

## Value vs. Growth: Who Leads the Cyclical Stock Market?

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### *Abstract*

*This paper documents unconditional asymmetric information diffusion between value and growth stocks. Specifically, the paper finds that growth stocks react to market information faster than value stocks in both up and down market, and therefore they are more negatively affected by the worsening market condition, and more favorably affected by the positive market condition relative to value stocks. Consistent with the finding of market leadership of the growth stocks, we show that returns of growth stocks lead those of value stocks in terms of both mean returns and residual volatilities.*

### Introduction

The recent international stock market crash of September 2008 has raised significant challenges to both academia and investment practitioners. When shares of every type of company - small, large, growth, value - got crushed during the bear market, can we observe any distinction in relative performance? This paper is devoted to investigating certain patterns with regard to the value vs. growth performance in the cyclical state of market, in particular, to answering the question: Which stock is more vulnerable to the market downturn? Which stock is more responsive to the market rebound? Which stock leads the cyclical market?

Ample empirical studies show that the speed of stock price adjustment to new information varies across stocks, suggesting the existence of market frictions. Among others, Lo and MacKinlay (1990) find that the returns of large stocks lead those of smaller stocks. Brennan, Jegadeesh and Swaminathan (1993) find that firms with high analyst coverage tend to respond more rapidly to market returns than do firms with low analyst coverage. Badrinath, Kale and Noe (1995) document that returns of the stocks with the higher level of institutional ownership lead returns of the stocks with the lower levels of institutional ownership. Chordia and Swaminathan (2000) find that stocks with higher trading volume lead stocks with lower trading volume.

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On the front of value vs. growth analysis, Doukas and Li (2009) find that value stock prices exhibit a considerably slow adjustment to market information. They argue that the pattern of differential price adjustment between value and growth stocks is mainly driven by the high arbitrage risk borne by the value stocks, which deter risk averse arbitrageurs to trade against market inefficiency, resulting in a slower information diffusion. Hou and Moskowitz (2005) also document that value stock exhibit greater price delay than growth stocks, and they attribute the delayed price adjustment to the limited stock market participation associated with value stocks. Though taking on different perspectives, the arbitrage risk argument and the limited market participation theory are consistent with each other in the sense that high arbitrage risk deters arbitrage activities and therefore may partially contribute the limited market participation. On the other hand, firms that are segmented from the rest of the market tend to have higher arbitrage risk, because residual volatility as opposed to covariance with the market, is a better measure of risk for these firms whose risk is not being shared efficiently. The finding of the asymmetric information diffusion between value and growth stocks in both work suggests that the growth stocks lead the value stocks, and are more sensitive to the market return fluctuation.

The recent finding of countercyclical value premium by Gulen, Xing and Zhang (2008), however, challenges the above documented market leadership of growth stocks. They find that the expected value-minus-growth return tends to spike upwards rapidly during recessions and then decline gradually in the ensuing expansions. They argue that due to lack of flexibility in capital investment associated with value stocks, the fundamentals and the expected returns of value stocks react more adversely and sharply to the negative economic shocks than do those of growth stocks, suggesting that value stocks are more sensitive to the negative shocks than are growth stocks, therefore the asymmetric information diffusion documented by Doukas & Li (2009) might be associated with a slow response by value stocks to good, but not to bad, market news.

Motivated by this new challenge, this paper extends prior work in two directions. First, it revisits the issue of asymmetric information diffusion between value and growth stocks with a focus on whether the asymmetry is conditional on the state of the market. Our tests show that the differential speed of price adjustment between value and growth stocks is not affected by the inclusion of a binary variable for up and down market in the equation. And the comparison of market performance of value vs. growth stocks during large up and down market shows that the returns of growth stocks are more negatively affected by the worsening market condition, and are more positively affected by the improving market condition relative to value stocks. These test results suggest that the growth stocks react to new information faster than value stocks regardless of the market condition. Second, since the lead-lag relationship in stock returns are widely considered as evidence of asymmetric speed of information diffusion, the paper formally test the lead-lag structure between the returns of growth and those of value stocks. We find that the growth stocks lead the value stocks in terms of both mean returns and residual volatilities, robustly confirming the market leadership of the growth stocks.

The rest of the paper is organized as follows. Section II investigates whether the asymmetric price adjustment between value and growth stocks is conditional on the state of market. Section III explores the lead-lag relationship between value and growth stocks in terms of both mean returns and residual volatilities. Section IV concludes.

## II. Unconditional Asymmetry of Information Diffusion between Value and Growth Stocks

### II. 1 Data and Methodology

Following Davis, Fama and French (2000), portfolios are constructed in a two-by-three sort on size and B/M. Within each of the two size quartiles, the stocks are further allocated to three book-to-market portfolios. Controlling firm size is to recognize the asymmetric price adjustment between large and small stocks documented by Lo and MacKinlay (1990). All returns are calculated in excess of the Treasury bill rate from Ibbotson Associates. Market return is value-weighted return on all NYSE, AMEX, and NASDAQ stocks with book equity data for the previous calendar year. To be consistent with earlier studies in the asymmetric information assimilation literature (Lo and MacKinlay 1990, Conrad, Gultekin and Kaul 1991, Jegadeesh and Titman 1995), empirical tests presented in the paper use weekly return data. One advantage of using weekly returns rather than daily returns is that the positive cross-autocorrelation generated by different nontrading probabilities for different portfolio groups is virtually eliminated. Whereas the monthly returns would represent too long a time span to measure the speed of adjustment to new information. The sample includes 2431 weekly observations for each of the 6 size-B/M portfolios. The weekly portfolio return data from July 5, 1963 to January 29, 2010 are from Professor Kenneth French's website.

As in Doukas & Li (2009), we adopt Brennan et al (1993)'s procedure to test whether value stocks react to market information slower than growth stocks do. For each size group (small, big) the return on a zero net investment portfolio, which is long in portfolio G (growth stocks, or the low B/M stocks) and short in portfolio V (Value stocks, or the high B/M stocks), is regressed against current and lags of the market returns, proxies for market information. Essentially, we are estimating current and lagged market betas in Dimson regressions which allow for information lags exceeding one period. A positive coefficient on current market return and a negative sum of the coefficients on lagged market returns will imply that growth stocks react faster to common information than value stocks. Different from the regressions in Doukas & Li (2009), we include a binary variable to allow the parameters to differ when the market is up ( $R_m > 0$ ) or down ( $R_m < 0$ ) as follows:

$$R_{g,t} - R_{v,t} = \alpha + \beta_0 R_{m,t} + \delta R_{m,t} I_t + \sum_{k=1}^k \beta_{-k} R_{m,t-k} + \varepsilon_t$$
$$h_t = a + b\varepsilon_{t-1}^2 + ch_{t-1}$$