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Providing Effective Investment Advice: Insights from Behavioral Finance

The Keynote Speech from Morningstar's 2005 Investment Conference

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Summary

- All too often decision making about personal wealth is influenced by emotions and unconscious biases that cause people to make sub-optimal choices.
- Among the most pernicious are those biases that drive people to chase strong investment returns, make them reluctant to rebalance portfolios and cause them to over react to short-term volatility.
- Emphasis on a few timeless principles of investing can help:
 - It's the overall results of a portfolio that matter, not the component parts;
 - The more un-correlated investments in a portfolio the better; thus, effective diversification means that not all investments will work at the same time; and
 - Capital market returns are mean reverting. Systematic rebalancing, therefore, adds to return while reducing risk.

What Drives People to Make Counterproductive Investment Choices?

Chasing strong investment performance, whether through asset classes or investment managers, seems to be a permanent feature of investor decision making. People are somehow irresistibly drawn to the hot hand, often getting caught up along the way in one implausible scenario after the next, the bio tech bubble, the Internet bubble—perhaps a housing bubble today. Fifteen years ago, however, it was a housing bust

thought then to be capable of taking down the U.S. banking system.

And for those “highly experienced” capital market observers, I’m sure you remember the conglomerate boom of the 1960s, the nifty-fifty boom of the early 1970s and the takeover craze of the 1980s punctuated, by a proposed leveraged buy-out of none other than United Airlines at a huge premium to its underlying net worth.

Are we really all this incompetent? What drives people to these extremes?

A new field of study—actually it’s now about 30 years old—called behavioral finance has emerged to answer these exact questions. Behavioral finance is an outgrowth of an unlikely collaboration of economists and psychologists. While neither group is known for their predictive acumen, together they have developed a framework that sheds much light on the way people make decisions. Indeed, Daniel Kahneman, a psychologist whose work underpins much of this report, won the Nobel Prize in economics in 2002 for his contributions in this domain.

So let’s take a look at some of the precepts of his work as well as that of some of his colleagues. Their research shows, not surprisingly, that, when it comes to money, rational choice does not always apply. Instead, decision making is often colored by powerful biases—some that make us very conservative, and others cause us to be aggressive risk-takers.

The first of these biases falls into the conservative camp; it’s a bias that I will label *affection for certainty*. Studies show that most people have a disproportionate preference for investments that have no inter-period volatility. To illustrate the point, consider the results of

the following choice problem. It's a nice problem to have; you can choose between option A, wherein there is an 80% chance that you will receive \$4,000 and a 20% chance that you receive nothing—having an expected value of \$3,200—or you can choose option B and receive \$3,000 with certainty (*Display 1*).

Display 1
The Certainty Effect*

| | Choice A | Choice B |
|----------------|----------|----------|
| Amount | \$4,000 | \$3,000 |
| Probability | 80% | 100% |
| Expected Value | \$3,200 | \$3,000 |
| Popularity | 20% | 80% |

*This choice problem is more properly characterized as demonstrating risk aversion but can be transformed to support the certainty effect with additional steps that—while technically important—add little to the conceptual point being made.

Perhaps it won't surprise you to learn that when people were faced with this choice, 80% chose B—although A's expected value is greater than B's, and in 4 out of 5 cases \$1,000 greater, most people would rather leave that extra money on the table and go for the certain outcome.

The Impact of Bias on Portfolio Construction

This bias shows up in asset allocations. Over time the wealth of most households has been overly concentrated in investments with known or narrowly bounded outcomes at the considerable expense of long-run returns. Ambiguity is clearly distasteful to people and they are willing to give up a lot of return, too much return, to eliminate it.

The second thing about people, and it's a characteristic of great significance, is that they are highly *loss averse*, a concept distinct from being risk averse. Consider the following situation. Times have turned tough and you have a grim choice: You can choose option A, wherein there is an 80% chance you are going to lose \$4,000 but a 20% chance that you can avoid the loss entirely. The expected value of this option is a loss of \$3,200. Alternatively, you can choose option B, wherein you just accept a \$3,000 loss and walk away.

This is the same situation as the previous example except with the signs reversed; we are now contemplating losses as opposed to gains, a condition that induces a total transformation in attitude. When faced with the prospect of a certain loss, people were overwhelmingly willing to gamble to avoid it, even though the expected value of the gamble is actually a larger loss (*Display 2*).

Display 2
People Gamble to Avoid Loss

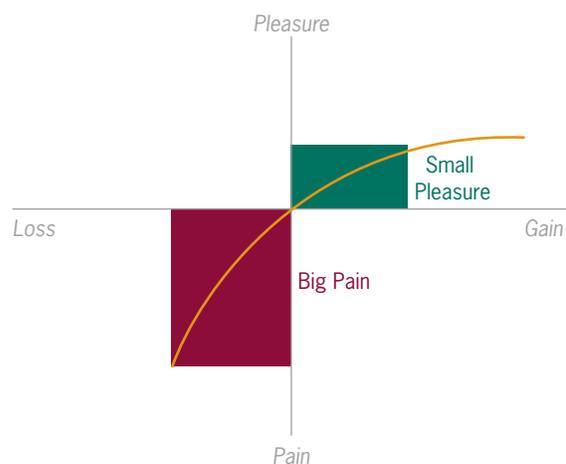
| | Choice A | Choice B |
|----------------|-----------|-----------|
| Amount | \$(4,000) | \$(3,000) |
| Probability | 80% | 100% |
| Expected Value | \$(3,200) | \$(3,000) |
| Popularity | 92% | 8% |

It is evident from this and many other such tests that in our minds, losses loom larger than gains. For most of us, the pain of a given loss significantly exceeds the pleasure of an equivalent gain. In fact, research on the subject shows that we equate gains and losses in a ratio of about 2:1.

A Disproportionate Trade Off

Here's a picture of loss aversion at work (*Display 3*): it reflects the value people place on gains and losses derived from real-world tests. Notice that as we move into the domain of potential losses, the slope of the line steepens sharply. The message in the display is clear enough: People just don't like losing money. Perhaps the only thing they dislike more are the people who lose it for them!

Display 3
Loss Aversion



Thus, investments framed in the domain of potential losses—whether as a function of poor recent performance or other unsettling factors—will be priced to offer returns higher than that explained by the risks they actually entail. Stated another way, the seller is willing to accept a low price to eliminate the stress of ownership that he or she can no longer bear.

Value investors, by the way, (of which I am one) find their place in the world by a willingness to take on this stress, living their lives being depressed, afraid and subject to repeated threats to their self esteem, all for the worthy objective of growing their wealth just a little faster.

It is no wonder that when such strategies are most opportune, clients express little interest in them. In general, people want to underweight anything that engenders anxiety. For them, it's just not worth the added return. And it's a perfectly fair choice. The problem is that this choice is often based on data which distorts their thinking.

The Importance of Feeling Secure

Here's an interesting study to illustrate the point. Investors were placed into two groups and asked to form a portfolio of two investments weighting each as they saw fit. All they knew about each investment was its trailing return. The first group of investors received returns based on monthly outcomes and the second group received returns based on yearly results, in both cases covering the same time span. The returns streams were drawn from a short duration bond index for one investment and the S&P 500 for the other.

What's most notable is that after receiving all of the return data, the group of investors receiving monthly returns put only 41% of the money in stocks while the group receiving the annual returns put about 70% (*Display 4*). An amazing result since the track record for each investment was, of course, identical over the term. It's just that people in the first group never felt as secure about stocks as the second because they were measuring results monthly and experienced a much higher proportion of reports in which the returns were negative (39% of the months vs. only 14% of the years).

Display 4

Loss Aversion Distorts Asset Allocation

| | Investors Receiving: | |
|--------------------------------------|----------------------|----------------|
| | Monthly Returns | Annual Returns |
| Stock Allocation | 41% | 70% |
| Frequency of Negative Reports | 39% | 14% |

This, of course, reflects the fact that returns grow geometrically per unit of time but volatility grows at the square root of time. Thus, the shorter the reporting period the higher the probability of experiencing a negative outcome. Owing to loss aversion, the asset then loses its appeal.

Indeed, this same group of investors was given a second allocation problem identical to the first except that all the returns provided were inflated by an amount large enough so that there were never any losses in either monthly or annual reporting periods. The final allocation went to 72% stocks for both groups (*Display 5*).

Display 5

Eliminate Loss Aversion and Rational Choice Predominates

| | All Returns Inflated | |
|-------------------------------|----------------------|----------------|
| | Monthly Returns | Annual Returns |
| Frequency of Negative Reports | 0% | 0% |
| Stock Allocation | 72% | 72% |

The message in this exercise is also clear. Excessive emphasis on near-term returns will almost surely lead clients to make suboptimal choices when it comes to volatile assets, even if they have good long-run returns, a bias appropriately labeled *myopic loss aversion*.

The Benefits of Keeping A "Portfolio Perspective"

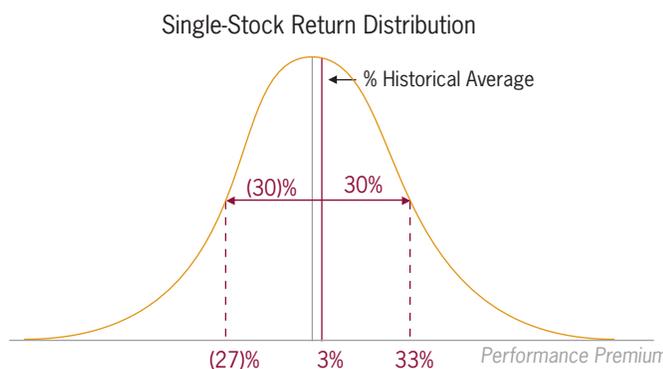
But we are not finished yet with how preoccupation with losses contaminates decision making. There is another powerful bias called *narrow framing*. Investors typically compartmentalize returns (narrow framing at work) and, owing to loss aversion, focus their attention disproportionately on the part of their portfolio that is not performing well. They do this even though they may know that the very point of a diversification is to find assets with no or negative correlations that do well over time but not at the same time. This is particularly problematic when investors decompose stock portfolios because they are consistently disappointed to see the large number of losers in strategies that in aggregate actually win.

Indeed, even professionals are not in touch with just how subtle success is in our business. By way of example, a portfolio strategy that has beaten the S&P 500 by 300 basis points per annum over a long period of time would

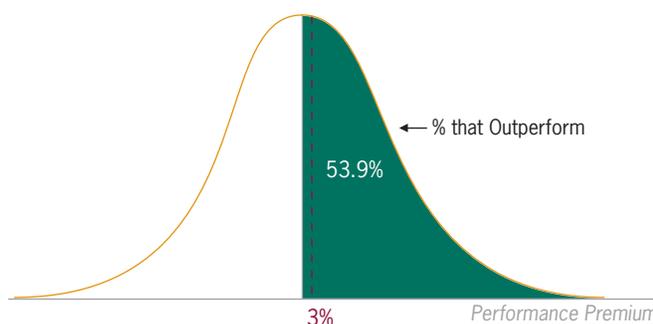
rank well into the top 10% of all professionally managed equity services.

How much do we know about the performance of any single stock in such a portfolio? Well, what we know is that any given stock will have a tendency to outperform the market by three percentage points, plus or minus some 30 percentage points, because that is the historical volatility of single, stock relative returns (*Display 6*). Were stock returns to be normally distributed, these relationships imply that only about 54% of the stocks in the portfolio actually outperform in any given year. The remaining 46% underperform, a failure rate most clients find hard to fathom (*Display 7*).

Display 6
Single-Stock Returns Are Highly Uncertain



Display 7
Success Stems from Surprisingly Low Batting Average



In fact, it's even worse than that because stock returns actually have a skewed distribution. This reflects the fact that stocks can only fall 100% but can more than double.

Thus, almost all successful stock-picking processes will have a favorable slugging average which in turn means that for any given performance advantage the batting average is lower than that implied by a normal distribution.

By way of example, the first quintile of the Bernstein dividend discount model, which has been in operation for some 30 years and has added over 400 basis points to the S&P 500 (*Display 8*), has a batting average of just 52.4%. The asymmetry of gains vs. losses actually accounted for nearly three quarters of the total return advantage. That asymmetry is not brilliance, it's primarily a reflection of the statistical character of stock returns.

Display 8
Decomposition of Bernstein DDM Performance Premium

| Source of Alpha | Contribution to Alpha | |
|-------------------|-----------------------|------------------|
| Batting Average | 52.4% | +120 b.p. |
| Slugging Average: | | |
| Winners | +28.0% | +295 b.p. |
| Losers | (22.0) | |
| Total | | +415 b.p. |

Counter-Balancing Intuition & Emotion

Narrow framing has the effect of causing many clients to lose faith far too quickly in strategies that are underperforming because they attribute the failure to a plethora of bad stocks that ironically are present in almost similar amounts in strategies that are actually working. For the same reasons, most clients find it almost untenable to rebalance portfolios. They see it as funding the losing strategy with the winner and as such, are almost always inclined to do precisely the opposite. Given that most return streams mean revert, this bias is highly counterproductive.

Its destructive effects show up, too, in the stock trading that individuals do for themselves. In a recent review of more than 8,000 paired trades at a discount brokerage firm, the stocks that people thought about and decided to sell consistently outperformed the things that they then bought, a result confirmed by any number of other studies. In fact, these findings caused one behavioral scientist to conclude that the cost of an investor having a thought is about 3.5% at an annual rate.

Now let's shift gears a bit and look at one more choice problem: Here we are asked to choose between receiving \$6,000 with a 1% probability vs. \$3,000 with a 2% probability. The expected value of these choices is, of course, identical, suggesting indifference.

In fact, when given this choice people preferred the \$6,000 option in a ratio of 7 to 3, implying that they thought the expected value of the \$6,000 option was greater than the \$3,000 choice (*Display 9*).

Display 9
Skewness: Go for the Gold

| | Choice A | Choice B |
|----------------|----------|----------|
| Amount | \$6,000 | \$3,000 |
| Probability | 1% | 2% |
| Expected Value | \$60 | \$60 |
| Popularity | 70% | 30% |

Now while the general public is not known for its skill in computing percentages, this explanation misses the point. Instead, what these and other similar tests show is that when the probability of success is really small, it's the size of the pot that matters not the mathematical odds of winning it. One percent, two percent, what's the difference? Both are very small, so what drives choice is going for the gold.

Indeed, the interest in making such wagers actually grows as the pot gets larger, even if the odds fall to truly tiny levels, explaining for instance the popularity of lotteries even among people who say they understand the mathematical odds. In the capital markets, this bias, called skewness, fuels most bubbles. Whole industries have been financed as a function of skewness; biotech in the early 1990s and the Internet cycle most recently.

Reliable or Distorted Forecasting?

The above behavior is based on known probabilities. But in most cases the probabilities that apply to a choice are not known and must be estimated. In these circumstances, people typically rely on a set of *heuristics*—think of them as mental short cuts—to form a point of view. While useful most of the time, a number of these heuristics leave people vulnerable to forecasting errors.

Among the most powerful is the *availability heuristic*, which asserts that the amount you believe in some view

of the future is functionally related to how often you hear that view expressed, how provocative the form and how authoritative the source. These factors, of course, may bear no relationship to how probable the forecast actually is.

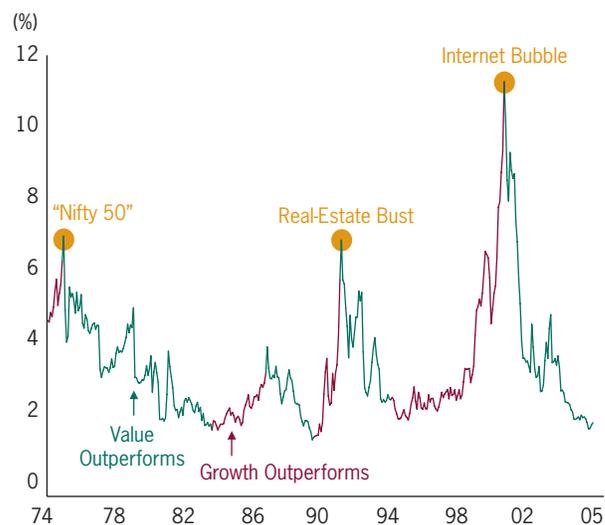
In the late 1980s, owing largely to availability, it was widely thought that the Japanese would soon dominate the world. Executives began to trek over to Japan to figure out how to copy what they were doing—an unthinkable such trip today.

More recently, availability was key in building the notion that the Internet would quickly and profoundly alter the dynamics of virtually all businesses—perhaps the most provocative example of the availability heuristic at work. Remember the catch phrase—“the Internet doubles every 100 days”? How many people ever stopped to check the validity of this assertion and the implausibility of the extrapolation even for just a few years?

Availability has become an ever more powerful force as the amount of media attention to the financial markets has grown. The frequency and form with which people are exposed to the popular perspectives on what the future holds has risen dramatically. And the data clearly shows that investors have become trend followers to a degree greater than at any time in history, adding, therefore, to the duration and magnitude of market anomalies.

You can see the effects of availability in *Display 10*, which measures the ex-ante return advantage associated with value, the complement of which is the return advantage in growth.

Display 10
Style Cyclicity Amplified by Availability Heuristic



What's measured here is how cheap the cheapest one hundred stocks in the S&P 500 are versus the index overall; the cheaper they are, the larger the return advantage. Thus, peak points on the graph equate to moments of big opportunity in value, high risk in growth and vice versa. When the return advantage is moving up (that is, value stocks are getting cheaper), growth is outperforming when its moving down it's value's turn to win.

Note that peaks in the return advantage of value are always associated with some market phenomenon which has received wide attention and has, through the effects of availability, radically reshaped investor perspectives. What's so interesting about these cycles is that they are such clear distortions when looking back. But it's quite another story while they're underway. The behavioral phenomenon that produce them are just irresistible. Said another way, trend extrapolation is almost always the popular forecast but rarely the operative model.

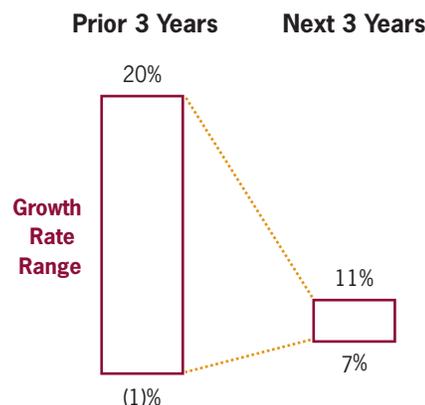
Presented in Display 11 is a long history of consensus growth rate forecasts for a large universe of companies ranked into quintiles from fastest expected growth rate to slowest. We then compare these forecasts to their growth rates over the prior three years. The high correlation is stunning. The data vividly demonstrate the attraction of trend extrapolation as a forecasting paradigm, especially for high-growth companies.

Display 11
Consensus Growth-Rate Forecasts Miss the Mark

| | Quintile | Future | Prior 3 Years | Actual |
|----------------|----------|--------|---------------|------------|
| Fastest Growth | 1 | 19% | 20% | 11% |
| | 2 | 13 | 12 | 8 |
| | 3 | 11 | 5 | 9 |
| | 4 | 10 | 1 | 8 |
| Slowest Growth | 5 | 5 | (1) | 7 |

What actually happened was that analysts were able to tell which companies were the fastest growers, but over-estimated their growth rates by nearly 80%. Also clear in the data is the strong tendency of corporate growth rates to mean revert. Very rapid growth slowed, very slow growth accelerated, all clustering much closer to the mean than most people expected (*Display 12*).

Display 12
Growth Rates Revert to Mean



Which is why an investment strategy focused exclusively on fast-growth companies is a formula for failure. Display 13 shows the returns of a large universe of stocks ranked by consensus expectations for growth. The return pattern is perverse, with the highest growth rate cohort producing the worst returns. Why is that? It's because mean reversion of growth came sooner and to a greater extent than anyone expected and in the process, quickly turned enthusiasm to disappointment.

Display 13
High Expectations Often Produce Disappointing Results



Data from 1982 through 2004; growth universe was defined by ranking a universe averaging 821 large-cap US stocks by price/book, dividing the universe in half by capitalization and selecting the highest price/book half.

Source: CRSP, S&P-Compustat, I/B/E/S and Alliance Capital

A similar pattern characterizes investment manager performance. There have been many studies to demonstrate that strong prior three year returns in mutual funds, for example, mean revert over the following three years.

Indeed, in the study referenced in Display 14 some 85% of such strongly performing funds produce returns below their prior three year level with a good number manifesting higher risk as well.

Display 14

Manager Performance Is Mean Reverting

**Best Performing Managers
Based on Trailing Three-Year Returns**

| | |
|-------------------------------------|--------|
| Prior Three Years | +4.3% |
| Next Three Years | (5.3)% |
| Percent Funds Showing Deterioration | 85% |

The moral of the story is that good things get less good over time and bad things get better. Yet at extremes, very few people see it that way.

Too Small A Sample Size Causes Bias

Let us touch on another bias that has a prominent influence on perceptions and choices. It derives from an inadequate grasp of the laws of probability and statistics by most people. It's an effect labeled *local representativeness* or alternatively, *the law of small numbers*. Thus, in the case of flipping a coin, people regard getting six heads in a row as highly improbable and proof positive that the coin is unbalanced. If a process has a certain character overall, they reason, it ought to be evident even if the sample size is small. In this case, there should have been at least one tail in six flips if the coin was fair.

Because of this intuitive belief, people are too quick to draw conclusions from limited data sets. This bias is endemic in the industry and leads to overconfidence on the part of many forecasters. Among clients, its most pernicious effect is in evaluating manager performance. A string of good years is typically seen as *prima facie* evidence of skill, which even if true, as we have seen, is vulnerable to mean reversion in the period just ahead.

The result: Investors systematically chase trailing returns; they buy high and sell low. Odd isn't it that vulnerability to these phenomena persists? It's because most people are unaware of their biases and as a result don't easily learn from their mistakes.

The Need for Advisors' Expertise

Which is where we come in as trusted advisors. We need to counter these wealth destroying tendencies in the advice we offer. While there are no magic antidotes, consistent emphasis on a few timeless principles of investing can go a long way to moderating the most harmful of these biases. So as we work with clients to design investment solutions for them, it should be emphasized that:

- *It is the return of the entire portfolio that matters, not its component parts; every effort should be made in communicating results to draw attention to this reality.*
- *The volatility of a portfolio is minimized by the inclusion of return streams that are not well correlated—negative correlations are even better. That means, by definition and by design, that some parts of the portfolio will always be doing badly. Clients need to be prepared for it—in fact, we need to get them to see the underperforming parts of the portfolio as an opportunity to add return through rebalancing rather than being a problem.*
- *Systematic rebalancing adds to return because the capital markets are, for the most part, mean reverting. Clients need to see rebalancing as a religious commitment. Rebalancing should be framed as a systematic way to ensure buying low and selling high.*
- *Diversification is good. The more uncorrelated, attractive return streams you can get into a portfolio the more predictable and the more stable the result will be. Attempts to concentrate in strongly performing parts of the capital markets raise the odds sharply that mean reversion of returns will prove to be your enemy when it could be your friend.*

Let me close by stressing that as investment advisors the quality of our services are not only defined by investment results; as important is how clients feel about their wealth along the way. Keeping clients well informed, renewing their confidence about the course they are on, is more than good bedside manner—it will make them far less prone to succumbing to insidious behavioral biases, especially in times of market turbulence. We at AllianceBernstein see sharing knowledge with clients with this purpose in mind as one of our most important priorities.

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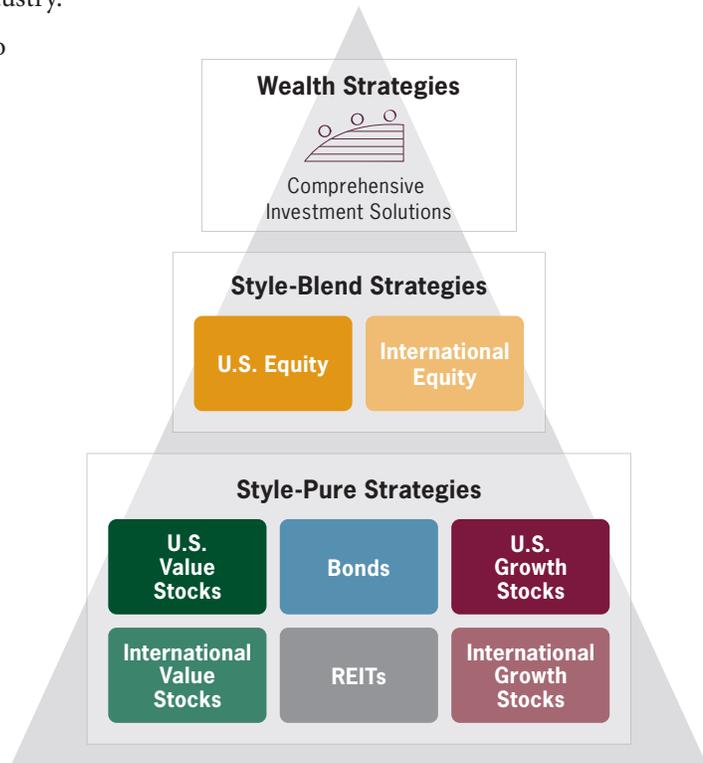
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