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NEWSLETTER

Issue 17

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This newsletter, like several before, arrives long past its original due date, because the included essay had a much longer and more difficult gestation period than we had expected. In the past, when the essay has turned out to be especially long, we've broken it into two parts, spanning two newsletters. This time, you're receiving a bumper issue, with the whole thing. When you weary of those tedious beach novels, you can unwind with this breezy alternative.

NEWS OF PEABODY RIVER

We recently had to answer a question that may be of interest for a few who might consider Peabody River as their investment manager. This concerned the possibility of taking out a loan against the collateral of the assets under management. The answer is that, yes, we can provide this service. The loan would be provided by BNY Mellon at a very favorable rate of interest. Loans can also be provided by other banks, but on slightly less favorable terms. There would, of course, be a limit, but quite a high one, on the percentage of the value of the assets that you could borrow against. We don't suppose this financial maneuver would be of interest to many, but for some, who are looking to finance private ventures as part of their overall portfolios of public and private investments, it could be a critical consideration.

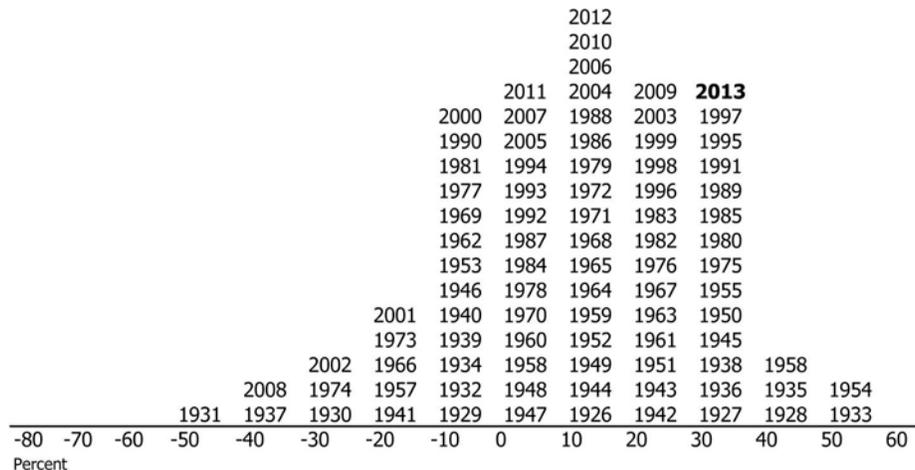
On June 17, Adam was elected secretary of the Boston Economic Club, of which he's been a member since 2000. This is a selective, old, private organization of bankers, investment managers, executives, business economists, a few academicians, and other professionals who enjoy off-the-record presentations, sometimes by well-known figures, on a wide range of topics, usually of current interest, and all falling within the ambit of economics and economic policy.

BRIEF REVIEW OF 2013 AND THE FIRST HALF OF 2014

Before beginning my review of the markets since our last newsletter, I want to offer a word of caution. As I have repeatedly said, we do not make short-term market forecasts, and we do not time the markets. We invest for the long term. Even so, we are uncomfortable with the current high level of the U.S. stock market with respect to appropriate measures of its value. Accordingly, we cannot see how the market can offer much in the way of return for some time to come. All the same, we are not forecasting a crash. For all we know, the market could just bump along at more or less the current level for a very long time. Almost anything is possible. For our clients, we continue to allocate among asset classes pretty much as we have been doing, but on the assumption that future stock returns, at least of the U.S. market, won't offer much of a premium over the returns of other asset classes. You have been alerted.

Because it has been a long time since our last newsletter, I will review the markets in 2013 and the first half of 2014.

Over the course of 2013, the S&P 500 stock index had a total return of 32.39%, and the Barclays Capital U.S. Aggregate Bond index had a total return of -2.02%.



Although our clients were well served in 2013 by large positive returns, it was a disappointing year for any asset class allocation that wasn't dedicated purely the U.S. stock market. Any diversification away from the U.S. stock market detracted painfully from the returns that could otherwise have been realized. The U.S. market markedly outperformed the international stock markets (as a whole). And the other asset classes did not come even close. Within the U.S. market, the stocks of small companies had the spectacular return of 45.07%.

The European stocks markets and the Japanese stock market had large returns, although less than that of the U.S. Outside Japan, Asian equity returns were poor. Broadly, the emerging markets, which include Latin America, had an especially poor 2013: Both their stocks and their bonds had negative returns. Venezuela, however, had the world's best stock market return of the year: 452%!

Real estate was a slight disappointment, with (by one broad index) a return of 2.86%. Commodities generally had a very, very poor 2013, with (by one broad index) a return of -9.5%. We had long been ambivalent about the prospects for commodities, and during the year, we, like many other managers, decided to jettison them from our clients' portfolios.

The first half of 2014 continued to reward investors handsomely. Despite causing some alarm at the start of the year, the U.S. stock market (as measured by the S&P 500 index) produced a return of 7.14%. Furthermore, the old adage, "Sell in May and go away" would, if obeyed (at least as of the end of June), have led investors far astray. The stocks of small U.S. companies, however (as measured by the S&P 600 index), which we overweight because, historically, they have had higher returns, returned only 3.22%. The stock markets of international developed countries (as measured by the MSCI EAFE index, which excludes the U.S.), had a return of 4.78%, a quite respectable return, but once again, lagging the U.S. market. Emerging stock markets on the whole (as measured by the MSCI emerging markets index) produced a 6.14% return, almost American in its size.

Master limited partnerships (MLPs), which we try to include in many of our clients' portfolios because they provide beneficial diversification, had a return of 15.27% for the six months.

Bonds, continuing to mock the endlessly repeated cries of "Wolf!" from some quarters over the last five years, provided a very respectable return, with the Barclays Aggregate Bond Index having a return of 3.93%. And real estate, as measured by one index, returned 16.42%.

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THE ALPHA AND THE BETA OF INVESTING

See how the Fates their gifts allot,
For A is happy — B is not.
Yet B is worthy, I dare say,
Of more prosperity than A!

W.S. Gilbert

The Oxford philosopher J. A. Smith reportedly told his students, "Nothing that you will learn in the course of your studies will be of the slightest possible use to you in after life—save only this—if you work hard and diligently, you should be able to detect when a man is talking rot, and that, in my view, is the main, if not the sole, purpose of education."

Although the main purpose of my essays has really been to convey the currently agreed best useful thinking about investing, still, if you have read them diligently and come away with just the ability to identify investment nonsense, they have succeeded.

This essay reverses my priorities. My main purpose here is, indeed, to help you detect when someone is talking rot. Nevertheless, in the end, there will be two distinct practical lessons worth remembering and

applying. One concerns the relationship between risk and return, and it will behoove you to keep this lesson in mind whenever you're inclined to throw caution to the wind in pursuit of better stock returns. The other concerns what counts as skill in selecting stocks, a matter to which I'll return in the last essay in this series, when we look at boasts and brags about investment performance. This lesson is of such importance as to justify the entire essay.

There was a time when the rhetoric of economics mattered nearly as much as its logic. To read Adam Smith is to savor the elegant, fluent, and bracing clarity of eighteenth-century prose. John Maynard Keynes, who was a successful investment manager and wrote about the stock market in his *General Theory* (1936),¹ was also a skillful stylist. Like most texts of any importance, early economic writings cannot be read as if they have only one obvious, indisputable and unmediated meaning. But the study of economics wasn't limited to its adepts; its texts didn't require a knowledge of higher mathematics and statistics, the prose was not narcotically hazy, and the vocabulary was not esoteric.²

For all that economics has lost with the introduction over the last century of the mathematics and models that require formal education, it has stood to gain in precision and power. Now, alas, few of us can read original economics texts that matter and advance the field, especially texts in the technical sub-discipline of financial economics, and the public must rely on interpreters and popularizers, many of whom are not economists and are ill qualified for the role that they have recklessly assumed.

In no area of modern financial theory are the fruits of ignorant popularization more rotten than in the matter of the words **alpha** and **beta**.

For those of us who are curious about financial theory and who happily labor in the fields of investing, these words are common currency. It is nearly impossible to discuss investments without them. The cluster of ideas that they represent to us is the point of departure for nearly all deeper analyses of the behavior of stock prices and returns. But for those members of the public who want to understand how to manage their personal finances, or to understand what an investment manager does, they really aren't very important at all. Still, if you ever proceed beyond my essays in your reading about investing, you are certain to encounter this professional jargon, and you stand in danger of falling victim to someone who is talking rot.

Rather than keep you in suspense, or more likely a confused stupor, while I lead you by the hand through a technical explanation to the real meanings of these terms, I will begin with their conventional definitions.

Defining Alpha and Beta

Beta is a measure of the sensitivity of a stock or a portfolio of stocks to the stock market as a whole. It is the multiple of the stock market's return that tends to produce the corresponding return of the stock or portfolio. For example, if a stock has a beta of 1, then the stock will have a tendency to go up and down by the same

¹ There is an unpublished paper by David Chambers, Elroy Dimson, and Justin Foo, "[Keynes the Stock Market Investor: A Quantitative Analysis](#)," September 2013.

² Much of the *General Theory* requires a grounding in the writings of Keynes's predecessors, but not the section in which he writes about the stock market.

return as the market. If it has a beta of 2, then it will have a tendency to go up by twice the market's return when the market goes up, and down twice as much as the market when the market goes down. If it has a beta of 0.5, then it will have a tendency to go up by half the market's return when the market goes up, and down half as much as the market when the market goes down. It's important to note the word "tendency;" there is no implication of a rigid relationship, and beta in no way tells you if the tendency is strong or weak. One of the vulgar errors propagated by popularizers is that a stock's beta will always tell you its return, given the market's return. A related error is the notion that a stock with a beta of, say, 2 has twice the risk of the market.

Some think of beta as akin to the correlation between the returns of a stock or of a portfolio of stocks and the returns of the market. Both beta and correlation are measures of how two things are paired. But they're not quite the same. Correlation is really the measure of the strength, that is to say, the consistency, of the tendency measured by beta. A stock's returns could have a high correlation with the market's returns, yet still have a low beta.

Alpha is the extra return of a stock or a portfolio of stocks beyond the return produced by the stock market. Alpha can be positive, negative, or zero. If an investment manager has the ability to pick stocks that beat the market, the portfolios that he manages have a positive alpha. When speaking among themselves, investment managers often say that a manager generates a positive alpha, when the layman would instead say that he has skill in picking stocks. One manager will ask another, about a third, "What was his portfolio's alpha?" (It can be rude for one manager to ask another directly for his alpha; it comes off sounding a little like, "Yeah, says who?")

You now know just enough to be confused and bamboozled by the next shyster or ignoramus who abuses these terms.

For one thing, even honest and knowledgeable investment professionals, when using "alpha" and "beta," often exercise Humpty Dumpty's prerogative: "When I use a word...it means just what I choose it to mean—neither more nor less." Two alternative meanings of "beta," quite common among professionals and dependent upon context, are, first, "the stock market's risk," and second, "the stock market's return." It's a convenient shorthand. Anyone not acculturated into the finance community may be perplexed at finding that the same word can stand for both "return" and "risk," but the former meaning is usually more like "return with its attendant risk." The meaning that I absolutely refuse to countenance is the identification of beta with volatility. This is simply a mistake. Beta is not volatility; it doesn't even tell you much about what a stock's volatility is. If you want to be pretentious and to refer to volatility by a Greek letter, say "sigma." (Sigma, or more correctly, σ , is the symbol for the statistical concept of **standard deviation**, which is what I have in mind when I refer to the "volatility" of returns.) I think I know how this mistake comes about. Because beta can be interpreted as a kind of investment risk, there arises the false syllogism, "Beta is risk; risk is volatility; therefore, beta is volatility." But beta is only a *kind* of risk, a contributor to overall investment risk. And besides, as I wrote long ago³, even the usual statistical sense of "volatility" underestimates the real total risk of investments. An alternative name for beta is **market risk**, because it stands for the portion of a stock's total

³ See Peabody River Asset Management *Newsletter*, issue 3, January 2009, essay, "[How to Think about Investment Risk](#)."

risk that arises from going along with the market, even though it's not expressed as a percentage or fraction of the total risk.

Etymology

In order really to understand alpha and beta, you have to know whence the words came. So I'm going to pursue a sort of etymology by way of mathematics, *Ursprache durch Technik*. The math I'll use, though, is only of the simple, middle-school sort.

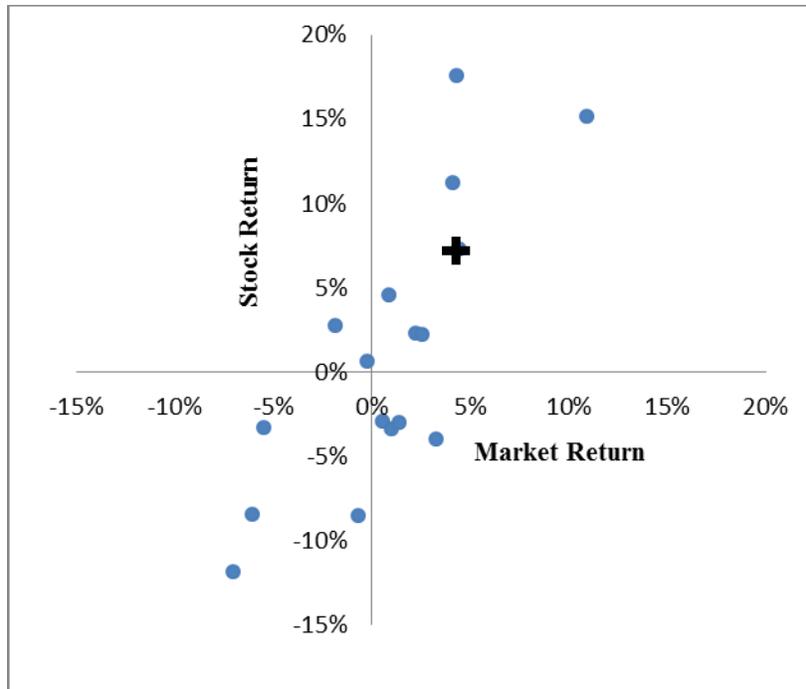
Why would anyone want to relate the return of a stock, or of a portfolio, to the return of the stock market as a whole? Well, there's a certain amount of intuitive sense to it. We know that stocks exhibit herd behavior; if they didn't, then the market, which is the herd comprising all stocks, wouldn't go up and down. So there's a relationship, even if not a strictly deterministic one, between the change in price of a stock and the change in price of the market. And the herd behavior itself makes sense, because the market, as a whole, seems to be sensitive to broad influences, like changes in the country's economic outlook, which very much includes the outlook for corporate profits, or perhaps the group psychology of the people who are trading stocks. (The more years one spends managing investments, the more cynical one becomes about the rationality behind the market's behavior, but nonetheless, there has to be something moving the market.) Moreover, it also makes sense that stocks will vary in their sensitivity to changes in the stock market, or whatever is moving the market. The more stolid companies, like electric utilities, have tended to produce reliable profits quarter after quarter, year after year. Nervous, excitable companies, like the producers of high-tech consumer products, tend to be very sensitive to the least change in the outlook for the economy. But again, beware of confusing beta with volatility. A stock's returns could be very volatile, while at the same time being only moderately sensitive to changes in the stock market as a whole.

It's also intuitively reasonable to expect a high degree of symmetry in a stock's behavior. Could a stock tend to go up more than the market when the market rises, but down less when the market falls? Quite possibly, though likely not for very long. Contrariwise, a stock that goes up less than the market when the market rises but down more than the market when the market falls will soon be pushing up financial daisies.

The simplest relationship that we can posit between the return of a stock or a portfolio and the return of the market is a linear one; that's another way of saying that the return of any given stock or any given portfolio tends to be a constant proportion of the return of the market, whatever the market's return may be.⁴

To visualize such a relationship, let's plot a graph of the returns of a (hypothetical) stock against the returns of the stock market, where each point represents one month's return on the stock and the same month's return on the stock market. We'll get a graph that looks something like this:

⁴ Note that I am talking not about prices but about returns, by which I mean total returns, not price returns.



In other words, let's say the stock market, over a given month, had a return of 4.5%, and the return of the stock was 7.3%. This would correspond to the highlighted point in the graph.

What we have is a **scatterplot**, not the graph of a line. But you can see that a line might "fit" the scatter and represent the relationship that we perceive in the graph of the two sets of returns. That relationship is the tendency of which I spoke earlier.

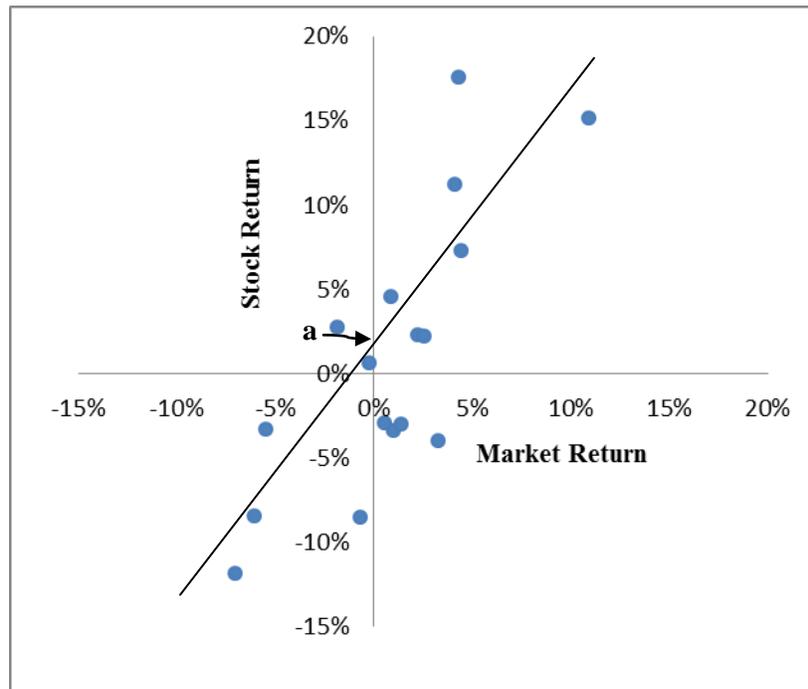
You'll recall from middle-school math the equation of the graph of a line: $y = a + bx$. For any point on a line, you multiply the value of its coordinate along the x-axis by **b**, then add the value **a**, and this gives you the coordinate of its position along the y-axis. The values of **a** and **b** are the same for all points on a given line; they define the line. One way of interpreting **a** and **b** is that **b** is the slope of the line, and **a** is the value of the point where the line crosses the y-axis.⁵

So, the line that fits our scatterplot of monthly stock returns will have a slope **b**, and a place where it intersects the y-axis, **a**. This means that if you were to multiply the return on the stock market in any month by **b** and add **a**, you'd get an estimate of the return on the stock during that same month. Not the actual value, but certainly a better estimate of it than a random guess. And **a** would be the value that the stock would tend to add to (or subtract from) the market's return, regardless of what multiplying by **b** would produce. We call this a **linear model** of stock returns.

If evidence bears this model out, it clarifies and adds precision to our understanding of how stocks behave. It also allows the possibility that some stocks or stock portfolios *might* tend to produce an extra return above what their dependence upon the market would have us expect. These are investments that we want to own if we're going to "beat the market."

⁵ A flat line has a slope of 0. A line rising from left to right at a 45-degree angle has a slope of 1.

The same graph, with the line, might look like this:



The **b** of this line precisely corresponds to the definition of beta with which I began: Take the return on the market, multiply by **b**, and you get an estimate of the return on the stock. If **b** is 2, then the stock will tend to go up or down by twice as much as the market. Then add or subtract **a**.

There is a basic technique of statistics, called **regression analysis**, that identifies the line that produces the best fit to the scatter of data and allows us to calculate its values of **a** and **b**, much better than “eyeballing” it. The origin of the name and the mathematics of the technique itself need not detain us. (The method originated in the late eighteenth and early nineteenth centuries from the need of astronomers to fit the curve of a planet’s or comet’s orbit to the imperfect observations that they had gathered of its visible positions in the sky as it moved around the sun; the name “regression analysis” is an artifact of a late-nineteenth-century advancement and application of the same technique to the analysis of human beings.)

What should detain us is how we interpret the line. We infer and calculate it from just the actual data that we have. But we can conceive that there is a true and ultimately unknowable linear relationship (in the case at hand, between returns on the stock and returns on the market), of which the line we calculate is but an imperfect manifestation, an estimate, because our observations are limited and imperfect manifestations of the true underlying relationship. You might say that the calculated line is an avatar of the true relationship, an avatar, however, that resembles the truth.

Statisticians use Greek letters to represent the constants of unknowable true relationships, thus, **α** (alpha) and **β** (beta) for the true line, and their Roman equivalents, **a** and **b**, for their avatars in the real world, which we calculated from our data. So the equation of the true line could be written as $y = \alpha + \beta x$. In our case, x would represent the return on the market, and y would represent the return on the stock.

It may have dawned on you that there is confusion in our talk of “beta.” What we calculate with actual returns isn’t β and α ; it’s b and a . I suppose it would be a little indistinct if investment professionals were to talk of “bee” and “ay” and cumbersome if they were to say “the estimated value of beta” and “the estimated value of alpha.”

But etymology isn’t destiny. “Alpha” and “beta” have become terms of art for investment managers, referring to the estimated values, or holding some of the other meanings I’ve already mentioned or that I will get to. Just don’t confuse them with the statisticians’ α and β .⁶

The rot begins to set in when the careless and the dishonest do confuse these estimates with the truth.

Not as Easy as It Sounds

When calculating values for beta, we have to use historical data. We calculate the values that fitted returns in the past. (Usually, the stock betas published by reputable providers of financial data are calculated from the past five years of monthly returns, because those are often the most available data, and a time scale in months and years suits the purposes of most investors.) But what’s past is past. Investors want to know what is happening at the present moment and will happen in the future. So whatever we calculate, while an imperfect portrayal of the past true relationship, is likely a worse representation of the current true relationship and the one to come. There are techniques that somewhat refine and improve the forecast betas by drawing upon accounting numbers from recent corporate financial statements, but historical values of beta remain the most important consideration even with these techniques. Fortunately, experience shows that the past relationship of any given stock to the stock market is likely to persist for at least a little while into the future. So while this state of affairs isn’t very happy, it’s not disastrous, at least for beta.

For alpha, the problems are just beginning.

Remember that, as I’ve argued in earlier essays, the stock market is very, very efficient, which means that stock prices fully or almost fully reflect the value of all publicly available information almost instantaneously. The evidence for this proposition, from numerous studies, comes in large part from observing that most investment managers who pick stocks have not, in the long run, been able to beat the market, after allowing for the cost of risk.⁷ Also, remember that we can decompose stock market—and I emphasize *market*—returns into two parts: the very small return that comes from just holding money, and the much larger return, called a “risk premium,” for taking on risk or risks.⁸ The concept of a risk premium implies that, on average,

⁶ Many interpreters of statistical analyses in all fields of study say “beta” when they mean an estimate of β from a regression analysis. But investment professionals are probably the most promiscuous in using the word this way.

⁷ See Peabody River Asset Management *Newsletter*, issue 8, July 2010, essay, “[Is the Market Efficient?](#)” which explains the complexities of this proposition. There is another strand of research providing evidence for market efficiency, too complicated to get into in that essay or this one and also more contentious, based on the behavior of stock prices alone, not portfolio managers’ performance. Also, when observing the performance of actual managers, we’re already taking into account the costs of trading; when studying the performance of hypothetical portfolios, we have to subtract the likely costs of trading and, often, taxes.

⁸ See Peabody River Asset Management *Newsletter*, issue 11, July 2010, essay, “[What Return Can We Expect from Stocks?](#)” If you’re already familiar with the Capital Asset Pricing Model, don’t get ahead of me.

managers should be able to produce a small alpha simply because they manage money. The concept of efficiency implies that even if some stocks have positive alphas greater than this tiny risk-free return, and for a length of time that is perceptible by a human being (as distinct from a computer), the portfolios created by investment managers tend to have alphas no greater than that risk-free return, and more likely less, after taking their fees into account. Of course, investment managers who pick individual stocks claim that they do, indeed, possess skill; if they have skill, then, by definition, their portfolios ought to have significant positive alphas. Naturally, many managers therefore claim to have produced significant positive alphas and will gladly tell you what they are.

Now, statisticians know perfectly well that all the observations of stock returns don't lie along the ideal line. They're scattered, as in my earlier graph, and as they ought to be, because of the unique characteristics and circumstances of each stock. So statisticians represent the linear model of stock behavior not as I wrote it above, but as $y = \alpha + \beta x + \epsilon$. That final ϵ (epsilon) represents the displacement of the real value, for any single interval of time, from the ideal line. If all goes well, and our linear model completely explains everything that is not idiosyncratic in the observed returns, then the observed displacements from the calculated line, called the **residual returns**, or **residuals**, for short, will average out over time to zero, and collectively fall into the familiar "bell curve" pattern. That is, in theory, ϵ has an average value of zero, and we hope that our observed residuals will also have an average value of zero. To put this another way, the line should represent the only consistency in the behavior of a stock's returns over the passage of time; every other component of its returns is particular to each individual stock (or possibly subgrouping of stocks, like an industry) at each increment of time, and therefore has the appearance of occurring randomly. Because of the residuals, a stock with a beta of, say, 2 has approximately twice the risk of the market *and then some*.

Our linear model is called the **Market Model**. It is the most elementary example of a **risk model**, which explains the returns of an investment in terms of its constituent returns and risks.

Let's review this. According to the Market Model, every stock return or stock portfolio return over a given span of time—say a day, a month, a quarter, a year, or five years—can be divided into three parts: a constant component, called "alpha," which may be positive, negative, or zero, and bears no relation to risk; a risky component that depends upon the stock market's return and is sometimes, in yet another example of my profession's casual attitude toward its own jargon, called "beta" (even though it's beta times the market return); and a third component, which, when written as part of an equation, looks like a constant⁹, but actually represents a value that fluctuates randomly, independently of the market's return, and averages to zero as time passes. (We have to be consistent in our time intervals; if we're considering daily, rather than monthly returns, for example, then alpha is a constant amount of daily return.)

Given that ϵ looks like a constant in the equation, and α actually is a constant, how can you tell the two apart when you've calculated actual values from observations? Well, if you have a solid grounding in statistical methods and are scrupulous in carrying out your analysis, you'd be inclined to perform a mathematical test to see whether you could say with confidence that your estimate, α , is different from zero (or from the small risk-free return). Then, you might graph all of the residuals, which are just the differences between actual observations and the corresponding values that lie along the line, whose specifications you now have, and see what kind of pattern they make. There are mathematical tests that you can apply to the residuals to see if they

⁹ It's what statisticians call a "**random variable**."

really form a bell curve. But knowing this business as I do, I can tell you that most investment managers will claim that any amount by which their portfolios do better than the market, however small, is alpha, and therefore represents skill, when most probably it is only a transient non-zero average of some residuals.

Let me translate this jargon into layman's language: it's not evidence of skill; it's pure chance.

It is a maxim of statistical analysis that all interesting discoveries come from studying the residuals of calculated statistical models, because that's how we find out what's wrong with the early drafts of those models. If the residuals don't average to zero, this could be because the model is neglecting other commonalities and consistencies (or because the relationship isn't linear, but a curve). In the case of stock returns, it would mean that more than just the return of the stock market regularly explains the behavior of all stocks over time.

Consider this gustatory analogy: You're developing a methodology for rating various pizzerias based on the pizzas they sell. You'd quickly realize that a system based solely on the different qualities of tomato sauce would be wholly inadequate for accounting for the differences among the pizzas. You have to consider the variations in two other commonalities, crust and cheese. Pepperoni, sausage, green pepper, mushrooms, and so on, are inexact counterparts to the idiosyncrasies of stocks (because, being available in most pizzerias, they aren't totally idiosyncratic), but they still aren't common to all pizzas and therefore aren't universal bases for comparison, as crust, sauce, and cheese are.

We have to be alert to the possibility that, in our Market Model of returns, the stock market's return is just the tomato sauce, and we should be looking also at, maybe, the crust and the cheese of stocks, whatever these other explanatory economic commonalities may be.

It turns out that the Market Model is a bad model of stock returns.¹⁰ No one—but no one—believes that it reasonably fits the data. By “bad,” I don't mean “useless” or even “wholly inadequate” in the way that our tomato sauce model was. But I do mean that it's far too crude. It doesn't take into account the distinction between the return that you get just by having money (the “risk-free” return) and the ostensible premium that you get for taking on risk. Also, research has long shown that there seem to be other common influences on stock returns besides the return of the market as a whole. And any common influence is necessarily a source of risk. (Also, as I will mention again later, the Market Model lacks deep economic insight.) I can tell you with complete assurance that for most stocks and portfolios of stocks, the residuals of the Market Model do not average to zero. And so, it is almost inevitable that there will be false alphas. Yet we investment managers persist in our talk of “alpha” and “beta” as if they're all you need to know about the relationship between the returns of a stock or a stock portfolio and the larger economy. Further, investment managers are delighted to confuse alpha with the average of residual returns if that average is positive, because they can then claim credit for mere stroke of good luck. (For many investment managers, the residuals could less happily average to less than zero, but you're not likely to hear about those managers.)

¹⁰ There's another way in which any linear model of stock returns has to be inadequate. Hypothetically, stocks can go up by any percentage, but they can't go down by more than 100%. So what happens to a stock with an estimated beta of 2 (and there are a few) if the market goes down 51%? It certainly can't act as if it has a beta of 2. The relationship between stock returns and stock market returns therefore cannot be truly linear. But within the usual range of these returns, a line should be a reasonable approximation.

But wait! We still haven't hit bottom. In the loosey-goosey way that we investment managers fling about the words "alpha" and "beta," "alpha" has also come to mean simply the difference between a portfolio's return and the return of the market. (If you reread the definition of alpha with which I began, you will see that I made it vague enough to encompass this meaning.) Just subtract the return of the stock market from the return of the portfolio, and—Voila!—alpha. I can't argue that this is a wrong usage.¹¹ I'm telling you how the word is used, and widely. But I can explain why it is grossly deceptive. And I will, below, when I look at alpha more closely.

Looking More Closely at Beta

Let's take a closer look at beta.

We'll begin with a review of its acceptable definitions in the context of investing:

- 1) A theoretical characteristic of a stock or a portfolio of stocks, written β , that is a measure of sensitivity to movements of the stock market as a whole;
- 2) The estimate of that theoretical characteristic, to be calculated from actual data and assumed to maintain its value in the future;
- 3) The result of multiplying definition 2) by the stock market's return; this amounts to the portion of the stock's or the stock portfolio's return that is attributable to its participation in the stock market;
- 4) A synonym for "the return of the stock market"; this is more qualitative than quantitative.
- 5) A synonym for "the risk of the stock market"; this is more qualitative than quantitative.

And two more, which I haven't yet touched upon:

- 6) The portion of a stock's or a stock portfolio's return that is attributable to its exposure to all of the common economic factors that may drive its returns, not just the stock market return alone. This is like definition 3), but more expansive, and also more qualitative.
- 7) The sensitivity of one thing to a change in another thing. This tends to be more qualitative than quantitative. I will say no more about it here.

Investment analysts work with actual values calculated according to definitions 2) and 3), but not the others. From here on, I when I write "beta," I will mean definition 2), which is the one I presented at the outset, or definition 3); these seem to be the most commonly used.

For my present purposes, I will assume that the Market Model is at least a tolerable model, which it is, but no better than that. It will support us for the distance we're riding it. We're using it to organize our thoughts about investing in stocks; I'm not training you to carry out research in financial economics. (This is why, two essays ago, I said that both that essay and this would be about organizing concepts of investing.)

¹¹ Incidentally, this does get rid of the counting of the risk-free rate of return as a part of alpha.

I've said that beta and alpha are characteristics of both individual stocks and of portfolios of stocks. It turns out that it is very easy to calculate the alpha and beta of a stock portfolio from the alphas and betas of the stocks that it contains: Just average them. This is most congenial. In contrast, you can't calculate the volatility of a portfolio or the correlation of a portfolio with the market by averaging volatilities of the returns of the stocks in the portfolio or the correlations of the returns of the stocks and the returns of the market. (The explanation of why this is so would distract us here.) Of course, in calculating the average of the betas and the alphas, you have to weight the individual values by the amounts of money invested in the different stocks. For example, if a portfolio holds two stocks, A and B, and there's twice as much money invested in A as in B, then the beta of the portfolio is $(\frac{2}{3} \times \text{Beta of A}) + (\frac{1}{3} \times \text{Beta of B})$.

As you add stocks to the portfolio, you're diversifying. And what is happening to the risk of the portfolio, at least in the limited sense of volatility of its prospective returns? It's going down, of course. But you can't diversify away the risk of the stock market (with stocks alone). You can diversify away only the idiosyncratic fluctuations of stocks, the residual returns. This is not to say that all the individual fluctuations are without reason; there are usually understandable or plausible reasons that stock returns fluctuate differently.¹² Ultimately, as you continue adding stocks to a portfolio, your portfolio becomes a miniature version of the entire stock market, an index fund. And so, the only remaining risk will be the fluctuations of the market, and your beta will be 1. This is why beta is alternatively called either "market risk" or **systematic risk**. (Not to be confused with "systemic risk," which is the expression we use to refer to risks posed to our entire financial system by, for example, the possibility of cascading bank failures.) And the idiosyncratic risks of stocks, the ones that become manifest as the fluctuations of residual returns, are called, collectively and in contradistinction, **unsystematic risk**.

It turns out that a portfolio doesn't need 1000 or even 500 stocks to diversify away unsystematic risk. If the stocks in the portfolio are chosen with sufficient randomness, more than 90% of the unsystematic risk can be diversified away with a portfolio of just twelve to fifteen stocks. There can be good reasons for holding more than 15 stocks, but getting rid of most unsystematic risk isn't, by itself, one of them. (Index funds of stocks try to mimic the market as closely as possible, so they often, but not always, hold all the stocks in the relevant index.).

Most investment managers don't buy stocks for their portfolios only once and then forget about them. Because most portfolios change with the passage of time, even if only because the relative weights of the stocks change as their prices fluctuate, averaging the betas of the stocks in a portfolio at any one point in time may not result in a fair estimate of the beta of the portfolio over a span of time, past or future. A portfolio manager, by her actions, can create a portfolio whose historical beta ought to be measured independently of the betas of the stocks that it holds at the current moment, though the betas of the stocks that it holds at any one instant provide the best estimate of what will happen in the next instant. If the current beta of the portfolio is very different from the manager's historical norm, it may be fair to guess that, in the long run, the manager will revert to form.

One extreme kind of beta corresponds to a so-called "long-short" portfolio. Because all stocks participate in the market, and stocks' betas are measured with respect to the market, hardly a stock exists in the natural

¹² See, again, Peabody River Asset Management *Newsletter*, issue 8, July 2010, essay, "[Is the Market Efficient?](#)"

world that has a negative beta, that is, a tendency to move in a direction opposite that of the market, over any great length of time. But the act of shorting (which is the borrowing of a stock and selling it, in the hope and expectation that it will drop in price, so that it can be bought back at the lower price before being returned to its owner) creates returns that are the opposite of what simple ownership of the stock will create. If the stock goes up in price, the owner gets a positive return, but the investor who shorted it gets a negative return; and vice versa. So, by combining in one portfolio stocks that are owned outright and stocks that are shorted, it is possible, in principle, to create a portfolio with a beta of approximately zero. This is the idea behind so-called “absolute-return” funds, which are sold by some mutual fund companies, and behind many hedge funds (of which I will say no more). No one would go to the trouble of doing this, of course, without being extremely confident of producing a positive alpha.

Among those laymen who have heard of beta, there is a misconception that high-beta stocks are very risky, and that risk-averse investors should avoid them. I once encountered a small institution that stipulated that, in their endowment portfolio, there should be no stocks with a beta greater than 1.25. This reflects a misapprehension of the point of beta, perhaps resulting from misidentification of beta with volatility. Because stocks are almost invariably held in portfolios—hardly anyone owns only one stock—and betas average out, the beta of any one stock shouldn’t matter to an investor. All that matters is the average beta. In a portfolio, a high-beta stock can be balanced against low-beta stocks. Of course, an investment manager could choose to build a portfolio entirely of high-beta stocks, but in that case, the issue is the high beta of the total portfolio.

The combination of these two features of beta—that you can very easily diversify away unsystematic risk, and that it’s the beta of the portfolio, not the betas of the individual stocks that matters—leads to the insight that is the first important lesson of this essay: **The return that a stock portfolio can achieve at a given level of risk ought to be proportional to its beta.**¹³

This insight, which was almost dogma when modern financial economics was in its infancy, is more theoretical than empirical. Although it should be taken with a salt tablet, it remains a practical approximation to reality over a broad range of values of beta—but not the full range.

Pause a moment. Reflect that this runs counter to the commonplace that return is proportional to risk. How many times have you thought, or heard someone say, that because a financial goal is big, more risk is needed? I addressed one aspect of this misunderstanding in my essay on the ability to tolerate risk.¹⁴ (My point there was that risk isn’t just volatility that you can ride out.) But another aspect is exactly this: You could take on more risk without any prospect of being compensated. Granted, as you add stocks to a portfolio, it’s difficult not to diversify away the unsystematic risk. But this proposition concerning beta goes deeper than that. It suggests that were you to invest in even just one risky stock, you should not expect a return that is more than proportional to its beta. And even if the proposition isn’t strictly correct, still, you should usually expect returns that are less than proportional to total risk.

The economic argument—not a logical proof—that underlies this insight is that the market is under no compulsion to compensate you for risk that you could easily diversify away. Because you can’t diversify away the risk represented by beta; that is therefore the risk for which the market compensates you. If it sounds as if

¹³This statement presumes that the only risk that matters is encapsulated in beta, which it isn’t.

¹⁴ See Peabody River Asset Management *Newsletter*, issue 13, February 2012, essay, “[Why Invest? \(Part 2 of 2\)](#)”

I'm anthropomorphizing the market, that's because I am; it's a convenient way that many of us, not only those with a quantitative bent, summarize the unintended net results of the actions of all the traders intentionally participating in the market. If you will, consider that I'm referring to the hyper-rational, calculating alter ego of the neurotic and emotionally-driven "Mr. Market" of Benjamin Graham and Warren Buffett.

Beta and the Capital Asset Pricing Model

Using this proposition concerning beta and several other economic assumptions, four economists concurrently and independently invented, in the mid-1960s, the **Capital Asset Pricing Model, CAPM** (pronounced "cap-em"). Unlike the Market Model, which we created simply because we could—anyone with Microsoft Excel can fit a line to a scatter of stock returns and stock market returns—the CAPM is a theory, or, to be more fair to it, a hypothesis deriving from deeper thinking about the ways in which investment markets work. My concern in this essay is not, however, deep thoughts. It's about alpha and beta, and so it is important to note that the CAPM, like the Market Model, has a β , and, for that matter, a beta. The β is pretty much the same as the one in the Market Model, if we think that the CAPM applies only to stocks, which is how the business school textbooks present it. (More on this later.) But you multiply its beta, not by the market's return, but by the market's return minus the so-called "risk-free" rate (which difference is the premium that the market pays you in compensation for its additional risk). The CAPM also has an α , but because the CAPM is presumed to explain a world where investments are always priced correctly, its α is equal to the risk-free rate, and not more than that. So, like the Market Model, the CAPM partitions returns into three components: The risk-free rate of return, the return that comes from exposure to the market, and residual returns that, over time, should average to zero. And as I just explained for the Market Model, the return that you ought to expect from a stock or stock portfolio should (if we neglect residual returns) be directly proportional to its β .

In an earlier essay,¹⁵ I explained how Modern Portfolio Theory defines as "efficient" those portfolios that are expected to produce the maximum return for a given amount of investment risk, and the "optimal" portfolio as the efficient portfolio that corresponds to an investor's tolerance for risk. Because the CAPM ignores unsystematic risk in explaining how stock returns are achieved, by its lights, the risk that defines efficient portfolios, and therefore the optimal portfolio, is beta, not volatility.

You might think that an investment advisor should put together high-beta portfolios for investors who can tolerate more than the risk of the stock market, and low-beta portfolios for investors who are more risk averse. In classical financial theory, embodied in the CAPM, these portfolios wouldn't provide the optimal investment strategy for any investors. According to the CAPM, the risk-tolerant investor could achieve a higher return, for a given beta that is greater than 1, by buying an index fund on margin, that is, borrowing money from her brokerage to buy, say, an S&P 500 exchange-traded fund (ETF). Conversely, the risk-averse investor would get a better return, for a given beta that is less than 1, by owning less of the index fund (or ETF), and keeping the rest of her money in cash. (Buying stocks on margin is an age-old practice for attempting greater returns at the price of greater risk; what the CAPM brought to the practice was the

¹⁵ See note 12.

demonstration that, when applied to the stock market as a whole, this could produce an optimal portfolio for an aggressive investor.)

But the real world never fails to flout our elegant and simple financial theories and models. The CAPM is no exception to this rule, and its problems have been known for decades. It's more economically sophisticated than the Market Model, and it has its uses, but for investors (as distinct from economists), its guidance provides only a starting point, a reference, for building a portfolio—if that portfolio consists of nothing but stocks. It should, in theory, be extended to include the entire universe of liquid financial assets (that is, ones that are traded easily and frequently), but as a practical matter, it can't be.

Starting in the late 1970s, economists and practitioners have proposed extensions and alternatives to the CAPM just for the purpose of modelling stock risks and returns. The extensions, on the one hand, decompose the residual returns of CAPM to try to figure out what caused them. The alternatives, on the other hand, have more than one systematic explanatory component of investment returns, beyond or instead of the return of the overall market, and all independent of each other. The return arising from each of these components is multiplied by a beta, representing the sensitivity of each stock to that component; each stock, then, has multiple betas, not just one. Economists often refer to the collective contribution of these components to a stock's overall return as the stock's "beta." In short, for a given period of time: The "beta" of Stock A = (β_1 of A) times (return arising from component 1) + (β_2 of A) times (return arising from component 2) + (β_3 of A) times (return arising from component 3), and so on. Hence, the sixth definition that I listed, above. Of course, we work with the estimated value of each β , not the actual β , which we can never know exactly.

Reflect for a moment on the idea of a systematic explanatory component of returns. Because the components purport to explain some proportion of all stock return fluctuations, they are, when added together, a measure of systematic risk. A moment ago, I said that "systematic risk" was a synonym of "beta." But really, it's the other way around. To continue this symposium on Greek vocabulary: The catchy "beta," which arose in a specific mathematical context as a measure of one specific systematic risk (arising from exposure to the stock market), has exercised a linguistic hegemony through synecdoche and has come to stand for the clunky expression "systematic risk," referring to all systematic risks, in total. This goes part way toward explaining why there are so many definitions of beta.

"Smart Beta"

One of the many, many real-world contradictions of classical financial theory was discovered in the late 1970s. It is that the stocks of small companies—taken as a collective—have historically produced higher returns than the stocks of large companies. This much, I think, is now widely known by the public. But what even many investment professionals fail to appreciate is that the higher returns came about not in relation to the total risk of these smaller companies—though, to be sure, the returns of these companies are much more volatile than the returns of large companies—but in relation to their collective beta. The small companies have produced much more return than their betas, according to classical financial theory, dictate they should. It looks as if you can get a discount lunch by investing in small companies.

For the last few years, analysts hoping to gain an advantage from similar abrogations of classical financial theory have turned to low-volatility stocks, which seem to have produced, not superior returns, but the same returns as stocks with higher volatilities. There has been debate over whether the peculiarity is specific to low-volatility stocks or to low-beta stocks. You can now buy exchange-traded funds designed to suit your choice of premise in this debate.

There has also been a campaign, with Rob Arnott, the eminent investment manager, analyst, and commentator, in the van, to alter the way we define a stock market index. This movement proposes the overthrow of the *ancien-régime* way of weighting companies in a stock market index, which is the same as what I earlier described for portfolios: making the weights proportional to the amount of money invested in the companies. (Note that we're talking not of stock portfolios in general, but just the portfolio consisting of all the companies that constitute the market.) Instead, the proposal is that weights be proportioned to "fundamental" or economic characteristics of the companies, by which is meant characteristics that correspond to accounting numbers that appear in financial statements, like the value of annual sales.

These alternative ways of dealing with the observed exceptions to our theoretical understanding of the role of the classical CAPM beta in defining risk are summed up in the latest investment buzzword: **smart beta**. If you haven't heard of beta before, then you haven't heard of smart beta, but you don't have to delve much deeper into the investment commentary of the last few years in order to find it.

So now, as if we needed more, we have another meaning of "beta." This one doesn't denote a number or a variable or even a concept; rather, "smart beta" is a collective term for a small group of alternative methods of organizing stock portfolios—but mainly Arnott's method—that will (many hope) produce somewhat better returns than a common stock market index fund, after allowance for risk, but without purporting to identify individual superior stocks. I hope that no one will contradict me if I state, merely as an observation, that "smart beta," the concept and especially its name, is not uncontroversial among financial experts.

But if smart beta really can produce superior returns (after making due allowance for risk), what are its implications for my hobby horse, market efficiency? Most proponents of smart beta would argue that the phenomena that these methods exploit do not necessarily constitute violations of market efficiency. The argument hangs, as ever, on the definition of risk. To estimate the value of a stock, you have to take into account its risk. When I explained the concept of market efficiency,¹⁶ I pointed out that there is a trap of logical circularity: To test the hypothesis of efficiency, we have to use a risk model to estimate the amount of risk that is being incorporated into stocks' prices. But we can't conclusively judge whether the risk model fits the data well without a presumption that the market is efficient (that is, that the model has the opportunity fully to explain the stocks' risks). And as I wrote above, we all agree that the Market Model is a bad risk model of stock returns. Similarly, but with more qualifications, there is agreement that the Capital Asset Pricing Model is also an inadequate model of stock returns. It is quite possible that some of the adjustments that come under the heading of "smart beta" constitute refinements of the CAPM, potentially resulting in a new model that better explains investment returns, and by whose lights the market is, indeed, efficient.¹⁷

¹⁶ See note 12.

¹⁷ Even Eugene Fama, one of the progenitors and most vehement defenders of the concept of market efficiency, with his one-time student, Kenneth French, has come up with an alternative, three-factor model, which is widely referenced in the investment profession. One of the new factors in this model is company size, so that the behavior of small companies is no longer anomalous.

Because of the logical co-dependency between the risk models and the tests of market efficiency, however, no one can ever clinch this argument, one way or the other. The stalemate has not, however, put an end to the arguing. The investing public should feel more pity than anger at the tragic failure of economic experts to secure the theoretical foundation of our investment advice.

Whoever came up with the phrase “smart beta”—Rob Arnott denies it was he but claims an “avuncular pride” in it¹⁸—was evidently trying to convey the notion that the methods it embraces depend upon the risk-compensating behavior of the stock market, not upon special investment insights that pry out extra return beyond the normal compensation for risk. They purport to be improvements to the CAPM, not violations of market efficiency. If it were otherwise, the designation might have been something like, perhaps, “smart alpha.”

Looking More Closely at Alpha

Now let’s take a closer look at alpha.

It has three definitions in the context of investing:

- 1) A theoretical characteristic of a stock or portfolio of stocks, written α , that is a measure of the steady return that you might expect from the stock or portfolio after allowing for β (times the return on the market) and for the random fluctuations in the price of the stock or portfolio;
- 2) The estimate of that theoretical characteristic, either calculated from historical data or forecast for the future; as the *New York Times* recently put it succinctly, “it is the ability to beat an index fund without adding risk to a portfolio,”¹⁹ which is a good definition when we’re talking of the alphas of portfolios, not of individual stocks.
- 3) The difference in return between a portfolio of stocks and the stock market.

For simplicity, let’s assume that the first and second definitions are the alpha of the Market Model, which includes but isn’t limited to the low “risk-free” return that you get from simply holding money. The third definition, or usage, is especially problematic. It confounds explanations and evaluations of a portfolio manager’s skill in “beating the market.” Here’s why:

Let’s say that the stock market, over the course of a year, goes up 10%. And let’s say that an investment manager had put together a portfolio that has a beta of 2. That means that, very likely, the portfolio, over the same year, went up by roughly 20%. (Could be more or less; even when beta is correctly estimated, there are residuals.) Using the deceptively expansive definition of alpha (definition no. 3), the manager could claim that her portfolio had an alpha of 10% (= 20% - 10%). That’s huge. But it’s confusing alpha with beta. We think of the alpha of a portfolio as being a measure of its manager’s skill, but this example doesn’t reflect skill at all.

¹⁸ *Investment Advisor*, April 2014, vol. 34, no. 4, p. 24. But I have heard his close colleague, Jason Hsu, disparage the term, at the MIT Sloan Investment Management Conference, Cambridge, Mass., 28 February 2014.

¹⁹ Issue of 6 April 2014.

If you're going to be ornery and tell me that you don't care where the extra return came from, alpha or beta, as long as the manager produced extra return, I'd agree with you that there is something to that. A lucky investment manager may be better than a good one. But only for the superstitious is past luck a guide to future luck. I'm assuming that you're not superstitious. Moreover, if the stock market were to decline by 10%, then our hypothetical manager—assuming that her portfolio still had a beta of 2—would likely lose roughly 20%.

Let me be perfectly blunt: Any Bozo can be a hero if his portfolio has a high beta and the market has been going up.

You may quite reasonably suppose that a skilled investment manager would shift into high-beta stocks as the market is going up, and so, perhaps to reckon beta as a form of alpha does, after all, do justice to managerial skill. But that would require that the manager have advanced knowledge of when the market will go up. Good luck with that. As I said in my previous essay,²⁰ there's precious little evidence that there are investment managers who are any good at timing the market. Still, a manager who does have that ability possibly might consider buying high-beta stocks just before the market goes up—although he would do better to buy stocks on margin—and then sell the stocks entirely just before the market goes down.

So here's the second specific lesson of this essay: **When an investment manager claims to have produced alpha—or even when he doesn't say “alpha” but says, “Hey, look at me! I beat the market!”—he is very likely confusing residuals with skill, or confusing beta with skill, or both.** And even if there actually was some alpha in there, that may be only because there is the small risk-free return and, maybe, during the period of measurement, he was no better than the proverbial stopped clock that is right twice a day.

When explaining, above, how the historical alpha of a portfolio (using definition 1) can be confused with residuals (of returns), I suggested that you might use mathematical tools for testing whether the alpha is actually distinct from a non-zero average of random residuals. I'm sorry now to admit that the peculiarities of investment data will usually frustrate anyone using these tools. That means that we can't be supremely confident that we can tell historical alpha from an average of residuals. So, whether a portfolio manager has actually produced alpha is at least as much a matter of judgment as of mathematics. But if anyone applying judgment sees alpha everywhere she looks in a crowd of portfolio managers, then that judgment is probably faulty; she's the teacher who gives every student an “A.” That also means that no attention need be paid to tenths of a percentage point of annual alpha. That is false and unjustifiable precision, and any claim to have added, say, 0.2% a year in alpha beyond the risk-free rate is baloney. I will return to this matter in my last essay, when I discuss the evaluation of investment performance.²¹

²⁰ See Peabody River Asset Management *Newsletter*, issue 16, November 2013, essay, “[Asset Class Allocation and Portfolios \(Part 2 of 2\)](#).”

²¹ One of the difficulties is that, for the mathematical tools of statistics to be applicable, the data points must be independent of each other. But few traditional, non-quant portfolio managers (as distinct from, say, quants, day-traders, or high-frequency traders) reevaluate all the stocks in their portfolios every, say, month, and change them without regard to previous decisions. Not only is there inertia, but tax considerations may discourage trading. So the portfolio holdings, and therefore the return, in one month is dependent upon the holdings, and therefore the return, in the previous month.

Tax Alpha

When discussing investment returns, I make a point of always reminding my readers of investment risk. But we all know that there are two certainties in life, and one is taxes. The returns with respect to which we define alpha and beta inhabit a world without taxes, which is fair enough for someone who is responsible for a pension plan or an institutional endowment, or for an IRA. But portfolios that are subject to taxation inevitably experience reduced returns, after the investor pays taxes on income (from bonds), dividends (from stocks), and realized capital gains. Yes, governments often change their tax rates, but they hardly ever eliminate taxes altogether, especially not the taxes on investments.

Taxes can easily wipe out any putative alpha that might have been gained through ingenious investment management of a portfolio, and that would have accrued to the same portfolio were it not subject to taxation. But ingenious tax management, as distinct from investment management, can add value beyond what might otherwise have been realized, even for a portfolio that holds only a stock index fund, which would still incur tax costs from the dividends that come in and from capital gains realized when the underlying index is updated. This added value is sometimes called a **tax alpha**.

Active Management

In earlier essays, I introduced the terms “passive investing” and “active investing.” The latter denotes the deliberate selection of specific stocks (or other kinds of investments) with the goal of “beating the market,” that is, beating an index of the market (or of a subdivision of the market), whereas the former refers to choosing investments that will simply match the performance of an index of the market (or subdivision, and before the subtraction of the manager’s fee). With our new vocabulary, we have an alternative way of defining passive investing: It’s the construction of a portfolio that has an expected beta of 1 and an expected alpha of 0. (That’s before the subtraction of the manager’s fee and after subtraction of the risk-free rate of return.) It’s possible, however, at least conceptually, to put together a portfolio that has an expected beta of 1 and an alpha that is greater than 0. Some such portfolios, if they aren’t too volatile, are called “enhanced index” portfolios. Whether they’re achievable depends, of course, on an ability to produce alpha.

Alpha tends to be fleeting, unlike beta. Warren Buffett has famously said that his “favorite holding period is forever”; he could just as well have said that he prefers stocks that permanently have a positive alpha. But these are rarities, if they exist at all. (Buffett’s reasoning may have included, implicitly, a tax alpha, especially as the stock of his company, Berkshire Hathaway, is held more by individuals, who are taxed, than by pension funds and endowments, which generally aren’t.) When a skilled investor buys a stock whose return she expects to be greater than the market’s, then she is betting that she’s identified a positive alpha. Even if the excess return is owing in part to its high beta, still, if she sells the stock before its price drops, she’ll have extracted alpha from it. Ingenious analysts may also spin golden alphas out of the plain flax of residuals, which, after all, ordinarily reflect new information about a stock that surprised the market, but maybe not the ingenious analyst. This is what Buffett meant when he said that he likes volatility, because it allows him to buy the stocks of good companies at low prices. The statistical debunker, analyzing such a manager’s portfolio performance retrospectively, won’t find the alpha in every individual stock that the manager traded. That’s why, when analyzing the historical performance of a manager, we look at the alpha of his portfolio, not the alphas of the individual stocks that he bought and sold.

There is a brotherhood of investment analysts—it happens to be mostly male—who spend their days applying the techniques of statistical analysis to accounting data, earnings forecasts, price movements, and market news in order to come up with explicit numerical forecasts of alpha. The label “quant” has in recent years taken on ambivalent connotations because of its association in the public’s mind with those sophisticates on Wall Street who dreamed up various kinds of so-called “structured products” for unburdening pension funds of their wealth; with those hedge fund managers who were too clever by half, like the managers of Long Term Capital Management, which nearly wrecked the world economy; and with the proprietary traders at large banks who could sleep soundly in the knowledge that taxpayers would rescue their employers if they came to grief on the shoals of their grand, outrageous risks. But unlike these rogues, the quants who forecast alphas are as harmless in their drudgery as lexicographers, liking nothing better than a large t-stat, a low p-value, and the wine, beer, snacks, and free exchange of ideas at monthly meetings of their local chapter of QWAFEFW (Quantitative Work Alliance for Applied Finance, Education, and Wisdom). Whether they are successful is another matter; having known many and worked with a few, I believe that some very likely are, though inevitably not at all times.

Besides Stocks

I’ve introduced alpha and beta as properties of stocks. What about other asset classes, like bonds? At an abstract level, it ought to be possible to construct market models for other asset classes along the same lines as our Market Model for stocks. In practice, it’s very difficult, if not impossible. The data that we’d need to compute estimates of alpha and beta just don’t exist in the same profusion as they do for stocks. Bonds, in particular, present a different, special problem: Unlike stocks, they mature; that is, nearly every bond expires at a set date in the future. As that date comes nearer, much of the risk inherent in a bond continually decreases. Consequently, the beta of a bond at one instant is different from what it was the instant before, and the methods that we use to estimate the betas of stocks, relying as they do on historical data, are therefore inapplicable to bonds. Some other asset classes, like real estate, trade very infrequently, and with very large transaction costs, so the historical data are too sparse to produce useable estimates of beta. In short, models like the Market Model and its more sophisticated cousins are pretty much the province of stocks and stock portfolios alone. Other kinds of risk models can be constructed for other asset classes, with different kinds of β (and alpha and beta) reflecting exposure and sensitivity to changes in other common influences, like prevailing interest rates (and even influences that can’t easily be identified). But, at least in the case of bonds, exposure to the overall asset class market can’t be one of the constituents of the models.

Finance textbooks tend to treat the Capital Asset Pricing Model as if it, too, applies to stocks alone, and if they are American textbooks, then to American stocks alone. But this isn’t right; understood correctly, the CAPM applies to all liquid investable assets, domestic and foreign, stocks, bonds, commodities, and more. If that’s so, then beta and alpha should be understood in relation, not to the stock market’s returns, but to the returns to the entire universe of investable liquid assets. So it should be little wonder that published stock betas and the CAPM as normally presented suffer from a poor fit to our observations of actual returns.

Conclusion

But these are problems for the theoretician to ponder and unwind. The practical investor need only recall, when the words are bandied about, that—to speak very roughly— “beta” refers to the component of a stock’s or a stock portfolio’s return or risk that comes from its being a participant in the stock market, and “alpha” is the rest of the return, after subtracting the returns that come from unexpected surprises. And if anyone tells you that he has created alpha in a portfolio, you will have to investigate diligently and ask difficult and technical questions if you are to have any hope of detecting whether he is talking rot.

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