

Portfolio Tilting, Monetary Policy, and the Business Cycle

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Abstract

This paper shows that there are times during which different investment styles dominate others. We use our proprietary style rating methodology to show which styles perform better during periods of monetary easing or tightening.

Introduction

“Which box do I fit in?”

This question, or one similar to it, is often asked by investors when referring to the Morningstar® style classification boxes. Of course, these “boxes” represent different risk exposures, so that investors should allocate relatively greater portions of their portfolio into the different boxes depending upon their risk-return preferences. However, this strategic asset allocation decision is somewhat dynamic as practitioners are all too familiar with. Most investment policy statements allow for a range of asset class weightings, to allow for some form of tactical asset allocation or tilting. Since the optimal performing asset mix changes with time, and a consultant may want to consider counseling clients to reappportion, or tilt from time to time to take advantage of temporary outperforming assets. We have examined evidence provided by Standard and Poor’s Research Insight® product to determine when this tilting should occur.

Background

Fama and French (1992) constructed a three factor model to explain security returns. The returns were found to be best explained by the security’s market beta, the firm size, and the price-to-book ratio. Murguia, et. al. (2002) used the Fama and French (1992) framework to show how advisors can use these factors to measure the importance of these risk exposures in determining portfolio returns. Another use of the three factor model in the Murguia, et. al. (2002) study was to track manager style drift. Riepe (1999) conducted an analysis to determine the incidence of style drift of mutual funds. On the

basis of the Morningstar® classification, he found that actively managed funds regularly drifted from their stated styles.

Style drift in and of itself may be good policy (from a strictly performance perspective), provided a client is informed of:

- ✓ Why it happens.
- ✓ Why it might be good for them.
- ✓ And when it happens.

Building on the traditional Fama and French (1992) multi-factor framework, Jensen and Mercer (2002) have shown that during expansionary monetary policy periods, beta is positively and significantly related to returns, as is book-to-market equity; but market capitalization is negatively related to returns. During restrictive periods, beta is negative and significant, but book-to-market equity is positive and significant. So, from an investment return perspective aggregate economic conditions can influence which style box might get some overweighting attention by an investor.

Brennan, et. al., (1998), have demonstrated the importance of momentum and trading volume—outside the traditional Fama and French (1992) three factor specification—in determining investment performance. For this reason, we use a proprietary multi-dimensional style analysis to address the issue of selecting the best style for a given economic context.¹

¹ Incidentally, this methodology can also be useful on a specific security level for corporate executives, as Yook and McCabe (2001) have demonstrated a strong relationship between market-value-added per share and fundamental, financial characteristics.

Methodology

In a previous paper (Jacobsen & Mendelson, 2004), we have shown that the determinants of style are price-to-earnings (PE), price-to-cash flow (PCF), the three-year annualized growth rate of profit margin (GPM), the three-year annualized growth rate of cash flows (GCF), and the market value of all the common outstanding for a firm (MV). These factors help determine the value-cap dimension of a portfolio. We have also argued, from an arbitrage perspective, that signs of the weights and changes in the weights of replicating portfolios can be used to identify whether a portfolio's manager is aggressive and whether they are contrarian or momentum. In this paper, we use the same methodology to examine which style is best, conditioned on Federal Reserve monetary policy and the business cycle.

We compare the signs and magnitudes of factor loadings from a discriminant analysis during periods of monetary easing and tightening to determine which style performs better across monetary policy regimes. We also evaluate the statistical significance of these sorting factors by using an ordinal logistic analysis.

Data

Compustat® was the source for our fundamental data. We analyzed the Federal Funds rate to determine four periods of time during which the analysis would be conducted. We selected, on the basis of trends in the federal funds rate, the month of January 1999 and December 2001 to represent periods in which Fed policy was characterized as being expansionary. July 1994 and April 1995 were determined to represent periods in which

Fed policy was contractionary. From the entire Compustat® database, we took the month of, the month before, and the month after the above mentioned dates to calculate the previous percentage change in stock price, the current market value, the current price-to-earnings ratio, the current price-to-cash flow ratio, the annualized three year growth rate of profit margins, and the annualized three year growth rate of cash flows. Using this data and the subsequent percentage change in stock price, we were interested in the statistical significance and the direction of the relationship between the preceding variables and the realized returns of the stocks. We were effectively looking at what type of investment strategy would have garnered an increased probability of realizing positive portfolio returns in the period ahead.

The realized returns were sorted between positive and negative results. Each group's median return was calculated. The returns that were the worst (below the median for the negative returns) were assigned a value of 1. The returns that were zero or lower, but above the median for the negative returns, were assigned a value of 2. The returns above zero, but below the median for the positive returns, were assigned a value of 3. The highest returns (greater than the median for the positive returns) were assigned a value of 4. For July 1994, there were 1,173 companies in the database analyzed. For April 1995, there were 3,257 companies in the database analyzed. For January 1999, there were 2,811 companies in the database analyzed. For December 2001, there were 2,209 companies in the database analyzed.

We did a similar analysis conditioned on the business cycle. We analyzed data on all traded companies during the expansionary period including December 1998 and the recessionary period including June 2001. In this instance, we were looking at extreme returns: the lowest 750 returns for each time period were coded as 0 and the highest 750 returns were coded as 1.

Results

The results suggest that *it is difficult to predict the rating of a security's or portfolio's return in advance on the basis of the factors we employed conditioning only on monetary policy* (though it is better than the 25% probability of getting it correct since a blind guess would be accurate 25% of the time). During a period of monetary easing, the discriminant analysis was correct 29.67% of the time for January 1999 and 31.58% of the time for December 2001. It was easier to predict the price change (positive or negative) instead of the magnitude of the change, with the model being correct 54.92% of the time in January 1999 and 54.08% of the time in December 2001. During a period of monetary tightening, the discriminant analysis was correct 33.83% of the time in July 1994 and 32.75% of the time in April 1995. The model got the price movement (positive or negative) correct 55% of the time in July 1994 and 56.83% of the time in April 1995. Actual statistical results are available by contacting the authors.

The uniformly dominant investment style through the periods was a contrarian style, which assumes a security's return will reverse itself from one period to the next. During periods of monetary easing, investing in small-cap value firms dominated investing in

other types of firms. During periods of monetary tightening, investing in large cap growth companies dominated other types of investments.

Conditioning on the business cycle yielded better results than conditioning on monetary policy. From the discriminant analysis, during an expansionary period, previous period returns and market value were negatively related to returns, price-to-earnings and the growth rate of cash flows were positively related to returns. This suggests a contrarian, small-cap-core style would dominate other styles during an economic expansion. From the logistic analysis, (which predicted 56.8% of the returns correctly) the previous period returns and market value were statistically significant and negatively related to returns in the subsequent period; the price-to-earnings ratio and growth rate of cash flows were statistically significant and positively related to the subsequent period's return. This confirms the finding of the discriminant analysis.

During a recessionary period, the optimal style tilting is different. We included beta as a determinant, as there were a large number of observations available with beta reported. Again, a contrarian approach is recommended by the discriminant analysis, as the previous change in price is negatively related to the subsequent change. The market value, price-to-earnings ratio, price-to-cash flows ratio, and beta are negatively related to returns. The growth rate of profit margin and growth rate of cash flows are positively related to returns. This all suggests a contrarian-small-cap-growth oriented style tilt is most appropriate during a recessionary period. The (binary) logistic analysis (predicting

58.6% of the outcomes correctly) confirms this strategy, as previous changes and beta are statistically significant and negatively related to the subsequent period's returns.

Using S&P/BARRA indices we constructed a model conditioned on both monetary policy and the business cycle. A paired sample t-test showed that only during expansionary periods (both monetary policy and business cycle expansions) did one style outperform all the others: large cap value statistically outperformed large cap growth, small cap value, and small cap growth. Our proprietary approach uses multiple factors to identify stocks and portfolios as large-small and value-growth rather than a single factor method.

Conclusion

While traditional strategic asset allocation for investors continues to be the approach of choice for portfolio selection, within the target ranges of that allocation, style tilting can help improve returns while remaining compliant with the overall personal risk tolerance specifications of the client. Style is important in portfolio performance, but tilting decisions should be conditioned on fundamentals that can be correlated with specific types of monetary policy and phases of the business cycle. Our findings suggest that during periods of monetary easing, contrarian-small-cap-value tilting can add value to a portfolio. During periods of monetary tightening, a contrarian-large-cap-growth style would be the most beneficial tilt. The business cycle analysis suggests a contrarian-small-cap-value approach is best during expansions and a contrarian-small-cap-growth approach is best during recessions.

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