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CONTENTS

Equity Style Analysis: Beyond Performance Measurement

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Abstract

To succeed in today's complex and ever-changing environment, institutional investors must be well-versed in a myriad of different financial statistics and measures. In many cases, the greatest constraints an institutional investor faces are a lack of time and resources to perform the analysis required to ensure a strong and successful portfolio. Institutional investors need easy access to an enormous amount of data, and to have that data presented in a clear and concise manner.

Traditionally, institutional investors consider the returns of current and prospective asset managers relative to peers as a key component of the manager evaluation process. Fundamental characteristics analysis is often presented for additional perspective on the manager style, although some recipients of this type of information are unsure how to use this additional detail. Many sophisticated investors and their consultants have evolved their own methods to combine return, risk, and fundamental characteristics analysis together with relevant peer group comparisons to identify relevant indicators of manager style and skill.

BNY Mellon Asset Servicing has responded to this challenge with its Charts capability. Institutional investors can custom-create high-end graphical reports that effectively present complex data relationships as well as compare, understand and communicate portfolio performance, risk statistics and profile characteristic data against universe peer groups and proxies.

By supporting performance- or characteristic-based analysis on more than one hundred different metrics (Appendix A), institutional investors can evaluate a portfolio over time and against a universe of peers. The combination of extensive features, simple and objective exhibits, and flexible customization provide Institutional investors with easy access to their investment information.

This case study follows a hypothetical institutional investor utilizing Charts to evaluate the merits of three large cap growth managers. While evaluating the managers, it becomes apparent that even though the managers are all classified as large cap growth, their respective implementation and processes require more analysis than a simple performance comparison would provide.

The case study illustrates that when characteristics of a portfolio are displayed in a variety of ways, institutional investors can easily comprehend their investment analysis and use this data to support the difficult manager selection and retention decisions they routinely have to make.

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I. Challenges Facing Institutional Investors in Manager Selection

Institutional investors face a number of challenges when it comes to the selection and evaluation of investment managers.

When institutional investors are working with existing managers, they will continuously question the performance, approach and understanding of their portfolios:

- How did my manager perform relative to peers?
- Has their investment process changed?
- How is the portfolio structured relative to other investment approaches?
- Are the portfolio characteristics consistent with my understanding of the investment process?

For a prospective manager, institutional investors need to know if the manager's style/exposure complement or overlap their existing managers?

With new market realities challenging institutional investors daily, the ability to compare portfolios quickly and concisely is more important than ever. Charts can assist in the clear consolidation and presentation of this information. More importantly, it helps provide a starting point to analyze a manager's portfolio and understand the impact it will have on the total fund.

Reliance on Historical Performance

Past performance is no guarantee of future results. Yet the temptation to conduct performance only comparisons is ever present and difficult to resist. Past performance information is easy to obtain. Managers are willing to share their performance results, particularly when they've had periods of superior results. An institutional investor is likely to be provided results from a subset of the prospective manager pool that has had recent good performance results, no matter what particular approach has been in favor. Additionally past performance is easy to compare: How did the manager perform relative to the index? To peers? These are straight forward, easy-to-answer questions.

Institutional investors are under ever-increasing pressure to generate additional value in their investment portfolios relative to their benchmarks, so it's tempting to hire investment managers who've generated excellent historical returns.

While performance is an important part of the analysis, it is only one part of the review that should be conducted when evaluating managers. Charts helps institutional investors avoid the potential pitfalls of focusing solely on performance. When combined with a universe of profile (portfolio characteristic) data, an institutional investor can measure a given manager or portfolio against its peers by any of the available metrics. Characteristic analysis provides a deeper understanding of a manager's strategy than merely evaluating it on performance-based statistics alone.

Portfolio Diversification

Today, institutional investors want to effectively diversify assets across investment styles and sub-styles. They are aware of the benefits achieved through diversification and know that investment styles rotate in and out of favor. The challenge, however, is to ensure that investment managers are adhering to the style/sub-style they claim to inhabit, or were hired to invest in. Investment managers can be subject to style drift as a result of asset growth, diminishing attractiveness of their current stock universe or simply due to their style being out of favor. These factors can undermine an institutional investor's diversification objective.

Charts has several ways of monitoring a portfolio's or composite's diversification. One way to see if a portfolio has drifted over time is to plot it in a characteristic universe and compare its position in quarters or years on a single page. When reviewing the positioning of the portfolio versus the index, universe mean, or median, the Institutional Investor might see changing trends that could lead to better questions for manager discussions. Correlation, as well as numerous other returns-based characteristics, can be analyzed over different time periods (Appendix B) as well. Diversification of assets is important for any institutional investor, but rendered largely irrelevant if the assets are highly correlated with one another. Charts provides a quick way of reviewing and comparing many measures of diversification, including both returns and holdings-based characteristics.

Investment Philosophy and Risk Tolerance

Institutional investors have different risk tolerances. Some take more risk in hopes of generating higher returns; others have relatively conservative views and structure their portfolios accordingly. Given an institutional investor's current spending policies or future funding needs, either approach may be prudent.

What is Charts?

Charts is a sophisticated web-based graphics and reporting capability that enables clients to compare, understand, and communicate portfolio performance, risk statistics and profile characteristics. Comparisons can be made against universe peer groups, market indices or in absolute terms. Charts provides easy access to your information along with a dynamic and flexible display of published and on demand calculated results.

Key Features:

Tell a Compelling Story

- Effectively illustrate manager-stated strategies and identify how results have been achieved using industry standard methodologies.
- Highlight distinguishing strengths and capabilities.
- Evaluate performance and portfolio characteristics against other managers, indices and market proxies.

Evaluate Performance and Make Effective Decisions

- Communicate results and use the information to further develop or adjust current strategies.
- Explain portfolio structure through combined performance, risk and fundamental characteristics within the same chart.
- Utilize specific statistics as a predictor of future trends.

Perform Competitive Analysis

- Access an extensive array of peer group universes and indices to identify potential competitive advantages.
- Industry standard methodologies and over 100 performance, risk and characteristic statistics ensure valid, relevant comparisons.

Portfolio concentration is one such measure of risk. An institutional investor can determine how highly concentrated the manager is relative to peers and determine the level of comfort that strategy provides. Additionally, over time a institutional investor can track the level of concentration and whether the investment manager is behaving consistently with, or deviating from, their stated approach. In other words, is the managers' portfolio constructed in a way that's consistent with their stated investment process?

In their evaluation of a manager, an institutional investor can measure the manager's adherence to a style by looking at their investment in terms of one or several key characteristics of that style. For example, a manager that advertises its style as large cap growth, one would expect the portfolio to have both a high weighted market capitalization and relatively high expected earnings growth rates. Alternatively, a value manager's portfolio would be expected to have relatively low price to book and price to earnings ratios. The institutional investor will quickly be able to detect if style drift has occurred and therefore will be able to make informed decisions regarding manager selection and retention.

While not universal, these challenges are common and can prove difficult to manage without effective tools to analyze the sometimes hundreds of individual investments that make up a particular investment manager's portfolio.

II. Case Study

What would an institutional investor's analysis look like using Charts? In the exhibits that follow, a manager selection/evaluation process will be reviewed from an institutional investor's perspective. This case study approach will use actual investment manager performance and portfolio characteristic data to illustrate how Charts can assist in the manager selection and evaluation process.

The case study is structured from the perspective of a large institutional investor responsible for managing tax-exempt institutional assets. The institutional investor is evaluating three large cap growth managers to fulfill a mandate, using equity characteristics to look beyond the managers' historical performance. The analysis is provided in terms of combinations of characteristics which are designed expose an element of the manager's strategy or the degree of success achieved (Appendix C). The analysis uses actual results as of September 30, 2008.

The managers under evaluation:

1. ● **Manager ABC**
Manager ABC's investment philosophy is to purchase stocks poised for strong growth due to catalysts such as rapidly expanding markets or the introduction of new and innovative products into existing markets. Manager ABC also looks for companies undergoing promising change such as new management, technologies, or products.

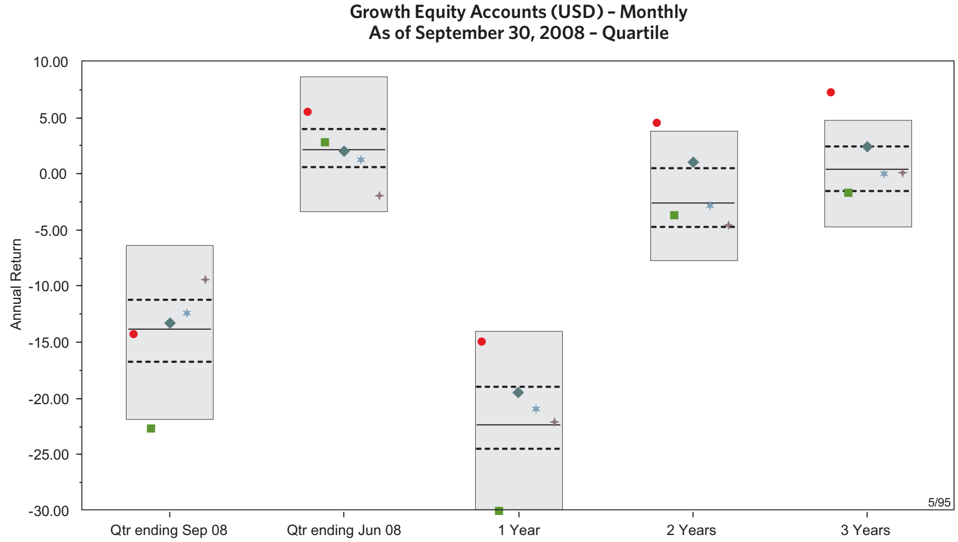
2. ■ **Manager XYZ**
Manager XYZ is a bottom up, growth-oriented equity manager looking to acquire stocks likely to produce positive earnings surprises. Similarly, Manager XYZ looks to sell or avoid purchasing stocks falling short of earnings expectations.

3. ◆ **Manager DEF**
Manager DEF's investment philosophy is to purchase high quality growth companies trading at substantial discounts. The firm employs a research intensive approach and holds a very concentrated portfolio with relatively low portfolio turnover.

All three are considered large cap growth managers, but each has a very different approach to the market. While the purpose of this exercise is to highlight the analytical capabilities available within Charts, it is unrealistic to neglect the performance element of Charts, which historically has been the primary use of the capability.

The following exhibit illustrates the performance, using standard time periods for each of the three managers:

Figure 1: Manager Performance



	Qtr ending Sep 08			Qtr ending Jun 08			1 Year			2 Years			3 Years		
	Value	%Tile	Rank	Value	%Tile	Rank	Value	%Tile	Rank	Value	%Tile	Rank	Value	%Tile	Rank
5th Percentile	-6.33			8.66			-14.06			3.82			4.74		
25th Percentile	-11.22			3.95			-18.94			0.49			2.43		
Median Percentile	-13.82			2.18			-22.32			-2.59			0.39		
75th Percentile	-16.71			0.58			-24.44			-4.72			-1.57		
95th Percentile	-21.85			-3.39			-29.86			-7.76			-4.72		
# of Portfolios	128			128			125			113			105		
● **Manager ABC**	-14.21	54	69	5.55	17	21	-14.85	8	9	4.55	4	4	7.30	2	2
■ **Manager XYZ**	-22.64	96	124	2.82	35	45	-29.99	96	121	-3.63	63	71	-1.65	77	81
◆ **Manager DEF**	-13.29	45	58	2.02	53	68	-19.45	31	39	1.04	18	20	2.46	25	26
✶ **Russell 1000 Growth Index**	-12.33	33	42	1.25	66	85	-20.88	41	52	-2.82	52	59	0.04	58	62
+ **Russell 1000 Index**	-9.35	12	15	-1.89	90	117	-22.10	50	63	-4.57	74	84	0.13	54	57

Universe Source: Russell Investment Group; Universe Status: Final, Calculated

Looking merely at the performance in Figure 1, the institutional investor might be inclined to select Manager ABC, since it is top quartile or better in four of five time periods. However, as the case study will illustrate, the analysis of managers can go much deeper once an institutional investor begins to look into the analytical components.

A series of questions are posed for the institutional investor and the analysis generated from Charts is used to answer them.

Questions for Large Cap Growth Managers:

1. What kind of growth stocks is the manager buying?
2. How adept is the manager at capturing strong earnings growth while avoiding negative earnings surprise?
3. Do the portfolio's earnings justify the price paid?
4. What is the earnings quality of the manager's portfolio?
5. Is the portfolio's growth rate likely to be accompanied by a high level of performance volatility?

Other questions for characteristic-based analysis:

6. How does your manager's strategy fare in different market environments?
7. Does analysis of the interaction of multiple portfolio characteristics provide additional insight?
8. Do managers exhibit consistent relative characteristics across multiple time periods?

ANALYSIS:

1. What kind of growth stocks is the manager buying?

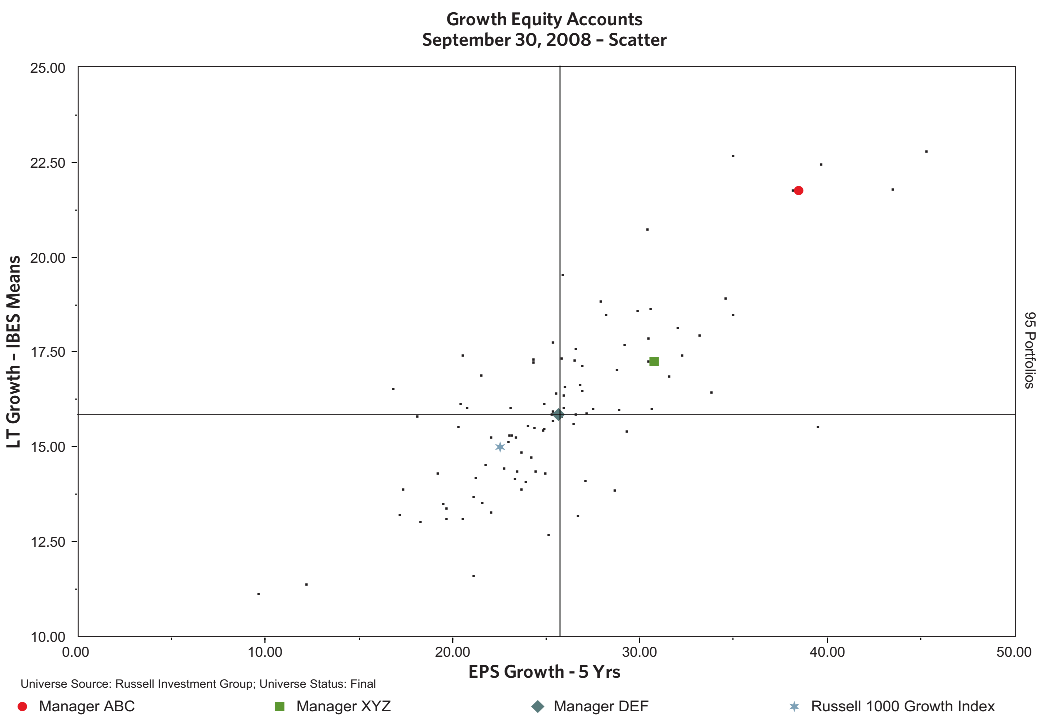
A growth manager buys securities with the assumption that the earnings of the companies whose stock it buys will increase faster than average. A manager is usually willing to pay more for these stocks than for others with lower forecasted growth. If earnings increase as anticipated, the manager should expect to be compensated with higher portfolio returns. However, given that the manager is forced to pay a premium for these higher-growth securities, if the actual performance falls short of the forecast, the manager will have significantly overpaid for an underperforming stock and the portfolio performance will suffer accordingly.

A combination of forward- and backward-looking statistics can be used to help the investor evaluate the manager in this context:

Long Term Growth IBES Means
EPS Growth – 5 Years

The EPS Growth statistic measures the earnings growth rate the portfolio has achieved over the prior 5 years, while the Long term growth statistic is forward looking. If a portfolio reflects high historic earnings growth coupled with high forecasted earnings, it usually indicates the manager is buying high secular growth type companies that generally exhibit greater earnings consistency. If long term forecasted growth is high and historical growth is low it is likely the manager is more focused on changes in earnings as opposed to absolutely high growth rates. It could also be the case that this type of manager is more likely to invest in highly cyclical companies and thus will tend to have more economically sensitive performance.

Figure 2: Long Term Growth IBES Means vs. EPS Growth 5 Years



Conclusions

In Figure 2, Manager ABC appears to focus on the highest growth securities at the exclusion of others. For the 5 years ended September 30, 2008, they have achieved nearly the highest level of growth in the entire universe of growth equity accounts. However, it is clear from their location on the growth forecast axis that their strategy involves buying many stocks with high growth forecasts. A fair assumption would be that they are buying stocks at a premium, since high growth rates tend to command high prices. Further analysis should involve the P/E ratio of the portfolio and the incidence of disappointing earnings results, since given the premium they are likely paying, negative earnings surprises could be devastating to their performance. Careful attention should be paid to the research process for Manager ABC and also to their sell discipline for securities that under-perform. It would also be prudent to consider their sector exposure as their focus on extreme growth may be a symptom of extreme sector concentration that the institutional investor may find unappealing.

In Figure 2, Manager XYZ appears to be more moderate in its growth purchases relative to Manager ABC. They appear above the median for both forward and backward looking earnings, but not to the degree of Manager ABC. Manager DEF appears on approximately the median for both statistics, looking rather conservative in comparison. This implies that they place a greater emphasis on the price that they pay for the stocks in their portfolio, and are not willing to pay a premium for the highest possible growth projections given the risk of poor returns as a result of falling short of earnings expectations.

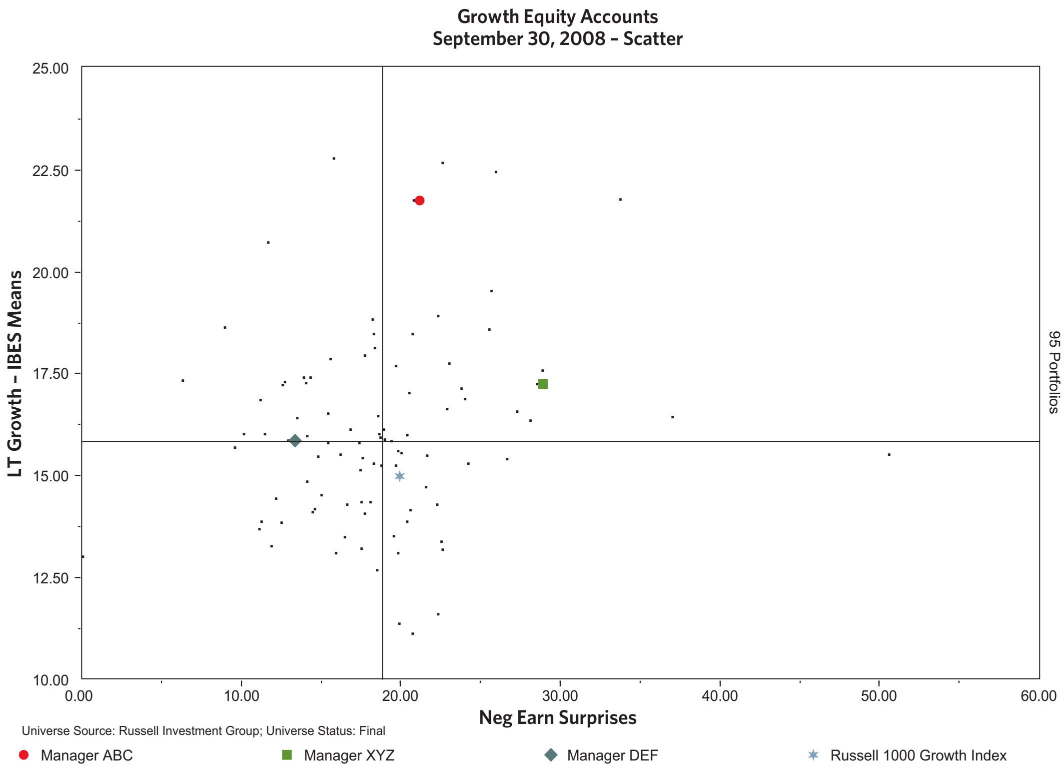
2. How adept is the manager at capturing strong earnings growth while avoiding negative earnings surprise?

A successful growth manager requires the knowledge to forecast a company's future earnings growth better than other investors. If reported earnings are lower than analysts' expectations, the manager faces the risk of a steep stock price drop. Two statistics that can help evaluate the manager's strength in this capacity are:

Long Term Growth IBES Means
Negative Earnings Surprise

The Negative Earnings Surprise statistic reflects the percentage of a portfolio with earnings that fall below estimates; the fewer there are, the better the manager is at estimating future growth. For a portfolio with high forecasted growth, a high incidence rate of negative earnings can be disastrous since the forecast of elevated growth likely commands a significant premium in the market. If the securities don't produce the high earnings they are supposed to, the stocks in the portfolio will decline and overall performance will suffer. Correspondingly, stocks with lower earnings forecasts tend to weather negative earnings surprise better. The general rule is that going extreme on high forecasted growth not only increases the likelihood of exposure to negative earnings surprise, but also amplifies the negative effects on portfolio performance when the negative earnings surprise occurs.

Figure 3: Long Term Growth IBES Means vs. Negative Earnings Surprises



Conclusions

In Figure 3, Manager ABC has a forecasted level of EPS growth significantly higher than its peers, with a level of negative earnings surprise slightly above the median. However, as in Figure 2, Manager ABC is focused heavily on stocks that have the highest possible growth forecasts, which are likely to trade at a high premium. When the earnings for these securities are reported at lower levels than expected, the result for their portfolio returns can be amplified relative to a more conservative manager.

Although the level of negative earnings surprise is higher in absolute terms for Manager XYZ, the fact that Manager XYZ doesn't seem to be quite as aggressive in their growth targets means that the impact on their portfolio may not be as extreme. Manager DEF, while only approximating the universe median in terms of forecast growth, has a level of negative earnings surprise that is among the best in the universe. As a result, Manager DEF has a lower risk of negative earnings causing poor performance relative to its peers.

3. Do the portfolio's earnings justify the price paid?

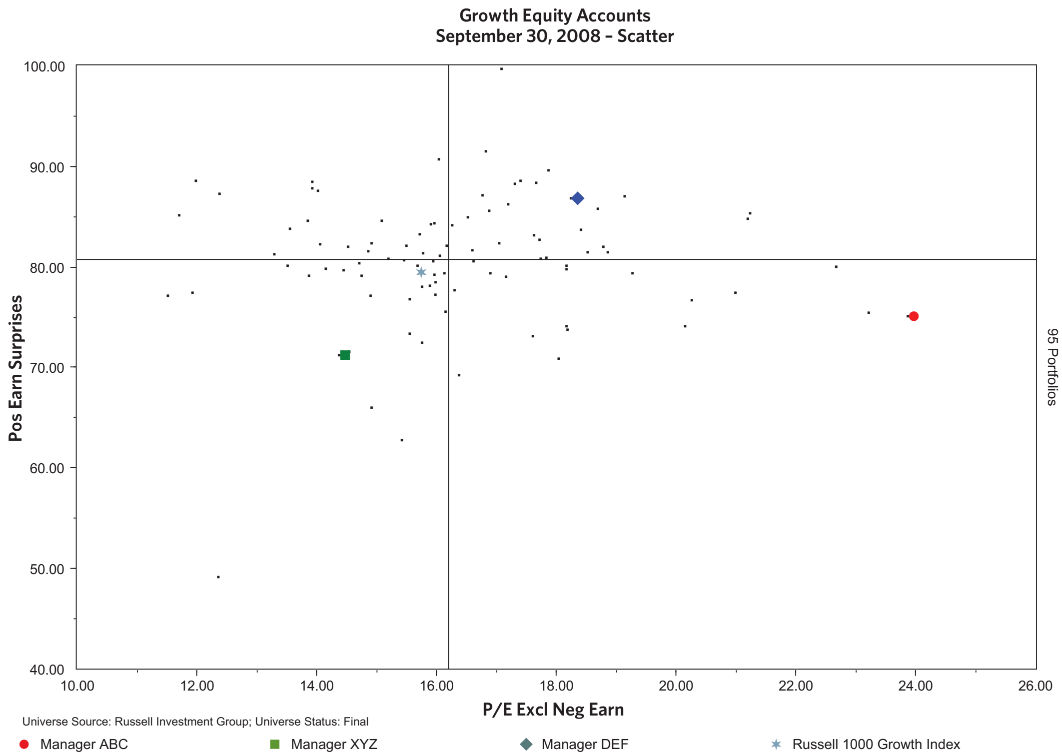
For investment styles focused on near term earnings, a valuable measure of how well a manager may be at selecting stocks is to compare whether the companies purchased meet their earnings estimates. A manager exhibiting a high percentage of negative earnings surprises at a given level of P/E ratio indicates the manager may be a poor judge at forecasting earnings. This is a problem because it implies that they are overpaying for the performance they receive. Conversely, selecting stocks that beat their earnings estimates can lead to the opposite conclusion, namely that the manager is a superior forecaster of earnings, and their stock selection is generating value. In Figure 5, these two characteristics have been selected to demonstrate the managers' effectiveness:

P/E (Excluding Negative Earnings)

Positive Earnings Surprise

For this time period, the index (Russell 1000 Growth) is near the median of universe's two characteristics. In Figure 4, of the universe of managers, Manager ABC has among the highest P/E Excluding Negative Earnings; however they have a somewhat sub-median Positive Earnings Surprise. Manager DEF is above the peer median for both characteristics, while Manager XYZ exhibits below median rankings for both characteristics. No clear linear relationship between these characteristics exists, but investors prefer a manager that exhibits greater success at selecting companies with earnings that exceed analysts' expectations for a given valuation (i.e. P/E, P/B, etc.) level.

Figure 4: Positive Earnings Surprise vs. P/E Excluding Negative Earnings



Conclusions

As was the case with negative earnings surprise, the positive earnings surprise metric suggests that Manager ABC may be in for a volatile investing experience. Given that their P/E is the highest of any manager in the universe, there is a high likelihood their picks must have earnings that meet or exceed the expectations of analysts in order to have success. If that does not happen, the premium paid for their P/E ratio, which in Figure 4 is approximately 24, becomes unjustified. In those environments, the investor can expect performance to suffer.

Manager XYZ has a portfolio with below median positive earnings surprise, lower than Manager ABC, and one might expect that their performance would suffer accordingly. However, the juxtaposition of these two characteristics allows an institutional investor to note that they are not overpaying for the positive earnings surprise to the degree that Manager ABC is. Since they are not paying the premium for the highest possible growth that Manager ABC must, their performance is not likely to be as impacted by being sub-median in positive earnings surprise. These two managers have clearly different approaches to growth investing.

In Figure 4, Manager DEF does deserve some attention because if they are going to invest in higher P/E stocks they will need higher exposure to positive surprise to justify the premium valuations.

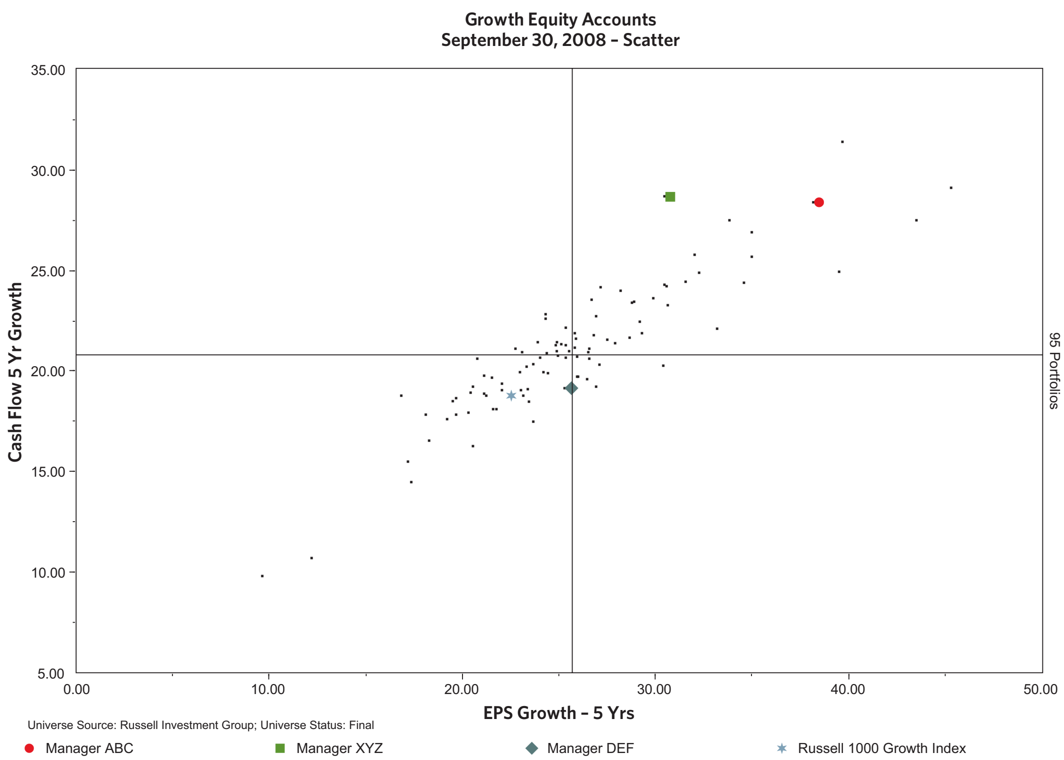
4. What is the earnings quality of the manager's portfolio?

Investors are interested in knowing the quality of earnings of the underlying companies in a portfolio since companies with more sustainable earnings are typically more stable, long-term investments. Similarly to Sales per Share Growth, a portfolio's Cash Flow Growth should be close to, or above, it's EPS Growth. Investors gain insight into the sustainability of an underlying portfolio's earnings by comparing the following two characteristics:

Cash Flow – 5 Year Growth
EPS Growth – 5 Years

Cash Flow 5 Yr Growth is indicative of the overall business growth and financial stability of companies held in the portfolio (even if the growth is not flowing through to the bottom line). It is a useful alternative measure of growth for companies that either do not have earnings, have weak earnings, or their book values do not reflect intangible assets (e.g., service companies or high technology companies). EPS Growth – 5 Yrs measures the earnings per share growth of a portfolio's holdings over the prior five years. Strong growth in EPS is an indicator of a healthy company. Without ample liquidity, a company may have to temper its plans for growth, which demonstrates why the Cash Flow measure is so important.

Figure 5: Cash Flow Growth – 5 Years vs. EPS Growth – 5 Years



Conclusions

In Figure 5 only Manager XYZ's Cash Flow Growth is on par with its EPS Growth. Both Manager ABC and Manager DEF reflect EPS Growth exceeding Cash Flow; sustained EPS Growth higher than Cash Flow Growth is not a positive indicator of sustainable future growth rates for these portfolios.

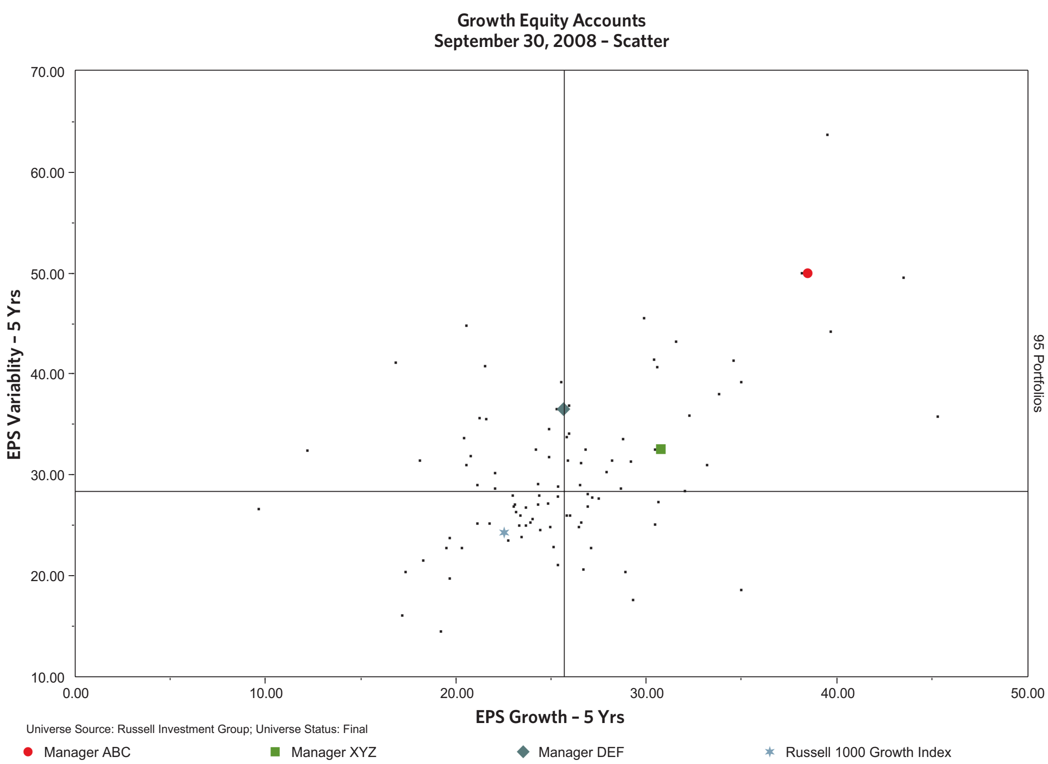
5. Is the portfolio's growth rate likely to be accompanied by a high level of performance volatility?

The historical earnings growth rate of a portfolio, when observed for an extended period of time, can help illustrate a great deal about the profile of securities a manager is likely to select. However, when the results over the period of time are condensed into a single number, a significant portion of the story can be obscured. For example, if a manager attains a growth rate of 25% each year for 5 years, the compound annual growth rate of the portfolio will be 25%. However, a portfolio which has yearly growth rates of 5%, 37%, 12%, 58% and 20% will also yield a five year annual growth rate of approximately 25%. When looking at the single metric of 5 year growth, these two portfolios would appear identical, but clearly investing in the second portfolio will produce much more variability in earnings. To better understand these results, an institutional investor should look at a comparison between the following two characteristics:

EPS Growth – 5 Years
EPS Variability – 5 Years

The characteristics provided in Figure 6 allows the institutional investor to determine how much variability was experienced while realizing the portfolio's historical earnings growth, and in turn whether or not the portfolio is a good fit with stated investment goals and objectives. Consistent with the earlier analyses, Manager ABC experienced the highest levels of both earnings growth and earnings variability. Their earnings growth ranks in the upper range for the universe, approaching 40% per annum over the previous 5 years. Accompanying this high growth rate are significantly higher levels of variability relative to peers. Manager XYZ delivered an annualized growth rate just over 30%, which is significantly above the universe median but with far less variability than Manager ABC. Manager DEF generated a growth rate that approximates the universe median, with slightly more variability than Manager XYZ.

Figure 6: EPS Growth – 5 Years vs. EPS Variability – 5 Years



Conclusions

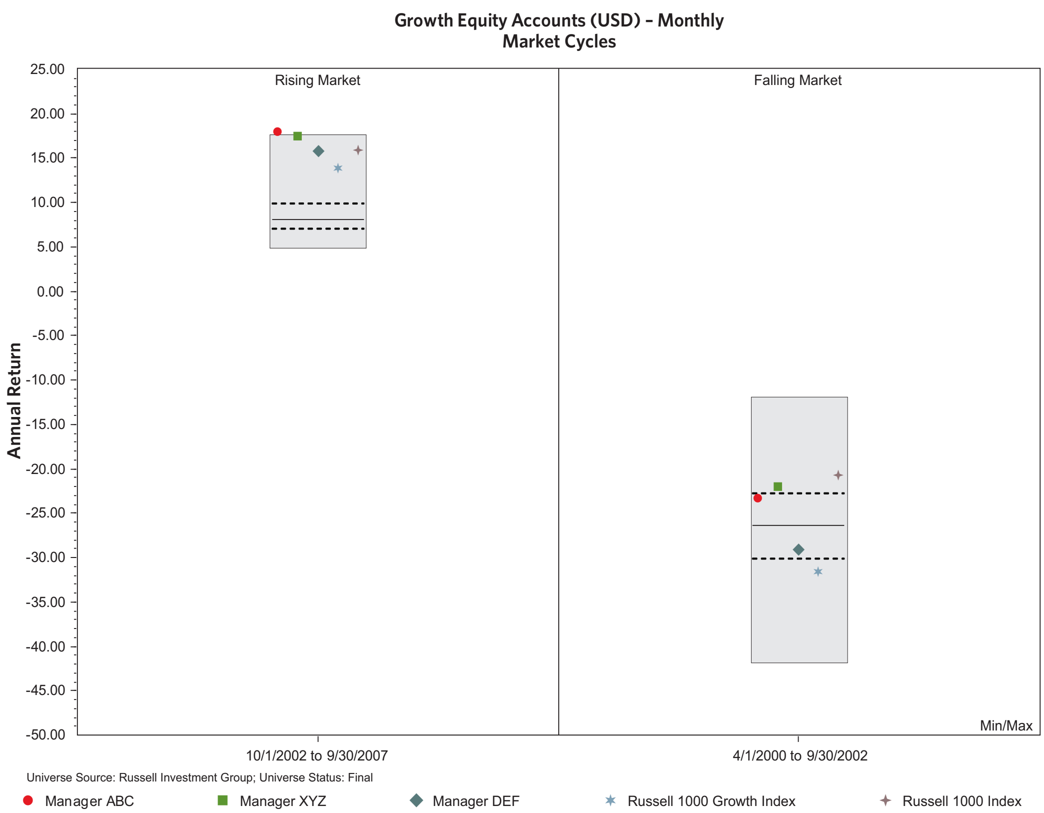
A high level of EPS variability within a portfolio is not necessarily a negative, but likely suggests that performance will be highly correlated with general economic performance. When economic conditions are favorable, their bets can pay off big, but when conditions turn negative these same investments can significantly under-perform. A high level of EPS variability also suggests that the portfolio is focused on and sensitive to earnings changes. In this situation, the manager may need to be more sensitive to short term progress of companies such as reported earnings relative to analyst expectations.

6. How does your manager's strategy fare in different market environments?

When evaluating a manager, a common tendency is to look at the manager's performance relative to peers over standard time periods. However, this practice in isolation can cause an institutional investor to overlook other informative factors. For example, an institutional investor should consider what was happening in the overall market during the period in question. In the case of large cap growth managers, performance would tend to suffer during periods that strongly favor value strategies. At first glance, that may lead an institutional investor to write off a potentially strong manager for having disappointing returns compared to its peers.

An institutional investor can isolate the performance of a manager specifically in terms of periods when the market was rising and falling by reviewing the historical performance for portfolios, composites, and universes for time periods identified as rising and falling markets. This can contextualize a positive or negative return and, through universe comparison, rate a manager's performance against their peers.

Figure 7: Market Cycles



Conclusions

Based on the results in Figure 7, all three managers are top performers relative to the index and peers in the rising market period. Even in the falling market period, all three outperformed the index. Manager XYZ continued to be a top quartile performer, with Manager ABC slipping into the second quartile and Manager DEF dropped into the third quartile. From this exhibit, an institutional investor can see that all three managers outperformed in the market environment favorable to their style, while both Manager XYZ and Manager ABC's strategies were more resilient in the falling markets period.

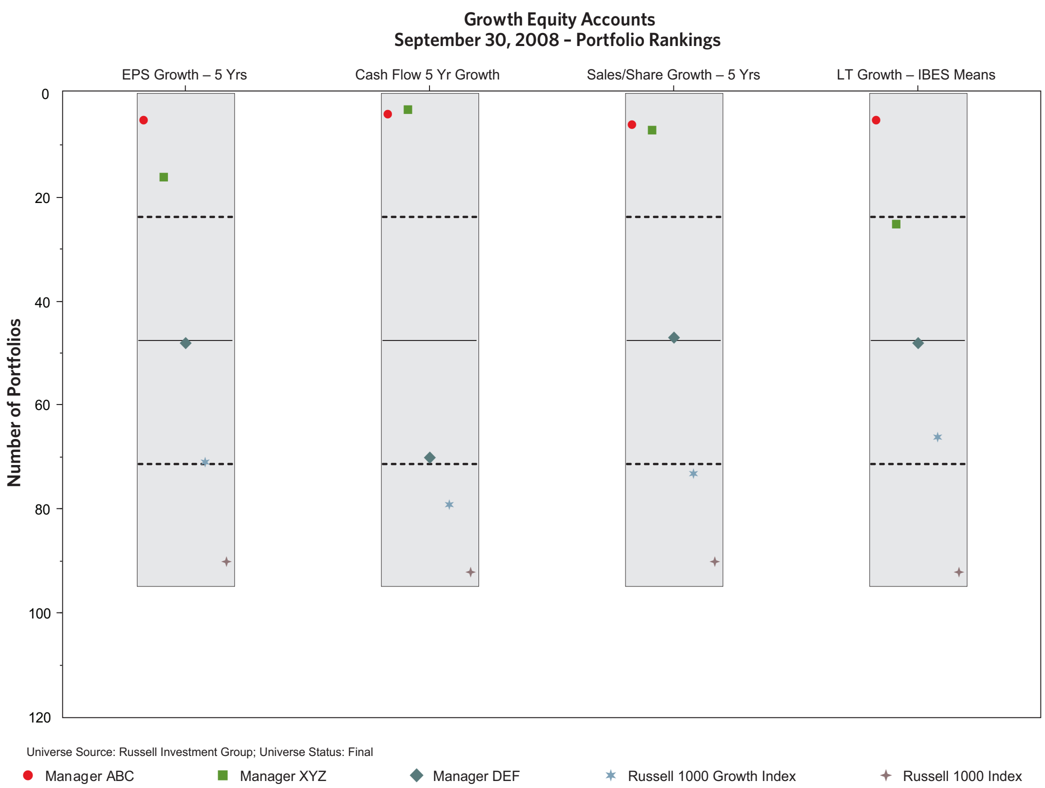
7. Does analysis of the interaction of multiple portfolio characteristics provide additional insight?

Using Portfolio Rankings, institutional investors can compare a manager against peers across multiple characteristics at a time. In the exhibit below, the three large cap growth portfolios are ranked against peers in terms of the following characteristics:

EPS Growth – 5 Years
Cash Flow – 5 Year Growth
Sales Per Share Growth – 5 Years
Long Term Growth IBES Means

In Figure 8, Manager ABC exhibits the strongest mix of characteristics, consistently in the top quartile of its peer group for each of the metrics selected. Manager XYZ is close behind, actually exceeding Manager ABC in the Cash Flow Growth statistic. Manager DEF tends to be close to the median of the peer group, almost falling out of the third quartile in terms of Cash Flow Growth.

Figure 8: Portfolio Rankings – Growth Characteristics



Conclusions

When reviewing Figure 8, one can conclude that Manager ABC, with its peer-leading growth statistics, may fare best during investment climates that favor high growth companies. However, in periods of underperformance for growth strategies, its performance may suffer more than Manager XYZ or Manager DEF. These are some potential outcomes that an institutional investor should consider before making manager selection and retention decisions.

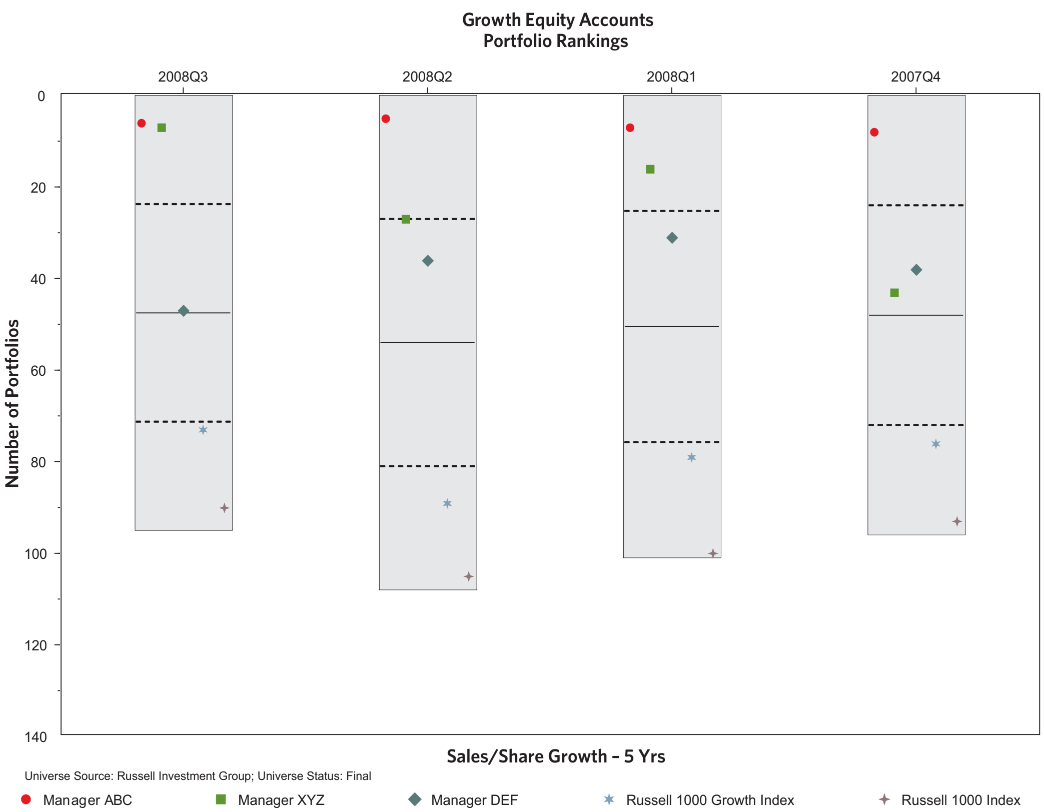
8. Do managers exhibit consistent relative characteristics across multiple time periods?

In addition to comparing return information across time, institutional investors can evaluate consistency by comparing managers and their peers over multiple time periods for a single statistic. In Figure 9, the three managers are ranked against each other and the Growth Equity Accounts universe for the previous four quarters. The statistic they are measured by is:

Sales Per Share Growth – 5 Years

As shown in Figure 9, Manager ABC exhibited the highest Sales Per Share Growth of the three during each time period, consistently in the top quartile of its peer group. Manager XYZ also tended to rank high on this statistic, although its ranking was less consistent than either Manager ABC or Manager DEF. Manager DEF placed consistently in the second quartile relative to peers.

Figure 9: Portfolio Rankings – Sales per Share Growth



Conclusions

Figure 9 is useful as it illustrates where a manager stands compared to peers, as well as demonstrating whether that ranking is consistent over time. Manager XYZ appears to be the least consistent of the three managers; it may be a reflection of a more volatile investment approach, or that their strategy changed over time. These are questions an institutional investor may pursue further with the manager. Overall, Manager ABC shows itself to be consistently among the most aggressive managers in the peer group, with Manager XYZ a close second, and Manager DEF tending toward the median in its Sales per Share Growth measure.

III. Case Study Conclusions

The often quoted statement: "a picture is worth a thousand words" or in this case, a thousand numbers. Charts implements this data graphically, transforming a page full of numbers into a more accessible and easier-to-interpret representation of investment information. By incorporating peer and index comparisons, time dimensions and a visual representation of the data, a story that might be missed when surrounded by reams of data is uncovered.

The three managers, share a common broad style but have very different implementations to their approach. While an institutional investor may be attracted to the top tier returns of Manager ABC, upon closer examination, the underlying risk profile may prove more than their risk budget will allow. On the other hand, a large institutional investor with multiple managers in the large cap growth arena may be comfortable adding such a manager to their line-up; the higher risk may complement more traditional players already in the fund. While Manager XYZ posted solid returns, its less consistent results across some of the characteristics may be the impetus for further conversations. Inconsistent characteristics don't necessarily mean an inconsistent process. In fact, a strategy may be consistently applied but lead to inconsistent attributes over time. The key is to figure this out if Manager DEF stands out as potentially the best fit for an institutional investor seeking a more conservative manager profile.

Additionally, an institutional investor may find these exhibits useful as part of a manager review. If a manager's performance is unexpected, this more detailed analysis can provide insight into the portfolio, and help prepare an institutional investor for an in depth conversation with their manager. The graphical nature of the results lends themselves to presentations when too many numbers and statistics could be hard to interpret. This greater level of statistical support which, when viewed in different ways, provides a fundamentally sound basis for evaluating managers.

The exhibits presented in this case study represent a small subset of the graphical data available in Charts. Appendix C, provided by Paul Greenwood, of Northern Light Ventures, includes additional characteristics pairings, and a brief description of what the pairings demonstrate.

IV. Appendix

A: Available Charts Characteristics

Statistic Name	Category
1 Year EPS Forecast – I/B/E/S Medians	Portfolio Characteristics
2nd Year EPS Forecast – I/B/E/S Medians	Forecasted Growth Short-Term
Beta (vs. R3000)	Portfolio Characteristics
Book Value 5 Year Growth	Historical Growth Long-Term
Cash Equivalents	Portfolio Composition – % Portfolio
Cash Flow 5 Year Growth	Historical Growth Long-Term
Convertibles	Portfolio Composition – % Portfolio
Convexity	Portfolio Characteristics – Fixed Income
Convexity Weighted Median	Portfolio Characteristics – Fixed Income
Current Fiscal Year I/B/E/S Means – 1 Month Ago	Forecasted Growth Short-Term
Current Fiscal Year I/B/E/S Means	Forecasted Growth Short-Term
Current Yield	Portfolio Characteristics – Fixed Income
Current Yield Weighted Median	Portfolio Characteristics – Fixed Income
Debt Coverage	Quality/Market Risk
Debt/Capital	Quality/Market Risk
Debt/Equity	Quality/Market Risk
Dividend Payout Ratio – 5 Year Average	Historical Growth Long-Term
Dividend Yield	Valuation
Dividend Yield 5 Year	Valuation
Dividends/Share Growth – 10 Years	Historical Growth Long-Term
Dividends/Share Growth – 5 Years	Historical Growth Long-Term
Domestic Equity	Portfolio Composition – % Portfolio
Duration	Portfolio Characteristics – Fixed Income
Duration Weighted Median	Portfolio Characteristics – Fixed Income
Earnings Surprises – Recent Qtr Z-Score	Earnings Trends
EPS Growth – 1 Year ($-Weighted Median)	Historical Growth Short-Term
EPS Growth – 10 Years	Historical Growth Long-Term
EPS Growth – 2 Years ($-Weighted Median)	Historical Growth Short-Term
EPS Growth – 5 Years	Portfolio Characteristics
EPS Variability – 10 Years	Portfolio Characteristics
EPS Variability – 5 Years	Portfolio Characteristics
Equity (Common)	Portfolio Composition – % Portfolio
Falling Earnings Estimates – %	Earnings Trends
Five Largest Economic Sectors – FTSE/ICB	Sector/Stock Concentration
Five Largest Economic Sectors – GICS	Sector/Stock Concentration
Five Largest Economic Sectors – Russell	Sector/Stock Concentration
Fixed Income	Portfolio Composition – % Portfolio
FTSE Cyclical Cons Goods	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Basic Materials	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Consumer Services	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Consumer Goods	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Financials	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Health Care	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Industrials	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Oil & Gas	FTSE/ICB Economic Sectors – % Equity

Appendix, continued

A: Available Charts Characteristics

Statistic Name	Category
FTSE/ICB Other	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Technology	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Telecommunications	FTSE/ICB Economic Sectors – % Equity
FTSE/ICB Utilities	FTSE/ICB Economic Sectors – % Equity
GICS Consumer Discretionary	GICS Economic Sectors – % Equity
GICS Consumer Staples	GICS Economic Sectors – % Equity
GICS Energy	GICS Economic Sectors – % Equity
GICS Financials	GICS Economic Sectors – % Equity
GICS Health Care	GICS Economic Sectors – % Equity
GICS Industrials	GICS Economic Sectors – % Equity
GICS Information Technology	GICS Economic Sectors – % Equity
GICS Materials	GICS Economic Sectors – % Equity
GICS Other	GICS Economic Sectors – % Equity
GICS Telecommunication Services	GICS Economic Sectors – % Equity
GICS Utilities	GICS Economic Sectors – % Equity
Implied Growth – 5 Year Average	Historical Growth Long-Term
Implied SD – I/B/E/S Current Fiscal Year	Forecasted Growth Short-Term
Implied SD – I/B/E/S Long-Term Growth	Forecasted Growth Long-Term
International Equity	Portfolio Composition – % Portfolio
Large Capitalization	Size of Companies – % Equity
Long-Term Growth – I/B/E/S Means – 1 Month Ago	Forecasted Growth Long-Term
Long-Term Growth – I/B/E/S Means	Forecasted Growth Long-Term
Long-Term Growth Forecast – I/B/E/S Medians	Portfolio Characteristics
Medium Capitalization	Size of Companies – % Equity
Medium/Large Capitalization	Size of Companies – % Equity
Medium/Small Capitalization	Size of Companies – % Equity
Miscellaneous Holdings	Portfolio Composition – % Portfolio
Modified Duration	Portfolio Characteristics – Fixed Income
Modified Duration Weighted Median	Portfolio Characteristics – Fixed Income
Mutual & Pooled Funds	Portfolio Composition – % Portfolio
Negative Earnings Surprises – %	Earnings Trends
Number of Equity Holdings	Portfolio Characteristics
Number of Fixed Income Holdings	Portfolio Characteristics – Fixed Income
Options & Futures	Portfolio Composition – % Portfolio
Other & Receivables	Portfolio Composition – % Portfolio
Option Adjusted Convexity	Portfolio Characteristics – Fixed Income
Option Adjusted Convexity Weighted Median	Portfolio Characteristics – Fixed Income
Option Adjusted Duration	Portfolio Characteristics – Fixed Income
Option Adjusted Duration Weighted Median	Portfolio Characteristics – Fixed Income
Option Adjusted Spread	Portfolio Characteristics – Fixed Income
Option Adjusted Spread Weighted Median	Portfolio Characteristics – Fixed Income
Percent in Ten Largest Equity Holdings	Sector/Stock Concentration
Portfolio P/E – $-Weighted Median	Valuation
Portfolio P/E – 5 Year Average	Valuation
Portfolio P/E – 5 Year Average Excluding Negative Earnings	Valuation
Portfolio P/E – I/B/E/S 1Yr Forecast EPS	Portfolio Characteristics

Appendix, continued

A: Available Charts Characteristics

Statistic Name	Category
Portfolio P/E – Median	Valuation
Portfolio P/E – Normalized Earnings	Valuation
Portfolio P/E	Portfolio Characteristics
Portfolio P/E Excluding Neg. Earnings	Portfolio Characteristics
Portfolio Price/Book – $-Weighted Median	Valuation
Portfolio Price/Book – Median	Portfolio Characteristics
Portfolio Price/Book	Valuation
Portfolio Price/Sales	Portfolio Characteristics
Positive Earnings Surprises – %	Earnings Trends
Pretax Return on Assets – 5 Year Average	Profitability
Price/Cash Flow	Portfolio Characteristics
Quality A and A-	Quality Rank – % Equity
Quality A+	Quality Rank – % Equity
Quality B+, B and B-	Quality Rank – % Equity
Quality C and D	Quality Rank – % Equity
Quality Not Ranked	Quality Rank – % Equity
Return on Equity – 1 Year	Profitability
Return on Equity – 2 Year Average	Profitability
Return on Equity – 5 Year Average	Portfolio Characteristics
Return on Equity Momentum	Profitability
Rights & Warrants	Portfolio Composition – % Portfolio
Rising Earnings Estimates – %	Earnings Trends
Russell Autos and Transportation	Russell Economic Sectors – % Equity
Russell Consumer Discretionary and Services	Russell Economic Sectors – % Equity
Russell Consumer Staples	Russell Economic Sectors – % Equity
Russell Financial Services	Russell Economic Sectors – % Equity
Russell Health Care	Russell Economic Sectors – % Equity
Russell Integrated Oils	Russell Economic Sectors – % Equity
Russell Materials and Processing	Russell Economic Sectors – % Equity
Russell Other	Russell Economic Sectors – % Equity
Russell Other Energy	Russell Economic Sectors – % Equity
Russell Producer Durables	Russell Economic Sectors – % Equity
Russell Technology	Russell Economic Sectors – % Equity
Russell Utilities	Russell Economic Sectors – % Equity
Sales/Share Growth – 1 Year	Historical Growth Short-Term
Sales/Share Growth – 2 Years	Historical Growth Short-Term
Sales/Share Growth – 5 Years	Historical Growth Long-Term
Small Capitalization	Size of Companies – % Equity
Spread Duration	Portfolio Characteristics – Fixed Income
Unclassified Capitalization	Size of Companies – % Equity
Years to Maturity/Call	Portfolio Characteristics – Fixed Income
Years to Maturity/Call Weighted Median	Portfolio Characteristics – Fixed Income
Yield to Maturity	Portfolio Characteristics – Fixed Income
Yield to Maturity Weighted Median	Portfolio Characteristics – Fixed Income
Yield to Worst	Portfolio Characteristics – Fixed Income
Yield to Worst Weighted Median	Portfolio Characteristics – Fixed Income

B: Risk/Return Statistics

3 Years Ending September 30, 2008: Comparison

Statistic	Manager ABC	Manager XYZ	Manager DEF	Growth Equity Universe Median	Russell 1000 Growth Index
Avg Return	0.70	0.29	-0.01	0.10	0.07
Ann Return	7.30	2.46	-1.65	0.26	0.04
Cum Return	23.55	7.55	-4.86	0.77	0.13
Ex Return vs RF	11.11	-4.88	-17.29	-11.66	-12.30
Avg Ex Ret vs RF	0.37	-0.04	-0.34	-0.23	-0.26
Ex Return vs Mkt	23.41	7.42	-4.99	0.64	0.00
Avg Ex Ret vs Mkt	0.63	0.21	-0.08	0.03	0.00
Beta	1.18	1.05	1.26	1.05	1.00
Beta T-Stat	13.12	16.13	15.33	36.82	—
Upside Beta	0.84	0.77	0.67	0.95	1.00
Downside Beta	1.04	0.98	1.25	1.07	1.00
Upside Variance	8.26	5.95	7.02	5.13	4.62
Downside Var	13.30	10.14	16.53	9.52	8.32
Upside Std Dev	2.87	2.44	2.65	2.26	2.15
Downside Std Dev	3.65	3.18	4.07	3.08	2.89
Std Dev	4.64	4.01	4.85	3.83	3.60
Ann Std Dev	16.08	13.89	16.81	13.26	12.47
Variance	21.55	16.09	23.54	14.64	12.95
Alpha	0.68	0.23	-0.02	0.04	0.00
Alpha T-Stat	2.10	0.98	-0.06	0.39	—
Sharpe Ratio	0.08	-0.01	-0.07	-0.06	-0.07
Ex Return to Risk	5.04	1.85	-1.03	0.17	0.00
Sortino Ratio	0.10	-0.01	-0.08	-0.07	-0.09
Ann Tracking Error	6.87	4.72	6.75	2.15	0.00
Ann Info Ratio	1.10	0.55	-0.15	0.15	—
Appraisal Ratio	0.35	0.16	-0.01	0.06	—
Treynor Ratio	0.32	-0.04	-0.27	-0.22	-0.26
R-Squared	0.84	0.89	0.88	0.98	1.00
Standard Error	1.93	1.39	1.76	0.61	0.00
Correlation	0.91	0.94	0.94	0.99	1.00

Appendix, continued

C: Characteristic Pairing Matrix

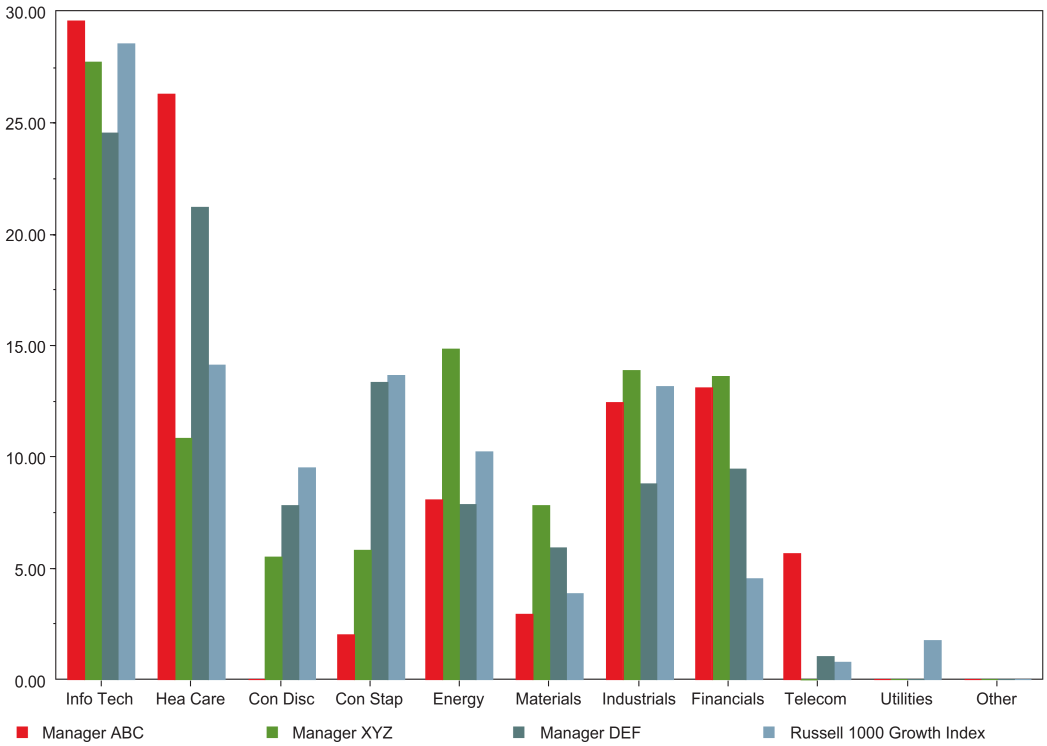
Characteristic	Rationale
P/E (ex negative EPS) vs. IBES LT Growth Mean	Growth-oriented managers can use this metric to show how much they are paying for expected earnings growth. Also relevant for highly earnings-focused market-oriented managers.
P/E (ex negative EPS) vs. IBES One Year Growth Mean	Growth-oriented managers can use this metric to show how much they are paying for expected earnings growth. Also relevant for highly earnings focused market-oriented managers.
P/E (ex negative EPS) vs. % Negative Earnings Surprise	The higher a portfolio's valuation levels (P/E, P/B, P/CF, etc.) the higher the earnings expectations and the greater the risk of having a significant amount of negative earnings surprise. Also relevant for highly earnings focused market-oriented managers.
P/E (ex negative EPS) vs. ROE 5 Year Average	Not a good metric for growth-oriented investors. But market-oriented and value managers may wish to use this comparison as a measure of how much quality (i.e. higher ROE) they are getting for a unit of valuation (P/E). In other words, high ROE and low valuation would generally be thought of as positive.
P/E (ex negative EPS) vs. EPS Surprise Z-Score	Same as P/E vs. Neg Surprise; however, particularly helpful for managers focused on identifying companies with earnings catalysts (like positive earnings surprise).
P/E (ex negative EPS) vs. % Positive EPS Surprise	Most relevant for large cap managers who are highly focused on near-term earnings. The greater the positive surprise for the P/E, the better.
IBES Growth One Year Means vs. Falling Estimate Revisions	Companies with high expected growth are generally riskier because they often sell at higher valuations. Thus, the higher the expected growth, the more important it is that the exposure to negative EPS revisions is limited.
IBES LT Growth Mean vs. % Negative Earnings Surprise	Companies with high expected growth are generally riskier because they often sell at higher valuations. Thus, the higher the expected growth the more important it is that the exposure to negative EPS surprise is limited.
IBES One Year EPS Growth Mean vs. % Negative Earnings Surprise	Companies with high expected growth are generally riskier because they often sell at higher valuations. Thus, the higher the expected growth the more important it is that the exposure to negative EPS revisions is limited.
One Year Return vs. One year Relative Strength	For value oriented investors this metric can show how "fresh" portfolios are. In other words, if the manager has strong performance and low one year relative strength then they have clearly "recycled" their portfolios and can make an argument that they are not hanging on to past winners too long. Growth managers can use it to show they aren't "chasing" stocks simply because they have gone up.
Cash Flow 5 Yr. Growth vs. EPS 5 Year Growth	This is essentially a measure of earnings quality. The best situation would be for a manager's cash flow growth to be close to or above its EPS Growth. EPS Growth well ahead of CF Growth would be negative.
EPS Variability vs. IBES LT EPS mean	Value-oriented investors focused on high quality stocks could use this to show the quality (ROE) and consistency (EPS Variability) of their companies. Less relevant for other styles.
EPS Variability vs. 5 Year ROE Average	Managers who focus on high quality companies with consistent earnings could use this to validate their defensive orientation (i.e. portfolios that should go down less than other managers). This would work best for value managers, not at all for growth managers and somewhat for market-oriented managers.
EPS 5 Years vs. IBES LT EPS Growth Means	If historical and forecasted EPS are similar, then it is more difficult to believe the stocks are undervalued. Thus, having forecasted earnings higher than trailing earnings would generally be preferable.
Sales Growth 5 Year vs. EPS 5 Year Growth	For growth-oriented investors earnings growth is generally fueled by sales growth. Sales growth well behind EPS growth might suggest less sustainable growth.

Source: Paul Greenwood, Northern Light Ventures

Appendix, continued

D: GICS Sector Exposures

GICS Sector Comparison, September 30, 2008



Appendix, continued

E: Charts Characteristic Definitions

Characteristic	Definitions
P/E (ex negative EPS)	This characteristic measures the P/E ratio of the entire portfolio; it is equivalent to summing the holdings' prices and dividing that result by an approximation of "normalized" EPS in the denominator. For companies with volatile earnings patterns, this measure can be more meaningful than other P/E ratios that are subject to cyclical peaks and troughs. For example, economically sensitive stocks exhibit their lowest P/E ratios when their EPS levels are highest, and vice versa; the P/E ratio of a portfolio invested in such stocks could be misleading when compared to other portfolios. Using a normalized earnings proxy helps offset such potential distortions.
IBES LT Growth Mean	The Long-Term Growth Forecast statistic indicates the consensus outlook for a portfolio's EPS growth. I/B/E/S provides means of research analysts' estimates for companies' long-term (typically five years) growth rates. Only stocks with at least three estimates in the I/B/E/S database are included.
IBES One Year Growth Mean	The Long-Term Growth Forecast statistic indicates the consensus outlook for a portfolio's EPS growth. I/B/E/S provides means of research analysts' estimates for companies' one year growth rates.
% Negative Earnings Surprise	This statistic measures negative earnings surprises in the last quarter. The market generally rewards investors holding stocks with reported earnings greater than expected.
ROE 5 Year Average	Return on Equity (ROE) relates a company's profitability to its shareholders' equity. A high ROE indicates that the portfolio is invested in companies that are currently profitable, though care should be taken when using this number because financial leverage affects the ratio.
EPS Surprise Z-Score	This statistic provides a numerical value to quantify the magnitude of recent earnings surprises in the portfolio. The z-score standardizes absolute EPS figures to make them comparable across different stocks. A high earnings surprise z-score indicates that the portfolio is invested in stocks with large recent positive earnings surprises, and vice versa.
% Positive EPS Surprise	This statistic measures positive earnings surprises in the last quarter. The market generally rewards investors holding stocks with reported earnings greater than expected.
Falling Estimate Revisions	These statistics indicate the trends in earnings estimates based on I/B/E/S data by comparing current estimates for each stock with the previous month's estimates.
One Year Return	This is a measure of the gain/loss of a portfolio of securities over a period of one year. This measure includes capital appreciation and dividend income.
One Year Relative Strength	The purpose of this statistic is to measure a stock's past performance against that of a specified benchmark for one year This characteristic reflects investor optimism/pessimism toward a portfolio's holdings.
Cash Flow 5 Year Growth	This statistic measures a holding's cash flow growth over the last five years. The statistic is a useful alternative measure of growth when companies are held that do not have earnings, or have weak earnings, or their book values do not reflect intangible assets (e.g., service companies or high technology companies). The statistic indicates overall business growth and financial stability of companies held in the portfolio (even if the growth is not flowing through to the bottom line).
EPS 5 Year Growth	This statistic measures the trailing 5-year EPS growth of a portfolio's holdings. A log linear regression is used if all earnings are positive; a trend-line regression is used if any of the earnings are zero or negative. If either point of the trend line is zero or negative, it is not possible to calculate a growth rate, and the stock is not included in the portfolio calculation.
EPS Variability	This statistic measures the variability of annual earnings per share over a specified period of time. A high EPS Variability number indicates that the portfolio is heavily invested in companies with volatile earnings streams, a characteristic of cyclical stocks. Please note that this statistic examines companies' absolute earnings patterns rather than their earnings growth rates. As a result, stocks with consistent year-over-year growth rates may have variability in their absolute annual earnings patterns.
Sales Growth	This characteristic measures the growth of holdings' revenues over the last five years. Because companies with stable profit margins require sales growth to increase earnings, this statistic can be useful as a measure of earnings growth potential.

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