TORRAY LLC

White Paper
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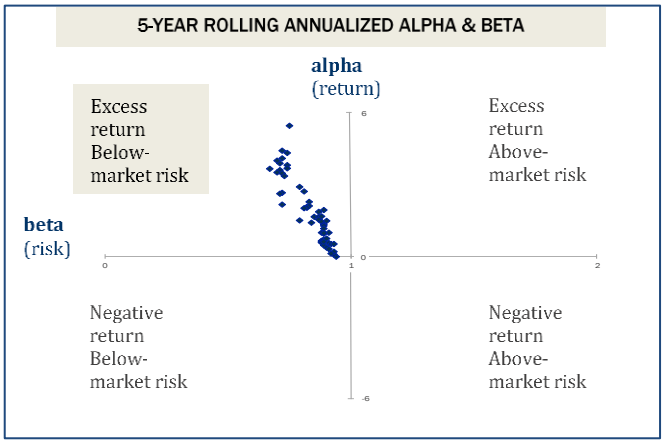
Investing for Consistent Growth

The Low Volatility Anomaly and Our Risk Adjusted Growth Model

- *Premise:* The Risk-Adjusted Growth Model is a method of analyzing companies on the basis of growth consistency.
- *Core belief:* Stock selection based on growth consistency is a more durable source of returns than selection based on magnitude of growth or momentum alone.
- *Implementation:* Systematic application of this model, augmented by rigorous fundamental analysis and disciplined portfolio construction, improves the probability of achieving excess returns over the long-term.

While the rewards of a successful growth stock investment can be impressive, losses can occur faster than gains, erasing years of positive returns in a few trading sessions. Curiously, many growth investors don't make risk-reduction a priority. According to industry data of active managers, over 65% of growth managers had a standard deviation of returns exceeding their benchmarks, or betas greater than one for the five year period between 2009 and 2014.[1] Instead of targeting risk, many managers focus on maximizing return by purchasing stocks offering the fastest absolute growth. Since rapid growth can be hard to sustain over time, strategies built on this principle inherently tend to involve significant risk.[2]

Our research suggests that "growth consistency" is regularly overlooked by investors who gravitate toward stocks offering the fastest absolute growth rates rather than characteristics that allow companies to deliver more stable and predictable growth. Growth consistency is the tendency of growth rates to show low variation or volatility over time. Typically, it is more likely that companies will replicate consistent growth rather than high rates of growth over a full market cycle. Therefore, we believe that targeted investments in companies exhibiting stable growth leads to positive alpha generation, while limiting downside risk. The chart at the right illustrates the positive impact over two decades of employing this consistent growth philosophy."[3]

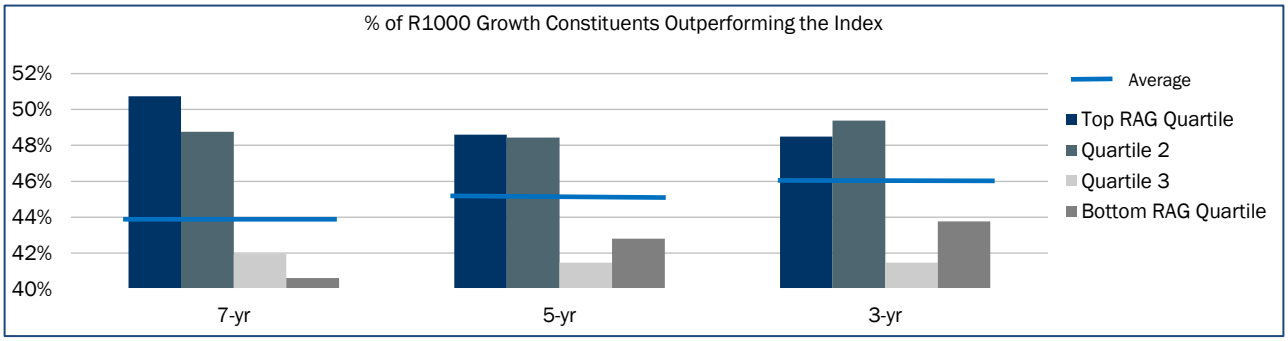


This phenomenon, known as the "low volatility anomaly" in financial and academic circles, has largely been ignored by many in the investing community.[4] "Over the long run, stock portfolios with lesser variance in monthly returns have experienced greater average returns than their 'riskier' counterparts". This is the key take-away from the seminal paper by Robert Haugen and A. James Heins in 1972, a finding that has been reinforced in subsequent studies as recently as 2013. This may seem counter-intuitive, earning it the "anomaly" label, since conventional wisdom holds that higher expected risk is compensated with higher expected returns. A subsequent study covering the 46 years from 1966-2011 further examined the phenomenon and concluded that the higher returns related to low-volatility portfolios were tied to volatility as a stock characteristic and not to compensation for higher systematic factor risk.[5] Another way to think about this is to recognize the effect of compounding, where negative events will do more to harm a portfolio than positive events of the same magnitude will do to help it (e.g. a 50% decline requires a subsequent 100% lift to breakeven). Consequently, these studies support our belief that the most effective way to generate better long-term returns is to identify companies with less volatile business results. Simply put, to win by losing less than the overall market at any given point in time.

There are many factors that are used in determining consistent growth; the primary tool we utilize is our Risk-Adjusted Growth "RAG" Model. To exploit the low volatility anomaly, the RAG Model calculates a risk-adjusted growth score that discounts excess growth by the volatility of the return streams. The financial results examined are revenue, earnings per share (EPS) and free cash flow (FCF). Time periods observed are trailing five and ten years, as well as five years of trailing data combined with three years of forecasted results. These time periods are sufficient to capture a complete business cycle as well as incorporating a component of estimated future results. By expanding our analysis beyond a single point in time to include RAG scores over various timeframes, we are better able to identify persistent patterns, and thereby

increase our potential for identifying stocks that should exhibit steady growth going forward. This methodology allows us to efficiently screen large stock universes to identify companies with a history of attractive rates of stable growth for further fundamental analysis.

To validate the probability of finding stocks that outperformed the index, we conducted a study that analyzed the annual performance of the constituents of the Russell 1000 Growth Index (R1000G). For each year, the beginning period constituents were divided into quartiles based on trailing five-year EPS RAG scores. The annual returns for each quartile's constituents were compared to that of the R1000G in order to calculate the percentage of each quartile that outperformed the R1000G. The following graphic illustrates the results as of 12/31/2016. The study finds that the top two quartiles consistently offered a significant increase in the probability of finding stocks that outperformed the index compared to the bottom two quartiles. This confirms that RAG scoring can help identify attractive investment opportunities.



Scoring and ranking the stocks within our investment universe positions us to identify those with the highest potential for consistent success, which we then target for more traditional fundamental analysis and portfolio construction. While the model is instrumental in helping us identify potential portfolio additions, it is just one component of our process.

The major risk of the RAG model is similar to most historically-based models: that the future is different than the past. We attempt to address this risk by calculating multiple RAG scores using different time periods and metrics, and treating these as the starting point for in-depth fundamental analysis rather than as the sole selection criteria. The process also tends to identify companies in inherently stable sectors that may look and act similar to each other. For example, Consumer Staples companies tend to score well because their earnings streams vary little year to year. However, we've found that RAG Scores are often most valuable at identifying undiscovered, consistent growth companies in volatile sectors such as Energy, Health Care (biotech), and Materials.

In summary, the Risk-Adjust Growth Model is an effective tool for understanding the nature of growth and quantifying the associated risk. The model is built on factors likely to repeat in the future, improving the predictive value of the approach and offering a differentiated strategy to incorporate the concept of risk. Most importantly, the RAG model is not widely utilized by the market and therefore, helps identify valuation inefficiencies that can be exploited in a repeatable manner.

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Investing involves risk; principal loss is possible.

[1] On December 31, 2014, 170 managers of the 262 (65%) in the Investment Metrics Large Growth universe reported a five year standard deviation greater than the benchmark (Russell 1000 Growth) and 172 (66%) reported a beta greater than 1.0 to the same benchmark (Source: FactSet).

[2] This concept is known in finance theory as the "Law of Large Numbers." This Law is based on the statistical concept that as the number of samples increase, the average of these samples tends to reach the mean of the entire population. Related to businesses and the economy, this means that as a company grows, its growth rate will decrease to that of the overall economy over time. The number of companies breaking this rule is extremely limited.

[3] As of 09/30/17; based on gross returns. Inception 03/31/98. Source: FactSet. Calculated from quarterly TRCLG Composite results vs Russell 1000® Growth Index. Portfolio Characteristics shown above are based on past observations and may not be indicative of future results.

[4] "On the Evidence Supporting the Existence of Risk Premiums in the Capital market", Robert Haugen and A. James Heins (1972).

[5] "The Low-Volatility Anomaly: Market Evidence on Systematic Risk vs. Mispricing", Xi Li, R. N. Sullivan, CFA, L. Garcia-Feijoo, CFA (2013)

[6] Trailing seven, five, and three-year period ending 12/31/16. Results calculated using simple arithmetic average of the percentage of RAG quartile constituents that outperformed the Russell 1000® Growth Index each year. Results excluded Index constituents that did not have a RAG score due to insufficient reported earnings history or no earnings reported. Source: Factset.