effect in this context?

WS: You are pushing beyond my expertise in terms of the extent to which there is crowding out and there are people who could better answer that. But I do believe, as I said in the letter – which was proposed by others but I agreed with – that this is not the time to be running these huge budget deficits, whether you deal with it on the tax front or spending front, or both. Personally, from a value viewpoint I have problems with the particular nature of the tax cuts that have gone into place in terms of re-distributive issues in that they do by far favour my friends and I do not think that is good social policy.

IA: Looking back at your career, what do you think is your greatest achievement?

WS: It is easy to say the CAPM, because, after all, the Nobel Committee decided that was my most important accomplishment and they are pretty good judges of these things. But I would rather broaden it to the more general conclusions, which I tried to encapsulate in the Princeton Finance lectures, that there is very good reason to believe that only market risk is rewarded with higher expected return. An even better way to say it is: you get rewarded for taking the risk of doing badly in bad times – or to make it a little grander, for bearing societal risk with the corollary of that being not to take a lot of non-market risk or the risk that the lawyers would term as "uncompensated".

So those two basic ideas boil down that you will get high expected return if you take more market or societal risk, and you will not get more expected return if you take other kinds of risk and so, from a pragmatic standpoint, do not take much of that other kind of risk unless you need to offset your job risk or if you think you really have found the next Warren Buffett. The extent to which I played a role in bringing those ideas to the fore – and I am not the only one by all means – is the most important thing I have done.

I am sort of proud of the binomial option pricing approach as well, which I had a role in. That certainly has had huge amount of practical application and, according to people such as Mark Rubinstein, that kind of option pricing is used more frequently than Black-Scholes. I do not know if that is true or not but I know it is used a lot and I am kind of proud of that as well but I would say the other transcends that.

William Sharpe is 1990 Nobel Laureate in Economics and STANCO 25 Professor of Finance, Emeritus at Stanford University's Graduate School of Business