What's Working Currently for the Market

- **What's New:** We update our analysis of market-wide factor effectiveness
  Based on conversations with clients over the past few weeks, many large cap investors are curious about which factors are currently delivering the best performance. We therefore discuss which factors have performed best and worst for the overall market over the last 12 months, updating our prior findings from January. We use our standard method of synthetic long-short portfolios with monthly rebalancing.

- **What's Important:** Value factors continue to deliver good returns
  In general, we find that the factors that are working currently are very similar to those which have delivered good long-term performance. The factors with the highest information ratio were Price/Book on the positive side, and “size” (market cap) on the negative side. The returns to estimated long term growth were negative over the past 12 months. We also find that dividend yield would have generated returns which are approximately zero.

- **What This Means:** We continue to favor a multi-factor strategy
  Based on these results, we do not see any justification for modifying our Factor Allocation Strategy methodology. In our view, investors are more likely to achieve good returns by adopting a disciplined approach in order to reduce strategy risk. Currently, we recommend a weighting towards value, but with a blend of growth and momentum factors as well in order to reduce the chance of picking too many “value trap” names.

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Please see analyst certification and other important disclosures starting on page 13.
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Overall Results

We have updated our analysis of factor effectiveness for the entire market. At the beginning of the year, we provided a detailed overview of current and long-term factor returns for the overall market (Factor Effectiveness Monthly, January 13, 2005). Here we update current factor effectiveness, without updating the “long run” section. We will be pleased to provide a copy of the original piece from January 2005, for any clients who may not have seen it.

Exhibit 1
Annualized Means and SDs for 12 Months to May 2005

In general, value factors continue to deliver the highest and most consistent returns. As shown in Exhibit 1, over the past 12 months the best-performing factors have included EBIT/Price, Sales/Price, and Book/Price. As we showed at the beginning of the year, these factors have also been among the strongest performers over the long run. Conversely, the single worst-performing factor over the past year has continued to be Market Cap, as was also true for the 12 months ending December 2004.

Looking at the information ratios for these factors shows only minor changes since January. By dividing the annualized mean return by the annualized standard deviations shown above, we can measure the “information ratio” for each factor’s current effectiveness. Exhibit 2 demonstrates that the two strongest signals over the past 12 months have been Market Cap as a negative indicator, and Book/Price as a positive indicator. These two were also the strongest signals in January (though we did not show a chart of “information ratios” at that time).

Exhibit 2
Information Ratios over 12 Months to May 2005

It is also interesting to look at the evolution of factor effectiveness over the past 12 months. In general, we are skeptical about the ability of any strategist, analyst, investor, or computer program to identify the factors which will be effective over the next three to six months. However, we
think it’s quite useful to compare long-run factor effectiveness with what has been effective over the past year, on the grounds that if something has worked reasonably well over the long term and has also been producing good results recently, then this may be a theme which is currently worth pursuing.

**Value Factors**

Value factors continue to deliver relatively high and consistent returns. Among all of the synthetic long-short portfolios that we consider, the highest positive return over the last 12 months would have been 15% from Sales/Price, followed by 13% for EBIT/Price and 12% for Book/Price. As shown in Exhibit 3, the most consistent return would have come from the portfolio based on Book/Price, which explains the high information ratio shown in Exhibit 2.

**Exhibit 3**

**Book/Price, Sales/Price and EBIT/Price**

<table>
<thead>
<tr>
<th>Year</th>
<th>Book/Price</th>
<th>Sales/Price</th>
<th>EBIT/Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>May-04</td>
<td>0%</td>
<td>-4%</td>
<td>0%</td>
</tr>
<tr>
<td>Nov-04</td>
<td>2%</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>May-05</td>
<td>4%</td>
<td>6%</td>
<td>8%</td>
</tr>
</tbody>
</table>


Earnings-based metrics have delivered lower but still positive returns, but dividend yield has been a disappointing strategy. As we reported in January, the long-run returns to both Historical E/P and Forward E/P have been positive, but generally lower and more volatile than the returns to Book/Price, Sales/Price, and Operating Earnings/Price. This is consistent with the patterns seen in Exhibit 4, which show that the returns to both trailing and projected E/P have been negative over the past couple of months, though the portfolios would have delivered returns of 8% and 10%, respectively, over the whole period. The graph also shows that over the 12 months ending May 2005, a long-short portfolio based on dividend yield would have delivered a cumulative performance of zero, with the strong gains up to August 2004 being gradually whittled back down. As with all the numbers in our analysis, these returns are presented on a pre-transaction-costs basis. After incorporating transaction costs, the return to a dividend-yield-based strategy over a 12-month period would have been negative.

**Overall, the 12-month return to value factors is roughly in line with the long-run returns.** Over the past 20 years, among the factors that we consider here, the highest returns would have come from long-short portfolios based on EBIT/Price, Sales/Price, and Book/Price, and the portfolio based on Book/Price would have the highest information ratio. The returns to trailing E/P, forward E/P, and dividend yield would also have been positive, but with lower returns and lower information ratios. The summary table in Exhibit 5 demonstrates that there isn’t much variation between the results over the past 20 years and the past 12 months.

**Exhibit 4**

**Forward and Trailing E/P and Dividend Yield**

<table>
<thead>
<tr>
<th>Year</th>
<th>Historical E/P</th>
<th>Forward E/P</th>
<th>Dividend yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>May-04</td>
<td>-4%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Nov-04</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>May-05</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Factor</th>
<th>L12M Mean</th>
<th>Stand. Dev.</th>
<th>L20Y Mean</th>
<th>Stand. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book/Price</td>
<td>11.6%</td>
<td>3.6%</td>
<td>16.2%</td>
<td>13.1%</td>
</tr>
<tr>
<td>Sales/Price</td>
<td>15.3%</td>
<td>9.0%</td>
<td>18.3%</td>
<td>17.1%</td>
</tr>
<tr>
<td>EBIT/Price</td>
<td>13.1%</td>
<td>11.2%</td>
<td>21.0%</td>
<td>19.6%</td>
</tr>
<tr>
<td>Trailing E/P</td>
<td>8.0%</td>
<td>10.1%</td>
<td>7.1%</td>
<td>19.1%</td>
</tr>
<tr>
<td>Forward E/P</td>
<td>10.1%</td>
<td>10.7%</td>
<td>8.0%</td>
<td>21.3%</td>
</tr>
<tr>
<td>Dividend yield</td>
<td>0.1%</td>
<td>12.9%</td>
<td>5.0%</td>
<td>19.6%</td>
</tr>
</tbody>
</table>

“L20Y” results are from January 1985 to May 2005.
**Growth Factors**

Historical growth has been weakly rewarded, but projected growth has underperformed over the past year. Over the 12 months ending May 2005, a long-short portfolio based on trailing growth in EPS would have delivered 5%, whereas a similar portfolio based on consensus expectations of long-term EPS growth would have produced a return of minus 7%, as shown in Exhibit 6.

**Exhibit 6**

*Estimated and Historical Long Term Growth*

<table>
<thead>
<tr>
<th></th>
<th>May-04</th>
<th>Nov-04</th>
<th>May-05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical LTG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated LTG</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


The returns to consensus analyst revisions have also been weakly positive. Over the past year, a long-short portfolio based on one-month consensus revisions would have produced a return of 4%, whereas similar portfolios based on three-month and 12-month revisions would each have produced returns of 2%. As shown in Exhibit 7, the three-month and 12-month versions would have produced negative returns from May 2004 to December 2004, while the returns to the one-month version have been essentially flat since January 2005.

**Exhibit 7**

*Consensus Analyst Revisions*


These results are not a surprise. In previous work, we have found that investors generally tend to overpay for projected growth, while portfolios based on historical growth have quite often produced flat to weakly positive returns. Similarly, we have also found that analyst revisions were highly effective leading indicators of market sentiment from 1985 to the end of 2000, but that since that time their performance has been much less impressive (Questioning the Significance of Analyst Revisions, October 7, 2004). The results in Exhibit 8 demonstrate that over the year ending May 2005, long-short portfolios based on historical long-term growth and on one-month analyst revisions performed slightly better than their long-term averages, but none of these factors produced better returns than the majority of factors shown in Exhibit 5. However, we continue to believe that “growth” factors do have a role to play in portfolio strategies, because over the long run such factors can be a useful hedge against the risk of picking too many “value trap” stocks.

**Exhibit 8**

*Current and Long Run Growth Factor Effectiveness*

<table>
<thead>
<tr>
<th></th>
<th>L12M Mean</th>
<th>Stand. Dev.</th>
<th>L20Y Mean</th>
<th>Stand. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated LTG</td>
<td>-7.1%</td>
<td>11.0%</td>
<td>-3.2%</td>
<td>24.9%</td>
</tr>
<tr>
<td>Historical LTG</td>
<td>4.6%</td>
<td>5.4%</td>
<td>-0.4%</td>
<td>11.8%</td>
</tr>
<tr>
<td>1m analyst revisions</td>
<td>3.8%</td>
<td>3.7%</td>
<td>1.3%</td>
<td>7.1%</td>
</tr>
<tr>
<td>3m analyst revisions</td>
<td>2.1%</td>
<td>6.8%</td>
<td>3.7%</td>
<td>10.5%</td>
</tr>
<tr>
<td>12m analyst revision</td>
<td>1.6%</td>
<td>7.0%</td>
<td>3.7%</td>
<td>12.1%</td>
</tr>
</tbody>
</table>


**Momentum Factors**

Both short-term momentum reversal and medium-term momentum have produced positive results, but with
relatively high volatility. As shown in Exhibit 9, over the past year a long-short portfolio based on one-month momentum reversal would have generated a return of 8%, and a similar portfolio based on medium-term momentum (total return over the 11 months prior to the most recent month) would have produced a return of 6%. However, the returns to both these strategies would clearly have been quite volatile. Nevertheless, we do believe that momentum does have a part to play in portfolios, because it can provide useful additional information about market sentiment.

Exhibit 9
One-Month Reversal and Medium Term Momentum

ROE and ROIC have both been rewarded over the past year, but dividend payout has delivered disappointing returns. As shown in Exhibit 12, the returns to a long-short portfolio based on ROE would have been 12%, while the return to a similar portfolio based on ROIC would have been 8%. The graph demonstrates that both of these metrics have mainly been rewarded since January 2005, having produced unimpressive returns before then. Conversely, the returns to a long-short portfolio based on dividend payout ratio would have been positive from May 2004 to August 2004, but subsequently would have generated negative returns, ending the year with a cumulative performance of minus 2%.

Exhibit 12
ROE, ROIC, and Dividend Payout

Size and Efficiency Factors
Market cap has been the single strongest factor over the past year, but as a negative indicator. As shown in Exhibit 2, the absolute value of the “information ratio” for market cap is the highest for any factor. Over the past year, as shown in Exhibit 11, a long-short portfolio constructed on this basis would have delivered a return of minus 30%. Thus, a similar long-short portfolio which was long the bottom quintile of the MSCI 1000 would have delivered a return of positive 30%. The strikingly poor performance of the mega-caps over the past year is a continuation of the overall trend that we have discussed elsewhere (Big Isn’t Beautiful in the Long Run, December 17, 2004).
Over the past year, the negative returns to size and dividend payout were greater than over the long term, whereas the positive rewards to ROE were both higher and less volatile. As shown in Exhibit 13, both market cap and dividend payout have generally delivered negative returns over the long run, but their performance over the past year was more extreme than their annualized mean over the past 20 years. Similarly, the long-run performance of ROE and ROIC has generally been positive, with notably higher information ratios than for the successful value factors of Book/Price, Sales/Price, and EBIT/Price. Over the 12 months ending May 2005, a long-short portfolio based on ROE would have delivered higher and more consistent returns than has generally been the case over the long run.

Exhibit 13

<table>
<thead>
<tr>
<th>Factor</th>
<th>L12M Mean</th>
<th>L12M Stand. Dev.</th>
<th>L20Y Mean</th>
<th>L20Y Stand. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market cap</td>
<td>-30.0%</td>
<td>9.0%</td>
<td>-4.1%</td>
<td>13.6%</td>
</tr>
<tr>
<td>ROE</td>
<td>12.4%</td>
<td>6.2%</td>
<td>7.6%</td>
<td>14.3%</td>
</tr>
<tr>
<td>ROIC</td>
<td>7.9%</td>
<td>6.0%</td>
<td>8.1%</td>
<td>15.5%</td>
</tr>
<tr>
<td>Dividend payout</td>
<td>-2.9%</td>
<td>10.7%</td>
<td>-1.8%</td>
<td>7.9%</td>
</tr>
</tbody>
</table>


\[\text{Exhibit 14}\]

**Dividend Strategies**

Arguably the most important result here is that dividend-based strategies continue to underperform, as has been the case since early 2003. In January, we reported that dividend yield had generally produced positive returns over a 20-year period, but with relatively high volatility. However, Exhibit 4 and Exhibit 12 show that over the past year, the cumulative returns to dividend yield and to dividend payout were zero and negative, respectively. As shown in Exhibit 14, these results are quite consistent with the performance of both factors over the past few years. The cumulative returns to long-short portfolios based on Dividend Payout or Dividend Yield would have been positive from early 2000 until the end of 2002, but negative since the beginning of 2003.

These results suggest that in general, dividend payers have underperformed relative to non-dividend payers. We think it’s likely that there are too many investors chasing the theme of “dividends,” and that consequently the price of all dividend-paying stocks has been too high, relative to their non-dividend-paying peers. As we pointed out in January, this was also the case in the period 1973-83, when non-dividend-payers generated the highest returns of any group studied (Factor Effectiveness Monthly, January 13, 2005, Exhibits 24 and 25). The results shown in Exhibit 14 suggest that over the past couple of years, all dividend-related information has been fully reflected in equity prices. It may be worth mentioning that our analysis reflects total returns, so that the direct effect of the dividends paid is already incorporated in our results.

Our results don’t negate the possibility that dividend-based strategies will outperform in the future. With regard to dividend yield, a number of market commentators have written over the past couple of years that in an uncertain economic environment, and with government and corporate bond yields at relatively low levels, investors should give more attention to dividend yield. With regard to dividend payout, there is a substantial body of literature within corporate finance which suggests that higher dividend payout ratios are inherently a good thing, because they signal management’s commitment to return capital to shareholders. These points seem valid, but as shown in Exhibit 14, dividend-based strategies would have generated relatively poor returns for investors over the past couple of years.
Factor Allocation Strategy Weights

The Factor Allocation Strategy model currently suggests that large cap portfolios should include consideration of value, momentum, and growth. Our proprietary Factor Allocation Strategy is intended to reduce the “strategy risk” which would be incurred by relying too heavily on any single factor or style. Currently, the FAS model is favoring value factors, with a recommended weight of 41% for Price/Book. Price/Operating Earnings has a recommended weight of 6%. We also have a weighting of 10% for ROE, even though (as discussed below) this factor has not always given impressive results in the past. Momentum factors are also recommended, with a 16% weighting for medium-term momentum. Dividend payout has a weighting of 6% for this month. Finally, the model suggests a weight of 21% for Estimated Long Term Growth, because even though this factor hasn’t generally produced outperformance in the long run, it provides an effective hedge against an excessive tilt towards value.

Cumulative Performance of FAS Factors

The following graphs show the cumulative performance to each of the factors identified by the FAS methodology. In each case, the graphs show the cumulative return to a synthetic long-short portfolio, with monthly rebalancing, which is long the top quintile and short the bottom quintile of large cap stocks ranked by the relevant factor. Please see the Appendix to this report for additional details and caveats about this methodology, and also for citations to our stand-alone reports on “What’s Working” and the Factor Allocation Strategy. The FAS weightings are based on returns and volatility over the past ten years. Exhibit 16 shows the performance of all the factors that we consider for the large cap universe over that time period.

Conclusion

Behavioral finance provides a partial explanation for the results shown here. The persistence of the performance differential between value factors and growth factors represents a difficult puzzle for those who believe in the "efficient market" perspective, or who think that markets are mostly efficient but with some minor anomalies. But a behavioral finance view can offer an internally coherent explanation for why investors seem to habitually overpay for growth and underpay for value. We have recently published a stand-alone report looking at behavioral finance, which provides more details on these points (Insights for Quants from Behavioral Finance, June 1, 2005).

Appendix: Methodology

Basis for “What’s Working”
The “What’s Working” model allows us to examine the predictive performance of various fundamental and market-driven factors. The model is based on synthetic long-short portfolios, with monthly rebalancing, to assess the explanatory power of each specific factor. This approach provides a rigorous and consistent way of determining which factors can produce real outperformance.

The “What’s Working” approach is suitable for stock-picking within a defined universe, where stocks have sufficient dispersion both in factors and in returns. If all the stocks in a particular sector or market tend to move up and down together, then obviously a factor-based approach will generally be less effective — because there will be much less opportunity to use factor effectiveness to distinguish between the best and worst performers. For more insight on this point, see our separate piece Market Beta, Sector Beta, and Stock Picking (March 10, 2004).

We consistently look at total return. Many market participants and much of the media look solely at prices, and it’s certainly possible to analyze factor effectiveness in terms of price returns. But when the overall market is growing slowly or moving sideways, it’s very important that investors should be aware of the total returns available from stocks, in the form of capital gains (via price) and income (via dividends). Quite a lot of factor effectiveness research looks solely at price returns, but we consistently use total returns in our work.

Our database has been carefully developed to minimize look-forward bias. Many researchers use databases which make simple, or even simplistic, assumptions about when new information became available. Frequently, this means that their “out-of-sample” results are actually contaminated by information that would not have been available at the time. Obviously, investors should be skeptical about the results from such work. We believe that our database does not suffer from this problem.

It is important to note that the long-short portfolio methods that we use may not reflect actually achievable outcomes. Our analysis is based on synthetic portfolios, rather than actual ones. We do include returns from dividends, but do not account for transaction costs including the bid-ask spread and the market impact of buying and selling. Our results also do not take account of the financial risks that would have been incurred by adhering to a particular trading strategy in the event of losses. No representation is made that these returns could have been achieved.

Current vs. Long-Term Analysis
The “What’s Working” method can be applied to different investment horizons. Some investors have a basically short-term mentality, and are mainly interested in knowing which are the most effective factors currently, and thus what is expected to work in the near future. By contrast, other investors have more of a buy-and-hold focus, and they prefer to see what factors seem to work over the long run.

“What’s Working Currently” focuses on the past twelve months. When we are looking at factor effectiveness over a relatively short period, we focus only on the annualized mean and annualized standard deviation of returns, because we assume that factor effectiveness is unlikely to change much over a period of a year or less.

“What Works in the Long Run” and “What Doesn’t Work in the Long Run” presents the factor returns over the longer run. When we are looking at longer periods, we give more attention to the time series characteristics of the returns, and specifically we consider:

- the mean absolute return from the synthetic long-short portfolios based on the factor: this indicates the extent to which the factor is really differentiating between “good” and “poor” investments;
- the smoothness of the return over time: this indicates whether the factor is only effective under certain market conditions.

Quant vs. Fundamental Methods
Quant analysis will often identify stocks with “value” characteristics. A company may fall into the “value” category because it has unattractive growth prospects, or after a string of bad results, or simply because it is covered by few sell-side analysts. Over the years, a number of articles have suggested that investors should avoid stocks which are widely covered and popular, and instead should...
focus on stocks which are comparatively neglected and little known. (See Arbel and Strebel, 1983; Solt and Statman, 1989; and Hong, Lim and Stein, 2000.)

Behavioral finance suggests that investors may overreact to negative news stories. If so, then stock prices may overshoot on the downside while bad news is flowing, leaving scope for movement in the opposite direction when the bad news stops flowing. (Equally, the same phenomenon may apply to investor attitudes towards companies which report a series of good-news stories.)

A combination of quant screening plus fundamental insights should offer significant benefits. Within-sector stock picking should benefit enormously from research analysts’ deep understanding of a particular sector, as we explained in Alpha Searching Within Sectors (May 7, 2004). In particular, the insights of a fundamental researcher can help to assess whether a “cold” stock, which may look comparatively cheap, really does have potential to outperform in the future.

Some companies may look appealing both from a quant perspective and in terms of their fundamentals, and thus will clearly deserve careful consideration. Moreover, because of the possibility of behavioral bias in the market, we suggest that investors may want to investigate stocks where fundamental analysts may have a neutral stance, but which look attractive from a quant perspective.

It’s worth pointing out that achieving strong results by buying value stocks will require an investor to avoid following the crowd. Building a portfolio on the basis of value factors will mean going long low-multiple stocks that are currently “unloved,” and at the same time shorting high-multiple stocks which are often “glamorous” and highly visible. In essence, this is very close to a strategy of buying oversold names and selling overbought ones.

Not following the crowd may result in better returns over the long run, but could require considerable financial resilience over the medium term. We think that only brave portfolio managers will be willing to exit from a stock which has been rising, and instead put money into a company which might well have numerous good reasons to be trading at low multiples. Moreover, as we cautioned before, our analysis does not consider the financial risks which would have been incurred by maintaining a trading strategy in the face of losses. Shorting an “expensive” stock, if it subsequently continues to rise, would require considerable financial resilience.

Some recent empirical research suggests that savvy investors are able to find a balance between fundamental value and price momentum. Many analysts, particularly those who come from the accounting tradition, firmly believe that stocks will ultimately converge towards fair value. But anyone who was active in the market during the TMT bubble will be aware that valuations can stay very high for quite extended periods. Some recent research suggests that some of the biggest and most sophisticated hedge funds were able to ride stocks up, and then jump off when the price started to fall. As the authors (Brunnermeier and Nagel, 2004) comment, such behavior might seem irrational from the perspective of fundamental valuation, but it was entirely reasonable in a climate where the entire market was moving in one direction.

Basis for “Factor Allocation Strategy”

Optimal factor weights may differ over the long run versus the short run. Quant analysis suggests that over the long run, investors should focus on value factors rather than growth factors. By ranking stocks in terms of P/E, Price/Book, ROE, and similar metrics, and then buying the “cheap” ones while selling the “expensive” ones, it should be possible to generate decent returns over the long term. (Please see our earlier comments about the perils of relying on synthetic portfolios for assessing what returns are actually available. In particular, we again stress that we are not including transaction costs in our analysis.) However, investors’ appetite for risk can change over time. At certain points in the market cycle, there can be substantial benefits to increasing exposure to higher beta and lower quality.

We have developed a “Factor Allocation Strategy” model that seeks to hedge strategy risk through market cycles. We use a multi-factor model, where the weights assigned to each factor will vary over time, depending on how each factor works in relation to the others. The Factor Allocation Strategy model optimizes the weight assigned to each factor, in order to minimize market risks. Fuller details about this model, and its inputs and outputs, can be found in our previously published report titled Factor Allocation Strategy (November 17, 2003).

Each month, we publish updated estimates for the optimal factors and weights using the Factor Allocation Strategy methodology. This monthly publication contains
a quantitative analysis of all the major sectors in the market — with the exception of Telecoms and Utilities, where we have found that data problems make analysis of factor effectiveness rather difficult. We will be pleased to provide copies of our Factor Effectiveness Monthly for clients who may not currently be receiving them.

**Bibliography**


(Research assistance for this Appendix was provided by Caroline Reiss Smetana.)
**Analyst Certification**
The following analysts hereby certify that their views about the companies and their securities discussed in this report are accurately expressed and that they have not received and will not receive direct or indirect compensation in exchange for expressing specific recommendations or views in this report: Qi Zeng, CFA and Chris Gowlland, CFA.

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Different securities firms use a variety of rating terms as well as different rating systems to describe their recommendations. For example, Morgan Stanley uses a relative rating system including terms such as Overweight, Equal-weight or Underweight (see definitions below). A rating system using terms such as buy, hold and sell is not equivalent to our rating system. Investors should carefully read the definitions of all ratings used in each research report. In addition, since the research report contains more complete information concerning the analyst’s views, investors should carefully read the entire research report and not infer its contents from the rating alone. In any case, ratings (or research) should not be used or relied upon as investment advice. An investor’s decision to buy or sell a stock should depend on individual circumstances (such as the investor’s existing holdings) and other considerations.

Global Stock Ratings Distribution

(as of May 31, 2005)

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<tr>
<td>Underweight/Sell</td>
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<td>19%</td>
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<td>Total</td>
<td>1,890</td>
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Data include common stock and ADRs currently assigned ratings. For disclosure purposes (in accordance with NASD and NYSE requirements), we note that Overweight, our most positive stock rating, most closely corresponds to a buy recommendation; Equal-weight and Underweight most closely correspond to neutral and sell recommendations, respectively. However, Overweight, Equal-weight, and Underweight are not the equivalent of buy, neutral, and sell but represent recommended relative weightings (see definitions below). An investor's decision to buy or sell a stock should depend on individual circumstances (such as the investor's existing holdings) and other considerations. Investment Banking Clients are companies from whom Morgan Stanley or an affiliate received investment banking compensation in the last 12 months.

Analyst Stock Ratings

Overweight (O). The stock’s total return is expected to exceed the average total return of the analyst’s industry (or industry team’s) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Equal-weight (E). The stock’s total return is expected to be in line with the average total return of the analyst’s industry (or industry team’s) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Underweight (U). The stock’s total return is expected to be below the average total return of the analyst’s industry (or industry team’s) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

More volatile (V). We estimate that this stock has more than a 25% chance of a price move (up or down) of more than 25% in a month, based on a quantitative assessment of historical data, or in the analyst’s view, it is likely to become materially more volatile over the next 1-12 months compared with the past three years. Stocks with less than one year of trading history are automatically rated as more volatile (unless otherwise noted). We note that securities that we do not currently consider "more volatile" can still perform in that manner.

Unless otherwise specified, the time frame for price targets included in this report is 12 to 18 months. Ratings prior to March 18, 2002: SB=Strong Buy; OP=Outperform; N=Neutral; UP=Underperform. For definitions, please go to www.morganstanley.com/companycharts.

Analyst Industry Views

Attractive (A). The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark named on the cover of this report.

In-Line (I). The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark named on the cover of this report.

Cautious (C). The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark named on the cover of this report.

Stock price charts and rating histories for companies discussed in this report are also available at www.morganstanley.com/companycharts. You may also request this information by writing to Morgan Stanley at 1585 Broadway, 14th Floor (Attention: Research Disclosures), New York, NY, 10036 USA.
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<td>The Americas</td>
<td>1585 Broadway</td>
<td>New York</td>
<td>United States</td>
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