In the distant past, before modern portfolio theory told investors to diversify, just about all portfolios were concentrated active portfolios. Some colorful folklore surrounded this practice. Will Rogers was asked how he made a fortune in the stock market. He said, “I just buy a few stocks and wait ’til they go up.” He was then asked, “What if they don’t go up?” and he replied, “Then I don’t buy ‘em.”

What is the role of high-conviction active managers in an investor’s portfolio? Should investors “staff” their manager allocations chiefly with index funds and high-conviction (also known as concentrated active) funds—either long-only or hedge funds—applying a barbell approach? Or is it more efficient for managers to be diversified, with enhanced index funds and other low-active-risk funds playing a large role?

Here, we argue that, because investors can diversify, managers don’t have to. Most managers can and should specialize, with the resulting portfolios having large active positions and, potentially, a fair amount of active risk.

This advice may seem peculiar coming from us. In the past, we’ve advocated an approach to investing that is straight out of Grinold and Kahn [2000]. These great researchers advised investors to maximize the information ratio, which is a function of breadth as well as skill. Breadth is the number of independent active management decisions that a manager makes. Grinold and Kahn argued, correctly, that a manager with a given amount of skill maximizes his or her information ratio by maximizing breadth. This line of reasoning leads to the conclusion that managers should be diversified, not concentrated.

But no manager can be skilled at everything! There is only so much a person or small group of people can know. As long ago as 1957, the Nobel prize–winning economist Herbert Simon argued, persuasively, that (contrary to the conventional assumptions of classical economics) people are not purely rational beings seeking to know everything that could be relevant to every decision they face.

Instead, the behavior of people in the economy is described by “bounded rationality.” The theory of bounded rationality says that it’s more efficient—more rational, in fact—to be slightly irrational. You must decide what you can and cannot know, and focus on the former. Thus, people specialize and become experts in something, if possible hiring other experts to do the things they cannot, but often making decisions with very incomplete information.

In investment finance, bounded rationality means that most (not all) managers should find a niche where their expertise really pays off.
large, multi-strategy firms with trillions of dollars under management, should become generalists and apply their vast information-gathering ability across thousands of securities. But most should not. And the investor should choose from both menus, blending high- and low-active-risk managers.

If you build a portfolio of diversified active managers, you will probably wind up constructing a high-cost closet index fund, because the active bets will tend to cancel each other out. And if they don’t, if the active bets are highly correlated because the managers pursue a similar style, the result will be a single beta bet, or factor bet, relative to the benchmark—in which case you’d be better off explicitly making the beta bet at low cost.

Thus, applying Grinold and Kahn in the context of bounded rationality means that an optimal manager structure will contain both generalist and specialist alpha seekers, as well as index funds.

The next section of this article discusses the bounded rationality argument from behavioral finance, which implies that one should specialize. We follow with a brief history of the thinking that leads investors to believe that managers should be broadly diversified, and we show under what circumstances that argument is misleading. (Managers with credible high alpha forecasts should specialize; it’s investors’ portfolios of managers that should be broadly diversified.) Finally, we describe the position that high-conviction management properly holds in an investor’s portfolio.

We then explain how good active management teams function and indicate what investors should look for when choosing such teams. We touch on the screening process, deep research on industries and individual companies, portfolio construction, risk management, and performance evaluation (distinguishing good managers from bad ones). We then address differences between long-only managers and long–short managers or hedge funds.

In general, we use the term “high conviction” and “concentrated active” interchangeably. The theory of active management states pretty clearly that a manager has to have quite a high alpha expectation for a security to give it a large weight in a portfolio. A high alpha expectation is synonymous with high conviction. Thus, high conviction translates to large weights for individual securities and, hence, to a concentrated style of active management.

**CONCEPTUAL BACKGROUND**

**The Behavioral Finance Case for Specialization**

Herbert Simon, who won the 1978 Nobel economics prize, challenged the classical economic assumption that all agents (producers, consumers, and so forth) pursue their self-interest with perfect rationality. He proposed “bounded rationality” as an alternative assumption. Bounded rationality means that there is only so much you can know, so it’s rational and necessary to make decisions with incomplete information. He said that decision makers are “satisficers,” seeking satisfactory rather than optimal solutions; they are limited in their ability to be rational by “cognitive limitations,” on one hand, and “structures of the environment,” on the other.

In modern terms, information is both costly to obtain and difficult to interpret. The high cost of information is one of Simon’s environmental structures. Moreover, the acquirer faces diminishing returns to obtaining even more information. Once acquired, information is difficult to interpret because of what he called cognitive limitations—we are not infinitely smart. Moreover, it is difficult to know how much of the information you’ve gathered is already known by others, who presumably are trading against you.

Thus, it pays to specialize. It is rational and cost efficient not to try to acquire all information. Information is more likely to be unique, or at least not widely shared, if it is about securities that only a few people care about.

Andrew Lo [2004], channeling Grossman and Stiglitz [1980] and Bernstein [1998] and beautifully enriching the stories told by both precursors, reconciled relatively efficient markets with evolutionary concepts and the possibility of successful active management, as follows:

From an evolutionary perspective, the existence of active liquid financial markets implies that profit opportunities must be present. As they are exploited, they disappear. But new opportunities are also continually being created as certain species die out, as others are born, and as institutions and business conditions change. Rather than the inexorable trend towards higher efficiency pre-
dicted by the [efficient market hypothesis], [my Adaptive Market Hypothesis] implies consider-
ably more complex market dynamics, with cycles as well as trends, and panics, manias, bubbles, crashes, and other phenomena that are routinely witnessed in natural market ecologies. These dynamics provide the motivation for active management.

Imagine trying to understand even a little about every security in a broad asset class in such swirling, turbulent waters! It takes a vast capital base and the large, multi-specialty staff of a “big house” just to gather the information required to run a broadly diversified active fund, to say nothing of converting this information into meaningful security or factor forecasts and then building portfolios that properly reflect the value added of those forecasts. Only a few very large managers should attempt this. The others should hone their specialties.

These two kinds of managers are among those portrayed in Exhibit 1, which shows the various information-gathering and breadth options open to prospective managers. The shaded areas are those for which funds cannot or should not be constructed. No one can know a lot about a lot of securities; anyone can know a little about a few securities, making such knowledge almost worthless. Note that there is a role (index funds) for not gathering information; index funds work on the principle that other people have already gathered the relevant information, so you don’t have to.

To sum up, there should be room in the investor’s total portfolio for these different approaches. Because the investor can diversify across managers, high breadth can be achieved at the total portfolio level, even if all of the underlying managers are specialized. We’d argue that the investor’s portfolio should also include diversified managers, typically very large houses that achieve great cost efficiency in knowledge gathering. That said, because a diversified portfolio can be built out of multiple specialized managers, an optimal manager structure need not include diversified managers or enhanced index funds.

Alpha Bets and Beta Bets

In past work, the authors have contributed to a body of literature that is now considered to be the basic instruction set for investors seeking to choose active managers and to blend active and indexed management. See Grinold and Kahn [2000]; Waring et al. [2000]; Waring and Siegel [2003]; and Siegel et al. [2009]. This literature says that the goal of all investment management is to maximize the Sharpe ratio, or expected return per unit of total risk. Once the Sharpe ratio–maximizing portfolio has been identified, the investor can leverage it up or down to the desired risk level.

The capital asset pricing model (CAPM) of Sharpe [1964], among others, as elaborated by Roll [1976], says that the Sharpe ratio–maximizing portfolio is the capitalization-weighted market portfolio of all risky assets. This, according to the CAPM, is the portfolio that every investor should hold in conjunction with cash or some other “riskless” asset, with investors differing only in the weights assigned to the risky and riskless asset categories.

Investors who seek to beat the market, however, will obviously have holdings weights different from the “cap” weights prescribed by the CAPM. These weights will reflect the views of the various active managers employed. The decision of what asset classes to hold (beta decisions) and how to beat each asset-class benchmark on a risk-adjusted basis (alpha decisions) are conceptually separate and should be separated in practice. The beta decisions should be based on finding the mix of asset classes that best matches the investor’s liability or general objectives. The alpha decisions should be based on the investor’s view of which active managers have true skill (the ability to beat a fairly constructed, and properly risk-adjusted, asset class benchmark).

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**Exhibit 1**
The Information-Breadth Matrix for Investment Management

<table>
<thead>
<tr>
<th>Number of Securities Studied/ Held</th>
<th>Amount of Information Gathered and Used</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>None</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>High Conviction</td>
<td>Large</td>
</tr>
<tr>
<td></td>
<td>1) Concentrated Long-Only Active Managers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Hedge Funds</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>Index Funds</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enhanced Index Funds</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diversified Active Managers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Infeasible</td>
<td></td>
</tr>
</tbody>
</table>
Exhibits 2 and 3 show how alpha–beta separation works as a concept. The risk caused by beta exposures (the choice of asset-class weights) is unrelated, and in fact orthogonal, to the risk caused by alpha exposures (active management). Both risks contribute to total risk, but they do not combine linearly. In fact, total risk is numerically not much larger than beta risk. But most investors are more averse to alpha risk than to beta risk in the sense that they are unhappy if they are underperforming their peers, while if the market is down, everyone is made worse off and there is nothing shameful about showing a loss.

**Selecting Managers Who Have Skill**

Investors should choose active management over indexing in those asset classes or parts of the portfolio where the investor believes he or she can identify man-
agers with skill. “Skill” means something different in active investment management than it does in ordinary English. Siegel et al. [2009] wrote:

If you walked out the front door of your building and happened to get hit by a car, an average or even below-average doctor would be a welcome sight. An average doctor has a great deal of skill, just not as much as some of his cohorts, and could at the very least keep you alive until you could find an above-average doctor. …[b]ut a fund manager with only average skill is almost completely useless! …[A] fund manager with average skill produces…an index fund [return on average over time, and even less] after fees….

So an average money manager, by definition, cannot and does not add any value…. A fund manager must have a truly exceptional (that is, a well above average) level of skill in order to be expected to beat the market.

Exhibit 2 expresses this concept graphically. The average active manager is shown as the horizontal line, about 1% below the “benchmark” line, where 1% is our estimate of typical manager fees and costs. Good managers are those above the benchmark line; that is, those with an expected alpha that is positive even after fees and costs.

Given these challenges, we face two problems: 1) How do we know what alpha to expect? And 2), given expected alpha and active-risk (tracking error) estimates for each candidate manager, how do we build an optimal portfolio of managers? The first question defines an art, while the second is mostly an engineering problem, if we have all the required inputs.

Forecasting Fund Manager Alpha

Handing money to someone and telling him or her to select winning managers is a little like handing someone a paintbrush and telling them to paint like Picasso. It isn’t impossible, but it’s going to take a lot more than just having the right tools.

Investors should maximize information ratio, not raw alpha. In a close analogy to asset-class allocators seeking the mix with the highest Sharpe ratio (SR), manager selectors should seek the mix of managers with the highest information ratio (IR), where

$$SR = \frac{E(R_p)}{E(\sigma_p)}$$  (1)

and

$$IR = \frac{E(\alpha_m)}{E(\omega_m)}$$  (2)

where \(R_p\) is the return on portfolio \(p\); \(\sigma_p\) is the standard deviation or risk of portfolio \(p\); \(\alpha_m\) is the alpha or active return of manager (or mix of managers) \(m\); \(\omega_m\) is the standard deviation of the alpha, also called active risk or tracking error, of the manager (or mix of managers) \(m\); and \(E\) means expected value.

Why should allocators maximize \(IR\) and not raw alpha? Because investors are averse to active risk and, thus, require a higher expected alpha if they are to be induced to take more active risk. The investor who wants a higher alpha should thus allocate more to managers with a high \(IR\), rather than pick the manager with the highest raw expected alpha irrespective of active risk.

Active risk in the denominator of the \(IR\) formula, then, is the “governor” that says “wait a minute” when an investor is contemplating an allocation to a manager with a high expected alpha. The contemplated alpha may or may not be realized, and if there is a disappointment, it could be large. The actual return could be much less than that of the benchmark or index fund.

We realize that this discussion may feel as though it has gone a bit astray. Concentrated active managers are likely to have high forecast alphas and high active risk. Doesn’t our line of reasoning say to avoid high active risk?

It depends. If the forecast alpha is high enough, then a relatively high degree of active risk can be justified. We’ll get to this in our later section on building portfolios of managers. First, however, we need to know where a high information ratio comes from.

Where does a high information ratio come from? Grinold’s [1989] fundamental law of active management says:

$$IR = IC \cdot \sqrt{B}$$  (3)

On the right-hand side, \(IC\) is the information coefficient, a measure of raw skill, equal to the correlation of realized returns and forecast returns; and \(B\) is breadth,
the number of independent security choices made each year (“each year” because IR is in annualized form).

The IC is simply a manager’s edge in choosing assets, or the ability to make security-level return forecasts. This is what a high-conviction manager has high conviction about. All active management is about forecasting; what makes a manager worth hiring is his or her ability to make return forecasts that are correlated with subsequent realizations. There is no other way to beat the market or to beat a benchmark.

Note that an information coefficient of 1 means perfect forecasting: every return forecast by the manager is realized exactly. No one ever comes remotely close to such an IC; most ICs are below 0.05. Forecasting is hard, especially when it concerns the future (or so said the great physicist Niels Bohr).

Why does this formula work? Ronald Kahn [1999], who admits that the concept is not intuitive, wrote,

[T]he Fundamental Law… is an old result from gaming theory. Imagine a roulette wheel where players can bet on red or black. The casino has a small edge because two numbers, 0 and 00, are green. (The casino’s IC = 0.053.) Through every spin of the roulette wheel, the casino maintains that small edge. Now, imagine [that] players [either] bet [2 five million times, or 10 million once]… The casino’s expected return is the same in both scenarios. However, it would clearly far prefer the first scenario from a reward-to-risk tradeoff.

The analogue to the casino is the investor, in whose interest it is to “spin the wheel” more times rather than fewer, to minimize the risk associated with capitalizing on his or her edge in the markets.

Thus, one very skilled manager with narrow breadth could add as much IR to a portfolio as another, less skilled manager with wide breadth. For example, all of the hypothetical managers in Exhibit 4 have the same information ratio.

**How big are IR and IC for good managers?** To give a sense of scale to IR and IC, consider the 495 managers and sponsor portfolios studied by Clifford et al. [2001]. The best one, as ranked by IR over January 1980 to March 2000, had an IR of 0.888, the 10th best had an IR of 0.498, the 20th best had an IR of 0.447, and the 100th best had an IR a little over 0.1. Most of the IRs were negative. Thus, an IR of 1 sustained over 20 years is effectively impossible, although over shorter periods it’s possible but unlikely.

We can also get a sense of scale for IC from these data. The best and second best managers studied by Clifford, Kroner, and Siegel, as measured by IC, did not pick stocks, and the third best (Magellan) used strategies that varied widely over the two decades studied. The fourth best (Alliance Large Growth), however, picked stocks from the large-cap growth universe of 150 to 200 companies. Assuming $B = 175, that manager’s IR of 0.645 translates to an IC of 0.049, sustained over 20 years. (Obviously it was much higher in the manager’s best periods and much lower in the worst periods.) This track record should be regarded as representative of the very best managers, not of typical active managers.

Diversified managers have less breadth than it appears. At least on first examination, it looks difficult for high-conviction or concentrated active managers to win this race, because the large number of securities in the market makes it possible for diversified managers to have a lot of breadth.

However, most of the security decisions made by diversified managers are not independent! Typically, these managers are not really applying their unique skills to each of the 3,000 securities in the Russell 3000. Instead, they’re eliminating whole categories, such as overpriced (high price/earnings) companies, unprofitable companies, and so forth. Then, they’re applying other heuristics and formulae to choose among the remaining companies and assigning portfolio weights. Thus, the number of truly independent decisions, the number that should be used to represent $B$ in the fundamental law, is much smaller for diversified managers than it appears.

Let’s say that a diversified value manager gets an initial list of 3,000 stocks (the Russell 3000) down to a smaller actual portfolio by using a cookie-cutter
Building Portfolios of Managers

Although Markowitz [1952] and many worthy successors have dealt with the challenge of building portfolios of securities or asset classes, the puzzle of building portfolios of managers has been less well covered. Managers provide a mix of asset-class and active (idiosyncratic) exposures, and the methods needed for optimizing across both the beta and alpha parts of the return are quite complex.

Chow [1995] proposed a manager-optimization solution, fleshed out in Waring et al. [2000] and presented in popularized form in Waring and Siegel [2003]. The essence of the solution is that “building a portfolio of managers is like building a portfolio of anything—it’s an optimization problem.” The investor must develop estimates of expected active return (alpha) and active risk (tracking error) for each candidate manager, as well as of the relevant beta returns and risks and a large number of correlations.

The result of the manager structure optimization suggested by Waring et al. [2000] is a list of holdings weights for managers, analogous to the holdings weights for securities in a security-level optimization. The authors write,

[T]here is an important and positive role not only for the truly superior active managers, predictably capable of adding value to a portfolio, but also for index funds…. The relative proportions of active and passive managers are driven… by the investor’s desire to control the… active risk it is willing to accept in its portfolio. It is a classic risk budgeting question.

<table>
<thead>
<tr>
<th>Exhibit 5</th>
<th>Median Information Ratio and Active Risk for Concentrated and Diversified Active Equity Managers, April 2000 to March 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Index</strong></td>
<td><strong>U.S. Large/Midcap</strong></td>
</tr>
<tr>
<td><strong>Median Excess Return Over Benchmark (annualized, %)</strong></td>
<td>0.77</td>
</tr>
<tr>
<td>Low active risk managers</td>
<td>0.04</td>
</tr>
<tr>
<td>High active risk managers</td>
<td>0.21</td>
</tr>
<tr>
<td><strong>Median Information Ratio</strong></td>
<td>0.44</td>
</tr>
<tr>
<td>Low active risk managers</td>
<td>0.17</td>
</tr>
<tr>
<td>High active risk managers</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Source: Nielsen et al. [2012, p. 22].
Manager structure optimization also says that the weights of each manager within the active set are driven by the marginal contribution of each manager to the overall active return of the portfolio, where a penalty is taken for active risk. That’s what optimization does. If the marginal return contribution is high enough, as it would be with a highly skilled concentrated active manager, that overcomes the risk penalty and the manager gets a large weight.9

The investor does not have to actually use an optimizer to take advantage of these insights. Optimization is the right way to think about building a portfolio of managers, but heuristic methods, in which judgment and experience are used to arrive at manager weights, may be just as useful.10

What Can We Conclude from All This Theory?

We can summarize our arguments up to this point as follows: In the general case, diversified active funds are more efficient, in terms of the efficient uses of both costly information and an active risk budget, than high-conviction, concentrated active funds. However, concentrated active funds take advantage of the principle that people gain in their ability to gather and interpret information by specializing.

Hiring a concentrated active manager adds to an investor’s overall portfolio efficiency, or information ratio, if the manager has a great deal of what we’ve called, as a term of art, “skill.” In this context, a skillful manager:

• is good at identifying particularly valuable or hard-to-get information that managers with a broader selection universe will not be able to get or will not know is important, and
• has high cognitive and/or intuitive ability to process information.

More often than not, this high degree of ability comes from specialized knowledge and experience, as a research doctor, field geologist, or aerospace engineer might have.

The logic of bounded rationality also suggests that truly high ICs can be achieved only by those who know a lot about a few securities. Those who know a little about many securities have breadth on their side; they can achieve a high IR without a particularly high IC and offer a different active risk/active return profile than specialist managers. If, in addition, the high-IC manager also charges a low fee, that is of even greater advantage to the investor (see Siegel et al. [2009]).

Thus, the presence of high-conviction managers in a well-engineered portfolio of managers is a natural consequence of high information costs, limited resources, and the inability of any one individual or small group of individuals to know everything.

We now describe some of the characteristics of a skilled manager of a concentrated active, or high-conviction, equity portfolio.

IDENTIFYING SKILLFUL ACTIVE MANAGERS

We’ve referred to a seemingly mysterious ingredient called skill, which enables managers to beat both the market (or a market-related benchmark) and other managers, this last step being necessary because active management is a zero-sum game (Sharpe [1991]). So, what is skill? Mostly, it’s what wins in any competitive business environment: hard work informed by experience. Let’s delve into the ingredients of skill for a high-conviction equity manager, looking at the question primarily from the standpoint of an investor picking managers from among a large population of candidates.

Exhibit 6 diagrams the general principles of security analysis and active portfolio management outlined in this section. We discuss the process in detail in the following.

People

The investor’s goal in building an optimal portfolio of investment managers is to reap consistently higher after-fee returns than an index fund provides. What should an investor look for to raise the odds of success? Clearly, a demonstrated track record of past success is comforting, but this can prove to be a trap. Wimmer et al. [2013], reinforcing our own earlier work (Donoho et al. [2010]), noted that long periods of consistent alpha generation are often precursors to periods of underperformance. Past success may only signify a manager’s skill at exploiting some past market cycle or regime.

Unfortunately for investors, there is little serial correlation in manager returns. Thus, potential inves-
Factors must look deeply into the dynamics of each investment management organization to carefully examine the personnel, investment process, and stability of the enterprise.

Whether the investment process is fundamental, quantitative, or a mix of the two, the investor should carefully consider the background and talent of the investment professionals and staff. This is of paramount importance. Because the investment management business is highly competitive, long service to the firm is indicative of a strong organization, as is the presence of senior individuals with deep experience. A strong educational background, familiarity with the conceptual foundations of finance, and formal credentials all are important criteria. (Relevant credentials include business and economics degrees, CFA and CPA designations, and, if fundamental analysts are being considered, specialized experience in an industry).

**Philosophy and Process**

The investor must obtain a firm grasp of each manager’s investment process. It is said, with some validity, that “too many inquiries or meetings are never enough,” although the investor must, of course, eventually make a decision.

Knowing the philosophy underlying the unique parts of the manager’s investment process is a good place to start. What led the firm to believe that the knowledge they gather with their process is overlooked by the market, which is largely efficient? How did the investment philosophy take shape and what does the investment team believe about the way the world works? As Swensen [2000] noted, successful firms have tended to stay aligned with their original philosophies, with incremental deviations or enhancements in technique evolving over time.

**Screening**

The investment management process generally first involves reducing a broad universe to a more limited set of candidate securities. A rules-based process (either mechanical or judgmental) is invoked to winnow down the number. Most screens contain variables that the manager believes will yield candidate securities that
outperform the broad selection universe or benchmark. This screening process allows the smaller set of candidate securities to be studied in much greater detail.

Screening is necessary because the end-stage fundamental portfolio management process is time-consuming. Investors should expect their managers to spend considerable time researching each selected security in order to gain an information edge. Without a way of first reducing the full set of securities in their benchmark to a smaller group, managers would have to employ hundreds of security analysts.

The screening process should sort the universe by security characteristics that, according to the investment manager’s research, point to above-market returns. For example, a cash flow–oriented manager might choose to eliminate select businesses in which high levels of capital expenditures are required to maintain assets. By examining cash flows after deducting maintenance capital expenditures, such a manager could identify and eliminate certain capital-intensive businesses deemed unattractive using this screening tool. Because the screening criteria must be uniformly applied to a large number of securities across different sectors and industries, they should not be overly specific.

To ensure that a manager’s screening criteria are effective, the manager should be able to show that the screened securities outperformed the pre-screened benchmark over a long time horizon, not just over carefully selected short periods. In addition, the manager should be able to enunciate the logic of what drove the outperformance and why it should occur again in the future.

Fundamental Analysis of Equity Securities

After a manager has reduced a broad universe of securities to a smaller set of potential candidates, he or she begins to identify truly outstanding candidates for potential inclusion in a high-performing portfolio. Investors should carefully determine that the manager is basing his or her skill on true stock selection, rather than broad macro or beta bets. It is easy for managers to fool themselves into thinking they are making superior stock choices when they happen to choose factor or sector weights that outperform over a given period. There is more to active management than that. Wermers et al. [2012] showed that fundamental analysis of individual securities has payoffs that cannot be obtained merely by betting on sectors or common factors.

How does one tell the difference? Portfolio analytics software can be used to decompose the returns of a manager’s portfolio into stock selection bets, on the one hand, and market, factor, and sector bets on the other. Returns from sector and factor bets mean that a manager was in the right place at the right time, rather than profiting from deep insight into specific securities. These analytic programs are generally based on Ross’s [1976] arbitrage pricing theory, which expresses expected security or portfolio returns as a function of factor returns. The residual, or error term, in a factor regression—based on arbitrage pricing theory represents unique, stock-picking “skill.”

When evaluating managers, then, investors should ask to what extent a portfolio manager’s return streams are based on unique, stock-picking skill, as opposed to factor bets. The manager should have a technically sophisticated answer to this question. Pure stock-picking skill, then, is not easily acquired and maintained by an investment firm—nor, as we’ve noted, is it easily identified by potential investors. Nevertheless, some investment managers have such skill, evidenced by maintaining consistent records of above-market returns over time that cannot be attributed to factor and sector bets. It is important for the investor to do the difficult work needed to determine which managers fit that criterion.

Types of Analysis Used in Successful Fundamental Portfolio Management

The reader may assume from the following sections that we are advocating a “top-down” approach to portfolio management, but we’re not. The following sections are merely presented as high-level examples of techniques that have been successfully used in fundamental security analysis. They are not meant to be comprehensive, nor do they have to be followed sequentially. Different investment firms incorporate different philosophies and procedures successfully into their investment processes.

Industry. Industry analysis is an integral and necessary part of security analysis. A manager who places too many bets in a particular industry (or sector) exposes
the investor to macro risks that are distinct from those that attach to a specific company in that industry.

Industry analysis includes examination of trends in 1) constituent company profitability; 2) general demand for an industry’s output (for example, global future oil demand when analyzing the energy sector); 3) inputs or resource constraints (for example, if lumber prices are increasing, homebuilders are likely to face increased margin pressure); and 4) labor market dynamics. (A labor issue might be: Are experienced programmers in short supply? If so, software development costs will rise, and the shortage might also result in substandard or delayed project delivery.) Finally, 5) managers must try to develop unique insights into structural change. Here a manager adds the special sauce. Are there some unknown or misunderstood facts or situations that are good or bad news for an industry? If so, these facts or situations should be factored into the desirability of the securities in that industry.

These insights are often buried in global macroeconomic, demographic, consumer, and producer data that can be difficult for an analyst to piece together. Because these data are both hard to obtain and challenging to interpret, using them to make an accurate industry forecast can be a powerful portfolio enhancement tool. The analyst must then establish whether the forecast path of the industry is secular or cyclical; if cyclical, where in the cycle is the industry now? The analyst must also assess the risks to the forecast: if the outlook is positive, what could go wrong? If negative, what could turn things around?

The analyst must then make the industry forecasts useful for stock picking. One way of doing so is to rank the relevant industries by their relative attractiveness. Another approach is simply to use the output for each industry as a qualitative input to security-specific analysis. In any case, analysts ignore industry factors at their peril, a fact supported by Hall and McVicar [2013], who found that sector allocation had a greater impact on performance than security selection for 3,350 U.S. equity funds over the 1980–2005 period.

**Analysis of individual securities.** After screening the universe to arrive at a reasonably sized list of candidates, the analyst must study each candidate in depth. (Depending on how large the list is, there may be several more attempts to further cull it with additional screens.) At some point, the analyst is ready to take a deep dive into the internal workings of the candidate companies.

First, classifying the candidates into peer groups makes it easier to rank securities in order to identify the best ones. Whether the peer group is based on industry, sector, and SIC codes, or on general criteria, such as growth, value, or capitalization stratum, it is up to the researcher to create an objective method for categorizing securities according to their desirability. Some of the criteria used in this final stage of analysis are as follows:

1. **Performance analysis.** Net income trends, growth in sales revenue, unit output demand analysis, inventory turnover, working capital, cash flow analysis, enterprise valuations, and so on.

2. **Resource inputs.** Cost of goods sold, inventory valuation methods, margin analysis, overhead measurements, trend analysis of resource providers, threats and opportunities in input cost structures, technology costs, pricing power relative to competitors, workforce data and trend analysis, foreign dependency.

3. **Capital deployment.** Level of capital relative to competitors, returns on shareholder equity, returns on deployed capital, degree of leverage, external capital access, fixed-income security performance, and so on.

4. **Investment banking.** Merger and acquisition activity, acquisition analysis, vertical integration opportunities, expansion into new units or divisions, spin-off analysis, secondary offering or buy-back activity, outside agency ratings, entity holdings analysis (percentage of a firm’s securities held by institutions, individuals, and so forth).

5. **Management and human capital.** Vital statistics (age, gender, backgrounds), changes in leadership team, workforce characteristics, management incentives (not only the amount of cash compensation, options, pensions and other benefits, but the performance metrics used to determine compensation packages), cost of workforce vis-à-vis competitors, and so on.

6. **Downside analysis.** Determination of where company is in its cycle, customer demand analysis, risk assessment.
7. **Target price valuation.**

   a) Fundamental analysis: Price-to-fundamental-value ratio or rich/cheap analysis and assessment of both fair and downside value. Scenario analysis for changes in internal company dynamics (listed previously), historical market behavior relative to peer group, impact analysis of underlying entity (spin–off, sale, investment banking activity and corresponding impact on securities valuation).

b) Technical analysis: Study of supply and demand for the security.

8. **Holdings impact.** Impact on the portfolio (concentration, sector/industry risks) from the addition of a security. How liquid is the security and how quickly can it be transacted in an emergency?

9. **Regulatory/legal threats.** Is the entity in a precarious regulatory or legal predicament? Is the industry being affected by regulatory decisions or legislation?

10. **International issues.** Currency risk, geopolitical risks, trade advantages or disadvantages, taxation.

11. **Competitive strategy analysis.** Technological advances, market positioning, and so on, vis-à-vis competition; patents, court rulings, resource exclusivity; other competitive factors.

A real-life example can illustrate the importance of these criteria in identifying hidden opportunities. Let’s review our analysis of a “big box” retailer that sells building and home improvement products. Following several years of declining revenues, brought on by the global financial crisis and anemic new home construction, as well as competition from two slightly more upscale providers, this company responded by closing stores and trimming overhead. Still, this once high-flying firm saw its stock price plummet as it disappointed investors by routinely missing earnings estimates.

With no near-term catalysts for turnaround in sight, many investors had abandoned the stock, which was trading at a valuation that presumed that home building and improvement would remain in an indefinite malaise. However, a diligent analyst would have dissented. The market ignored several opportunities for the company to increase revenues and margins.

For example, the company had removed underperforming products from its inventory and was thus able to negotiate aggressively with its remaining suppliers by offering them coveted shelf space as well as higher volumes because many competing products had been eliminated. As a result, the company had enhanced its ability, during a period of economic distress for its suppliers, to be guaranteed the lowest inventory costs in the industry for years to come.

Moreover, by adopting incentive programs and contractor discounts, the company moved to better serve professional contractors and tradesmen, an important source of profitable repeat business. Finally, the company had entered into a joint venture with a highly popular Swedish modular furniture manufacturer to offer prefabricated kitchens. International sales data confirmed that these prefabricated kitchens were extremely popular in foreign markets, particularly among more cost-conscious first-time home buyers. An astute analyst could have figured out that this venture provided a significant opportunity for future domestic sales growth.

Importantly, the CEO had used leverage very sparingly, limiting balance-sheet risk during the challenging economic environment. Analysis revealed that none of the growth opportunities mentioned were impounded in the stock price; they were, in effect, free call options for a patient investor. With the risk–reward profile tilted so heavily in favor of the upside, this company was given a significant weight in a concentrated portfolio and proved to be a highly successful long-term investment.

This kind of careful analysis involves gathering a lot of information. Fortunately, due to changes in technology, raw information is easier and cheaper to gather than it used to be; Moore’s Law is an attempt to qualify this phenomenon for data-processing speed. But the ability to discern a signal in a blizzard of information is not getting cheaper; it may, in fact, be getting more valuable. The challenge at hand is not simply to gather more information but to apply wisdom and experience to figuring out what of the available information is relevant, and how.

**Portfolio Construction**

After an analyst has completed the industry and security evaluations, he or she will likely create a potential buy and/or sell list of securities. The next task is to determine the weight, if any, of each security in the portfolio. This is an optimization exercise, and it is where the “rubber meets the road” in building winning investment
strategies. Herold [2003] demonstrated that, compared with heuristic or naïve weighting, optimization contributes tremendously to portfolio performance.

It is one thing to determine which securities are advantageous to hold; it is quite another to weight them effectively in a risk-aware, optimized format. This step can be accomplished using a computerized mean–variance optimizer or manually using heuristics and judgment. Either way, it is vitally important to get the weights right.

The optimal size of a security holding is a function not only of that security’s intrinsic attractiveness but also of the risk that it brings to the other holdings. Clearly, a security that is highly ranked should be held in much larger quantity than one that is farther down the list—but only to the extent that adding another unit of that security increases the overall risk-adjusted return of the portfolio, after considering how the security is correlated with other portfolio holdings. The security’s liquidity, beta, and volatility also affect its optimal portfolio weight.

**Optimization issues for high-conviction portfolios.** When using an optimizer, all other things being equal, more diversification will always result in a higher Sharpe ratio and thus a better portfolio from the optimizer’s viewpoint. Thus, optimizing over a broad set of securities will result in a large number of holdings, unless the expected alphas for a few securities are so extraordinary that they are deserving of materially outsized portfolio weightings, driving the weights to zero (or near zero) for the others.

A portfolio manager who wants to place a bigger bet on fewer stocks can input his or her honestly appraised alpha estimates (or total return estimates that include alpha). Because alpha estimates high enough to get large holdings weights are not commonplace, the portfolio manager may want to add constraints or rounding conventions to reduce the number of securities held (e.g., holdings less than 1% are rounded to zero).

**Unintended risk exposures.** Risk has many forms. Buying securities only in a single sector clearly exposes the investor to the risks inherent in those particular industries, but there are more subtle types of risk. *Intrinsic risk* comes from holding securities that are sensitive to such factors as interest rate exposure, small company size, foreign exposure, or value or growth style exposure. A portfolio manager can unwittingly hold a large weight in such a group, creating unintended and unrewarded risk. The investor must be satisfied that a given manager is cognizant of these subtle risks and has taken measures to mitigate them.

**Managing downside risk.** Successful high-conviction portfolio managers understand that concentrated bets can be risky. After initial or contemplated holdings weights have been calculated, a successful portfolio manager will ensure that the concentrated bets can withstand adverse market conditions. Scenario or sensitivity analysis can be employed, either formally or informally, to measure the impacts of adverse consequences. This analysis can be conducted using sophisticated modeling software, or through a manual process—either way, the goal is to ensure that the manager carefully considers downside consequences.

This becomes more important with less-diversified portfolios. For example, holding a large weight in Internet companies, which tend to be high-beta and fast-moving with a big potential downside, may produce either a very high return or a complete disaster. Such a bet must be balanced by holding other securities with more defensive characteristics, ideally going up (or at least holding their value) when Internet stocks are falling rapidly. As such, even highly skilled stock pickers should have a mechanism for tracking and maintaining balance between defensive and more cyclical exposures within their portfolios.

There are several statistics that an investor can employ to measure the risk of a manager’s positions. Volatility, beta, downside risk measures, and sector and factor weights are among the most important. High turnover of a portfolio can produce large transaction costs, and holding illiquid securities can amplify these costs. An investor can also measure the “batting average” of a portfolio over time (the percentage of bets that are eventually successful, based on some objective and predetermined measure of success). There are many ways an investor can measure a portfolio manager’s effectiveness; a large body of literature discusses the pros and cons of each method.

**Long–Short Investing**

This article has been written in the context of long–only investing, but the concepts also apply to long–short managers. Investors who consider hedge funds, which are typically long–short funds that may also use leverage, should be well aware that very high levels of
risk sometimes result. Hedge funds were, of course, originally established to reduce (hedge) risk by taking out some or all of the market exposure inherent in long-only investing. Some such funds do take a lot of risk, however, and the investor is well advised to assess that risk for any given long–short or hedge fund manager.

That said, there are great advantages to long–short investing. Such a strategy eliminates the long–only constraint and introduces symmetry of implementation between a manager’s bullish views on some securities and bearish views on others. When a manager has a negative view on a particular security in a long-only portfolio, the expression of that view is limited to not holding it, which is equivalent to a short position against the benchmark as large as (but no larger than) the weight of that security in the benchmark. For most securities, that weight is very small. In long–short portfolios, however, a short position representing the magnitude of the opinion can be expressed.

Before investing in long–short portfolios, however, the investor should be aware of the high cost of short positions. Selling short requires first borrowing the security. The cost of borrowing becomes part of the overall cost of investing. In addition, “shorting” a security introduces another risk, caused by the natural inclination of equities to rise over time. As an example, the S&P 500 Index has risen in 67% of the years since its inception.

Finally, as Jeremy Grantham has noted,12 in long-only investing, bad ideas shrink as a proportion of one’s portfolio and eventually go away. In short selling, bad ideas grow and grow until they take over the portfolio. This is a risk that investors rarely appreciate.

When assessing the desirability of a fund, then, investors should understand that long–short investing is difficult, so due diligence is very important. The investor should carefully examine each investment manager’s track record and length of time as a long–short investor. Moreover, investors should strive to understand the nature of a long–short manager’s return stream, noting that it makes sense to have a long–short strategy only if the manager is producing alpha from both the long and short positions.13

**CONCLUSION**

Building winning portfolios of managers is the investor’s toughest job. It is analogous to a manager building winning portfolios of securities. To do so, the investor should hire managers with the largest expected contribution to the overall information ratio of the portfolio. Such managers may have any level of active risk.

Concentrated active, or high-conviction, managers are an important subset of the manager universe. If a manager has a high enough degree of conviction regarding a small number of securities, and if that conviction is warranted, then it makes sense for such a manager to assemble a concentrated fund. Investors should seek out high-conviction managers and include them in their portfolios.

**ENDNOTES**

1See, in particular, Siegel et al. [2009].

2Information ratio is active return, or alpha, divided by active risk and is what investors who choose active managers should seek to maximize.

3See Simon [1957].

4See, for example, Sharpe [1974].

5Alpha–beta separation is covered in Siegel et al. [2009].

6The raw returns in excess of the benchmark, sometimes called alphas, are also surprisingly high, given the zero-sum nature of active management. This result gives a clue as to the size of the survival bias or other biases in the manager data used by the authors.

7Waring and Siegel [2003, p. 35].

8The estimation of all the cross-correlations of manager returns (separating the alpha and beta parts) is made easier by two simplifying assumptions. First, as we noted at the outset, alpha and beta exposures are uncorrelated if estimated correctly. Second, the pure active returns of managers (after all market and factor returns have been removed) are also uncorrelated with each other. So, most of the correlations are zeroes.

9The question of how to weight the securities in the portfolio raises a closely related question: what is the benchmark, or set of neutral weights? The benchmark should be specific to the field the manager tills, instead of a broad asset-class benchmark. It could be a stylized benchmark (such as small-cap value), an industry or sector benchmark, or a normal portfolio customized to that manager’s selection universe. The benchmark for performance measurement and evaluation should be the same as the benchmark of neutral security weights used for portfolio construction.

The benchmark for the portfolio of concentrated managers assembled by the investor, however, should be the aggregate of the manager-specific benchmarks. It could very easily be the asset-class benchmark.
Optimizers are highly sensitive to the accuracy of the inputs and, as a result, are sometimes called “error maximizers” (Michaud [1989]). In the case of optimization across managers, the key input is the expected alpha for each manager, which can only be estimated very approximately. Thus, a heuristic approach to setting manager weights, instead of using an optimizer, can easily be justified.

For more information in determining the level of factor and sector bets in portfolios, see Fischer and Wermers [2012], especially Chapter 4.

Jeremy Grantham, presentation at the Foundation Financial Officers Group, Boston, MA (October 15, 2008).

Otherwise, the manager is collecting a hedge-fund fee structure for hedging market risk, a function the investor can fulfill himself at radically lower cost.

REFERENCES


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