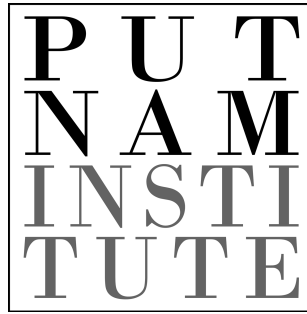


PUTNAM INVESTMENTS



VALUE INVESTING TODAY

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SUMMARY

In the latter half of the 1990s, the returns of value-oriented equity investment strategies were far surpassed by their growth-oriented counterparts. Although this pattern was reversed in 2000, growth's longer-term outperformance has prompted questions regarding the validity of value investing in today's marketplace. Are equity markets experiencing a new paradigm in which high-growth companies will consistently outperform slower-growth firms?

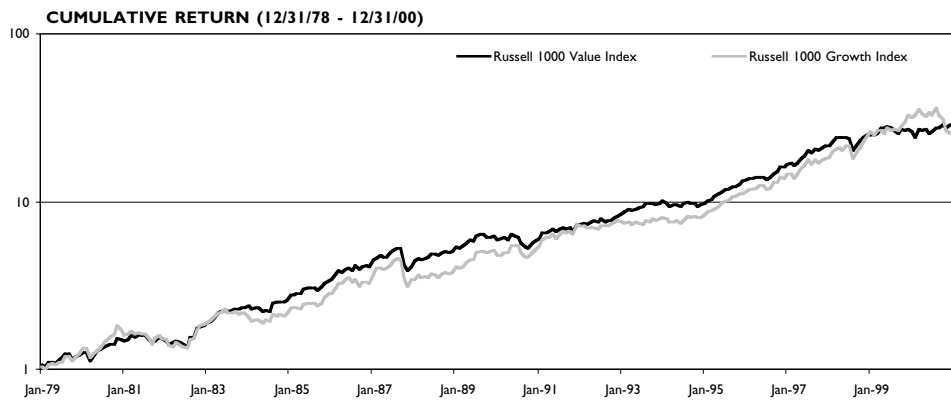
Putnam Investments believes value investing remains an essential part of a balanced investment plan. However, traditional approaches to value investing no longer apply to all sectors and companies. Value managers need to adopt new investment approaches to meet the realities of a changing market environment.

This paper will support the following assertions:

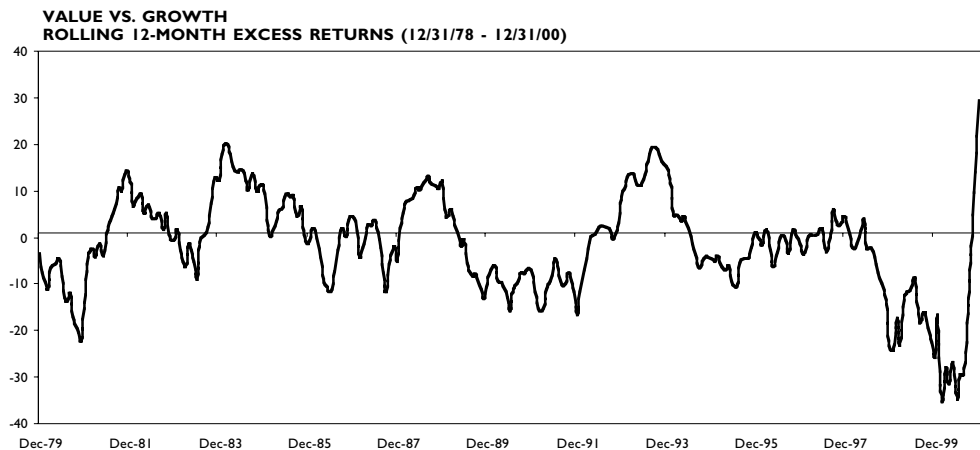
- Recurring investor irrationality makes value investing a consistently valid long-term strategy;
 - Changes in the global economic environment have altered the rules of value investing; and
 - New tools and substantial research resources are essential for successful value investing today.
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A COMPARISON OF VALUE AND GROWTH INVESTMENT RETURNS

Looking only at the 1998-1999 period makes it appear that growth equities as an asset class tend to outperform value equities. But in the 17 years prior to January 1998, stocks with low relative valuations based on measures such as price-to-earnings, price-to-book, and yield (that is, value stocks) outperformed stocks that were expected to experience above-average earnings growth. In fact, value had overtaken growth once again by the end of 2000. Index data reveal that over the long term, returns from value and growth investing tend to be similar.



Over shorter periods, however, returns of the two styles can vary sharply. There was a particularly wide divergence in the period 1998-1999 as the cumulative aggregate return of growth stocks greatly surpassed those of value stocks. The magnitude and duration of that return advantage provided support to the case for growth, while causing some to question whether a value-oriented strategy remains a viable way to outperform the market until 2000, when value began to rebound.



Some periods within an economic cycle clearly favor value stocks. For example, value stocks typically outperform in times of economic recovery (as was the case subsequent to the 1987 and 1990 market downturns). In addition, value stocks tend to be defensive, experiencing less downside in general market declines. Conversely, there are also periods in the economic cycle when value stocks usually underperform. So there is little reason to believe that investing exclusively in either value or growth stocks will provide consistently superior long-term returns.

INVESTOR IRRATIONALITY: THE BASIS OF VALUE STRATEGIES

A major assumption of most economic and financial theory is that individuals act rationally and consider all available information in their investment decision-making process. Researchers, however, have uncovered a substantial body of evidence that refutes this assumption. In the words of prominent investor William Gross,

Markets invariably move to undervalued and overvalued extremes because human nature falls victim to either greed and/or fear.¹

Value investors seek to exploit these anomalies by identifying securities whose fundamental attributes are inconsistent with their current prices. Such inconsistencies often stem from the emotional state of individual investors rather than a valuation truth.

Investors tend to:

- Extrapolate past trends into the future
- Follow others in a herd mentality
- Feel overconfident in their ability to foretell the future
- Take risks that are disproportionately large relative to potential return

Examining these behaviors one by one:

EXTRAPOLATION

Because the future is uncertain, investors tend to place too much weight on recent past experiences, extrapolating trends that are at odds with long-run averages and

¹ "Everything you've Heard About Investing is Wrong," *New York Times*, June 16, 1997.

statistical probabilities. Investors clearly become more optimistic when the market goes up and more pessimistic when the market goes down. For example, in an article published in the *Wall Street Journal* in June 1997, Professor Robert Schiller of Yale University found that at the peak of the Japanese equity market in 1989, 14% of Japanese investors expected a market crash. After that market crashed in 1990, 32% of Japanese investors expected another crash, or a prolonged continuation of the then-current crash.

Extrapolating the trends of 1997-1999 into the future can lead to unrealistically high expectations for rapidly growing companies (e.g., technology stocks) and unrealistically low expectations for slower-growing companies (e.g., most other sectors). The result can be market prices that are far different from “fair value.”

GROUP-THINK/HERD MENTALITY

Investors, like most human beings, find it more comfortable to be part of the pack rather than to stand alone. Professor Meir Statman of Santa Clara University, a leading researcher of the behavior known as “fear of regret,” has shown that people who have made an error in judgment tend to suffer [a disproportionate degree of] sorrow and grief afterward. Similarly, investors often accept conventional wisdom to avoid being held directly responsible for an error in judgment. Many investors find it easier to buy a popular stock and rationalize a decline in price “since everyone else owned it and thought so highly of it.” On the other hand, great conviction is required to buy an underperforming stock with a poor image.

This tendency toward group thinking can cause a stock to develop a strong momentum that feeds on itself. For example, portfolio managers may choose to own a stock because it is heavily represented in a benchmark or held by competitors even if there are doubts about its underlying merits. The opposite can occur with out-of-favor stocks. Both situations cause stocks to move away from their fair value.

OVERCONFIDENCE

Investors consistently overestimate their ability to predict the future. Forecasts of future earnings growth are critical to assessing the relative merits of a company and its proper valuation; relatively minor differences in growth assumptions can result in major differences to an investor’s assessment of a stock’s worth. By definition, however, the distant future is the period about which investors have the least solid information. Forecasts of long-term earnings growth therefore inherently involve a good deal of conjecture.

The impact of growth assumptions on the fair-value assessment of rapidly growing companies is greater than on that of their slower-growth counterparts. Hence,

overconfidence in those assumptions can lead to more extreme over- and under-valuations in rapid-growth areas of the market.

RISK-TAKING

Finally, researchers have found evidence of a “gambling effect.” People tend to be risk-takers when significant gains are possible, even when there is a low probability of success. This phenomenon can be clearly seen in lotteries, in which large numbers of people repeatedly purchase tickets even though the odds of winning are low. The gambling effect also helps to explain why investors appear willing to pay enormous valuation premiums for growth prospects that, though highly uncertain, promise large gains.

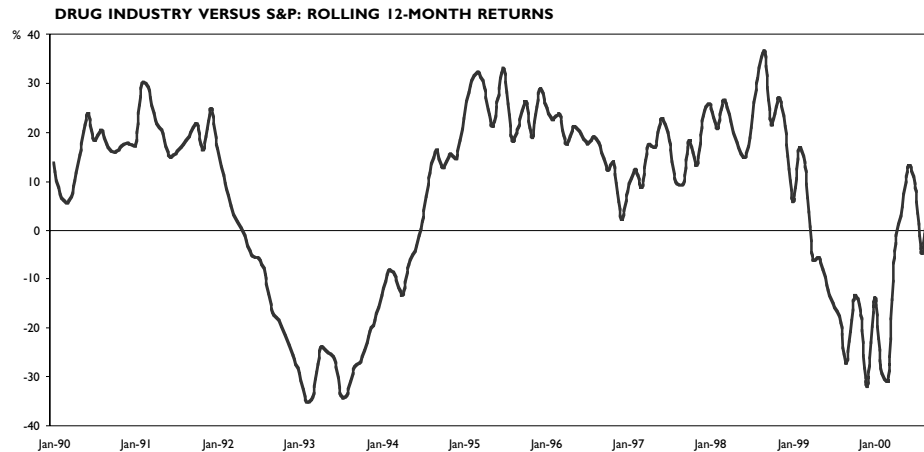
CASE STUDY IN IRRATIONAL INVESTOR BEHAVIOR: PHARMACEUTICAL STOCKS

A close look at the performance of drug stocks in the 1990s illustrates the effects of all four of these behaviors — investors’ extrapolation of past trends, the momentum that can build as investors follow consensus, investor overconfidence, and excessive risk taking.

After President Clinton’s election in 1992, investors expected health-care reform to cut drug companies’ profits and accordingly began to sell pharmaceuticals. As negative momentum built, more and more investors participated in the sell off, causing the stock prices in this sector to fall further and further below “fair value.” Yet investors’ fears were never realized. Many drug companies continued to exhibit strong fundamentals as a stream of profitable new drugs such as Prozac were introduced to the market. The Clinton health-care legislation never passed Congress, and the drug sector proceeded to outperform the overall stock market significantly throughout the mid-1990s.

As the 2000 election neared, renewed concerns about health-care reform, patent expirations, and a reduced pipeline of new drugs sent pharmaceutical stocks down once again. Furthermore, investors’ obsession with technology in the late 1990s diverted investment capital from most other sectors. As technology stocks rose to unprecedented valuation levels, investors continued to pour money into the sector despite valuations that were already very high in comparison to other sectors.

As the momentum for technology intensified, drug stocks fell far below what many value investors believed to be fair value. But when technology fell out of favor in mid to late 2000, drug stocks again rebounded, providing strong outperformance for its investors.



Source: Ford data services

In this example, anomaly-creating investor behavior included:

Extrapolation of trends — assuming drug stocks would continue to decline and technology would continue to climb

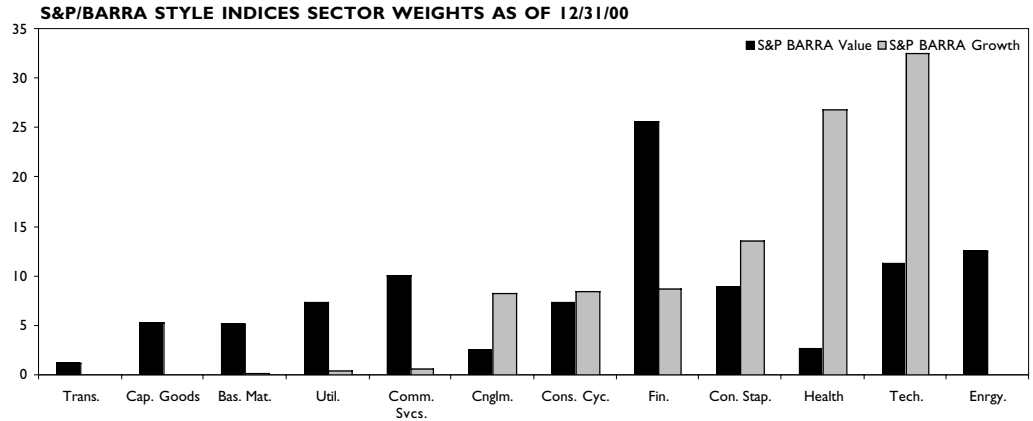
Group think — investors exhibited a herd mentality, selling drug stocks in both the early and late 1990s and driving the technology run-up in the late 1990s

Overconfidence — Investors overestimated their ability to forecast the result of health-care reform and technology's ability to sustain high rates of growth and superior investment performance

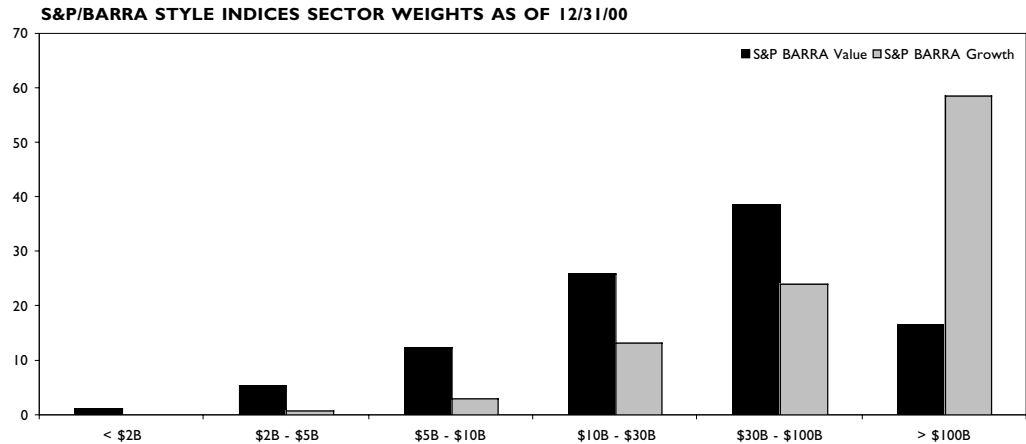
Risk-taking — The concentration of investment flows into the technology sector (and away from pharmaceuticals) pumped up tech-sector valuations to levels that in retrospect were disproportionately large relative to the probability that the sector could sustain its rapid aggregate growth in revenues and earnings.

A MARKET FOCUS ON GROWTH CREATES OPPORTUNITY FOR VALUE INVESTORS

The performance of value stocks is sometimes described as cyclical. In fact, a situation with increased market action (wider swings in stock prices) is a value investor's ideal hunting ground, since as a stock's relative value drops, its likelihood of falling below its fair or intrinsic value increases.



As can be seen in the chart above, the technology sector has dominated the growth universe while the value universe's sector weightings have remained much more evenly balanced. While technology and healthcare make up 60.00% of the S&P/BARRA 500 Growth Index as of December 31, 2000, the two largest sectors in the value index represent only 38% of the index. The relative lack of attention paid to companies outside the technology sector in recent years has generated numerous opportunities for value investors. For example, the S&P/BARRA 500 Value Index consisted of 379 stocks on December 31, 2000, while its growth counterpart had only 121 stocks. In addition, the Growth Index is now heavily weighted in its largest-cap names: over 60% of the capitalization weighted index is composed of companies with market capitalization in excess of \$100 billion.



VALUE INVESTING AND THE NEW ECONOMY

The reason most often cited for the weakness of value strategies relative to their growth counterparts is that value strategies ignore the realities of the new economy. Indeed, new economy firms are automatically regarded as growth companies in many investors' minds, while old economy businesses are thought of as synonymous with value. We believe this is a serious fallacy. What makes value strategies succeed has more to do with human nature than with the tools through which companies create value — and human nature is far less subject to change than these tools.

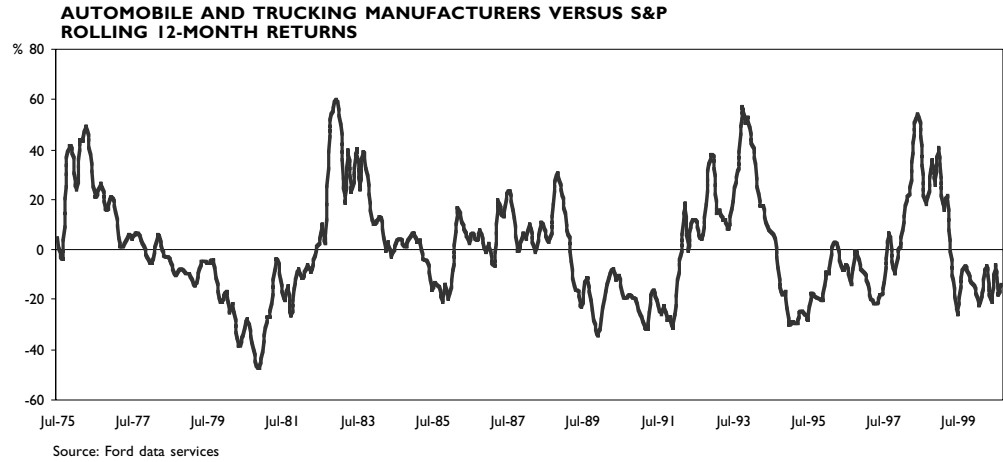
The past twenty years is not the first era in which the economy has experienced technical innovation. New technologies such as the telephone, automobile, television, and personal computer have each had an enormous impact on the way business is done. But no new technology has ever rendered value investing obsolete. In fact, many companies involved in these formerly ground-breaking businesses are now in value universes and are highly represented in value indices. Similarly, today's Internet companies may be tomorrow's value stocks.

Yet it is unquestionably true that the global economy has undergone a profound transformation, one with important implications for the strategies on which value investors have traditionally relied. The revolution in information technology has been a critical engine of growth, providing firms with the digital tools to reduce costs and improve productivity, efficiency, and profitability. Companies that provide innovative and effective technologies should continue to see rapid sales and profit growth. New industries (e.g., e-commerce and security authentication) will keep emerging to meet new demands.

The flaw in many investors' thinking, however, is an assumption that new-economy businesses will flourish while old-economy companies will perish. A more realistic view is that both new-economy companies and old-economy companies will flourish or fail based on the same standard: whether they can create a sustainable competitive advantage. The greatest beneficiaries of new technologies may be traditional old-economy firms that devise newways of using these tools to slash costs and increase productivity and profits.

In the early 1980s, many investors had written off the U.S. automobile industry, which was suffering from the effects of high fuel prices, high interest rates, and intense competition from foreign automobile manufacturers, as well as operating inefficiencies and poor quality. The industry was able to achieve a turnaround, however, by improving the quality of its products and using new technologies to make its operating processes more efficient and cost effective. The subsequent rebound in auto-sector stock prices was significant. Similarly, an auto manufacturer today that develops an extranet to seamlessly communicate

inventory needs to suppliers, shorten the waiting time for parts, and lower inventory costs may well be rewarded by improved earnings and a higher stock price.

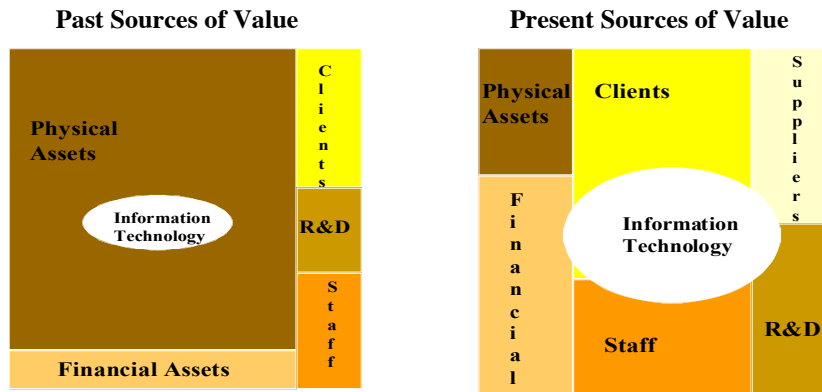


THE IMPACT OF THE INFORMATION TECHNOLOGY REVOLUTION ON VALUE INVESTING

The revolution in information technology has created new analytical tools that augment the traditional techniques of value investing. Familiar measures such as price-to-earnings, price-to-book, and dividend yield, though still useful in assessing relative value, are less informative than they once were. Investment managers today must closely examine companies to identify all relevant indicators of value.

ASSETS AND BOOK VALUE

As the global economy has become increasingly information-based, sources of shareholder value have changed, as noted by the graphs below. Successful companies must increasingly realize benefits from strategic relationships with customers and suppliers, hire and retain the best people, and exploit ways to reduce the capital intensity of their businesses.



Source: Harper Business 2000.

The relative importance of physical assets has declined, while the role of intangible assets has increased. Yet, intangible assets are not captured efficiently in balance sheets. As a result, the price/book ratio, a traditional valuation tool of value managers, has become a far less effective measure of value. In making asset-based assessments of fair value, investment managers must now include non-traditional factors.

EARNINGS GROWTH AND PRICE/EARNINGS MULTIPLES

For much of the postwar period, corporate earnings growth rates occurred within a relatively narrow range. Recently, however, the spread of corporate growth rates — both actual and expected — has widened as a consequence of the technology revolution.

Expected growth rates of America's largest companies

	1988 Expected Growth		2000 Expected Growth
IBM	9.5%	Microsoft	25.0%
Exxon	6.5	GE	14.0
GE	9.5	IBM	14.0
AT&T	9.5	Lucent	20.0
Royal Dutch	7.5	Intel	20.0
GM	6.0	Cisco	30.0
Ford	6.5	Wal-Mart	15.0
Philip Morris	11.0	AT&T	13.4
Merck	15.0	Exxon	8.0
DuPont	8.5	Merck	12.0
Minimum	6.0	Minimum	8.0
Maximum	15.0	Maximum	30.0
Spread	7.0	Spread	22.0

Source: Paine Webber, 1998 estimates; Putnam Investments, 2000 estimates.

An environment of more divergent growth rates has reduced the efficacy of another traditional tool of value managers: price/earnings (P/E) ratios. Faster-growing companies deserve higher P/E multiples. If differences in growth rates are relatively narrow, P/E comparisons are useful devices for spotting relative value between stocks. But as the range of growth rates widens, the validity of P/E comparisons correspondingly decreases.

FINANCIAL MANAGEMENT AND DIVIDEND YIELDS

As corporate financial management has become more sophisticated over the past 20 years, share buybacks have become more common. Share buybacks and dividend payments are both returns of capital to shareholders and have an identical impact on a company's balance sheet. Yet only the latter is captured in the dividend yield.

Historically, value managers have used dividend yield as an indicator of relative value. But with some companies choosing to repurchase shares rather than increase dividends, dividend yield comparisons have become less meaningful and, in some cases, misleading.

FINANCIAL FLEXIBILITY AND PRICE/CASH RATIOS

Price/cash ratios are a traditional measure of the financial flexibility of a business. In today's fast-moving business environment, however, gross cash flow is not necessarily the most relevant number for the denominator of this ratio. In many capital-intensive businesses, much or all of a company's cash flow must be reinvested in the business. Analysis of a company's ability to generate free cash flow (i.e., cash flow over and above capital spending needs) has consequently become more critical.

NEW TECHNIQUES FOR IDENTIFYING AND MEASURING VALUE

Today's value managers must use analytic models that incorporate recent theoretical advances and employ input from intensive qualitative and quantitative research to identify all potential sources of value for a company's stock.

QUANTITATIVE TOOLS AND SCREENING MODELS

Like most investment managers, value managers generally screen a broad universe of stocks for companies with characteristics that have historically been associated with successful investment opportunities. Value screens focus on identifying stocks that are cheap relative to their underlying worth.

Discounted cash flow (DCF) models are the most appropriate tools for value-oriented investors today because they:

- Take into account all aspects of a company's business;
- Provide a framework for evaluating future prospects as well as existing assets;
- Allow the impact of future prospects and/or change to be quantified;
- Enable the quick, objective evaluation of new developments;
- Provide investors with a common investment evaluation platform;
- Demonstrate the ability to identify mispriced stocks

DCF models can be used to assess relative value while incorporating the impact of changed expectations. Forecasts inherently entail some level of speculation, so rigorous research must support these expectations. By incorporating predictions of future cash flows (derived from fundamental research) into a DCF calculation,

investment managers can estimate a stock's fair or intrinsic value. An important distinction is that these variables are used to derive a stock's fair value; they are not the sole criteria for a decision to buy or sell. Ranking a universe of securities by the difference between current price and fair value allows managers to evaluate relative opportunities, even though the factors driving a stock's price may differ from one company to the next.

A strong internal research program is necessary because relying on external research to generate inputs for a DCF model limits a manager's ability to identify unique investment opportunities. Proprietary research allows managers to better assess appropriate security-specific risk premiums and growth assumptions, all of which provide unique advantages when incorporated into quantitative models.

Additional quantitative measures are useful in validating the results of fundamental research or output from a DCF model. For example, statistical measures of a firm's quality of earnings can help managers identify companies whose earnings have a material probability of deterioration.

FUNDAMENTAL RESEARCH AND STOCK SELECTION

Although screening models can be used to evaluate large groups of stocks quickly, significant resources for fundamental research are required to develop and assess qualitative factors across a broad universe. With either growth or value investing, these resources must be used efficiently to gather necessary data while remaining flexible enough to react quickly to changing market conditions.

Firms that rely on sell-side research cannot benefit from the constant and rich interactions that occur between analysts and investment managers working within the same firm. Having deep familiarity with a manager's investment style can help the analyst identify and make appropriate recommendations. Conversely, a manager's familiarity with the analyst's approach to research provides the manager with a greater understanding of the factors that drive the recommendation. The result is better investment decisions and greater levels of conviction.

CONCLUSION

Contrary to the efficient-markets hypothesis, which claims that all known information is incorporated in the current price of a security, market anomalies always exist as a result of recurring irrational investor behaviors. These anomalies create opportunities for value managers, opportunities that exist regardless of whether old-economy or new-economy stocks are leading market performance.

Major advances in information technology have changed the market environment in which value managers operate. Value-focused investment managers must rethink the use of traditional statistical measures of value and develop new tools and

ideas for identifying and measuring sources of value. Useful tools include a comprehensive discounted cash flow model and a globally integrated (rather than regionally compartmentalized) research organizational structure.

The value managers who succeed in the new era will be those who can flexibly adapt to constantly changing market environments and who are able to commit the significant resources needed to uncover and exploit emerging value opportunities.

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