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Equity Research

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Investment Sciences
Establishing Our Priors

MACRO STRATEGY

Investment Sciences

Investment Sciences
Ryan Preclaw
+1 212 412 2249
ryan.preclaw@barclays.com
BCI, US

A key building block for taking an empirical perspective on company fundamentals is our expectations (or priors) for the situations we look at: Looking at market-relative performance, the expected excess return for a randomly selected stock should be about zero (more or less by definition). But the reality is that we do not pick stocks to pay attention to at random – they come to our attention for a reason.

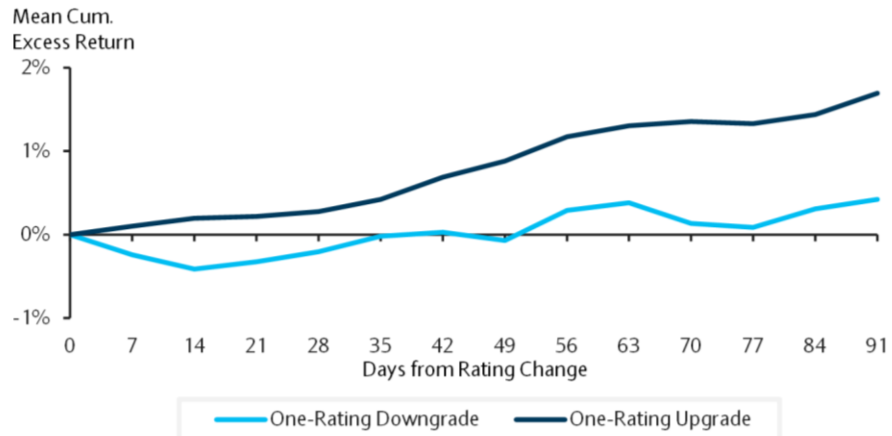
Stocks that Barclays fundamental analysts rate differently have had different distributions of returns: Compared to Equal Weights, Overweights have had higher risk-adjusted returns with similar volatility, while Underweights have had higher volatility but similar risk-adjusted returns.

Changes in ratings have been discrete events that also signal different return profiles: Stocks that were upgraded one rating outperformed the market in the subsequent 3 months; stocks that there upgraded two ratings, while more rare, outperformed for 6 months.

A strategy of buying the upgrades and holding them for 3 months would have outperformed the market since 2003: Though that performance has been flat to the S&P 500 in recent years, it has continued to outperform the non-technology components of the index.

FIGURE 1

Since 2003, Stocks That Were Upgraded by Barclays Analysts Outperformed Those That Were Downgraded



Source: Thomson, IDC, Barclays Research

PLEASE SEE ANALYST CERTIFICATION(S) AND IMPORTANT DISCLOSURES BEGINNING ON PAGE 8.

Empirical Building Blocks

An important building block for systematically combining data analysis with our analysts' knowledge about companies is our baseline (or prior) beliefs about a stock's return distribution. Having that foundation allows us to put the appropriate weight on new data-driven insight, to get a more refined view about potential returns that captures both what we already knew, and what we have learned. Even in situations where combining those insights formally is impractical, we think it remains a useful framework for understanding how much a new piece of information should change our views.

For stocks that are covered by Barclays analysts, a good starting point is to consider how return distributions differ based on those analysts' views. To do that, we use Barclays Equity Research's history of ratings and rating changes. Some key information about this data:

- The database has 7,184 ratings changes, covering 1596 stocks, starting in August 2002[1].
- We dropped all the events for non-US companies, in order to focus on names that were most appropriately benchmarked against the S&P 500. We also excluded GM, because returns around its bankruptcy filing were throwing off returns aggregations. In the end, we were left with data on 1473 companies.
- Finally, we joined the ratings events with daily returns from IDC and Thomson, and index returns from Bloomberg, to calculate the excess returns (stock return – S&P 500 return) for each covered stock. That measure of excess return is our focus here.

Excess Returns for Market Weight Stocks Have Been Near Zero, Positive (and Significant) for Overweights, but More Ambiguous for Underweights

When we look at the distributional characteristics of stocks conditioned on their ratings, a few key points stand out:

Overweights' excess returns have been positive on average, and statistically significant at the 95% level (Figure 2).

Equal Weights' mean return is near zero, though the 95% confidence interval (CI) overlaps substantially with the range for Overweights.

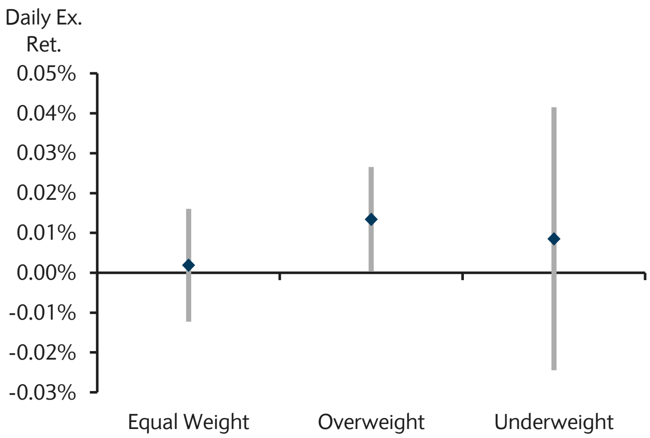
Underweights' mean excess returns have been positive, but with very wide confidence intervals. The 95% CI ranges for Underweights is so wide that we can't reject the possibility that their true mean is substantially negative. But we also can't dismiss the possibility that their true expected return is higher than for the Overweights.

Barclays' decision about whether or not to cover stocks has implications for returns. Given the average performance profiles of the three covered categories, process of elimination suggests that uncovered stocks must on average be underperformers relative to the S&P 500. Though like covered stocks, there will be both out- and under-performers in the group.

[1] On 16th September 2008 Barclays announced the acquisition of Lehman Brothers North American operations. The ratings data prior to that date was Lehman Brothers.

FIGURE 2

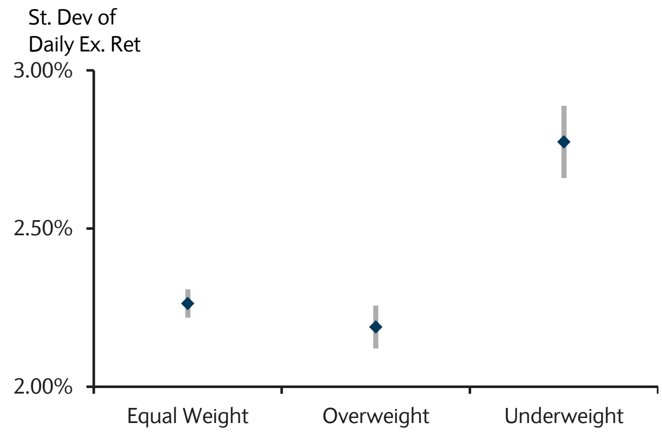
Barclays Overweight Rated-Stocks Have Had Statistically Significant Positive Excess Returns…



Source: Thomson QAD, IDC, Barclays Research

FIGURE 3

…Underweights are consistently more volatile than Equal Weights or Overweights

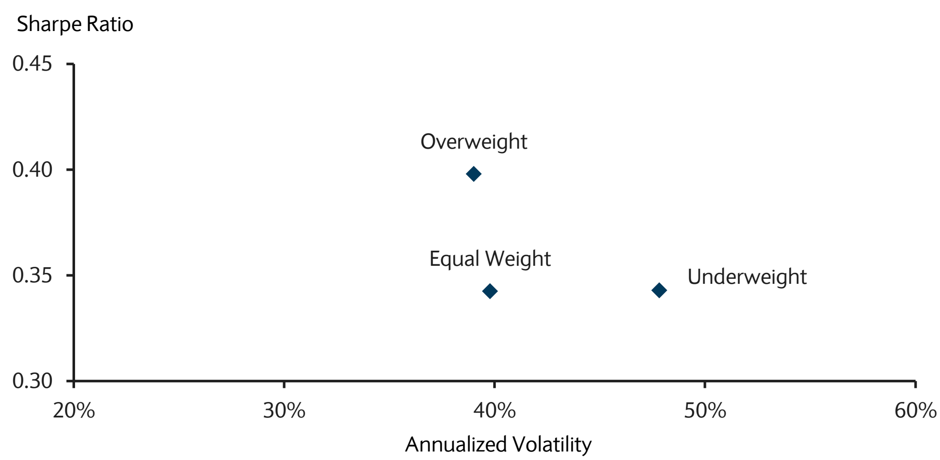


Source: QAD, IDC, Barclays Research. Note: standard error for second moment was estimated via a bootstrapping method.

Expected returns are important for investors, but so are risks. And here, we see more clearly the difference in the distribution of returns for Underweight-rated stocks and the other two ratings categories. As Figure 3 shows, there is substantial overlap in confidence intervals for the volatility of Equal Weight and Overweight stocks. By contrast, Underweight-rated stocks were about 25% more volatile than either of the other categories, and that difference was statistically significant (in the sense that there is no overlap in the CI ranges). So even though we can't be (statistically) certain that Underweights are performance worse than Overweights, they have been dependably (statistically) more volatile. For clients making stock selections in a risk-adjusted framework, that difference is critical.

FIGURE 4

Relative to Equal Weights, Overweights Have Had More Return for Similar Risk, Underweights Have Had More Risk for Similar Returns



Source: Thomson QAD, IDC, Barclays Research

These facts together also give us perspective in how to establish an empirical prior distribution for the stocks rated by Barclays analysts, which is especially clear when we frame it in a risk and risk-adjusted return context (Figure 4). Equal Weights have an average excess return close to zero, Overweights have similar risk profile but higher expected returns, and Underweights have a similar central expectation for risk-adjusted returns, but with higher risk.

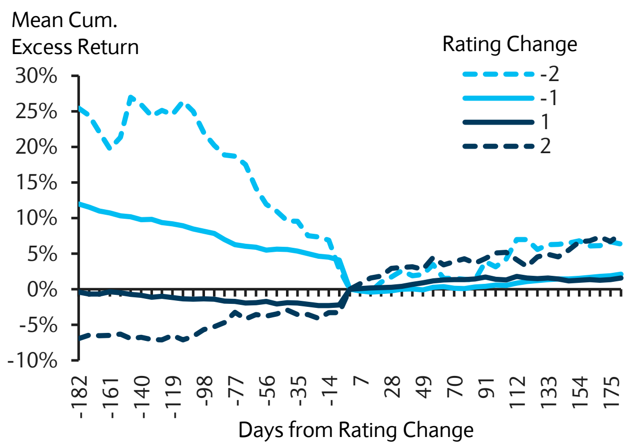
Different Ratings Changes Followed Different Return Paths

The rating levels are not the only piece of information we want to consider with regard to how stock returns might be different as a function of analyst views. The act of changing ratings provides us with discrete events to analyze. We looked on four basic kinds of ratings events: One- and two-notch upgrades, and one- and two-notch downgrades.

To evaluate how we should adjust expectations based on a ratings change event, we created an event-study dataset. We took every ratings change that affected the stocks in the set above. Then, we generated returns series for each, starting from six months prior to the change, to six months after. The cumulative return averages to each horizon is in Figures 5 and 6, with the "zero" point in the center the closing price on the day the rating change was released.

FIGURE 5

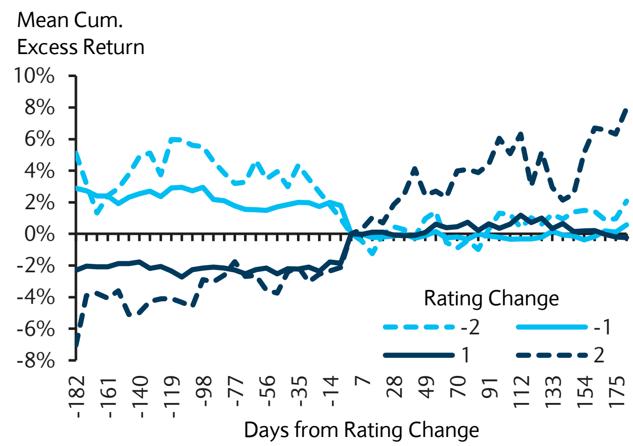
Mean Cumulative Excess Return



Source: Thomson QAD, IDC, Barclays Research

FIGURE 6

Median Cumulative Excess Return



Source: Thomson QAD, IDC, Barclays Research

There are some interesting things to note about returns around ratings changes:

Stocks tend to be falling into downgrades and rising into upgrades. Within that pattern, it's interesting that the one-notch upgrades tend to be modestly weak in the leadup to the upgrade, then jump just prior to the change.

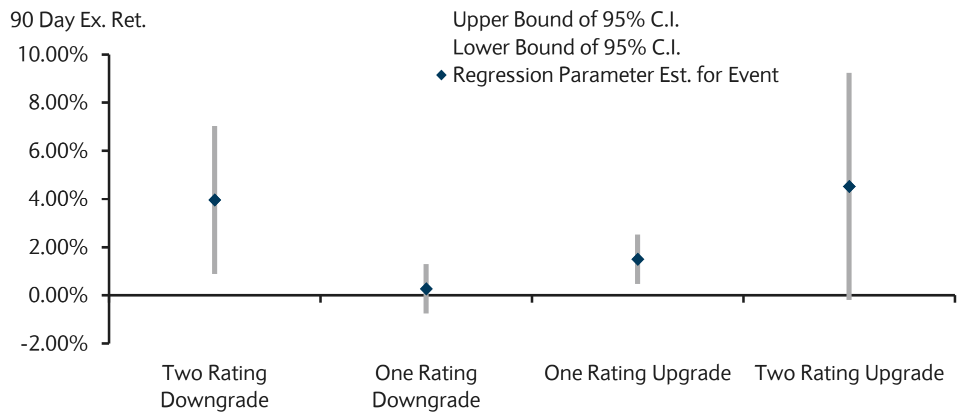
Two-rating upgrades are the most reliable outperformers. They generate positive excess returns even out to 6 months after ratings changes.

Two-rating downgrades also have positive performance after the rating change, although the differences between mean and median show that it is also volatile. But they also have the most extreme downward performance into the rating change. One way to think about them may be that the ratings change tends to happen around the culmination of very bad events, so that some stocks rebound shortly thereafter. Two-rating downgrades are also rare, with fewer than 10 a year in our dataset.

We use a regression to estimate the performance of stocks around each rating change, as show in Figure 6 (note that we use a generalized linear model, rather than ordinary least squares, because the returns are not normally distributed). At a three-month horizon, excess returns are positive and statistically significant at the 95% level for both one-notch upgrades (+1.5%) and two-notch (+4.0%) *downgrades*. Two-notch upgrades (+4.5%) are close enough to statistically valid (significant at the 94.7% level) that in practical terms they appear to be valid. Their relatively high standard error is likely because they are the least common ratings change event, representing only 2.2% of the examples.

FIGURE 7

Upgrades Generate Statistically Significant Outperformance Over a 90-Day Horizon, One-Notch Downgrades are Statistically Indistinguishable from Zero, and 2-Notch Downgrades are Big Outperformers



Source: Thomson QAD, IDC, Barclays Research

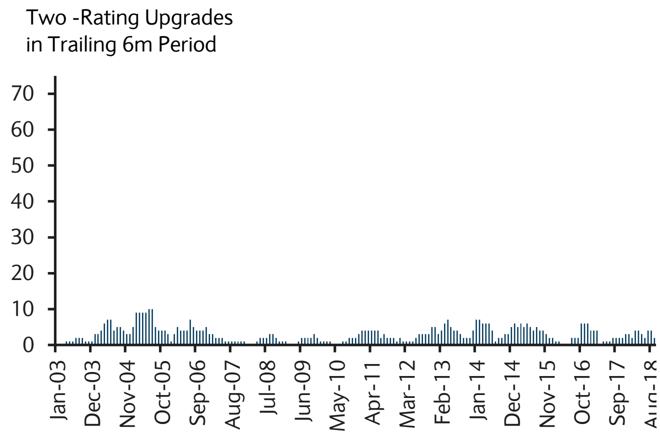
Returning to the idea of updating our views on a name to capture analyst views, that means that the time since the most recent ratings change will also influence our view on potential returns.

Systematically Buying Upgrades Could Inform an Alpha-Capture Strategy

If our result that analyst upgrades are statistically significant and positive, it would imply that we should be able to create an alpha-capture style strategy using them that outperforms the S&P 500 benchmark we used. Although there are probably too few two-rating upgrades for a dedicated strategy (Figure 8), we generally have plenty of one-rating upgrades (Figure 9) to work with at any given time.

FIGURE 8

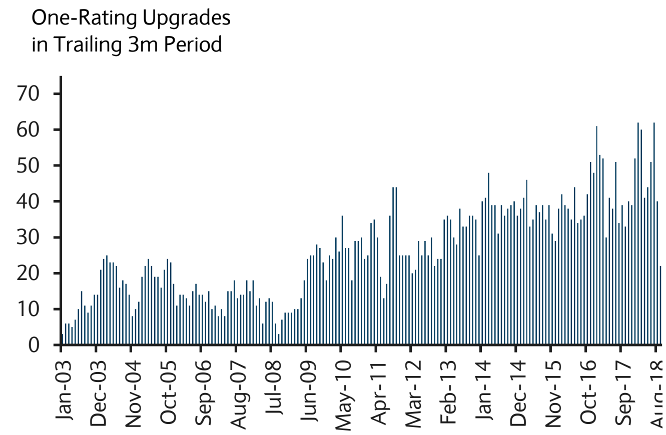
Barclays Fundamental Researchers Typically Have 3 Stocks Within 3 Months of a Two-Rating Upgrade…



Source: Barclays Research

FIGURE 9

…But The Number of Stocks Within 3 Months of an One-Rating Upgrade Has Averaged Closer to 40 Since 2013

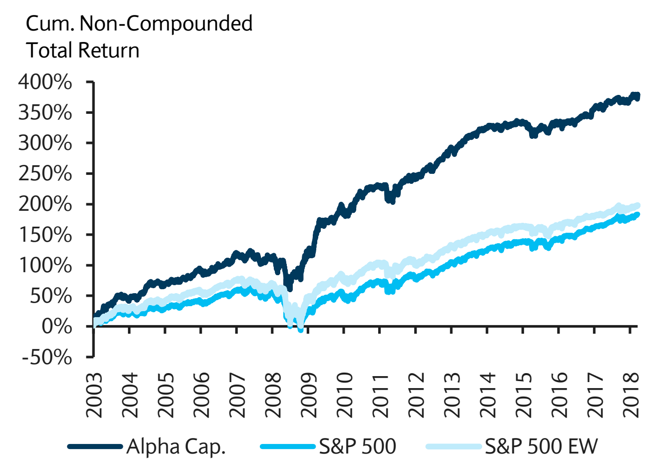


Source: Barclays Research

To conduct a simplified backtest, we constructed an equal-weighted portfolio of every name upgraded two-rating in the past 6 months, and every name upgraded one-rating in the past 3 months. We keep things very simple: no transaction costs, and assume daily rebalancing back to equal weight.

FIGURE 10

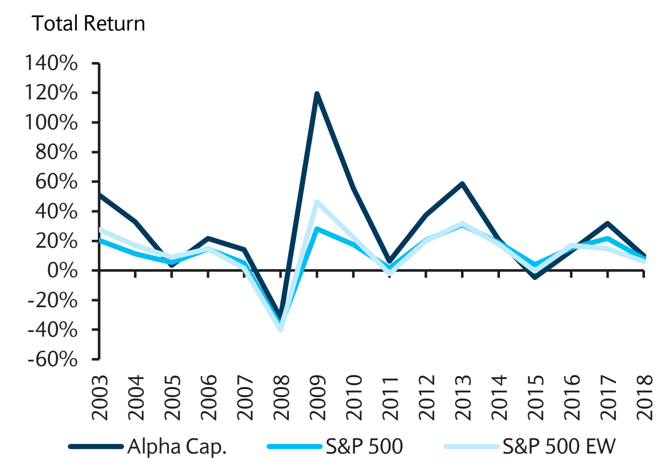
Alpha Capture –Style Strategy Would Have Outperformed S&P 500 Since 2003…



Source: Thomson QAD, IDC, Bloomberg, Barclays Research

FIGURE 11

…Though The Excess Return Generation Has Been Lower Since 2014



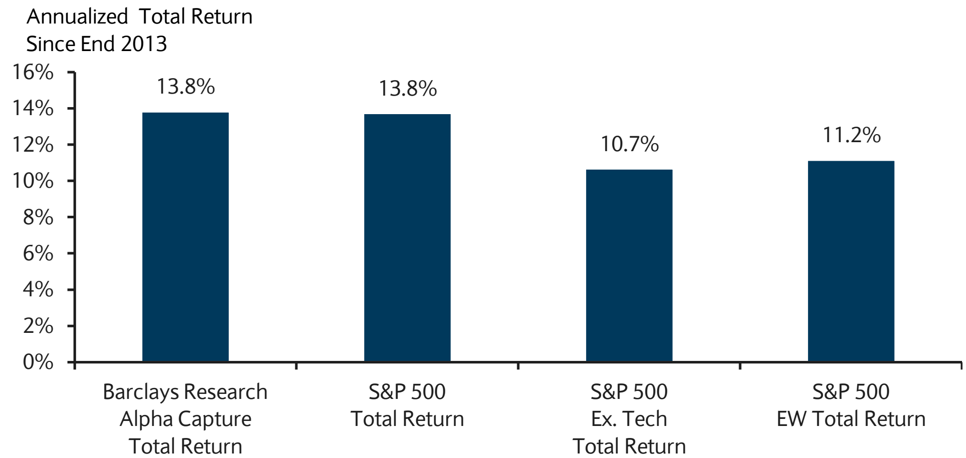
Source: Thomson QAD, IDC, Bloomberg, Barclays Research

Figures 10 shows the cumulative (non-compounded) total return vs. S&P 500 and the S&P 500 Equal Weighted indices, and Figure 11 shows the annual performance (with compounding). Although simplified, a strategy of owning an equal-weighted portfolio of Barclays analyst upgrades would have returned more that the S&P 500 since 2003. It would also have outperformed on a risk-adjusted basis, with an information ratio of 0.97. There are a few notes of caution of course; the first being that this is not a formally constructed backtest, so does not include transaction costs or estimates for market impact.

The strategy would also have performed less well in the past four years. The reasons for that are unclear, though some of it is likely attributable to the concentrated contribution of S&P gains from technology companies. Any equal-weighted strategy is likely to underperform in a period when gains are concentrated in a few stocks, and as Figure 13 demonstrates, the performance has exceeded that of the non-technology components of the S&P 500.

FIGURE 12

An Alpha Capture Style Strategy Would Only Have Matched the S&P 500 Since 2013, But Would Have Returned More Than S&P 500 Ex. Tech and Equal Weighted Indices



Source: Thomson QAD, IDC, Bloomberg, Barclays Research

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