



Becoming Style Conscious



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There are plenty of style indices from which to choose, and for the most part this choice is made on the basis of brand name, with Russell in the lead. But would we make the same choices if we actually understood how these sausages are made? These popular indices use the ratio of price to book (P/B) to divide the universe of stocks into value and growth. High P/B is growth and low P/B is value. The idea is that a stock trading at a price near or below its cost basis is inexpensive, a good value. But as Laurence Siegel states in a CFA Research Foundation monograph [see Siegel, 2003], *“Book value is mostly a historical accident. It is the accounting profession’s estimate of the company’s value; it reflects what the company paid for assets...[and] includes the goodwill of companies acquired.”* But not all indices are constructed using P/B. Some use price/earnings ratio (P/E) combined with other factors like dividend yield. P/E may be viewed as a growth measure. Investors will pay more for current earnings if they expect those earnings to grow. Dividend yield, in the same vein, may be viewed as a value measure, since dividends are generally paid by companies with established product lines who would rather pay out earnings to shareholders than invest in new projects.

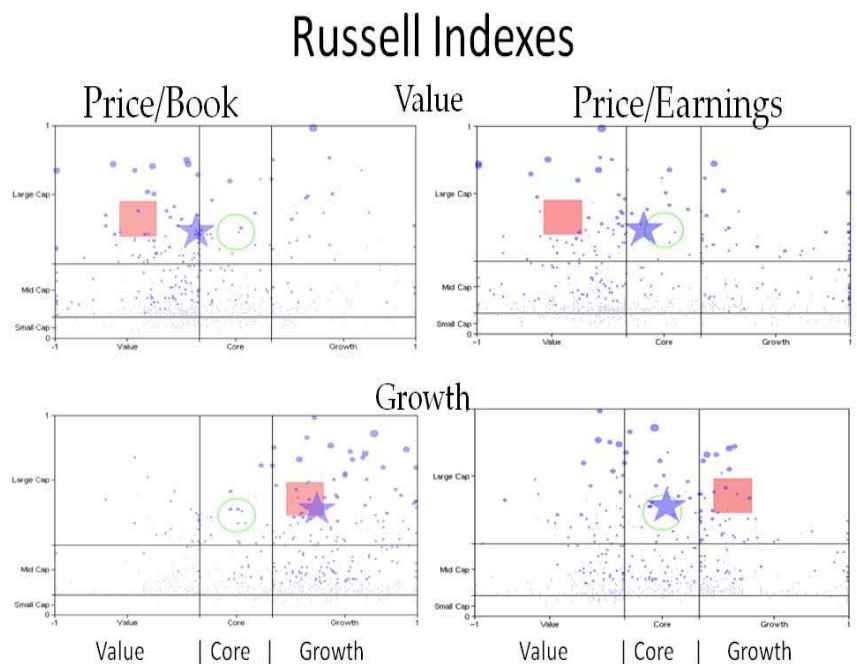
Some say that it doesn’t matter much which factor is used because all style indexes behave like each other. This thought is often expressed as follows: “When growth is in favor all of the growth indexes are in favor, and the same for value.” This is simply not true. As we demonstrate below, style indexes do in fact behave differently primarily because of the factors used to classify stocks into style categories.

In this article we use two index families that differ in the factors they use to define styles. The Russell indexes use P/B to create 6 style indexes: large, middle and small indexes for value and growth. An alternative set of style indices that I constructed, called the Alternative Indexes for the present purpose, uses 3 factors – P/E, dividend

yield, and P/B (where P/B has been normalized by sector¹)– to create 9 indexes: large, middle, small indexes for value, growth and core, where “core” is defined as the stocks in between value and growth. Russell acknowledges “core” in their classification scheme and assigns these stocks in the middle to both value and growth. We’ll call this Alternative index “P/E-based” to contrast it to the P/B-based approaches, even though it is a three-factor model of which P/E is only one of the factors.

As you will see in the following these differing constructs cause differences in many dimensions, including performance, characteristics, and stock composition. We’ll start with stock composition using a visualization of the stock make-up of individual portfolios. Every stock in the portfolio is plotted in Cartesian style space, with value vs. growth on the x axis and size on the y axis. In this way every portfolio has a unique “style signature.” This signature is dramatically affected by the style definitions that are used to calibrate the style space. A P/B-based framework renders a completely different signature than a P/E-based approach. This fact is shown graphically in the next 2 exhibits, and is due to the fact that book value is a stock variable while earnings are a flow variable. (Conceptually, and setting aside the effect of dividends, book value is the sum of all past earnings, plus initial capital deployed; earnings is thus the change in book value from one period to the next. However, the use of GAAP accounting instead of market value or economic accounting makes this relationship very approximate.) Let’s start with the signatures of the Russell 1000 Value and Growth indexes.

As you can see in the graph in the upper left, the constituents of the Russell 1000 Value index tend to cluster toward the upper left of the



¹ Price/book is normalized into a “shadow P/E” by regressing P/E against P/B across stocks in a sector.

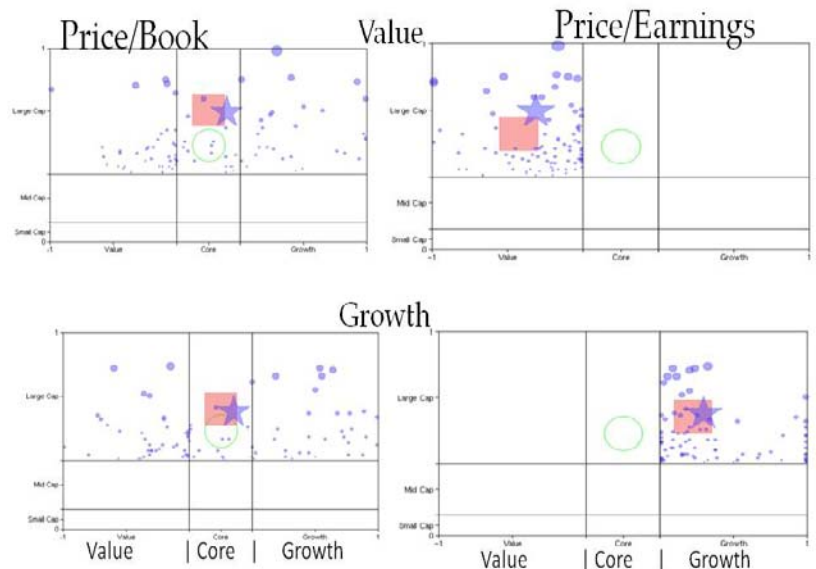
graph that uses the P/B definition, which is the large value sector. Also the centroid of the constituents, indicated by the star, also plots toward the upper left.² The square in the exhibit is our placeholder for where we expected the star to plot. The same clustering is even truer for the Russell 1000 Growth, with a purer position in the upper right quadrant of the graph on the lower left.

But if we analyze the stocks in the Russell indexes using a P/E-based model, the message is totally different, with constituent stocks dispersed all over style space, and the index centroid in the middle of the graph. As our earlier discussion of the difference between stock and flow variables predicts, the two style definers tell radically different stories.

P/E-Based Indexes

A similar result occurs if we look at P/E-based indexes. The constituents using a P/E-based model cluster as expected, but fall all over the map when P/B is used as the classification variable.

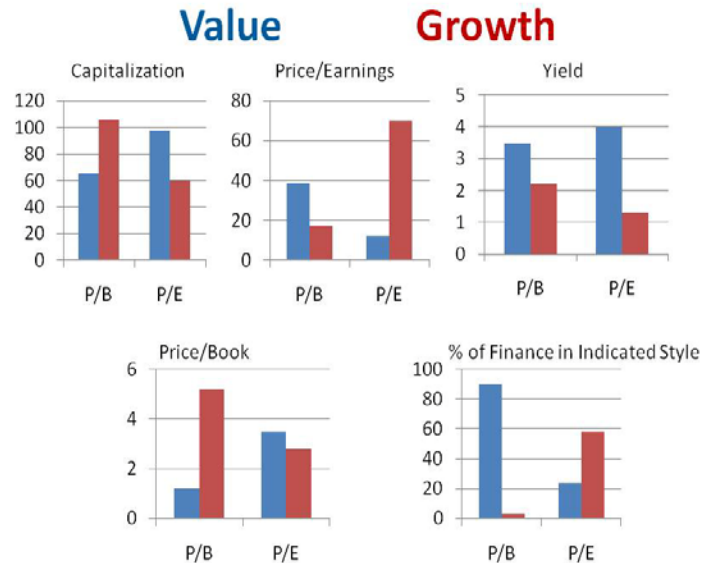
The 9-sector style grid is constructed as follows. We start with the entire Compustat database of approximately 5000 stocks. These are divided into 3 size groupings based on capitalization. Large cap is the top 65% of the universe, mid-cap is the next 25% and small cap is the bottom 10%. Then we sort within each size group by the classification factor, either P/B or the three-factor model that includes P/E. The top 40% by count are assigned to value, the bottom 40% to growth, and the 20% in the middle to core.



² The centroid is what non-mathematicians might call the center of gravity.

The value of the Cartesian graphs is in comparing portfolios of managers that we may want to employ. These inferences are dramatically affected by our choice of classification variable, so it's helpful to understand the "lens" we're using to view the world. The characteristics of stocks in each style sector calibrate this view. In the next section we examine the characteristics of the large value and large growth sectors in the 3rd quarter of 2009.

Characteristics in Q3, 2009



Here's a summary of the key differences:

Company size: P/B "sees" growth companies being larger than value. P/E sees the opposite.

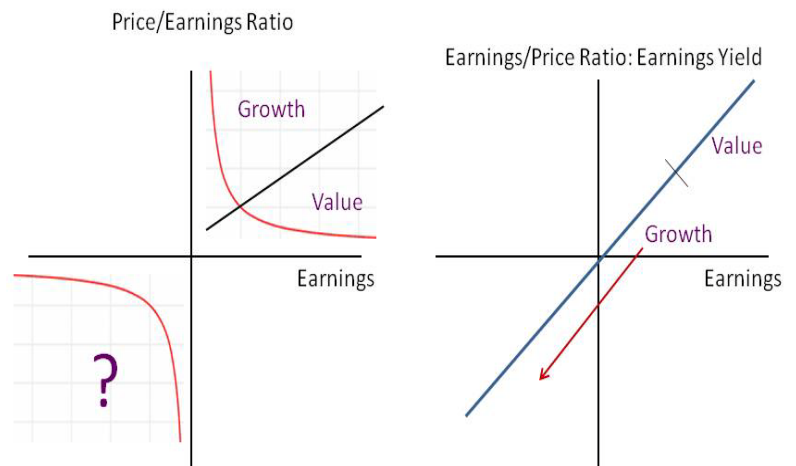
P/E ratio: P/B "sees" growth companies as having lower P/Es than value. P/E sees very much the opposite because P/E is one of the classification factors (recall this is really a 3-factor model).

Yield: Both "see" value as higher yield.

P/B ratio: Of course the P/B-based classification views growth as having a higher P/B than value. Although the P/E model includes P/B, the other factors dominate, and value has a higher P/B than growth. This latter result is very surprising and revealing.

Classification of financial stocks: 90% of the dollars in the Finance economic sector are classified as value using the P/B definition, in contrast with only 20% using the P/E model, which places most of Finance in growth. This

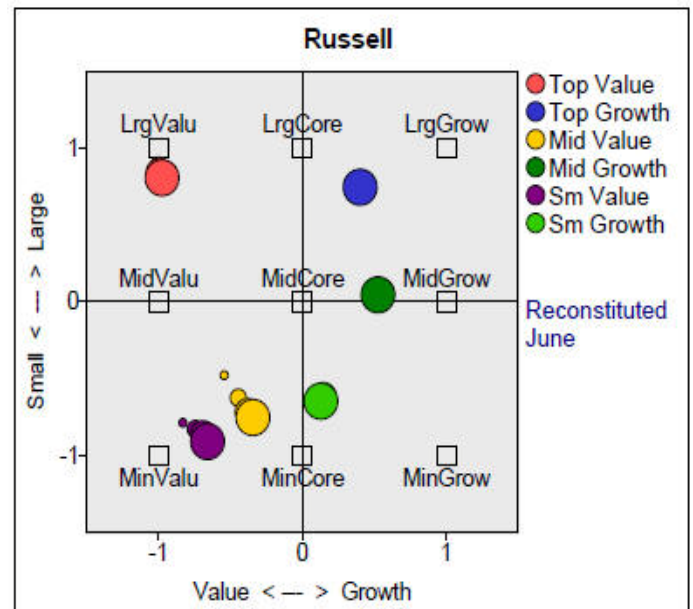
Classifying Stocks with Negative Earnings



substantial difference is a reflection of the current economic crisis, and in particular the view of the P/E model regarding negative P/Es.

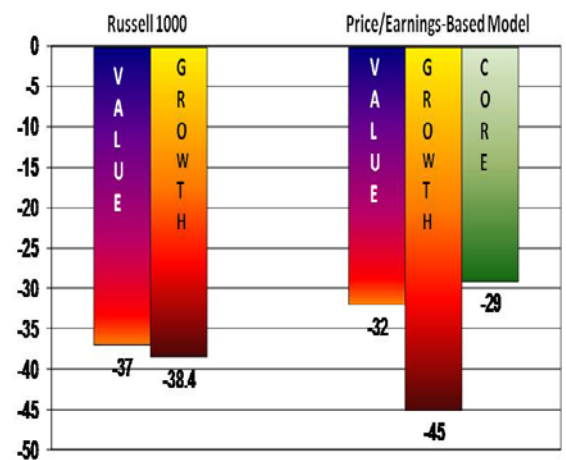
The P/E model views stocks with negative P/Es as growth stocks. One way to visualize this rationale is to consider the reciprocal of P/E, which is called the earnings yield, E/P. As shown in the exhibit, there is a continuum in the earnings yield, along the definition of growth stocks, as earnings become negative. By contrast P/E ratios become style indeterminate when earnings are negative.

Now let's look at the return behavior of the 2 different classification schemes, again using Russell as a proxy for P/B- based definitions. The next exhibit, courtesy of Wianno Associates, plots the Russell indexes against the P/E-based style palette using returns-based style analysis. As you can see, there are some performance similarities, particularly in large and small value styles, but for the most part the 2 definitions behave differently.



Another example is provided by 2008's decline, as shown in the next exhibit. The Russell large value and large growth indexes both lost about the same in 2008, whereas the P/E-based growth far underperformed both value and core. (This is largely because almost all of the companies with losses were financials, which underperformed all other industries in 2008.) Importantly, core defended best, a fact that has gone totally unrecognized. Core is important for portfolio construction and performance evaluation. In the case of 2008, following a core style would have avoided both overpriced growth stocks and severely distressed value stocks.

Style Performance for the Year 2008



Conclusion

It matters a lot which factors are used to define stock style classifications. Different approaches not only assign stocks to different styles, but they result in financial characteristics and performance behaviors that are materially different. It's important to know how these sausages are being made.

REFERENCE

Siegel, Laurence B. 2003. *Benchmarks and Investment Management*. Research Foundation of CFA Institute, Charlottesville, Va. Available online as a free download at <http://www.cfapubs.org/doi/pdf/10.2470/rf.v2003.n1.3922>