Change in Dispersion and Regulation Fair Disclosure

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ABSTRACT

This study separates value- from growth stock dispersion in light of the introduction of Reg FD. We find evidence that the change in information after Reg FD led to the increase in dispersion associated only with value stocks. Additionally, Reg FD also changed the already negative relationship between dispersion and stock returns. Due to effective reduction of selective earnings guidance for value stocks, the effect of earnings forecast dispersion on value stock returns has increased after Reg FD. This finding implies that the introduction of Reg FD had a larger impact on the value stock return behavior since value stock earnings forecasts are more dependent on the analysts' idiosyncratic sources of information.

JEL Classification: C33, G11

Keywords: Dispersion, Value Stocks, Growth Stock, Regulation Fair Disclosure and Financial Analysts

INTRODUCTION

Financial analysts are industry experts and knowledgeable intermediaries between firms and investors. In essence, analysts systematically collect, analyze, and disseminate information about firms' history performance records, comparative performance in the industry, and future performance prospects. Their earnings forecasts play an important role in the stock market. For companies, analysts serve as information disclosure agents. For investors, analysts provide worthwhile forecasts about the companies' future earnings. We investigate whether the impact of earnings dispersion on value and growth stock returns has changed before and after Regulation Fair Disclosure (Reg FD 17 CFR 243). While literature on investment style, dispersion, and Reg FD is extensive, rarely have all three issues been addressed in a unified study.

Academic work on value and growth investing has had a strong impact on professional investment management. The results from these studies (Fama &

French, 1992; Lakonishok, Shleifer, & Vishny, 1994) have formed the basis for investment strategies that are widely applied in equity markets. Fama and French (1992, 1993, 1995, & 1996) find that the ratio of book value to market value of equity (*BE/ME*) and company size are the leading explanatory variables for the cross-section of average stock returns. They and other researchers in the academic community come to the agreement that value investment strategies (e.g., strategies based on investing in high *BE/ME* stocks), on average, outperform growth investment strategies. However, there is no consensus about the exact reasons for the superior returns. One explanation for the difference in returns between value and growth stocks draws on behavioral considerations. For example, analysts may have self-interest in recommending successful stocks to generate trading commissions. They gravitate toward more exciting, successful growth-oriented stocks (Bhushan, 1989) resulting in an under-pricing of value stocks. This under-pricing causes value stock returns to be higher relative to their fundamentals.

Following the seminal work of Fama and French (1992, 1993, 1995, & 1996), more recent studies focus on the effects of analysts' earnings forecasts on value and growth stocks. Skinner and Sloan (2002) report that growth stocks, as measured by the *BE/ME* ratio exhibit an asymmetrically large negative response to negative earnings surprises. Matsumoto (2002) finds that managers of firms with high growth prospects have more incentive to manage analysts' expectations to avoid these negative earnings surprises. On the other hand, analysts might have a monetary incentive to report favorable earnings estimates in order to establish good rapport with top executives (Francis & Philbrick, 1993; Carleton, Chen, & Steiner, 1998; Michaely & Womack, 1999; Lim, 2001). Hong and Kubik (2003) believe that brokerage houses reward analysts, who promote stocks so as to generate underwriting business and trading commissions. In fact, Jegadeesh *et al.* (2004) find that financial analysts endorse growth stocks to attract institutional clients who typically invest more heavily in growth firms. In addition, evidence suggests that forecast dispersion is influenced by the quantity and quality of financial disclosures and that any significant change to the access of this financial information could alter forecast dispersion (Swaminathan, 1991; Dechow *et al*, 1996).

Under the auspices of Chairman Arthur Levitt, the Securities and Exchange Commission (SEC) introduced new standards prohibiting selective disclosure of material company information. The Reg FD (Reg FD 17 CFR 243) was first introduced in December 1999, released in August 2000, and became effective October 23, 2000. Reg FD was designed to reduce information inequalities between individual and institutional market participants by prohibiting selective disclosure of material information. The SEC passed Reg FD to level the playing field among small and large investors. Advocates of Reg FD contended that

company management routinely and selectively shared material information, and that privileged analysts might write upwardly biased recommendations in return for advanced information. Moreover, privileged relationships for larger investors put smaller investors at a distinct information disadvantage, or adverse selection risk (Eleswarapu, Thompson, & Venkataraman, 2002).

The purpose of this paper is to examine the effects of Reg FD on relationships between dispersion and stock returns and to provide distinctions in these relationships between value and growth stocks. The first hypothesis investigated in this paper is that forecast dispersion for value stocks has increased more than forecast dispersion for growth stocks after the introduction of Reg FD. Bailey *et al* (2003) find an overall increase in forecast dispersion after Reg FD but they do not distinguish between value and growth stocks. Divergence of opinion, as proxied by the dispersion of analysts' earnings forecasts, is an effective measure of analysts' uncertainty in a changing information environment (Barron & Stuerke, 1998). A higher degree of difficulty in forecasting could explain this uncertainty (Barth, Kasznik, & McNichols, 2001).

Also the degree of earnings management may play a role. Growth firms with good earnings prospects tend to provide unbiased and accurate earnings guidance relative to companies with poor earnings prospects (Liu, Xu, & Yao, 2004). Therefore, stocks with lower forecast dispersion tend to be those with higher future earnings. If analysts depend more on their idiosyncratic information sources to forecast value stock earnings, thereby creating larger dispersion, the change in information following Reg FD should widen the differences in opinion for value stocks. Since the information pool decreased, analysts were forced to use different heuristics to forecast earnings. The monitoring of private information should not have any effect on the relationship between dispersion and growth stock returns. Results show that, after the introduction of Reg FD, forecast dispersion is significantly higher for value stocks but not for growth stocks.

The second hypothesis investigated in this paper is that the effect of forecast dispersion on value stock returns is larger after the introduction of Reg FD than it is for growth stock returns. Recent studies find that stocks with higher dispersion of analysts' earnings forecasts have lower future returns (Diether, Malloy, & Scherbina, 2002; Doukas, Kim, & Pantzalis, 2004). Diether, Malloy and Scherbina (2002) hypothesize that dispersion of earnings forecasts serves as a proxy for difference in opinion implying that optimists hold the stock because they have the highest valuations and suffer losses in expectations since average opinion is their best estimate. The bigger the disagreement about a stock's value, the higher the market price relative to the true value of the stock, and the lower its future return (Miller, 1977). Nevertheless, Doukas, Kim and Pantzalis (2004) show that after classifying stocks into 25 portfolios on the basis of the stock's *BE/ME* and size quintiles, high *BE/ME* stocks and small-cap stocks have

significantly higher earnings forecast dispersion relative to growth stocks and large-cap stocks. Doukas, Kim and Pantzalis (2004) suggest that the higher returns from investment in value stocks reflect compensation for bearing risk associated with higher analysts' earnings forecast dispersion. Cash flows of growth stocks are perceived by investors as less uncertain and, therefore, less risky than the cash flows of value stocks.

More importantly, when analysts make earnings forecasts, they combine information provided by the companies they follow in conjunction to information they acquire on their own. The second source of information gives rise to the difference of opinions among analysts. Since value stocks earnings forecasts are more dependent on the idiosyncratic interpretation of analysts, the change in information after the introduction of Reg FD will therefore have an even larger effect on value stocks and no effect on growth stocks. This evidence of a stronger inverse relation between value stock returns and dispersion after Reg FD would imply that the distinction between value and growth stock dispersion is prompted by differences in dissemination and interpretation of earnings information and definitely not by the higher perceived risk of value stocks. The results in this study are consistent with that view. The paper is organized as follows. Section II describes the data and methodology, while results and related findings are provided in Section III. Section IV provides conclusions and implications.

DATA AND METHODOLOGY

Description of the Data and Sample Selection

The data for this study are extracted from I/B/E/S through the Institutional Brokers Estimate System, COMPUSTAT, and CRSP through the Center for Research on Security Prices. The I/B/E/S data consist of one-quarter-ahead earnings forecasts prepared in the years 1998-2003, and the COMPUSTAT and CRSP data matches the forecast data to calculate the dispersion measures. Following Bamber, Barron and Stober (1997) dispersion before the interim earnings announcement (DISPRE) is calculated. We expect that uncertainty before the earnings forecasts has significant value that has not been fully incorporated into the stock prices.

To test the stock return hypothesis in light of the introduction of Reg FD, only data that meet specific conditions are included in the study. First, the data are restricted to the time period from 1998 to 2003 to obtain a symmetrical period on either side of the introduction of Reg FD. Second, the consensus forecasts are restricted to one-quarter-ahead forecasts at the second quarter of years 1998 to 2003 since the SEC approved Reg FD on August 10, 2000 (third quarter) and Reg

FD was implemented on October 23, 2000 (fourth quarter). Furthermore, there are too few annual forecasts in the first quarters to compute the measures of dispersion to make a comparison pre-and post-Reg FD, while the second quarter earnings forecasts contain sufficient information (Bailey *et al.*, 2003).

Third, firms that have stock return data from CRSP daily NYSE, AMEX and NASDAQ files are included. Consistent with Doukas, Kim and Pantzalis (2004), the available stock return data from CRSP are matched with the computed earnings forecast dispersion data from I/B/E/S and accounting data from COMPUSTAT. To ensure the earnings forecast dispersion measures and the accounting data for COMPUSTAT are known before the returns they are used to explain, the accounting data from the fiscal year-end and the forecast dispersion measures at the second quarter for calendar year t are matched with the returns for July t to June $t+1$. This research uses the firm's common equity at the first quarter of each fiscal year in the sample to compute the ratio of book value of equity to current market value of equity (outstanding shares times the stock price) at the second quarter.[6] Since not all firms announce their second-quarter earnings in the same quarter, only firms with fiscal years ending on Dec. 31 are included in the sample. Fourth, each stock is covered by four or more analysts during the stock return months, since dispersion is computed by standard deviations of earnings forecasts.[7] The total number of stocks in the final sample averages 600 per year.

Methodology

Full Sample Portfolio Formations

This study investigates the impact of forecast dispersion around the second quarter earnings announcement on stock returns in the next fiscal year from July t to June $t+1$. The dispersion mean is calculated after classifying stocks into one of 25 portfolios, containing stocks that are independently sorted on the basis of the stocks' *BE/ME* quintiles and size quintiles. *BE/ME* is the book value of common equity plus balance sheet deferred taxes of the first quarter, over current market equity for second quarter for each year in the sample. Size is the stock's current market value at the second quarter of each fiscal year. These procedures produce four 5-by-5 matrices for the *BE/ME*-size combinations, resulting in 25 stock portfolios to study the mean differences in dispersion for value and growth stocks.

Bailey *et al.* (2003) find that after the introduction of Reg FD, forecast dispersion before earnings announcement increased, implying that disagreement and differential informed judgment about future annual earnings also increased.

[6] Common equity is calculated as the sum of total common equity (COMPUSTAT item 59) plus deferred taxes (COMPUSTAT item 35).

[7] On average, 16% of the firms in the total sample are covered by four analysts.

They use one pair of comparison quarters, post Reg FD II 2001 and pre Reg FD II 2000, with 268 observations each. This study will reevaluate these outcomes for those same quarters in Bailey *et al.* (2003). Also, this study will investigate the dispersion differences-in-means for a different pair of comparison quarters, post Reg FD II 2002 and pre Reg FD II 2000, to determine whether the changes in dispersion increase or decrease now that more time has passed since the adoption of this regulatory change. For statistical inference, the two sample difference-in-means tests are used in this analysis (McClave, Benson, & Sincich, 1999).[8]

Time Series Regression Analysis

Fama and French (1993) suggest that a three-factor time-series model might explain the cross-section of returns. Their three factors are *RMF*, the excess return (in excess of the risk-free rate) of the value-weighted market portfolio; *SMB*, the return on an arbitrage (zero-investment) portfolio consisting of the return on the big-firm portfolio subtracted from the return on the small-firm portfolio; and *HML*, the return on an arbitrage portfolio consisting of the return on the portfolio of high-*BE/ME* stocks minus the return on the portfolio of low-*BE/ME* stocks.[9]

To test whether returns are sensitive to analysts' uncertainty before earnings announcements, an additional factor for Fama and French's (1993) asset-pricing model is constructed. Doukas, Kim and Pantzalis (2004) suggest adding a disagreement factor that captures the difference in returns of value-weighted portfolios of firms with high and low dispersion. Two value-weighted return portfolios are formed on the basis of the top 30 percent and bottom 30 percent of pre-announcement dispersion rankings. The variable *DISPRE* is the return difference between the top 30 percent and bottom 30 percent of pre-announcement dispersion portfolios.

Average monthly returns are computed from July t to June $t+1$ for these portfolios to obtain a return series of 72 monthly observations from January 1999 to December 2004. Average excess monthly returns (in excess of the risk-free rate) are calculated for the 5-quintile *BE/ME* portfolios. The portfolio groups of interest are the high-*BE/ME* (or value stock) portfolio and the low-*BE/ME* (or growth stock) portfolio. The average excess monthly return series are regressed on the factors *RMF*, *SMB*, *HML*, and *DISPRE* to obtain factor sensitivities (slope coefficients) with variations of the following model:

$$R(t) - Rf(t) = a + bRMF(t) + sSMB(t) + hHML(t) + rDISPRE(t) + e(t), \quad (1)$$

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[8] The sample is also subjected to the Wilcoxon tests. The Wilcoxon test results do not differ significantly from the results of the two sample difference-in-means tests.

[9] These factors are available from Kenneth French's website (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/).

The slope coefficient on *DISPRE* measures the sensitivity of the factors on the returns to determine whether investor disagreement has a distinct and enveloping control on the determination of asset returns.[10] The null hypothesis that the slope coefficients (or factor loadings) are not priced in the market (i.e., will have zero value) is tested against the alternative hypothesis that some or all of the factors are priced. To determine the effects of dispersion on returns, regressions with and without the dispersion factor are used. These effects are evaluated over the full period of portfolio formations from January 1998 to December 2003 as well as the pre- and post-FD periods to see if the model specifications are acceptable.

We are also interested in whether the introduction of Reg FD affects the estimation of the parameter coefficients in model (1) over the entire time post-formation period. To test the null hypothesis that the return data exhibit a structural break at the introduction of Reg FD and that the data for the pre-FD period and the data for the post-FD period should be estimated with different regression models, the full regression model for the total sample period in (1) is subjected to Chow's (1960) structural break test.

EMPIRICAL RESULTS

The empirical results section is broken down into four parts. The first part describes the relationship between dispersion and the value premium as well as the relationship between dispersion and the size premium. The second part of the results section pertains to the first hypothesis, which investigates the change in forecast dispersion for value and growth stocks before and after the introduction of Reg FD. The third part relates to the second hypothesis researching the relationship between dispersion and stock returns for value and growth stocks before and after the introduction of Reg FD. The fourth part of this section provides a brief summary of results.

Forecast Dispersion and Portfolios

Table I reports the mean and median values of the quintile portfolios based on the *DISPRE* forecast dispersion measure. Dispersion of annual earnings forecasts before interim quarterly earnings announcements (*DISPRE*) equals the standard

[10] The robustness of the statistical inference on the coefficients in model (1) is dependent on the time-series properties of the data. The order of integration in the data is investigated with the Augmented Dickey Fuller test (ADF) (Dickey and Fuller, 1979, 1981) and the KPSS test (Kwiatkowski *et al.*, 1992). The null hypothesis of non-stationary time-series is rejected for all series.

Table I. Dispersion of Forecasts before Earnings Announcements for Portfolios of Firms Sorted on Size and BE/ME from 1999-2004

BE/ME Quintile	Size Quintile						
	Small	**2**	**3**	**4**	**Big**	**All**	**Small-Big**
Low	0.083	0.044	0.038	0.044	0.024	0.050	0.059**
	[0.035]	[0.030]	[0.025]	[0.022]	[0.016]	[0.026]	[0.019]*
2	0.058	0.043	0.036	0.032	0.024	0.04	0.034**
	[0.034]	[0.028]	[0.022]	[0.019]	[0.018]	[0.025]	[0.016]
3	0.074	0.059	0.043	0.044	0.032	0.053	0.042**
	[0.036]	[0.027]	[0.023]	[0.024]	[0.018]	[0.028]	[0.018]*
4	0.077	0.065	0.058	0.082	0.059	0.073	0.018*
	[0.046]	[0.029]	[0.029]	[0.031]	[0.038]	[0.032]	[0.008]
High	0.108	0.063	0.084	0.089	0.08	0.087	0.028**
	[0.062]	[0.037]	[0.042]	[0.035]	[0.039]	[0.040]	[0.023]*
All	0.079	0.055	0.052	0.058	0.044	0.058	0.035**
	[0.039]	[0.030]	[0.026]	[0.025]	[0.023]	[0.029]	[0.016]
High-Low	0.025**	0.019**	0.046**	0.045**	0.056**	0.037**	
	[0.027]**	[0.007]	[0.017]	[0.013]	[0.023]**	[0.014]	

* indicates significance at the 10 percent level and ** indicates significance at the 5 percent level.

deviation of all analysts' forecasts of annual earnings issued within 45 days prior to the interim earnings announcement, scaled by the absolute value of the mean annual earnings forecasts. Tests of all the mean differences for extreme *DISPRE* portfolios in Table I (value minus growth and big minus small) sorted on *BE/ME* and size indicate significantly higher dispersion in the value and small-cap stocks. These findings suggest that the value and small-cap returns patterns that have been observed in the US stock markets may be related to a forecast dispersion premium.

Dispersion of annual earnings forecasts before interim quarterly earnings announcements equals the standard deviation of all analysts' forecasts of annual earnings issued within 45 days prior to the interim earnings announcement, scaled by the absolute value of the mean annual earnings forecasts. This table reports the mean and median (in brackets) values of dispersion of annual earnings forecasts

before interim quarterly earnings announcements after classifying stocks into one of 25 portfolios on the basis of the stocks' *BE/ME* and size quintiles. *BE/ME* is the book value of common equity plus balance sheet deferred taxes of the first quarter over market equity of the second quarter for each fiscal year. The last column and bottom rows report mean and median (in brackets) differences between extreme portfolios and their significance levels from the corresponding t-statistics.

Change in Forecast Dispersion

Table II reports the mean and differences-in-mean before and after Reg FD between the second quarter of 2000 and the second quarter of 2002 for all stocks, growth stocks and value stocks. The difference-in-mean for forecast dispersion before announcement is 0.043 and statistically significant at the 5% level. The results suggest that forecast dispersion remains larger for value stocks than it is for growth stocks and that all forecast dispersion measures for value stocks increased even two years after the introduction of Reg FD.

Second Quarters 2000 and 2002

This table reports mean values of earnings forecast dispersion before interim quarterly earnings announcements (DIPSRE) for groups of stocks before and after the introduction of Reg FD. DISPRE equals the standard deviation of all analysts' forecasts of annual earnings issued within 45 days prior to the interim earnings announcement, scaled by the absolute value of the mean annual earnings forecasts. Each firm must have at least four analysts. The "change" measures the mean difference after Reg FD adoption. The *p*-values are two-sided from *t*-statistics of mean-differences. "NOBS" designates the number of observation for each panel.

Table II. Summary Statistics of Dispersion before Earnings

Summary Statistics on DISPRE						
All Stocks			**Growth**		**Value**	
Quarter	Nobs	Mean	Nobs	Mean	Nobs	Mean
II 2000	305	0.067	101	0.056	102	0.077
II 2002	323	0.070	107	0.047	108	0.120
Change		0.004		-0.009		0.043**
p-value		0.314		0.147		0.049

** indicates significance at the 5 percent level.

Dispersion and Stock Returns

Portfolio Formations

Table III shows the one-year ahead-average annual returns for the 5-quintile *BE/ME* portfolios and the one-year ahead-average annual returns for the *DISPRE* for all formation periods from the second quarter of 1998 to the second quarter of 2003. The intersection of the High-Low column and the all column in Table III shows that, in the period from January 1999 to December 2004, value stocks earned a monthly average of 0.287 percent (or 3.5. percent annually) more than growth stocks. The superior behavior of value stock portfolios is not consistent for all the average returns the year after portfolio formation. The High-Low column in Table III shows negative values for 1999, implying that in 1999 the average monthly returns for value stocks are lower than growth stock returns. The All column and the CRSP-VW column in Table III show that for the studied years in the sample, the monthly average returns display a similar pattern as that of the average monthly returns of the CRSP value-weighted portfolio. The one-year ahead-average annual returns for the *DISPRE* relative to the returns of the all column indicate that the stock returns are inversely related to dispersion.

Table III. Monthly Returns for Different BE/ME Portfolios: Return Period 1999 - 2004

		Book-to-Market Portfolios							
	CRSP-VW	**All**	**Low**	**2**	**3**	**4**	**High**	**High-Low**	**DISPRE**
All		0.528	0.383	0.394	0.605	0.589	0.670	0.287	-0.183
1999	1.972	1.320	2.544	1.608	0.760	0.531	1.155	-1.389	-2.739
2000	-0.833	-0.169	-0.408	-0.259	0.251	-0.107	-0.319	0.088	0.962
2001	-0.812	-0.154	-0.600	-0.702	0.138	-0.017	0.405	1.005	0.632
2002	-1.780	-1.308	-2.027	-1.676	-1.098	-0.702	-1.034	0.993	1.045
2003	2.463	2.325	2.036	2.160	2.321	2.637	2.472	0.436	-0.885
2004	1.051	1.154	0.752	1.234	1.255	1.189	1.342	0.590	-0.113

At the end of the second quarter, of each year t, 5 quintile portfolios are formed on the basis of book-to-market ratios (*BE/ME*). *BE/ME* is the book value of common equity plus balance sheet deferred taxes of the first quarter over market equity of the second quarter for each fiscal year. The value-weighted annual portfolios are then calculated for July of year t to June of year $t+1$. Average monthly return is the time-series average of the value-weighted portfolio returns (in percentages) for each year in the formation period from 1998 to 2003.

CRSP-VW reports the average monthly return for the value-weighted CRSP portfolio. The All column shows the average monthly return for value-weighted portfolios in each year. The High-Low column shows the difference in average monthly returns between the high *BE/ME* group and the low *BE/ME* group. The *DISPRE* column shows the average time-series return of a portfolio consisting of the return of high pre-announcement dispersion of earnings forecasts minus the return on a low pre-announcement dispersion of earnings forecasts portfolio.

Time Series Regression Results

Table IV reports the slope coefficients, their associated *t*-statistics, and the results for the *F*-tests for all the stocks in the *BE/ME* groups for two model specifications. Statistic *a* at the lower section of Panel A in Table IV shows the SUR *F*-test result. This statistic indicates the null hypothesis that the intercepts are jointly equal to zero can be rejected at the 5 percent level. Statistic *b* at the lower section of Panel B in Table IV shows the SUR *F*-test result. This result suggests the null hypothesis that the intercepts are jointly equal to zero also can be rejected at the 5 percent level. However, the higher R^2 values of the regressions in Panel B of Table IV imply that the regression model with *DISPRE* in combination with *RMF*, *SMB*, and *HML* explains a larger fraction of the average monthly returns. The R^2 values of the regressions that exclude the *DISPRE* factor in Panel A of Table V range from 0.7749 to 0.8307, while the R^2 values of the regressions in Panel B range from 0.7929 to 0.8601. These results indicate that *DISPRE* has an effect on the cross-section of stock returns.

The bottom of Table IV reports the Chow test statistic testing the null-hypothesis whether the return data do not exhibit a structural break at the introduction of Reg FD. The two-sample Chow test statistic shows the value of 3.97, suggesting that the null hypothesis can be rejected at the 1 percent level. This implies that the data for the pre-FD period and the data for the post-FD period should be estimated with different regression models.

SUR regressions are run with the excess returns (average raw return minus the risk-free rate) as the dependent variable. The independent variables are: *RMF*, excess return (in excess of the risk-free rate) of the value-weighted market portfolio, *SMB*, the return on an arbitrage (zero-investment) portfolio consisting of the return on the big-company portfolio subtracted from the return on the small-company portfolio, *HML*, the return on an arbitrage portfolio of high book-to-market ratio (*BE/ME*) stocks minus the return on the portfolio of low *BE/ME* stocks, *DISPRE*, the return of a portfolio consisting of the return of high pre-announcement dispersion of earnings forecasts minus the return on a low pre-announcement dispersion of earnings forecasts portfolio. Panel A shows the slope coefficients and their corresponding *t*-statistics for 5 *BE/ME* stock groups from 1999-2004 for asset-pricing model:

Table IV. SUR Regression of Returns on Specific Factors for BE/ME groups with Different Model Specifications: Return Period 1999 - 2004

Panel A.	a	bRMF	sSMB	hHML	rDISPRE	Adjusted R^2
Low	-0.002	1.231***	0.140*	0.206**		0.801
	(-0.56)	(15.05)	(1.74)	(2.06)		
2	-0.006**	1.163***	0.340***	0.561***		0.8307
	(-1.97)	(17.67)	(5.24)	(6.97)		
3	-0.005*	1.151***	0.191***	0.827***		0.7986
	(-1.65)	(16.78)	(2.83)	(9.86)		
4	-0.003	1.138***	0.182***	0.841***		0.7749
	(-1.11)	(15.62)	(2.53)	(9.44)		
High	-0.006**	1.062***	0.244***	0.896***		0.7767
	(-2.08)	(15.44)	(3.61)	(10.65)		
SUR	4.32[a] **					
H0: a=0	(0.04)					
Panel B.	a	bRMF	sSMB	hHML	rDISPRE	Adjusted R^2
Low	-0.002	1.117***	0.083	0.254***	-0.302**	0.8114
	(-0.65)	(11.71)	(1.00)	(2.55)	(-2.18)	
2	-0.006**	1.009***	0.263***	0.625***	-0.406***	0.8601
	(-2.30)	(14.08)	(4.23)	(8.34)	(-3.91)	
3	-0.005*	1.057***	0.144**	0.867***	-0.249**	0.8086
	(-1.77)	(13.20)	(2.08)	(10.33)	(-2.14)	
4	-0.004	1.000***	0.113*	0.899***	-0.364***	0.7994
	(-1.28)	(12.14)	(1.58)	(10.43)	(-3.05)	
	-0.006**	0.953***	0.190***	0.942***	-0.289**	0.7929
High	(-2.24)	(12.01)	(2.76)	(11.34)	(-2.51)	
SUR	5.03[b] **					
H0: a=0	(0.03)					
Two Sample Chow Test	$H_0 : \beta_0 = \beta_1$					3.97[a] *** (0.00)

* indicates significance at the 10 percent level, ** indicates significance at the 5 percent level and *** indicates significance at the 1% level.

$R(t) - R_f(t) = a + bRMF(t) + sSMB(t) + hHML(t) + e(t)$. Panel B shows the slope coefficients and their corresponding *t*-statistics for 5 *BE/ME* stock groups from 1999-2004 for asset-pricing model:

$R(t) - R_f(t) = a + bRMF(t) + rDISPRE(t) + e(t)$. Statistic [a] and statistic [b] correspond to the test value for the null hypothesis that all intercepts are jointly equal to zero with corresponding *p*-values in brackets. The value for the two sample Chow test corresponds to the test value of the Chow test for the null hypothesis of no

structural break at a known location. The corresponding p-value of the Chow statistic is shown in brackets.

Panel A of Table V reports the estimated regression coefficients of growth stocks from the pre-FD portfolio formation period from the second quarter of 1998 to the second quarter of 2000 and the post-FD portfolio formation period from the second quarter of 2001 to the second quarter of 2003. The coefficients on *HML* in models A1 to A4 in Panel A of Table V show that there is an inverse relationship between growth stocks and the value premium after Reg FD. The parameter coefficient on *SMB* at model A1 shows the size premium before Reg FD is significant at the 5 percent level while the coefficients on *SMB* in model A2 and A3 are statistically significant at the 10 percent level. The parameter coefficient on *SMB* at model A4 is statistically insignificant. This suggests that the size premium is not a factor after the introduction of Reg FD. The coefficients on *DISPRE* in models A2 and A4 are negative but statistically insignificant. The bottom section of Panel A in Table V reports the t-statistics of the null that the full model parameters before and after the introduction of Reg FD are equal. Only the change in the *RMF* coefficient before and after the introduction of the Reg FD is positive and statistically significant while the changes in the other parameters are not statistically significant. Even though the coefficient on *DISPRE* is not significant, adding the factor to the model increases systematic risk. This implies that firms might have provided more earnings guidance to growth firm analysts after the introduction of Reg FD but those investors reacted negatively, resulting in larger market risk.

Panel B of Table V reports the estimated regression coefficients of value stocks from the pre-FD portfolio formation period from the second quarter of 1998 to the second quarter of 2000 and the post-FD portfolio formation period from the second quarter of 2001 to the second quarter of 2003. The parameter coefficients of *RMF*, *SMB* and *HML* of all regression models in show that all the Fama-French factors show their anticipated signs and statistical significance at the 1 percent level except for the parameter coefficients on *SMB* in models B1 and B2. The parameter coefficients on *DISPRE* in model B2 and B4 show that dispersion before earnings announcement has an inverse and statistically significant relation with value stock returns before and after the introduction of Reg FD. The bottom section of Panel B in Table V reports the t-statistics of the null that the full model parameters before and after the introduction of Reg FD are equal. The change in *HML* coefficient is negative but not statistically significant. The change in the *RMF* parameter is negative and statistically significant, while

Table V. Time Series Regression of Returns on Specific Factors for Growth Stocks with Different Model Specifications in Different Time Periods: Formation Period 1998 – 2003

Panel A.		a	bRMF	sSMB	hHML	rDISPRE	Adjusted R^2
Growth	A1.	-0.002	1.276***	0.256**	-0.396**		0.7434
Pre-FD		(-0.42)	(8.51)	(2.08)	(-2.36)		
1998-2000							
	A2.	-0.004	1.177***	0.190*	-0.450**	-0.337	0.7503
		(-0.64)	(7.16)	(1.46)	(-2.65)	(-1.37)	
		a	bRMF	sSMB	hHML	rDISPRE	Adjusted R^2
	A3.	0.000	1.253***	0.164*	-0.398***		0.9271
Post-FD		(0.04)	(18.53)	(1.59)	(-3.15)		
2001-2003							
	A4.	0.000	1.226***	0.149	-0.372**	-0.059	0.9253
		(0.07)	(13.44)	(1.36)	(-2.66)	(-0.46)	
Equal	$\beta_{A2}=\beta_{A4}$		1.91*	-0.60	-0.98	-0.71	
parameters			(0.060)	(-0.547)	(-0.332)	(-0.481)	
Panel B.		a	bRMF	sSMB	hHML	rDISPRE	Adjusted R^2
Value	B1.	-0.010**	1.031***	0.208**	0.879***		0.6822
Pre-FD		(-2.18)	(8.59)	(2.11)	(6.55)		
1998-2000							
	B2.	-0.011**	0.950***	0.154*	0.923***	-0.274*	0.6914
		(-2.41)	(7.22)	(1.48)	(6.79)	(-1.40)	
		a	bRMF	sSMB	hHML	rDISPRE	Adjusted R^2
	B3.	-0.002	1.025***	0.477***	0.637***		0.8707
Post-FD		(-0.51)	(13.33)	(4.06)	(4.43)		
2001-2003							
	B4.	-0.001	0.868***	0.393***	0.785***	-0.333**	0.8891
		(-0.38)	(9.15)	(3.45)	(5.39)	(-2.51)	
Equal	$\beta_{B2}=\beta_{B4}$		-3.21***	3.23***	-0.22	2.72***	
parameters			(-0.002)	(0.002)	(-0.824)	(0.008)	

* indicates significance at the 10 percent level, ** indicates significance at the 5 percent level and *** indicates significance at the 1% level.

the change in the *SMB* parameter as well as the change in *DISPRE* coefficient are positive and statistically significant. These findings imply that after Reg FD value firms effectively stopped providing earnings guidance, thereby increasing analysts' earnings dispersion and applying more downward pressure on the value stock returns. It appears that investors agree with the reduction in selective disclosure towards the professionals because the systematic risk decreased after the introduction of Reg FD.

Time series regressions are run with the excess growth stock returns (average raw return minus the risk-free rate) as the dependent variable over the pre-and post FD time periods. The explicit multi-factor asset-pricing model is:

$$R(t) - R_f(t) = a + bRMF(t) + sSMB(t) + hHML(t) + rDISPRE(t) + e(t).$$

The independent variables are: *RMF*, excess return (in excess of the risk-free rate) of the value-weighted market portfolio, *SMB*, the return on an arbitrage (zero-investment) portfolio consisting of the return on the big-company portfolio subtracted from the return on the small-company portfolio, *HML*, the return on an arbitrage portfolio of high book-to-market ratio (*BE/ME*) stocks minus the return on the portfolio of low *BE/ME* stocks, *DISPRE*, the return of a portfolio consisting of the return of high pre-announcement dispersion of earnings forecasts minus the return on a low pre-announcement dispersion of earnings forecasts portfolio. Panel A reports the slope coefficients and their *t*-statistics for growth stocks before the introduction of Reg FD, while Panel B shows the slope coefficients and the *t*-statistics for growth stocks after Reg FD. Panel A reports the slope coefficients and their *t*-statistics for value stocks before the introduction of Reg FD, while Panel B shows the slope coefficients and the *t*-statistics for value stocks after Reg FD. . The *t*-statistics for the equal parameter section correspond with the null of the β parameters of the full model before and after the introduction of Reg FD being equal. The values in brackets indicate the *p*-values of these tests.

Summary of Findings

The results from this research suggest value stocks and smaller stocks have larger forecast dispersion before earnings announcement in the period from 1999 to 2004. Value stocks also earned 3.6 percent more than growth stocks during that same period. In addition, forecast dispersion before announcement for value stocks is higher directly after the introduction of Reg FD. However, forecast dispersion for all stocks between the second quarter of 2000 and the second quarter of 2002 has dissipated. Only forecast dispersion before announcement for value stocks changed significantly from the second quarter of 2000 to the second quarter of 2002.

Furthermore, the relationship between forecast dispersion before earnings announcement and stock returns over the years from 1999 to 2004 is negative. Dispersion before interim earnings announcements also has an inverse relationship with value stock returns before and after the introduction of Reg FD but the impact of dispersion on value stock returns increased following the introduction of Reg FD. Also noted is the decrease in systematic risk for value stocks after the introduction of Reg FD. Although the results are not statistically significant, the impact of dispersion before earnings announcement on growth stock returns decreased after the introduction of Reg FD and systematic risk for growth stock increased after Reg FD.

CONCLUSIONS AND IMPLICATIONS

This study investigates the hypothesis that forecast dispersion, on both growth and value stock returns, increased after the introduction of Reg FD. Bailey *et al.* (2003) report overall dispersion increased at the second quarter of 2001, arguing that forecasting future earnings was more difficult after the adoption of Reg FD. This research confirms these findings for the same period but provides evidence that the change in information led to the increase in dispersion only associated with value stocks. The increased dispersion found in the second quarter of 2001 (Bailey *et al.*, 2003) drastically dissipates during the second quarter of 2002, although value stock forecast dispersion remains higher. The results in this study suggest that the reduction in selective disclosure for value stocks resulted in less earnings guidance, resulting in higher dependence on idiosyncratic information sources to forecast earnings, thereby creating larger dispersion in value stocks.

Also, this study examines the impact of earnings forecast dispersion on the cross-section of returns before and after the introduction of Reg FD. The hypothesis is that following Reg FD the effect of forecast dispersion on value stock returns is larger than it is for growth stock returns. This study finds that, after Reg FD, the relationship between returns and dispersion is negative (Johnson, 2004). However, due to effective reduction of selective earnings guidance for value stocks, the negative effect of earnings forecast dispersion on value stock returns has increased after Reg FD. On the other hand, the returns of growth stocks reacted in the same fashion on dispersion after Reg FD. It is difficult to reconcile these findings with the hypothesis put forth by Doukas, Kim and Pantzalis (2004) that dispersion is actually a risk proxy. The evidence that value stock returns have a stronger inverse relationship with dispersion counters the notion that dispersion could be viewed as a proxy of risk. It actually indicates that financial analysts' difference in opinions is guided by the firms' managers. Since value stock earnings forecasts are more dependent on the analysts'

idiosyncratic sources of information, dispersion had an even larger negative impact on the value stock return behavior after the introduction of Reg FD.

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