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A Test of the Errors-in-Expectations Explanation of the Value/Glamour Stock Returns Performance: Evidence from Analysts' Forecasts

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ABSTRACT

Several empirical studies show that investment strategies that favor the purchase of stocks with low prices relative to conventional measures of value yield higher returns. Some of these studies imply that investors are too optimistic about (glamour) stocks that have had good performance in the recent past and too pessimistic about (value) stocks that have performed poorly. We examine whether investors systematically overestimate (underestimate) the future earnings performance of glamour (value) stocks over the 1976 to 1997 period. Our results fail to support the extrapolation hypothesis that posits that the superior performance of value stocks is because investors make systematic errors in predicting future growth in earnings of out-of-favor stocks.

FOR MANY YEARS, ACADEMICS and investment professionals have argued that investment strategies that call for the purchase of stocks with low prices relative to dividends, earnings, book value, or other measures of value produce higher returns (Graham and Dodd (1934) and Dreman (1977)). While recent U.S. and international empirical evidence shows that value (or out-of-favor) stocks earn higher returns than growth (or glamour) stocks (Fama and French (1992, 1993, 1996), Lakonishok, Shleifer, and Vishny (1994; hereafter, LSV), and Arshanapalli, Coggin, and Doukas (1998)), the interpretation of why value outperforms growth strategies remains controversial.

Fama and French (1996; hereafter, FF) argue that value strategies are fundamentally riskier. In their view, the higher average returns of high book-to-market stocks reflect compensation of risk.[1] LSV (1994), however, postulate that value strategies produce superior returns because investors

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[1] Arshanapalli et al. (1998) provide international evidence in support of this view based on 18 countries over the 1975 to 1995 period. Fama and French (1998) provide similar evidence for 12 major markets for the 1975 to 1995 period.

consistently overestimate future growth rates of glamour stocks relative to value stocks.[2] The essence of this argument is that investors are excessively pessimistic (optimistic) about value (glamour) stocks because they tie their expectations of future growth in earnings to past bad (good) earnings. Alternatively, value strategies outperform glamour strategies because actual future growth rates of earnings of glamour stocks relative to value stocks turn out to be considerably lower than they were in the past or than what the multiples on those stocks suggest the market expected them to be. This implies that investors make systematic errors in predicting future growth in earnings of out-of-favor stocks. Namely, investors' excessive pessimism about future earnings of value stocks is held responsible for the superior performance of value stocks relative to glamour stocks. Consistent with this view, La Porta (1996) shows that selling stocks with high forecasted earnings growth and buying low projected earnings growth stocks produces excess returns.[3] La Porta et al. (1997; hereafter, LLSV) examine stock price reactions around earnings announcements and show that size-adjusted announcement returns are significantly more positive for value than glamour stocks. The findings of these studies have been interpreted as being consistent with the view that investors are too optimistic about stocks that have had good performance in the recent past and too pessimistic about stocks that have performed poorly.

It should be noted, however, that these studies do not directly test the errors-in-expectations hypothesis. Specifically, La Porta (1996) uses earnings growth forecasts to classify stocks into value and glamour portfolios while all studies that document the return premium for value stocks form value and glamour stocks using valuation measures, such as book-to-market. Thus, it is doubtful that his findings represent an errors-in-expectations explanation for the value/growth phenomenon observed based on book-to-market ratios.[4]

LLSV (1997) provide evidence that the return differential between value and growth stocks over a three-day window around quarterly earnings

[2] LSV (1994) also argue that value strategies yield higher returns because they exploit the suboptimal behavior of the typical investor.

[3] LSV (1994) argue that strategies that bet against investors who extrapolate performance too far into the future have superior performance. They classify stocks in value and growth portfolios based on past performance (using historical sales-, earnings-, and cash-flow-growth measures) and expected future performance (using P/E and price-to-cash-flow ratios) and examine long-run returns (five year returns). La Porta (1996) acknowledges that the superior performance of value stocks can be attributed to investor errors about future growth in earnings and errors about risk. However, he focuses only on the former.

[4] This is highlighted in the regression results of La Porta's (1996) study (see Table IV, Panel B, on p. 1731). On one hand, the relationship between forecast error (defined as actual earnings minus forecasted earnings) and the expected growth rate in earnings is negative, indicating more optimism for stocks with higher expected growth rates (i.e., growth stocks according to LaPorta's classification). On the other hand, the reported relationship between forecast errors and the book-to-market ratio is negative as well, indicating more optimism for stocks with higher book-to-market ratios (value stocks).

announcements accounts for up to about 30 percent of the annual value premium reported in prior studies. However, a possible reason for this result could be the fact that growth and value stocks respond asymmetrically to negative earnings announcements. Consistent with this view, Skinner and Sloan (2001) document that growth stocks experience a significantly stronger negative reaction to negative earnings surprises than value stocks. Hence, it is likely that a few large negative abnormal returns for growth stocks due to earnings disappointments account for the return differential reported in LLSV, even though, on average, earnings forecasts might be equally optimistic/pessimistic across value and growth stocks. Furthermore, according to LSV (1994), the return differential between value and glamour stocks arises because investors *initially* have or form overly optimistic expectations about future earnings prospects of growth stocks, leading to subsequent price declines when these expectations are not met. LLSV also state that "value stocks provide superior returns because the market slowly realizes that earnings growth rates for value stocks are higher than it *initially* expected and conversely for growth stocks" (italics added, p. 860). That means that a contrarian strategy intended to fully exploit investors' systematic errors in expectations has to be initiated shortly after stocks have been classified into "value" and "growth" portfolios. This, then, implies that the appropriate time of testing the *initial* market expectations should be shortly after the past year's annual report becomes available. Therefore, LLSV's evidence cannot be regarded as a direct test of the errors-in-expectations hypothesis because the earnings surprises they examine are not the difference between the initial forecast made by investors for a given investment horizon and the actual earnings, but the difference between the last forecast issued just prior to actual earnings announcement and the actual earnings.

To test the extrapolation hypothesis, we allow investors to classify stocks into value and glamour portfolios based on available information first and then we assume that they form expectations about future earnings. If investors make systematic errors in expectations, as claimed by the extrapolation hypothesis, it is expected that their initial earnings expectations about glamour stocks should be systematically larger than the actual earnings announced after the formation of expectations. The extrapolation hypothesis also predicts that the earnings forecasts for value stocks should be systematically smaller than the actual earnings announced after the formation of expectations. We examine analysts' earnings forecasts, issued shortly after stocks are classified into value and growth portfolios, which we use as a proxy for the market's expectation of future earnings. We compare these estimates to the actual earnings across value and growth stocks in order to determine whether the market's initial optimistic forecast bias is more pronounced for glamour than value stocks as predicted by the errors-in-expectations hypothesis.

Financial analysts' forecasts are widely disseminated and are of substantial interest to investors and researchers (Cragg and Malkiel (1968), Malkiel

(1982), Givoly and Lakonishok (1984), and La Porta (1996)).[5] In particular, we analyze analysts' forecast errors and forecast revisions for firms with different book-to-market and size characteristics over the 1976–1997 period. The forecast error (defined as the median consensus forecast minus actual earnings) and forecast revision (defined as the recent forecast minus earlier forecast) are used to capture investors' errors in expectations when they forecast future earnings. The extrapolation hypothesis predicts that analysts' earnings forecasts for growth (value) stocks are expected to be initially overly optimistic (pessimistic). Therefore, positive (negative) forecast errors, measured by the difference between analysts' forecasts, issued shortly after stocks have been classified into value/glamour categories, and actual earnings, should be expected for growth (value) stocks. Furthermore, subsequent downward (upward) revisions in earnings' expectations for growth (value) stocks should provide additional evidence on whether investors were, indeed, excessively optimistic (pessimistic).

Our results fail to support the extrapolation hypothesis. High book-to-market firm portfolios display higher forecast errors and larger downward forecast revisions than low book-to-market portfolios, indicating that investors are more optimistic about value than growth stocks. Furthermore, similar results are obtained when we compare extreme quintile portfolios of firms ranked on size. Finally, we conduct a two-by-two comparison analysis of extreme firm portfolios: (1) one that contains firms with the smallest size and largest book-to-market ratio, and (2) one that contains firms with the largest size and lowest book-to-market ratio. In contrast with the predictions of the extrapolation hypothesis, we find that investors make larger forecast errors in predicting future earnings for small-cap and value than large-cap and growth stocks, implying that they are not much more optimistic about large-cap and growth than small-cap and value stocks. These results hold for several forecasts issued at different time periods after the portfolio formation date.

The paper is organized as follows. In Section I, we discuss the data selection process. In Section II, we present and discuss the empirical results. Finally, we provide concluding remarks in Section III.

I. Sample Selection

The book-to-market and size data used in this study were retrieved from the 1998 COMPUSTAT annual PST, Full-Coverage and Research database. Book-to-market is defined as the ratio of book value of common equity (item #60) to market value of equity (closing price at fiscal year end (FYE; item #199) times number of common shares outstanding (item #25) at the

[5] La Porta (1996) suggests that security analysts' forecasts represent a relatively good proxy for market's earnings expectations of future earnings. Elton, Gruber, and Gultekin (1981) also show that stock prices respond more to changes in analysts' forecasts of earnings than they do to changes in earnings themselves, suggesting the usefulness of financial analysts' earnings forecasts as a surrogate for investors' expectations.

end of the fiscal year preceding the analysts' forecast). Size is measured by the market value of common equity at the end of the fiscal year preceding the analysts' forecast.

Following Philbrick and Ricks (1996), we retrieved both analyst earnings forecasts and actual earnings-per-share data from the 1998 Institutional Brokers Estimate Systems (I/B/E/S) database. All forecasts and actual earnings are converted into primary earnings per share (EPS) if they are diluted, using adjusting factors listed in the I/B/E/S database.[6] We also retrieved stock prices from the I/B/E/S database in order to be consistent with forecasts and actual earnings for the adjustments of stock dividends and stock splits. As in Easterwood and Nutt (1999), we selected analyst consensus forecasts available eight months prior to FYE in order to have a similar forecast horizon across all firms. The eight-month horizon is established to ensure that analysts have access to the previous year's annual report at the time their forecast is made.[7] We define a consensus forecast as the median forecast reported by I/B/E/S. Two earnings forecast variables were computed: (1) forecast errors, defined as the difference between the median value of the one-fiscal-year-ahead forecasts and actual earnings, and (2) forecast revisions, defined as the difference between two consecutive forecasts. We delete firm-year observations when the stock price at the beginning of the fiscal year is less than three dollars, because the earnings forecast variables we used are standardized by stock price.[8]

We examine forecast errors based on forecasts issued at different periods after the portfolio formation date. We also examine corresponding forecast revisions made to the initial one-fiscal-year-ahead forecast issued eight months prior to FYE. Given the different requirements for computing the two earnings forecast variables, the empirical tests were conducted relying on different sample sizes. The sample for the forecast errors based on forecasts made eight months prior to FYE contains 44,536 firm-year observations. The samples of the forecast errors from estimates issued in months closer to the actual earnings announcement date are larger because the frequency of the issuance of analyst forecasts increases as the forecast horizon decreases. In addition, the samples for the forecast revisions are somewhat smaller since they rely on additional data requirements.[9] The sample period covers the

[6] Dilution occurs when a company issues securities that are convertible into common equity. Such issues can take the form of convertible bonds, rights, warrants, or other instruments. Diluted EPS is smaller than primary EPS that is based on the number of common shares outstanding.

[7] According to Penman (1987), the vast majority of firms (about 92 percent) file their annual reports with the SEC within three months after the FYE.

[8] We retested after including firm-year observations with stock price less than three dollars. The results remained qualitatively equivalent to the ones we report here. These results are available from the authors upon request.

[9] Some firms do not have analysts providing both estimates necessary for the computation of the forecast revision. For example, a forecast revision based on a forecast issued eight months prior to FYE and on another forecast issued two months prior to FYE would require that there are consensus forecasts available for both eight and two months prior to FYE.

years 1976 through 1997. Observations are assigned to particular years based on the month the forecast was recorded in I/B/E/S.[10]

II. Empirical Results

A. Analysis of Security Analysts' Forecasts

According to the contrarian strategy, errors in expectations and excessive extrapolation characterize the performance difference between value and glamour stocks. The core of the extrapolation hypothesis is that the market's initial earnings expectations are too extreme (i.e., pessimistic about value firms and too optimistic about growth firms). Extrapolation also implies that individuals tend to overweigh recent information and expect the future to be similar to the past. To test the extrapolation hypothesis, we use security analysts' forecast errors, FE_{t-m}, where m indicates how many months prior to FYE the forecast was issued. For example, FE_{t-8} is defined as the difference between the median of the one-year-ahead annual earnings forecasts made eight months prior to the FYE month ($F_{t-8}(A_N)$) and the actual earnings (A_N) standardized by the stock price per share (P_{t-11}) at the beginning of the fiscal year $[(F_{t-8}(A_N) - A_N)/P_{t-11}]$. We use median values instead of means because mean values can be influenced by extreme observations (outliers). In all our subsequent analysis and sample comparisons, we utilize median values. It should be noted, however, that we obtain similar results when mean values are used instead of medians. In fact, our mean-based results yield stronger results in terms of significance levels. Knez and Ready (1997) argue that extreme observations may be the source of the size risk premium, estimated by FF (1992). Knez and Ready provide evidence that the size risk premium completely disappears when the one percent of most extreme observations is dropped each month from their sample.

If investors' expectations are too optimistic (pessimistic) about growth (value) firms, then we should expect larger positive forecast errors for growth firms rather than value firms. In addition, the extrapolation hypothesis is tested using analysts' forecast revisions. A revision in month $t - m$ of the forecast issued at $t - 8$, ${}_{t-8}FR_{t-m}$, is defined as the difference between the earlier $(t - 8)$ and the most recent $(t - m)$ forecast standardized by the stock price per share at the beginning of the first forecast's fiscal year $[(F_{t-m}(A_N) - F_{t-8}(A_N))/P_{t-11}]$. If investors' earnings expectations are initially too optimistic, then subsequent forecasts are expected to be revised downward. According to the prediction of the extrapolation hypothesis, such downward forecast

[10] Forecast errors and forecast revision observations are not available for 1998. This is because our I/B/E/S tape cutoff month is October 1998, which means that the latest forecast errors could technically be computed for forecasts made in January 1998 and the latest actual EPS available in our data is for September 1998 FYE firms. However, since only six such firms' actual EPS are available in January 1998, these were included in the 1997 sample. Similarly, since forecast revisions are classified to years based on the year of the first forecast, the latest forecast revision we were able to compute was for October 1997.

revisions should be more pronounced for low book-to-market firms than high book-to-market firms in compliance with the view that investors' expectations are too optimistic for growth firms. We sort firms based on book-to-market and size characteristics and form quintile portfolios. The sorting procedure was conducted annually at the end of the fiscal year preceding the analysts' forecasts. We then compare the median values of the analysts' forecast errors and revisions for the lowest and highest quintile portfolios. For robustness, the analysis is repeated using alternative deflators and on an annual basis as well.

B. Forecast Errors

Table I reports median values of analysts' forecast errors for book-to-market sorted quintile firm portfolios over the 1976 to 1997 period. Median values are reported for the entire sample as well as across exchanges. Consistent with previous studies (O'Brien (1988), Lys and Sohn (1990), Mendenhall (1991), Abarbanell and Bernard (1992), and Lim (2001)), the evidence shows that analysts' median forecast errors are positive for all quintile portfolios, implying that, on average, analysts are optimistic about future earnings for all stocks. However, stocks assigned in different book-to-market quintile portfolios have distinctly different forecast errors, as is evidenced from the highly significant Kruskal–Wallis χ^2 statistics. The portfolio with the highest book-to-market valuation (value) stocks exhibits the largest forecast error, while the portfolio with the lowest book-to-market valuation (growth) stocks displays the smallest forecast error. This is consistent with the view that investors are more optimistic about value than growth stocks. The same pattern is prevalent even when firms are classified based on their exchange listings.[11] The smaller (larger) forecast errors in earnings expectations for growth (value) stocks are inconsistent with the predictions of the extrapolation hypothesis that postulates that investors' expectations are more optimistic (pessimistic) about growth (value) stocks.

In sharp contrast with the extrapolation hypothesis, the evidence in Table I suggests that analysts tend to overestimate the future earnings of value rather than the future earnings of growth stocks. Our results are also in agreement with Klein's (1990) findings that show analysts' annual earnings forecasts are too optimistic for firms with large prior stock price declines (value stocks) and stock price underreaction, not the overreaction documented by De Bondt and Thaler (1985, 1987, 1990).[12]

While the return advantage of value strategies has been shown (LSV (1994)) to persist even after adjusting for size, the superior return on such strategies is argued by FF to be driven by the size factor as well. The FF argument implies that higher returns from value investing are likely to be associated more

[11] It should be noted that the "Other" exchanges represent regional U.S. stock exchanges and Canadian exchanges whose stocks are included in COMPUSTAT. This subsample is considerably smaller than the samples of stocks traded in the NYSE, AMEX, or Nasdaq exchanges.

[12] Furthermore, the documented difference in forecast errors between value and growth stocks is consistent with the "post earnings announcement drift" in stock prices (Bernard (1992)).

Table I

Medians of Forecast Errors for Book-to-Market Sorted Portfolios

This table reports median values of analysts' forecast errors (*FE*) for the book-to-market quintiles portfolios for the pooled sample of all stocks in the NYSE, AMEX, Nasdaq, OTC, and regional exchanges for the years 1976 to 1997. The forecast error is defined as the difference between the median forecast of fiscal year N earnings per share made eight months before the FYE month t ($F_{t-8}(A_N)$) and the actual earnings per share (A_N) deflated by the stock price at the beginning of the fiscal year retrieved from the I/B/E/S database, that is, $FE_{t-8}(A_N) = [F_{t-8}(A_N) - A_N]/P_{t-11}$. Book-to-market ratios are computed as the book value of common equity divided by the market value of common equity. The sorting procedure was conducted annually at the end of the fiscal year preceding the analysts' forecasts.

Book-to-Market			All		NYSE		AMEX		Nasdaq		Other	
Median	n		Median	n	Median	n	Median	n	Median	n	Median	n
0.2148	8,898	Low	0.0026	8,898	0.0011	4,356	0.0125	425	0.0052	4,010	0.0297	107
0.3994	8,913	1	0.0051	8,913	0.0028	4,985	0.0102	460	0.0089	3,365	0.0253	103
0.5777	8,910	2	0.0056	8,910	0.0037	5,517	0.0134	435	0.0094	2,844	0.0312	114
0.7657	8,913	3	0.0054	8,913	0.0037	5,621	0.0151	349	0.0080	2,820	0.0242	123
1.1828	8,902	High	0.0118	8,902	0.0102	4,982	0.0257	437	0.0113	3,303	0.0551	180
0.5904	44,536		0.0052	44,536	0.0032	25,461	0.0139	2,106	0.0079	16,342	0.0306	627
Kruskal–Wallis χ^2			176.56		159.69		5.46		35.93		4.47	
[Probability $> \chi^2$]			[0.0000]		[0.0000]		[0.0200]		[0.0000]		[0.0340]	

with small than large capitalization stocks. Therefore, in accordance with the extrapolation model, investors should consistently overestimate (underestimate) the future growth in earnings of large (small) stocks. If investors overestimate the future prospects of large firms, they are expected to make greater systematic errors in forecasting their future earnings relative to small firms.

To test whether investors systematically misperceive the future performance of large firms more in comparison to small firms, we examine the median values of analysts' forecast errors for size (market capitalization) sorted quintile firm portfolios. The results, reported in Table II, indicate that small size firms have higher median forecast error than big size firms. In contrast to the predictions of the extrapolation hypothesis, the pattern of forecast errors is inversely related to size. This implies that investors do not make larger systematic forecasting errors in predicting future earnings for large firms. It is interesting to note that this pattern of results is remarkably similar across stock exchanges. Consistent with our previous results, this evidence suggests that analysts do not systematically overestimate (underestimate) the future earnings of big (small) firms.

Given these results, we also explore how the median values of analysts' forecast errors vary with both size and book-to-market. We form 25 size and book-to-market portfolios. Each portfolio consists of stocks assigned annually to a different combination of book-to-market and size quintiles. In Table III we present the results for the size and book-to market quintiles for the 25 combination portfolios using the full sample. Consistent with our previous results, Table III provides strong evidence of larger forecast errors for small and high book-to-market (value) stocks. The median forecast error for the smallest capitalization and highest book-to-market portfolio is 0.0233 while it is only 0.0005 for the counterpart size and book-to-market portfolio. Contrary to the predictions of the extrapolation hypothesis, these findings reinforce the view that investors are less optimistic about the future performance of large and growth firms than small and value firms.

Table IV reports median difference tests between analysts' forecast errors for the two extreme quintile portfolios sorted on the basis of book-to-market (Panel A), size (Panel B), and the combination of size and book-to-market (Panel C). The results show that almost all median differences are significant at conventional levels. This evidence suggests that the superior return performance of out-of-favor stocks cannot be explained by investors' excessive pessimism about future earnings.[13]

[13] It should be noted that in addition to the forecast errors, we also examined revisions of the fiscal year N earnings forecasts issued in the month $t - 20$ (i.e., these are two-year-ahead forecasts). These revisions were computed based on the forecast issued in month $t - 8$, that is, they are defined as: ${}_{t-20}FR_{t-8}(A_N) = [(F_{t-8}(A_N) - F_{t-20}(A_N))/P_{t-23}]$. The evidence (not reported here, but available upon request) indicates that ${}_{t-20}FR_{t-8}(A_N)$ is more negative for value stocks than for growth stocks, indicating that investors were more optimistic about value stocks than about growth stocks even before stocks were classified into value/growth categories. This is consistent with the findings of Lee and Swaminathan (2000) who showed that value stocks tend to be negative momentum stocks (i.e., past earnings revisions have been more negative for value stocks).

Table II

Medians of Forecast Errors for Size-Sorted Portfolios

This table reports median values of analysts' forecast errors (*FE*) for the size quintiles portfolios for the pooled sample of all stocks in the NYSE, AMEX, Nasdaq, OTC, and regional exchanges for the years 1976 to 1997. The forecast error is defined as the difference between the median forecast of fiscal year N earnings per share made eight months before the FYE month t ($F_{t-8}(A_N)$) and the actual earnings per share (A_N) deflated by the stock price at the beginning of the fiscal year retrieved from the I/B/E/S database, that is, $FE_{t-8}(A_t) = [F_{t-8}(A_N) - A_N]/P_{t-11}$. Size is defined as the market value of common equity. The sorting procedure was conducted annually at the end of the fiscal year preceding the analysts' forecasts.

Size			All		NYSE		AMEX		Nasdaq		Other	
Median	n		Median	n	Median	n	Median	n	Median	n	Median	n
40.55	8,898	Small	0.0210	8,898	0.0196	1,986	0.0249	820	0.0202	5,866	0.0635	226
108.24	8,913	1	0.0095	8,913	0.0087	3,738	0.0130	539	0.0090	4,468	0.0520	168
244.25	8,910	2	0.0053	8,910	0.0054	4,948	0.0115	362	0.0045	3,478	0.0370	122
627.31	8,913	3	0.0026	8,913	0.0027	6,694	0.0073	249	0.0017	1,901	0.0381	69
2,682.61	8,902	Big	0.0013	8,902	0.0013	8,095	0.0067	136	0.0008	629	0.0063	42
243.73	44,536		0.0052	44,536	0.0032	25,461	0.0139	2,106	0.0079	16,342	0.0306	627
Kruskal–Wallis χ^2			1,042.74		213.80		13.97		181.58		5.72	
[Probability $> \chi^2$]			[0.0000]		[0.0000]		[0.0002]		[0.0000]		[0.0167]	

Table III

Medians of Forecast Errors for Book-to-Market- and Size-Sorted Portfolios

This table reports the medians of analysts' forecast errors (*FE*) for portfolios of stock belonging to different combinations of Book-to-market and size quintiles for the pooled sample of all stocks in the NYSE, AMEX, Nasdaq, and regional exchanges for the years 1976 to 1997. The forecast error is defined as the difference between the median forecast of fiscal year N earnings per share made eight months before the FYE month t ($F_{t-8}(A_N)$) and the actual earnings (A_N) deflated by the stock price at the beginning of the fiscal year retrieved from the I/B/E/S database, that is, $FE_{t-8}(A_N) = [F_{t-8}(A_N) - A_N]/P_{t-11}$. Book-to-market ratios are computed as the book value of common equity divided by the market value of common equity. Size is defined as the market value of common equity. The sorting procedure was conducted annually at the end of the fiscal year preceding the analysts' forecasts.

Book-to-Market Portfolio (Median)		Size Portfolio (Median)												Kruskal–Wallis χ^2 [Prob. > χ^2]
		Small (40.55)		1 (108.24)		2 (244.25)		3 (627.31)		Big (2682.61)		Total		
		Median	n	Median	n	Median	n	Median	n	Median	n	Median	n	
Low	(0.2148)	0.0198	1,040	0.0082	1,626	0.0040	2,034	0.0011	2,086	0.0005	2,111	0.0026	8,898	449.84 [0.0000]
1	(0.3994)	0.0178	1,443	0.0096	1,858	0.0062	1,799	0.0032	1,777	0.0013	2,036	0.0051	8,913	394.74 [0.0000]
2	(0.5777)	0.0200	1,597	0.0098	1,754	0.0056	1,825	0.0037	1,810	0.0021	1,924	0.0056	8,910	223.53 [0.0000]
3	(0.7657)	0.0237	1,693	0.0084	1,679	0.0046	1,861	0.0024	1,905	0.0018	1,775	0.0054	8,913	260.42 [0.0000]
High	(1.1828)	0.0233	3,125	0.0132	1,996	0.0077	1,391	0.0068	1,335	0.0056	1,055	0.0118	8,902	99.49 [0.0000]
	Total	0.0210	8,898	0.0095	8,913	0.0053	8,910	0.0026	8,913	0.0013	8,902	0.0052	44,536	1,042.74 [0.0000]
Kruskal–Wallis χ^2 [Probability > χ^2]		9.82 [0.0435]		11.77 [0.0191]		17.08 [0.0019]		45.26 [0.0000]		50.25 [0.0000]		176.56 [0.0000]		

Table IV
Median Difference Tests

This table reports differences in medians and the corresponding median difference tests for analysts' forecast errors (*FE*). The comparison is conducted for the following sets: highest and lowest book-to-market sorted quintile stock portfolios (Panel A); smallest size and biggest size sorted quintile stock portfolios (Panel B); highest book-to-market/smallest size and lowest book-to-market/biggest size quintiles stock portfolios (Panel C). The analysts' forecast errors are for portfolios of stocks traded in the NYSE, AMEX, Nasdaq, and regional exchanges for the years 1976 to 1997. The forecast error is defined as the difference between the median forecast of fiscal year N earnings per share made eight months before the FYE month t ($F_{t-8}(A_N)$) and the actual earnings (A_N) deflated by the stock price at the beginning of the fiscal year retrieved from the I/B/E/S database, that is, $FE(A_N) = [F_{t-8}(A_N) - A_N]/P_{t-11}$. Book-to-market ratios are computed as the book value of common equity divided by the market value of common equity. Size is defined as the market value of common equity. The sorting procedure was conducted annually at the end of the fiscal year preceding the analysts' forecasts.

Panel A: Median Difference Tests between the Highest and Lowest Book-to-Market-Sorted Quintile Stock Portfolios

	Difference in Median = (Highest Book-to-Market) − (Lowest Book-to-Market)				
Variable	All	NYSE	AMEX	Nasdaq	Other
Forecast error (*FE*)	0.0092***	0.0091***	0.0132**	0.0061***	0.0254**
(Median *z*-statistic)	(13.29)	(12.64)	(2.33)	(5.99)	(2.11)

Panel B: Median Difference Tests between the Smallest and Biggest Size-Sorted Quintile Stock Portfolios

	Difference in Median = (Smallest Size) − (Biggest Size)				
Variable	All	NYSE	AMEX	Nasdaq	Other
Forecast error (*FE*)	0.0197***	0.0183***	0.0182***	0.0194***	0.0357**
(Median *z*-statistic)	(32.29)	(14.62)	(3.73)	(13.47)	(2.39)

Panel C: Median Difference Tests between the Portfolios Consisting of Stocks in the Highest Book-to-Market/Smallest Size and the Lowest Book-to-Market/Biggest Size Quintiles Portfolios

	Forecast Error (*FE*)
Difference in FE	0.0228***
(Median *z*-statistic)	(17.61)

** and *** Significance at the 5 percent and 1 percent levels, respectively.

We have also examined longer term (two and three years ahead) forecasts issued at $t - 8$ in addition to the one-year-ahead forecasts presented in the first four tables. The evidence based on the longer-horizon forecasts (not reported here) is consistent with the results presented thus far.[14]

[14] These results are available from the authors upon request.

C. Median Difference Results Using Alternative Deflators for Forecast Errors: Robustness Tests

While the analysts' forecast errors and forecast revisions reject the view that investors systematically overestimate (underestimate) the future performance of glamour (value) stocks, it can be argued that this conclusion is induced by the choice of the stock price as scaling variable. This section seeks to provide evidence that our results are not sensitive to the scaling variable used in the analysis. To examine the scaling-of-variables issue, we standardized forecasts errors using alternative deflators and reproduced the tests reported in the previous tables. The deflators used are: sales, book value of total assets, absolute value of EPS, and absolute value of the median forecast. In addition, we estimated raw (undeflated) forecast errors and revisions for portfolios of all stocks traded in the NYSE, AMEX, Nasdaq, and regional exchanges. A summary of these results is presented in Table V.

Table V reports median difference tests between analysts' forecast errors, standardized by alternative deflators, for the two extreme quintile portfolios sorted on the basis of book-to-market (Panel A), size (Panel B), and the combination of size and book-to-market (Panel C). The evidence indicates that all median differences are significant at conventional levels. These results mirror the price-adjusted results reported in Table IV. Contrary to the assertions of LSV (1994), these findings suggest that the superior return of out-of-favor stocks cannot be explained by investors' excessive pessimism about future earnings. In summary, the evidence in Table V suggests that our results are insensitive to the choice of the scaling variable.

D. Calendar Forecast Errors and Revisions

Because the above results can be influenced by investors' excessive pessimism (optimism) of value (glamour) stocks concentrated in a single year, the evidence based on the entire 1976 to 1997 period may be misleading. Similarly, investor perception of risk is likely to be market-wide rather than specific to a particular firm and may cause performance to be correlated in calendar time. Therefore, as a check of robustness, we conduct median difference tests on an annual basis over the 1976 to 1997 period. These tests compare the median values of the forecast errors for the extreme book-to-market- and size-sorted portfolios. We also perform a similar comparison for the extreme combination portfolios sorted on the basis of both book-to-market and size. These results are listed in Table VI. The median analysts' forecast errors for the highest book-to-market quintile portfolio are significantly higher than the lowest book-to-market quintile portfolio in 15 out of the 22 years. This evidence is consistent with our previous findings, and suggests that these results are not sensitive to a specific year.

The median analysts' forecast errors for the smallest portfolio are significantly higher than the largest portfolio in 20 out of the 22 years. The median difference results for extreme size- and book-to-market-sorted quintile portfolios provide additional evidence that corroborates the findings re-

Table V

Robustness Tests: Median Difference Tests Using Different Deflators for Forecast Errors

This table reports differences in medians and the corresponding median difference tests for analysts' forecast errors (*FE*). The comparison is conducted for the following sets: highest and lowest book-to-market-sorted quintile stock portfolios (Panel A); smallest size and biggest size-sorted quintile stock portfolios (Panel B); highest book-to-market/smallest size and the lowest book-to-market/biggest size quintile stock portfolios (Panel C). The analysts' forecast errors and forecast revisions are for portfolios of stocks traded in the NYSE, AMEX, Nasdaq, and regional exchanges for the years 1976 to 1997. Book-to-market ratios are computed as the book value of common equity divided by the market value of common equity. Size is defined as the market value of common equity. The sorting procedure was conducted annually at the end of the fiscal year preceding the analysts' forecasts. The forecast error is deflated by different deflators, *D*. The forecast error is defined as the difference between the median estimate eight months before the FYE and the actual earnings divided by the deflator (*D*), that is, $FE_{t-8}(A_N) = [F_{t-8}(A_N) - A_N]/[D]$. We provide median difference test results for the following deflators: sales, book value of total assets, absolute value of actual EPS, absolute value of median forecast, and one (which constitutes the case for no deflating), that is, the deflators, *D*, are measured as $\ln(\text{Sales})_{t-12}$, $\ln(\text{Total Assets})_{t-12}$, $|A_N|$, $|F_{t-8}(A_N)|$, and one, respectively.

Variable	Deflator, *D*, is equal to				
	Sales	Total Assets	|actual EPS|	|median forecast|	1 (undeflated)
Panel A: Median Difference Tests between the Highest and Lowest Book-to-Market-Sorted Quintile Stock Portfolios					
Forecast error (*FE*)	0.0137***	0.0119***	0.0823***	0.0684***	0.0710***
(Median *z*-statistic)	(7.11)	(7.53)	(8.88)	(8.89)	(9.72)
Panel B: Median Difference Tests between the Smallest and Biggest Size-Sorted Quintile Stock Portfolios					
Forecast error (*FE*)	0.0280***	0.0277***	0.2330***	0.1829***	0.0900***
(Median *z*-statistic)	(26.48)	(26.54)	(27.36)	(29.12)	(18.95)
Panel C: Median Difference Tests between the Portfolios Consisting of Stocks in the Highest Book-to-Market/Smallest Size and the Lowest Book-to-Market/Biggest Size Quintiles Portfolios					
Forecast error (*FE*)	0.0269***	0.0244***	0.2274***	0.1846***	0.1000***
(Median *z*-statistic)	(14.16)	(14.14)	(14.80)	(15.28)	(12.57)

*** Significance at the 1 percent level.

ported before. The median analysts' forecast errors for the smallest size and highest book-to-market quintile portfolio are significantly higher than the largest size and lowest book-to-market quintile portfolio in 18 out of the 22 years. Overall, the results in Table VI are in line with the previous evidence. We find no evidence to support the behavioral finance theory that posits that investors extrapolate recent trends too much or weight recent information too heavily.

Table VI

Median Difference Tests of Forecast Errors for Firms Traded in All Exchanges by Year

This table reports medians of analysts' forecast errors (*FE*) for the extreme quintile portfolios of stocks sorted by book-to-market (BM), size, and both book-to-market and size. The extreme portfolios were created after sorting the pooled sample of all stocks in the NYSE, AMEX, Nasdaq, and regional exchanges. The forecast error is defined as the difference between the median forecast of fiscal year N earnings per share made eight months before the FYE month t ($F_{t-8}(A_N)$) and the actual earnings per share (A_N) deflated by the stock price at the beginning of the fiscal year retrieved from the I/B/E/S database, that is, $FE_{t-8}(A_t) = [F_{t-8}(A_N) - A_N]/P_{t-11}$. Book-to-market ratios are computed as the book value of common equity divided by the market value of common equity. Size is defined as the market value of common equity. The sorting procedure was conducted annually at the end of the fiscal year preceding the analysts' forecasts.

	Median *FE* of Extreme Book-to-Market Quintile Portfolios					Median *FE* of Extreme Size Quintile Portfolios					Median *FE* of Extreme Book-to-Market and Size Quintile Portfolios				
	Observations		Median Values			Observations		Median Values			Observations		Median Values		
Year	High BM Firms	Low BM Firms	High BM Firms	Low BM Firms	Diff. in Median z-statistic	Small Size Firms	Big Size Firms	Small Size Firms	Big Size Firms	Diff. in Median z-statistic	Small Size and High BM Firms	Big Size and Low BM Firms	Small Size and High BM Firms	Big Size and Low BM Firms	Diff. in Median z-statistic
1976	108	108	0.0052	0.0000	0.81	108	108	−0.0016	0.0000	−0.22	42	37	−0.0042	0.0000	−0.23
1977	131	131	0.0046	0.0000	0.62	131	131	0.0097	0.0037	0.97	50	44	0.0007	0.0006	0.19
1978	163	164	−0.0008	−0.0018	0.51	163	164	0.0066	−0.0020	2.30**	54	33	0.0132	−0.0041	1.47
1979	234	234	0.0018	0.0000	0.66	234	234	0.0199	−0.0031	4.48***	86	54	0.0232	−0.0025	1.64*
1980	255	255	0.0214	0.0009	4.55***	255	255	0.0277	0.0000	4.63***	97	55	0.0507	−0.0033	3.86***
1981	277	277	0.0206	0.0055	1.72*	277	277	0.0310	0.0045	4.57***	107	76	0.0467	0.0014	3.18***
1982	269	269	0.0581	0.0151	6.47***	269	269	0.0476	0.0201	4.65***	106	60	0.0772	0.0112	4.13***
1983	320	320	0.0151	0.0021	3.68***	320	320	0.0212	0.0035	3.85***	102	58	0.0392	0.0021	2.52**
1984	375	375	0.0106	0.0068	0.65	375	375	0.0327	0.0043	7.37***	98	53	0.0402	0.0029	3.84***
1985	388	389	0.0338	0.0098	4.79***	388	389	0.0441	0.0081	9.64***	108	62	0.0574	0.0062	5.23***
1986	389	390	0.0265	0.0066	5.85***	389	390	0.0303	0.0033	9.55***	117	69	0.0488	0.0000	5.85***
1987	401	401	0.0219	0.0023	5.72***	401	401	0.0255	0.0002	8.19***	113	80	0.0341	−0.0000	5.09***
1988	407	407	0.0168	0.0022	3.93***	407	407	0.0316	−0.0018	9.60***	123	112	0.0475	−0.0010	5.30***
1989	422	422	0.0184	0.0054	3.79***	422	422	0.0259	0.0030	7.21***	128	95	0.0408	0.0012	4.50***
1990	440	441	0.0472	0.0047	9.27***	440	441	0.0359	0.0047	9.49***	145	120	0.0728	0.0012	7.45***
1991	421	421	0.0300	0.0028	5.35***	421	421	0.0287	0.0040	7.03***	140	112	0.0445	0.0009	5.44***
1992	486	486	0.0137	0.0019	3.10***	486	486	0.0186	0.0016	7.67***	179	127	0.0332	0.0005	5.62***
1993	553	553	0.0125	0.0025	3.40***	553	553	0.0176	0.0011	9.43***	205	146	0.0267	0.0014	5.10***
1994	637	637	0.0064	0.0009	2.99***	637	637	0.0154	−0.0007	10.74***	256	164	0.0124	−0.0002	4.56***
1995	691	691	0.0036	0.0003	1.95**	691	691	0.0116	0.0000	8.54***	260	165	0.0094	0.0000	3.76***
1996	744	744	0.0015	0.0009	0.99	744	744	0.0097	0.0004	8.39***	305	187	0.0050	−0.0003	2.66***
1997	787	787	0.0013	0.0006	0.96	787	787	0.0229	0.0101	6.89***	303	200	0.0039	0.0002	1.50

*, **, and *** Significance at the 10 percent, 5 percent, and 1 percent levels, respectively.

E. Additional Tests Using Future Forecast Errors and Revisions Based on Earnings Estimates Issued Closer to the Actual EPS Announcement

Thus far the evidence shows that analysts' expectations based on forecasts issued eight months prior to FYE are more optimistically biased for value than growth stocks. This is interpreted as a contradiction to the extrapolation hypothesis. To examine whether this result is not sensitive to the choice of the forecast horizon, we conduct additional tests using future forecasts, that is, forecasts made after the initial forecast issued in month $t - 8$, as well as additional future forecast revisions closer to the time of the actual earnings announcement. This test is also expected to shed light on the LSV (1994) argument that the value/glamour return anomaly is "consistent with the view that superior post formation returns on value stocks are explained by upward revisions in expectations about the relative growth rates of value versus glamour stocks" (p. 1564). Specifically, we investigate whether our results obtained from the initial forecast issued shortly after the portfolio formation date (i.e., at $t - 8$) are retained or reversed when we use subsequent forecasts issued at dates closer to the time of the actual earnings announcement. Conceivably, initial optimistic forecasts for value stocks could become pessimistic as we near the actual EPS release date because the market becomes more aware of the first three quarterly earnings performance. Such a reversal in market expectations would be in line with the positive earnings surprise for value stocks, reported by LLSV (1997). However, if the pattern observed for forecasts issued at $t - 8$ persists for subsequent forecasts as we approach the annual earnings announcement date, then that would provide further evidence against the errors-in-expectations hypothesis.

We examine forecasts issued two months prior to FYE ($t - 2$), and during the FYE month ($t - 0$). The timing of these forecasts is chosen so that at the time they are issued, the market is aware of the first three quarters' performance. We compute the forecast errors from the difference between the median of the consensus estimates issued m months prior to FYE and the actual earnings for fiscal year N, $FE_{t-m}(A_N)$. The corresponding forecast revisions are formed as the difference between median consensus forecast issued m months prior to FYE and the median consensus initial forecast issued at $t - 8$, ${}_{t-8}FR_{t-m}(A_N)$. We also investigate the forecast error and the forecast revision using the very last forecast issued prior to the actual earnings announcement date. These are labeled as $FE_{last}(A_N)$ and ${}_{t-8}FR_{last}(A_N)$, respectively.

Table VII includes median values of forecast errors from estimates issued initially (at $t - 8$), and at the above mentioned subsequent time periods for different quintile portfolios of stocks classified based on book-to-market (Panel A), size (Panel B), and combinations thereof (Panel C). The results in Table VII show that optimistic forecasts issued shortly after portfolio formation ($t - 8$) are subsequently downgraded as the annual earnings announcement date approaches, indicating that the length of the forecast horizon is an important determinant of the magnitude of the forecast bias. This

result is consistent with the evidence in Clement (1999) and Conroy, Fukuda, and Harris (1997). More interestingly, this reduction in optimism varies across growth and value stocks. The median values for the forecast errors of value stocks declined from 0.0118 (at $t - 8$) to 0.0034 (at $t - 2$), and to 0.0011 (at $t - 0$). The corresponding medians for the forecast errors of growth stocks are 0.0026, 0.0007, and 0.0000, respectively, indicating a sharper decline in optimism for value stocks than for growth stocks. However, analysts' forecasts have remained more optimistic for value than growth stocks as evidenced by the significant Wilcoxon rank sum z-statistics for the medians difference test. Notably, the median values of forecast errors from the last analysts' estimates issued shortly before the actual earnings announcement date are zero across all book-to-market groups, indicating that the market, on the average, correctly anticipates earnings just before they are announced. This is consistent with rational expectations in the case of a very short forecast horizon.[15]

Similar patterns of results are observed for size-sorted portfolios, as shown in Panel B. Small firms exhibit the sharpest dissipation in optimism. However, median forecast errors of small stocks are significantly higher than those of large stocks across all periods leading up to the actual earnings announcement. The analysis based on portfolios from a two-way classification on book-to-market and size (Panel C) reveals a pattern consistent with our previous results. Decreases in forecast errors are more pronounced for small and value than large and glamour stocks as the forecast horizon shortens. These stocks also exhibit significantly higher levels of optimistic bias relative to large and growth stocks. Overall, the evidence in Table VII is consistent with our previous results and in contrast with the prediction of the errors-in-expectations hypothesis.

Table VIII reports the median values of revisions made to the initial forecast issued at $t - 8$, based on subsequent forecasts issued at $t - 2$, $t - 0$, and just prior to the earnings announcement (last forecast). These results are consistent with the evidence reported in Table VII. Forecast revisions are negative across the board indicating that the initial optimistic forecasts are revised downward with more information being released as we approach the actual earnings announcement date. In contrast to the prediction of the errors-in-expectations hypothesis, the downward forecast revisions are significantly larger in magnitude for value than growth stocks. In addition, the magnitude of downward revisions is significantly larger for small than large stocks. In summary, Tables VII and VIII provide evidence against the prediction of the extrapolation hypothesis and show that our previous results are not sensitive to the choice of the forecast horizon. The results reported in

[15] This result is inconsistent with the evidence of LLSV (1997). The seemingly puzzling phenomenon of higher earnings surprises for value stocks reported by LLSV coupled with our evidence of equally unbiased forecasts across value and growth stocks is likely to be attributed to the asymmetric response of glamour stocks to negative earnings news as reported in Skinner and Sloan (2001).

Table VII

Forecast Errors at Different Periods Prior to the Actual Earnings Announcement

This table reports the medians of analysts' forecast errors for portfolios of stock belonging to different book-to-market (BM) and size quintiles as well as combinations thereof for the pooled sample of all stocks in the NYSE, AMEX, Nasdaq, and regional exchanges for the years 1976 to 1997. The forecast errors are defined as the difference between the median forecast for fiscal year N earnings made m months before the FYE month, t, and the actual fiscal year N earnings deflated by the stock price at the beginning of the fiscal year retrieved from the I/B/E/S database, that is, $FE_{t-m}(A_N) = [F_{t-m}(A_N) - A_N]/P_{t-11}$. We examine forecast errors from estimates made eight, two, and zero months prior to FYE, as well as the last forecast prior to the actual earnings announcement.

Panel A: Book-to-Market Quintile Portfolios

Book-to-Market	$FE_{t-8}(A_N)$ [N = 44,536]	$FE_{t-2}(A_N)$ [N = 45,414]	$FE_{t-0}(A_N)$ [N = 45,462]	$FE_{last}(A_N)$ [N = 45,970]
Low	0.0026	0.0007	0.0000	0.0000
1	0.0051	0.0015	0.0000	0.0000
2	0.0056	0.0017	0.0000	0.0000
3	0.0054	0.0015	0.0000	0.0000
High	0.0118	0.0034	0.0011	0.0000
High − Low	0.0092	0.0027	0.0011	0.0000
[Wilcoxon rank sum z]	[13.37***]	[6.94***]	[2.52**]	[0.38]

Panel B: Size Quintile Portfolios

Size	$FE_{t-8}(A_N)$ [N = 44,536]	$FE_{t-2}(A_N)$ [N = 45,414]	$FE_{t-0}(A_N)$ [N = 45,454]	$FE_{last}(A_N)$ [N = 45,970]
Small	0.0210	0.0076	0.0029	0.0015
1	0.0095	0.0030	0.0009	0.0000
2	0.0053	0.0014	0.0000	0.0000
3	0.0026	0.0005	0.0000	0.0000
Big	0.0013	0.0001	0.0000	0.0000
Small − Big	0.0097	0.0075	0.0029	0.0015
[Wilcoxon rank sum z]	[32.29***]	[26.28***]	[19.49***]	[15.17***]

Panel C: Book-to-Market- and Size-Sorted Portfolios

Book-to-Market	Size	$FE_{t-8}(A_N)$ [N = 44,536]	$FE_{t-2}(A_N)$ [N = 45,414]	$FE_{t-0}(A_N)$ [N = 45,454]	$FE_{last}(A_N)$ [N = 45,970]
Low	Small	0.0198	0.0077	0.0040	0.0023
	1	0.0082	0.0030	0.0011	0.0000
	2	0.0040	0.0011	0.0000	0.0000
	3	0.0011	0.0000	0.0000	0.0000
	Big	0.0005	0.0000	0.0000	0.0000
1	Small	0.0178	0.0073	0.0025	0.0013
	1	0.0097	0.0030	0.0007	0.0000
	2	0.0062	0.0017	0.0004	0.0000
	3	0.0032	0.0008	0.0000	0.0000
	Big	0.0013	0.0001	0.0000	0.0000

Table VII—*Continued*

Panel C: Book-to-Market- and Size-Sorted Portfolios (Continued)

Book-to-Market	Size	$FE_{t-8}(A_N)$ [N = 44,536]	$FE_{t-2}(A_N)$ [N = 45,414]	$FE_{t-0}(A_N)$ [N = 45,454]	$FE_{last}(A_N)$ [N = 45,970]
2	Small	0.0200	0.0066	0.0023	0.0011
	1	0.0098	0.0026	0.0000	0.0000
	2	0.0056	0.0016	0.0000	0.0000
	3	0.0037	0.0011	0.0000	0.0000
	Big	0.0021	0.0007	0.0000	0.0000
3	Small	0.0237	0.0079	0.0028	0.0013
	1	0.0084	0.0029	0.0011	0.0000
	2	0.0046	0.0009	0.0000	0.0000
	3	0.0024	0.0000	0.0000	0.0000
	Big	0.0018	0.0000	0.0000	0.0000
High	Small	0.0233	0.0082	0.0031	0.0015
	1	0.0132	0.0044	0.0014	0.0007
	2	0.0077	0.0023	0.0004	0.0000
	3	0.0068	0.0005	0.0000	−0.0006
	Big	0.0056	0.0012	0.0000	−0.0002
(High and small) − (low and big)		0.0229	0.0082	0.0031	0.0015
[Wilcoxon rank sum z]		[17.74***]	[13.05***]	[8.62***]	[6.49***]

** and *** Significance at the 5 percent and 1 percent levels, respectively.

Tables VII and VIII are robust to the use of different deflators other than the beginning of the year stock price. Also, the results are retained if undeflated *FE*s and *FR*s are used.

III. Conclusions

The intent of this paper is to investigate whether investors systematically underestimate (overestimate) the future performance of value (growth/glamour) stocks, using analysts' ex ante earnings forecasts as a proxy for the market's expectation of future earnings. We use earnings forecasts, issued shortly after stocks were classified by investors into value/growth portfolios, on an annual basis. The analysis of these forecasts is designed to capture initial bias in expectations about the future performance of stocks. This amounts to a direct test of the extrapolation hypothesis that posits that investors make systematic errors in predicting future growth in earnings of out-of-favor stocks.

We analyze analysts' forecast errors and revisions using security analysts' earnings forecasts reported to I/B/E/S over the 1976 to 1997 period. We sort stocks on the basis of book-to-market and size characteristics every year and form quintile portfolios. We then compare the median values of forecast errors and forecast revisions for the lowest and highest quintile portfolios. The analysis is repeated on an annual basis as well.

Table VIII

Revisions of the $t - 8$ Forecast at Different Periods Prior to Actual Earnings Announcement

This table reports the medians of analysts' forecast revisions for portfolios of stock belonging to different book-to-market (BM) and size quintiles as well as combinations thereof for the pooled sample of all stocks in the NYSE, AMEX, Nasdaq, and regional exchanges for the years 1976 to 1997. The forecast revisions are defined as the difference between the median forecast made eight months before the FYE month (t) and the median forecast for the earnings of the same year (N) made m months prior to FYE deflated by the stock price at the beginning of the fiscal year retrieved from the I/B/E/S database, that is, ${}_{t-8}FR_{t-m}(A_N) = [F_{t-m}(A_N) - F_{t-8}(A_N)]/P_{t-11}$. We examine revisions of the $t - 8$ forecast using forecasts made two and zero months prior to FYE, as well as the last forecast prior to the actual earnings announcement.

Panel A: Book-to-Market Quintile Portfolios

Book-to-Market	${}_{t-8}FR_{t-2}(A_N)$ [N = 44,098]	${}_{t-8}FR_{t-0}(A_N)$ [N = 44,072]	${}_{t-8}FR_{last}(A_N)$ [N = 44,526]
Low	−0.0008	−0.0017	−0.0020
1	−0.0019	−0.0033	−0.0040
2	−0.0022	−0.0037	−0.0044
3	−0.0021	−0.0035	−0.0042
High	−0.0048	−0.00777	−0.0085
High − low	−0.0040	−0.0060	−0.0065
[Wilcoxon rank sum z]	[−13.72***]	[−13.74***]	[−13.69***]

Panel B: Size Quintile Portfolios

Size	${}_{t-8}FR_{t-2}(A_N)$ [N = 44,098]	${}_{t-8}FR_{t-0}(A_N)$ [N = 44,072]	${}_{t-8}FR_{last}(A_N)$ [N = 44,526]
Small	−0.0070	−0.0119	−0.0138
1	−0.0035	−0.0058	−0.0068
2	−0.0019	−0.0032	−0.0039
3	−0.0013	−0.0021	−0.0024
Big	−0.0005	−0.0011	−0.0012
Small − big	−0.0065	−0.0108	−0.0126
[Wilcoxon rank sum z]	[−24.23***]	[−27.71***]	[−30.40***]

Panel C: Book-to-Market- and Size-Sorted Portfolios

Book-to-Market	Size	${}_{t-8}FR_{t-2}(A_N)$ [N = 45,421]	${}_{t-8}FR_{t-0}(A_N)$ [N = 44,072]	${}_{t-8}FR_{last}(A_N)$ [N = 44,526]
Low	Small	−0.0058	−0.0099	−0.0115
	1	−0.0028	−0.0048	−0.0060
	2	−0.0010	−0.0019	−0.0027
	3	0.0000	−0.0008	−0.0010
	Big	0.0000	0.0000	−0.0004
1	Small	−0.0061	−0.0112	−0.0125
	1	−0.0038	−0.0065	−0.0072
	2	−0.0024	−0.0040	−0.0048
	3	−0.0013	−0.0021	−0.0023
	Big	−0.0005	−0.0010	−0.0012

Table VIII—*Continued*

Panel C: Book-to-Market- and Size-Sorted Portfolios (Continued)

Book-to-Market	Size	${}_{t-8}FR_{t-2}(A_N)$ [N = 45,421]	${}_{t-8}FR_{t-0}(A_N)$ [N = 44,072]	${}_{t-8}FR_{last}(A_N)$ [N = 44,526]
2	Small	−0.0072	−0.0120	−0.0145
	1	−0.0034	−0.0062	−0.0070
	2	−0.0021	−0.0037	−0.0042
	3	−0.0018	−0.0023	−0.0028
	Big	−0.0007	−0.0016	−0.0019
3	Small	−0.0067	−0.0125	−0.0151
	1	−0.0031	−0.0050	−0.0057
	2	−0.0017	−0.0032	−0.0036
	3	−0.0016	−0.0024	−0.0027
	Big	−0.0006	−0.0012	−0.0012
High	Small	−0.0080	−0.0130	−0.0144
	1	−0.0049	−0.0067	−0.0087
	2	−0.0035	−0.0052	−0.0067
	3	−0.0037	−0.0053	−0.0055
	Big	−0.0030	−0.0043	−0.0043
(High and small) − (low and big)		−0.0080	−0.0130	−0.0140
[Wilcoxon rank sum z]		[−14.84***]	[−16.22***]	[−16.66***]

*** Significance at the 1 percent level.

High book-to-market stocks display higher forecast errors and larger downward forecast revisions than low book-to-market stocks, indicating that investors' expectations are not excessively optimistic about growth stocks. In addition, we find that investors are not more optimistic about growth than value stocks even in subsequent periods after portfolio formation as we near the actual EPS release date. Downward forecast revisions made in the months following the initial forecast issued shortly after stocks are classified into value and growth categories are significantly larger for high book-to-market than low book-to-market stocks, consistent with the view that investors are significantly more optimistic about value than growth stocks. Our evidence suggests that the superior return performance of out-of-favor stocks cannot be explained by investors' excessive pessimism about future growth in earnings. These results provide evidence that is inconsistent with the behavioral finance studies (LSV (1994), La Porta (1996), among others) which argue that investors are too optimistic about stocks that have had good performance in the recent past and too pessimistic about stocks that had performed poorly.

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