Analysts' preference for growth investing and vulnerability to market-wide sentiment

Kotaro Miwa[a] and Kazuhiro Ueda[b]

Abstract

Existing studies have argued that market-wide sentiment primarily affects individual noise traders. Contrary to this perspective, in this study, we find that financial analysts, who are sophisticated market participants, may be more vulnerable to sentiment than their peers. We predict that, due to analysts' preference for growth investing, their fair value estimations for growth stocks would be more upwardly biased by bullish market-wide sentiment than those of their market peers. We also predict that this biased estimation for growth stocks would lower the investment value of their recommendations. As is consistent with our predictions, we find that, especially during periods of bullish sentiment, analysts consider growth stocks to be undervalued, even though these stocks are in fact overvalued. In addition, recommended stocks experience poor relative return performance, especially after periods of bullish sentiment, and that this poor performance is not observed after controlling for growth factors.

Keywords: investor sentiment; financial analyst; stock recommendation; growth investing.

1. Introduction

Several behavioral finance studies have argued that correlated investor sentiment drives stock prices away from their fundamental values (De Long et al. 1990; Shleifer and Vishny 1997). As is consistent with this argument, studies have shown that time-varying market-wide sentiment affects cross-sectional stock returns (Lemmon and Portniaguina, 2006; Baker and Wurgler 2006) Such effects of sentiment are usually attributed to individual noise traders, since market-wide sentiment is considered to primarily affect these traders (De Long et al. 1990; Shleifer and Summers 1990).

On the other hand, Brown and Cliff (2004) cast doubt on this view. They argue that the sentiment effect not only influences individual noise traders, but professional investors as well. In line with their argument, several studies have shown the effects of sentiment on professional financial analysts, who are typically regarded as sophisticated market participants. Bagnoli et al. (2009) have reported that some analysts are sensitive to market-wide sentiment, and that the recommendations of these analysts are less

profitable than those of their peers. Walther and Willis (2013) show that bullish market-wide investor sentiment induces optimistic earnings forecasts. However, these studies only demonstrate that financial analysts are, at some level, influenced by market-wide sentiment. As such, they neither support nor go against the conventional wisdom that market-wide sentiment primarily affects individual noise traders rather than other more sophisticated market participants.

In this study, we provide counter-evidence to this conventional wisdom, i.e. we show that financial analysts, who are regarded as sophisticated market participants, could be more vulnerable to sentiment than others.

As a reason for analysts' vulnerability to sentiment, we focus on their excessive preference for growth investing which is reported by Jegadeesh et al. (2004).

The valuation of a firm's growth component is highly sensitive to investor beliefs about discount rates. Excessively low estimated discount rates lead investors to overvalue a firm's growth components. In addition, investor sentiment may reflect investor beliefs about discount rates that are not supported by prevailing economic and financial fundamentals (Lemmon and Portniaguina 2006; Baker and Wurgler 2006). Given that analysts' discount rate estimations

commove with those of investors, analysts' preferences for growth investing could make their fair value estimates more sensitive to sentiment. More specifically, due to these preferences, analysts' fair value estimates for growth stocks may be more upwardly biased by bullish market-wide sentiment than those of other market participants. As such, analysts tend to consider growth stocks to be undervalued, especially during periods of bullish market-wide sentiment, even if growth stocks are actually overvalued during those periods. In addition, we argue that this behavior is not at all aligned with the investment performance of recommendations, meaning that analysts' biased evaluations during periods of bullish sentiment could negatively impact the investment performance of recommended stocks.

In this study, we engage in empirical analyses that test these possibilities. We use the Baker and Wurgler (BW) market-wide investor sentiment index and the Michigan consumer sentiment index to explore market-wide sentiment effects.

2. Hypothesis development

We begin our study by examining whether analysts' preference for growth investing results in their excessive sensitivity to market-wide sentiment. We predict that analysts' fair value estimates for growth firms may be more upwardly biased by bullish sentiment than those of other market participants. In other words, analysts could consider growth stocks to be undervalued during periods of bullish sentiment, even though those stocks are likely to be overvalued during such periods. To test whether this is the case, we decompose our prediction into two parts. The first is that growth stocks will be more overvalued during periods of higher sentiment. The second is that analysts consider the growth stocks involved to be attractive (undervalued) during those periods.

Overvalued stocks are highly likely to underperform in periods subsequent to those of higher sentiment. Thus, our first prediction can be described by the following hypothesis:

Hypothesis 1: The relative return performance of growth stocks is lower when beginning-of-period sentiment is higher.

Financial analysts' favorable (buy) recommendations for a stock indicate that they consider the stock to be undervalued. Thus, our second prediction can be described with the following hypothesis:

Hypothesis 2: Growth stocks receive more favorable stock recommendations during periods of higher investor sentiment.

This biased estimation could have a negative impact on the performance of recommended stocks. In particular, analysts' excessive optimism about growth stocks during periods of bullish sentiment could result in the poor relative performance of their recommended stocks during such periods. To test this prediction, we divide it into two parts. The first is that recommended stocks experience lower subsequent stock returns after periods of higher sentiment, while the second is that their poor relative performance during periods of bullish sentiment can be attributed to the excessive optimism about growth stocks during such periods. Our hypothesis regarding the above-mentioned first prediction is as follows:

Hypothesis 3: Stocks with favorable recommendations experience lower returns following periods of higher investor sentiment.

If analysts' aggressive views on growth stocks during periods of bullish sentiment account for their poor performance after such periods, the poor performance should not be observed after controlling for growth factors. Thus, our hypothesis regarding the second prediction can be described as follows:

Hypothesis 4: After controlling for growth factors, there is no significant negative association between beginning-of-period sentiment and the relative return performance of recommended stocks.

3. Sample and descriptive statistics

3.1 Growth Characteristics

In this study, we consider two direct growth indicators and three indirect growth measures、 as follows:

Direct growth indicators: We include growth rates in sales per share over one year (we denote the sales growth rates for stock i at the end of month t as $SG_{i,t}$). In addition, we include $LTG_{i,t}$, which represents the mean

long-term earnings growth forecast for firm *i* at the end of month *t*. Stocks with high $SG_{i,t}$ or $LTG_{i,t}$ are regarded as growth stocks..

Indirect growth indicators: We first consider $TURN_{i,t}$, which is the average daily volume turnover for a stock in the preceding six months. High turnover stocks have growth properties (Lee and Swaminathan 2000) In addition, we consider two variables concerning valuation: inversed rank of earnings-to-price ratio ($IEP_{i,t}$) and that of book-to-price ratio ($IBP_{i,t}$). We regard stocks with high $IEP_{i,t}$ or high $IBP_{i,t}$ as growth stocks.

Jegadeesh et al. (2004) show that analysts' preference for growth investing based on these indicators is not aligned with the investment value of their stock recommendations.

3.2 Sample

We obtain our sample of analysts' recommendations from the unadjusted Institutional Brokers Estimate System (IBES) summary file. We collect data on all common stocks and excluded the shares of non-US firms. We also exclude stocks that had not received more than three analysts' recommendations and those priced below $5 (penny stocks), to ensure that our empirical findings are not driven by low-coverage stocks and low-priced stocks. We utilize monthly data from the end of 1993 until the end of 2010. As mentioned earlier, for the main part of our analysis, we measure investor sentiment by using the monthly time series of the BW investor sentiment index and the Michigan consumer sentiment index. To ensure that both indices are free of macroeconomic influences, following the approach taken by Baker and Wurgler, we conduct our investigation by using an orthogonal version of the indices.

4. Relative returns of growth stocks

4.1 Methodology

In this section, we test hypothesis 1. We first examine the association between beginning-of-period market-wide investor sentiment and the return performance of growth stocks relative to that for non-growth stocks.

We find that unadjusted raw growth indicators tend to contain large outliers. To reduce the influence of these outliers on our results, following the approach taken by Hess

et al. (2013), we calculate the decile ranks of firms' growth characteristics for each month's end. The decile ranks of $SG_{i,t}$, $LTG_{i,t}$, $TURN_{i,t}$, $IEP_{i,t}$, and $IBP_{i,t}$ are denoted as $dSG_{i,t}$, $dLTG_{i,t}$, $dTURN_{i,t}$, $dEP_{i,t}$, and $dBP_{i,t}$, respectively. We code decile ranks so that stocks with more growth characteristics receive higher scores. The bottom 10% of observations are assigned a rank of "1," while the top 10% are given a rank of "10."

Then, following a study by Honcoop and Lehnert (2007), we perform the following two-step regression analysis.

(1) For the end of each month, we regress subsequent one-month returns (stock returns for the following month) on one of the decile ranks of the growth characteristics ($dSG_{i,t}$, $dLTG_{i,t}$, $dTURN_{i,t}$, $dBP_{i,t}$, or $dEP_{i,t}$) as follows:

$$R_{i,t+1} = \alpha_{As,t} + \beta_{As,t} Indicator_{i,s,t} + \varepsilon_{Ai,s,t} \quad (1)$$

$R_{i,t+1}$ denotes one-month returns for stock *i* over the month *t+1*. $Indicator_{i,s,t}$ (s=1,2,…,5) denotes $dSG_{i,t}$, $dLTG_{i,t}$, $dTURN_{i,t}$, $dBP_{i,t}$, and $dEP_{i,t}$, respectively. $\beta_{As,t}$ can be regarded as a proxy for the relative return performance of growth stocks.

(2) We examine whether the time-varying regression coefficient $\beta_{As,t}$ is associated with market-wide investor sentiment by running the following regression:

$$\beta_{As,t} = c_{Ak,s} + d_{Ak,s} SENTIMENT_{k,t} + e_{Ak,s,t} \quad (2)$$

$SENTIMENT_{k,t}$ (*k*=1, 2) denote the BW sentiment index and the Michigan consumer sentiment index, respectively. The coefficient $d_{Ak,s}$ is estimated with the WLS method, where the reciprocal of the square of the standard error of the coefficient $\beta_{As,t}$ in the regression model (1) is used as a weight. A negative coefficient in equation (2) (d_A<0) indicates that growth stocks experience lower stock returns following periods of higher sentiment.

4.2 Results

The regression results are shown in Table 1. The results indicate the possibility that growth stocks experience lower stock returns when the beginning-of-period sentiment index is higher. The coefficient $\beta_{As,t}$ is significantly negatively associated with the BW index and the Michigan index, regardless of which growth characteristic is used. These results strongly support Hypothesis 1, which posits

that the relative return performance of growth stocks is negatively associated with investor sentiment. In other words, our findings support the inference that growth stocks are more overvalued when sentiment is higher.

Table 1 Performance of growth stocks

	Coefecient			
	B&W Idx		Michigan Idx	
SG	-0.0025	(3.76**)	-0.00006	(1.93**)
LTG	-0.0041	(3.79**)	-0.00015	(2.73**)
TURN	-0.0033	(3.28**)	-0.00010	(1.88**)
BP	-0.0022	(2.94**)	-0.00006	(1.75**)
EP	-0.0040	(4.8**)	-0.00010	(2.44**)

Note: Weighted least squares regression results for Eq. (2) are shown in this table. The "BW Idx" column presents the coefficients of the index constructed by BW. The "Michigan Idx" column shows the coefficients of the Michigan consumer sentiment index. The "SG," "LTG," "TURN," "BP," and "EP" rows show the regression results when dSG, dLTG, dTURN, dBP, and dEP are used as growth indicators, respectively. The figures in parentheses are simple t-statistics. ** indicates one-sided statistical significance at 5%.

5. Aggressive views on growth stocks
5.1. Evaluation of analysts' preferences

To test whether growth stocks receive more favorable recommendations during periods of higher sentiment, following the studies of Jegadeesh et al. (2004) and Hess et al. (2013), we evaluate analysts' bullish views on growth stocks, in terms of how much they consider growth stocks to be undervalued, based on the Spearman rank correlation coefficient between consensus (mean) stock recommendations [3] and stocks' growth characteristics at the end of each month. The high correlation coefficient implies that analysts have aggressive views on these growth stocks.

In addition, we evaluate analysts' bullish views on growth stocks based on the difference in growth characteristics between favorably recommended stocks and the least favorably recommended stocks. For the end of each month, we divide the stocks into quintiles, ranging from REC5 (recommended stocks) to REC1 (stocks least favorably recommended), on the basis of consensus in recommendations. We also calculate the averages of the growth characteristics' decile ranks for each

recommendation quintile. If decile ranks are higher for REC5 than for REC1, it is likely that analysts consider the growth stocks involved to be attractive (undervalued).

After evaluating analysts' aggressive views on growth stocks for the end of each month, we examine the association between market-wide investor sentiment and time-varying analysts' views on growth stocks. We run regressions of the following types:

$$Corr_{s,t} = c_{Ck,s} + d_{Ck,s}SENTIMENT_{k,t} + e_{Ck,s,t} \quad (3)$$

$$Spread_{s,t} \equiv Growth_{s,REC_{s,t}=High,t} - Growth_{s,REC_{s,t}=Low,t} \quad (4)$$
$$= c_{Dk,s} + d_{Dk,s}SENTIMENT_{k,t} + e_{Dk,s,t}$$

$Corr_{s,t}$ (s=1, 2, ... 5) denote the Spearman rank correlation coefficients between $REC_{i,t}$ and the growth characteristics ($SG_{i,t}$, $LTG_{i,t}$, $TURN_{i,t}$, $IBP_{i,t}$, or $IEP_{i,t}$, respectively). $Growth_{s,REC_{s,t}=High,t}$ (s=1, 2, … 5) denote the average values of $dSG_{i,t}$, $dLTG_{i,t}$, $dTURN_{i,t}$, $dBP_{i,t}$, and $dEP_{i,t}$, respectively, for the recommended stock group (REC5). $Growth_{s,REC_{s,t}=Low,t}$ denote the average values of the same, for the stocks least favorably recommended (REC1). $Spread_{s,t}$ denote the differences in growth characteristics between recommended stocks and the stocks least favorably recommended. The positive coefficients of $SENTIMENT$ (d_C >0 and d_D >0) imply that analysts consider growth stocks to be undervalued during periods of bullish sentiment.

5.2 Results

The results of our regression are shown in Table 2. They reveal that both *Corr* and *Spread* are significantly positively associated with the Michigan consumer sentiment index, regardless of the growth indicator used. In addition, both *Corr* for *TURN*, *IBP*, and *IEP* and *Spread* for *IBP* and *IEP* are significantly positively associated with the BW index. On the other hand, the results do not in any way support the negative association of *Corr* and *Spread* with the proxies of investor sentiment, as all of the coefficients are positive. These findings support Hypothesis 2, which posits that growth stocks receive more favorable recommendations during periods of higher investor sentiment.

---

[3] We code each individual recommendation so that recommended stocks receive higher scores (5=strong buy, 3=hold, 1=strong sell).

Table 2 Analysts' view on growth stocks

(a) Spearman rank correlation

	Coeffecient			
	B&W Idx		Michigan Idx	
SG	0.0197	(1.12)	0.00308	(2.83**)
LTG	0.0441	(0.62)	0.00438	(3.74**)
TURN	0.0741	(1.6)	0.00789	(6.02**)
BP	0.0508	(2.29**)	0.00350	(3.93**)
EP	0.0933	(2.16**)	0.00498	(3.46**)

(b)Spreads in growth characteristics

	Coeffecient			
	B&W Idx		Michigan Idx	
SG	0.1615	(1.23)	0.02530	(2.92**)
LTG	0.3221	(0.97)	0.02612	(3.29**)
TURN	0.5591	(1.92**)	0.05965	(5.25**)
BP	0.3850	(2.21**)	0.02557	(3.51**)
EP	0.6532	(2.19**)	0.03570	(3.2**)

Note: Ordinary least squares regression results for Eq. (3) and Eq. (4) are shown in Table 2(a) and Table 2(b), respectively. The figures in parentheses in the results for the coefficients are t-statistics based on Newey-West standard errors (lag = 12). ** indicates one-sided statistical significance at 5%.

6. Returns of recommended stocks

We examine whether the optimism on growth stocks lowers the relative return performance of recommended stocks.

6.1 Sentiment's effect on the relative returns of recommended stocks

First, we test Hypothesis 3, which posits that recommended stocks experience lower stock returns following a period of higher investor sentiment. To do so, we perform a two-step regression analysis. At the end of each month, we regress subsequent one-month returns on consensus recommendations as follows:

$$R_{i,t+1} = \alpha_{Et} + \beta_{Et}REC_{i,t} + \varepsilon_{Ei,t} \qquad (5)$$

Here, $REC_{i,t}$ denotes consensus recommendations for stock i at the end of month t. The coefficient β_{Et} can be regarded as a proxy for the relative performance of recommended stocks. [4] Then, we examine whether the time-varying regression coefficient β_{Et} is associated with the market-wide investor sentiment index by

---

[4] Since analysts rarely issue sell recommendations (Jegadeesh et al., 2004), the contribution of the relative return performance of stocks with sell recommendations to the slope coefficient is quite limited. Thus, we regard the slope coefficient as a strong proxy for the relative return performance of recommended stocks.

running the following regression:

$$\beta_{Et} = c_{Ek} + d_{Ek}SENTIMENT_{k,t} + e_{Ek,t} \qquad (6)$$

We estimate the coefficient d_{Ek} through the WLS method, using the reciprocal of the square of the standard error of the coefficient β_{Et} in regression model (5) as a weight.

The results, shown in Table 3 in the "Un-adjusted" column, reveal that the coefficient β_{Et} is significantly negatively associated with the two sentiment indices. These results support Hypothesis 3.

Table 3 Performance of recommended stocks

	Un-adjusted	Glamour characteristics adjusted
B&W Idx	-0.0078	0.0022
	(2.54**)	(1.21)
Michigan Idx	-0.00031	0.00004
	(2.04**)	(0.47)

Note: The "Un-adjusted," and "Growth characteristics adjusted," columns show the regression results for Eq. (6) and Eq. (8), respectively. The figures in parentheses are simple t-statistics. ** indicates one-sided statistical significance at 5%.

6.2 Mediation by an optimism for growth stocks

In this section, we test Hypothesis 4, which posits that there is no significant negative association between investor sentiment and the relative return performance, after controlling for growth factors.

With this in mind, we regress subsequent stock returns on consensus recommendations and growth characteristics (*SG, LTG TURN, BP*, and *EP*), as follows:

$$R_{i,t+1} = \alpha_{Ft} + \beta_{F0t}REC_{i,t} + \beta_{F1t}dSG_{i,t} + \beta_{F2t}dLTG_{i,t} \\ + \beta_{F3t}dTURN_{i,t} + \beta_{F4t}dBP_{i,t} + \beta_{F5t}dEP_{i,t} + \varepsilon_{Fi,t} \qquad (7)$$

The coefficient of REC (β_{F0t}) in model (7) is regarded as a proxy for the relative return performance of recommended stocks, after controlling for growth factors. Then, we regress the coefficient on the sentiment index as follows:

$$\beta_{F0t} = c_{Fk} + d_{Fk}SENTIMENT_{k,t} + e_{Fk,t} \quad (8)$$

The coefficient d_{Fk} is estimated with the WLS method, where the reciprocal of the square of the standard error of the

coefficient $\beta_{\mathrm{F}0_t}$ in the regression model (7) is used as a weight.

The regression results, shown in Table 3 in the "Growth characteristics adjusted" column, reveal that the coefficient d_{Fk} is not significantly negative and can even be positive, indicating that the coefficient of REC ($\beta_{\mathrm{F}0_t}$) is no longer associated with the beginning–of–period sentiment index. This result supports Hypothesis 4. It thus supports the argument that the poor relative performance of recommended stocks after periods of bullish sentiment could be induced by analysts' biased views on growth stocks during those periods.

6. Conclusions

Previous studies have argued that market-wide sentiment primarily affects individual noise traders. Contrary to this view, in this study, we show that financial analysts, who are sophisticated market participants, could be more vulnerable to sentiment than other market participants. We focus on analysts' preference for growth investing as the reason for their vulnerability to sentiment, and predict that, due to this preference, their fair value estimates for growth stocks would be more upwardly biased by bullish market-wide sentiment than those of other market peers. As a result, financial analysts may consider growth stocks to be undervalued, especially during periods of bullish sentiment. In addition, we predict that this excessive influence of market-wide sentiment would not be aligned with the investment value of their stock recommendations.

In accordance with our predictions, we find that growth stocks receive more favorable stock recommendations after periods of higher investor sentiment, although those stocks are more overvalued during such periods. Furthermore, our results reveal that the relative return performance of recommended stocks is lower after market-wide investor sentiment is higher. This negative association is no longer observed when we control for growth characteristics [5]. These results support the

inference that the poor relative performance of recommended stocks during periods of bullish sentiment is induced by analysts' biased views about growth stocks.

Our analyses raise the possibility that sentiment could primarily affect professional financial analysts, who are considered more sophisticated market participants than individual noise traders. Thus, our findings suggest that not only noise-trader-driven sentiment effects exist for asset prices, but also financial-analyst-driven sentiment effects.

Compared with individual noise traders, financial analysts are well-experienced, and their experience might reduce the influence of sentiment on their stock recommendations. However, unlike individual noise traders, their activity is heavily affected by their companies' economic incentives, which could result in their excessive preference for growth investing. Therefore, their companies' economic incentives may make analysts more vulnerable to market-wide sentiment, by inducing a strong preference for growth investing.

References

Bagnoli, M., Clement, M., Crawley, M, & Watts, S. (2009). The profitability of analysts' stock recommendations: what role does investor sentiment play? Working paper.

Baker, M. & Wurgler, J. (2006). Investor sentiment and the cross-section of stock returns. Journal of Finance, 61, 1645–1680.

Baker, M. & Wurgler, J. (2007). Investor sentiment in the stock market. Journal of Economic Perspectives, 21, 129–151.

Brown, W. & Cliff, T. (2004). Investor sentiment and the near-term stock market. Journal of Empirical Finance, 11, 1–27.

De Long, B., Shleifer, A., Summers, L., & Waldmann, R. (1990). Noise trader risk in financial markets. Journal of Political Economy, 98, 703–738.

Hess, D., Kretzmann, C., Maaz, C., & Pucker, O. (2013). Sell-side recommendations during booms and busts. Working paper.

Honcoop, D. & Lehnert T. (2007). Can

_____

[5] Additional tests show that continues to be observed even when we control for momentum and

difficult-to-value characteristics.

sentiment be predicted to have cross-sectional effects? The Journal of Financial Forecasting, 1, 55–62.

Jegadeesh, N., Kim, J., Krische, S., & Lee, C. (2004). Analyzing the analysts: when do recommendations add value? Journal of Finance, 59, 1083–1124.

Lee, C. & Swaminathan, B. (2000). Price momentum and trading volume. Journal of Finance, 55, 2017–2070.

Lemmon, M., & Portniaguina, E. (2006). Consumer confidence and asset prices: some empirical evidence. Review of Financial Studies, 19, 1499–1539.

Shleifer, A., & Summers, L. (1990). The noise trader approach to finance. Journal of Economic Perspectives, 4, 19–33.

Shleifer, A., & Vishny, R. (1997). The limits of arbitrage. Journal of Finance, 52, 35-55.

Walther, B. & Willis, R. (2013). Do investor expectations affect sell-side analysts' forecast bias and forecast accuracy? Review of Accounting Studies, 18, 207–227.