“Sentiment, growth and value investments: evidence from Korean Stock Listings”

AUTHORS	Jinho Byun https://orcid.org/0000-0002-5424-3433 Hyung-Suk Choi Paul Moon Sub Choi https://orcid.org/0000-0003-3338-4728

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Jinho Byun (Korea), Hyung-Suk Choi (Korea), Paul Moon Sub Choi (Korea)

Sentiment, growth and value investments: evidence from Korean Stock Listings

Abstract

In this paper, the authors relate the investment performances of value and growth stocks to investor sentiment. The authors' research objectives are twofold: first, the authors verify positive long-run abnormal returns of value investing under pessimistic investor sentiment. Second, the authors experiment a horse race between the fundamental and behavioral views of growth stock returns. Using a thirteen-year sample of Korea Exchange (KRX)-listed firms, the authors find a positive relation between the value premium and stock market sentiment: while growth investing can be relatively dominant in a pessimistic cycle under depressed investor sentiment, value strategy can outperform in an optimistic period. As a result, the authors confirm the usefulness of style investing adapted to investor psychology.

Keywords: value investment, growth investment, investor sentiment, behavioral finance, anomalies, long-run performance.
JEL Classification: G02, G11, G14, G15.

Introduction

Investments in growth and value stocks have long been contemplated among academics and practitioners. The relative premium of "underpriced" value stocks against "overpriced" growth stocks is a convensional wisdom to portfolio managers and stock analysts and a well-documented market phenomenon in the literature (Chang and Kim, 2003; Fama and French, 1992, 1993, 1996; Kim and Lee, 2006; Lakonishok et al., 1994; Arshanapli et al., 1998). The reasoning of this anomaly of value stocks is two fold. First, Fama and French (1993) identify the risk factors of value premium by testing via market beta, firm size, and book-to-market ratio: risky value stocks, on average, earn high returns. Second, on another hand, Lakonishok et al. (1994) attribute the relative premium of value stocks to the expectational errors of non-rational investors in inefficient financial markets.

The literature has found strong evidence of value premium in the Korean stock markets since 2000 by comparing the investment performances on value and growth stocks based on a variety of valuation multiples. Our study is motivated by these theoretical and empirical implications on value and growth investments which, however, are rarely related to investor sentiment in the stock market.

The theoretical perspectives on the abnormal returns of growth stocks take fundamental and psychological views. First, the fundamental approach argues that shifts in investor sentiment affect the discount rate for cash flows that differentiates the relative performances of value and growth stocks. Given that payoffs to growth companies are expected in later future than their value stock issuers, a change in the discount rate poses a bigger risk on the former (Cornell, 1999; Dechow et al., 2004; Lettau and Wachter, 2007). In other words, growth stocks, on average, have a longer duration with a higher negative sensitivity with respect to the market discount rate than their value cohort. Growth investing is, thus, expected to outperform in times of pessimistic investor sentiment when the projected discount rate rises.

Second, the sentiment-based view claims that irrational investor sentiment can cause fluctuations in security prices irrelevant of the forecast patterns of cash flows. These behavioral biases are conspicuous in small, growth, low institution owned, and "penny" stocks that are costly to be arbitraged out (Baker and Wurgler, 2007; Byun and Kim, 2010). This makes another case for investing in sentiment-driven growth stocks under negative market emotion.

In this research, we provide empirical answers to the following research question: Will growth (value) investing earn positive long-run premiums in times of pessimistic (optimistic) investor sentiment? First, investor sentiment is shown to be positively associated with long-run value premiums after controlling for their contemporaneous market risks. Second, identification of possible sources of value premium among fundamental and behavioral (sentiment-based expectational errors) factors by constructing firm size decile portfolios reveals a weak channel between investor sentiment and value premium.

In Section 1, we review the literature on value premium. The design, data, and variables of our research are discussed in Section 2. Section 3 presents the results of our empirical analyses.

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Jinho Byun, Ph.D., Professor of Finance, Ewha School of Business, Ewha Womans University, Korea. e-mail: jbyun@ewha.ac.kr.
Hyung-Suk Choi, Corresponding author, Ph.D., Associate Professor of Finance, Ewha School of Business, Ewha Womans University, Korea. e-mail: hyungsuk.choi@ewha.ac.kr.
Paul Moon Sub Choi, Ph.D., Assistant Professor of Finance, Ewha School of Business, Ewha Womans University, Korea. e-mail: paul.choi @ewha.ac.kr.
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Finally, we conclude with the implications of this study and future research agenda of our own and readers' in Final Section.

1. Literature review

Value and growth stocks have long attracted academic attention in the theoretical and empirical asset pricing literatures (Fama and French, 1992, 1993, 1996; Lakonishok et al., 1994). Fama and French (1993) argue that value stocks earn risk premiums due to their financial distresses and relatively high default probabilities. According to the fundamental view, the cash flows of growth and value stocks face differing risk profiles. In comparison, Lakonishok et al. (1994) claim that value premium owes to the expectational errors of investors. Long-run performances of value stocks stem from the risk premium of mis-pricing by behaviorally biased instestors in inefficient financial markets. If this anomaly of value stocks is due to a higher risk, growth stocks – at the other extreme in terms of valuation multiples – must be of a lower risk and return. However, time-eclectic investments in growth stocks outperform strategies in value stocks in practice.

In other words, value and growth stocks are not of perfect symmetry. Value stocks are not as pro-cyclical to the market and economy as growth stocks according to the studies of Lakonishok et al. (1994) on the long-run returns of value and growth stock portfolios. Campbell and Vuolteenaho (2004) suggest growth stocks provide a risker and more speculative investment opportunity than value stocks. Barberis and Shleifer (2003) and Barberis et al. (2005) claim that value stocks are neither recognized in term of common characteristics nor as much of preference to the investors as growth stocks. Also, Kim and Lee (2006) report the existence of the value premium in the Korean stock market.

2. Design of research

2.1. Theories. There are two perspectives of pricing errors in the behavioral finance literature: Hong and Stein (2003) argue pricing errors are due to the investor's under or overreacting psychological behavior with respect to past returns or fundamental values. On another hand, Baker and Wurgler (2007) put investor sentiment or psychology affects on the returns of market indices and individual stocks. However, the under and overreaction models implied from individual investor-level behavioral biases (overconfidence, representative bias, conservatism, etc.) appear to have limited roles in explaining portfolio returns, market efficiency and phenomena due to incomplete data collection and statistical inferences (Fama, 1998). Measuring and applying market-level investor sentiment has, thus, attracted due academic attention. In a top-down manner, one can analyze how individual and institutional investors react to changes in investor sentiment in the stock market.

Our market time-eclectic analyses on the relative performances of growth and value investing are twofold. First, we verify positive long-run abnormal returns of value investing under pessimistic investor sentiment. This is because growth stocks are likely to take a steeper downside impact than value stocks under negative market emotion and, thus, are expected to outperform in the long run. According to the fundamentalist view, either growth or value investing prescribes a long position in stocks temporarily trading below their economic intrinsic values.

While value investing exploits mispricing of a given listing based on the fair value implied from the issuer's assets in place, growth investing from growth opportunities. As the sum of all discounted future cash flows, the price of a given stock will be affected by the shocks to the sources of future cash flows. As the aggregate risk premium rises during bear markets, growing investors' pessimism increases their expected return-implied discount rate. For the cash flows of growth stocks are anticipated later than those of value stocks, the former faces steeper discounts than the latter does under negative market emotion.

Relating growth investing to investor sentiment is also supported by the sentiment view: the emotion of irrational investors can cause fluctuations in stock prices irrelevant of expected future cash flows. Baker and Wurgler (2007) argue those firms that are high in operational uncertainty, volatility in stock price, growth potential, speculative stock trading, small in size, short in history since incorporation, low in institutional ownership, and limited in exposure to arbitrage are susceptible to investor sentiment. Growth investing under negative market emotion, thus, will perform relatively better than value investing as investor sentiment improves.

Second, we sequentially experiment a horse race between the fundamental and behavioral factors of growth stock returns. The fundamental view expects a bigger impact of changes in the discount rate due to uncertainties on the long-run cash flows of growth stocks, while the behavioral perspective relates the expectational errors of stock prices to investor sentiment. If growth stock returns are better explained by the sentiment account, so will small and value stock returns under pessimistic investor sentiment. Should the fundamental reasoning dominate in data, growth investing will not outperform controlling for risks.

2.2. Variables and data. *2.2.1. Value and growth stocks.* In our study, we use the following valuation ratios: book value to market value (BE/ME), net

income to price (NI/Price), operating cash flow to price (OCF/Price), and sales to price (Sales/Price). These have been widely used in the literature (Chang and Kim, 2003; Kim and Lee, 2006).

2.2.2. Investor sentiment index. We construct an index of investor sentiment analogous to Baker and Wurgler (2007) who used the estimates of closed-end fund discounts, stock trading turnover, number of initial public offerings (IPOs), first-day abnormal returns of IPO'ed listings, number of shares outstanding relative to the total number of shares and outstanding bonds, and dividend premiums. As these were, however, firm-year observations and tending to the availability of data from the Korean stock markets, our index extends the works of Kim and Byun (2010). For example, due to relative scarcity, the number of IPOs and first-day abnormal returns of IPO'ed listings are not suitable in our empirical exercise. Dividend policy is not meaningful in valuation of Korean listed companies and closed-end fund discounts are not consistently reported in the Korean stock markets. Further, this research uses firm-month observations rather than firm-year.

Specifically, we identified the following variables to construct an index of investor sentiment: (1) buying and selling imbalance of individual investors (BSI); (2) market return of the Korea Stock Price Index (KOSPI); (3) stock-investing customer expectation index (CEI); (4) stock-investing customers' deposits (CD); (5) turnover ratio of listed stocks (TURN); and (6) capital raising ratio of equity shares (SR). These factors are used to extract the principal components and to linearly construct our investor sentiment index (Sentiment) following Baker and Wurgler (2007).

2.2.3. Data, portfolio construction, and preliminary results. We source financial and accounting databases 2000 through 2014 and sample 1,551 non-financial companies listed on the main board (650) and the KOSDAQ (901) of the Korea Exchange (KRX). Our choice of the sample period is less prone to a bias given the extraordinary economic volatility during the Asian Financial Crisis in the late 1990's. Our value and growth stock portfolios with monthly returns are constructed and annually rebalanced in the beginning of every April through the sample period whose overlapping performances are measured over quarterly, semiannual and annual holding periods. In other words, we estimate the buy-and-hold returns of investor sentiment and valuation multiple-specific decile portfolios through the mentioned periods from every April. Shown in Table 1, with respect to various valuation measures value investing paid off better than the growth alternative on the KRX through the sample period. To further highlight, all multiples other than the net income-to-price ratio (NI/Price) evidence statistically and economically meaningful relative dominance of value stocks.

Table 1. Decile estimation of valuation premium

	Growth									Value	Value-minus-growth
Decile	1	2	3	4	5	6	7	8	9	10	
BE/ME	0.45	0.42	0.98	0.64	1.00	1.46	1.26	1.51	2.15	2.24	1.79***
OCF/price	0.67	0.59	0.74	0.73	0.73	1.02	0.56	1.37	1.53	1.84	1.17*
NI/price	0.88	0.48	0.39	0.75	0.27	1.04	1.55	1.51	1.48	1.82	0.94
Sales/price	0.18	0.53	0.65	1.61	0.89	1.52	1.48	1.79	1.43	2.21	2.02***

Notes: significant at $p < 0.01$ (***), $p < 0.05$ (**), $p < 0.1$ (*).

3. Main results

In order to verify a possible association between the value premium and investor sentiment in the Korean stock market, the valuation ratios are estimated on a firm-month basis by quintile portfolios sorted per investor sentiment index in an ascending order of optimism ranging 1 (most pessimistic) through 5 (most optimistic), and are averaged over 3, 6, and 12 months. The value premium estimates are then tested for their significances per Student's t-test whose results are presented in Table 2.

Table 2. Quintile estimation of value premium per sentiment

Variable	Sentiment	3 months	6 months	12 months
BE/ME	Quintile 1 (pessimistic)	1.66*** (3.39)	1.92*** (4.39)	1.54*** (6.03)
	2	2.03*** (4.85)	1.59*** (5.87)	1.57*** (7.25)
	3	1.23** (2.66)	1.22*** (4.18)	1.26*** (5.70)
	4	1.28** (2.07)	1.17*** (3.55)	1.36*** (4.69)
	Quintile 5 (optimistic)	1.23*** (3.38)	1.11*** (4.49)	1.02*** (4.24)

Table 2 (cont.). Quintile estimation of value premium per sentiment

Variable	Sentiment	3 months	6 months	12 months
OCF/price	Quintile 1 (pessimistic)	0.63 (1.09)	0.19 (0.52)	0.02 (0.07)
	2	0.01 (0.01)	0.07 (0.17)	0.31 (0.99)
	3	0.83* (1.89)	0.12 (0.34)	0.34 (1.52)
	4	0.46 (0.88)	0.81* (1.88)	0.41 (1.58)
	Quintile 5 (optimistic)	1.26*** (2.96)	1.12*** (4.03)	0.78*** (4.25)
NI/price	Quintile 1 (pessimistic)	0.94* (1.83)	0.26 (0.76)	0.14 (0.48)
	2	0.31 (0.58)	0.51 (1.49)	0.22 (0.83)
	3	1.18*** (2.78)	0.43 (1.20)	0.25 (1.08)
	4	-0.19 (-0.38)	0.63 (1.41)	0.15 (0.59)
	Quintile 5 (optimistic)	0.92* (1.82)	0.52 (1.54)	0.60*** (2.76)
Sales/price	Quintile 1 (pessimistic)	1.27** (2.41)	2.03*** (4.30)	1.59*** (6.93)
	2	2.77*** (4.97)	1.87*** (4.49)	1.79*** (6.88)
	3	1.53*** (3.20)	1.54*** (4.17)	1.58*** (6.85)
	4	1.37*** (2.74)	1.45*** (5.96)	1.91*** (6.39)
	Quintile 5 (optimistic)	1.06*** (3.44)	0.97*** (4.26)	1.10*** (5.50)

Notes: significant at $p < 0.01$ (***), $p < 0.05$ (**), $p < 0.1$ (*).

Value investing appears to have had dominated growth strategy through the sample period in the Korean stock market. Specifically, value premiums are pronounced for those portfolios constructed per book to market (BE/ME) and sales to price (Sales/price) ratios over 6 and 12 months. Other than based on the operating cash flow to price ratio (OCF/price), a high premium is expected in the coming 3 months in a value portfolio during a most pessimistic period. Overall, we find a positive association between the value premium and investment sentiment as predicted by fundamental and psychological perspectives.

Table 3. Regression of value premium onto sentiment

	BE/ME	OCF/price	NI/price	Sales/price
Intercept	1.433*** (5.05)	-0.073 (-0.25)	0.309 (0.99)	2.045*** (7.04)
Sentiment	-0.615*** (-3.07)	0.330 (1.64)	0.353 (1.60)	-0.376* (-1.84)
SMB	6.489*** (2.85)	-12.767*** (-5.57)	-4.895* (-1.96)	3.525 (1.51)
UMD	3.443 (1.38)	3.501 (1.39)	3.697 (1.35)	4.321* (1.69)
Volatility	-0.002 (-0.29)	0.024*** (3.30)	0.011 (1.39)	-0.024*** (-3.22)
No. of obs.adj. R^2	180 0.104	180 0.265	180 0.063	180 0.100

Notes: significant at $p < 0.01$ (***), $p < 0.05$ (**), $p < 0.1$ (*).

As these value premium proxies are regardless of the system risk and market factors, we further procured and estimated the "small-minus-big" size premium factor (SMB; Fama and French, 1993), the "up-minus-down" momentum premium factor (UMD; Carhart, 1997), and the standard deviation of market return (Volatility). We have not included the market premium factor (the KOSPI return minus the risk free rate) in model specification for its high correlation with the sentiment index. In Table 3, in

order to analyze the effect of investor psychology on the value premium, the aforementioned valuation ratios are sequentially regressed (ordinary least-squares method, OLS) onto the monthly-estimated investor sentiment index (Sentiment) controlled for the size (SMB), momentum (UMD), and volatility factors. Other than the operating cash flow to price (OCF/price) and net income to price (NI/price) ratios, the investor sentiment is an economically and statistically influential risk factor to determining the value premium. This provides evidence for the psychological perspective that growth stocks outperform their value cohorts as investor sentiment improves, rather than the fundamental claim that the

Table 4. Quintile regression of value premium onto sentiment per size

		BE/ME	OCF/price	NI/price	Sales/price
Quintile 1 (small)	Intercept	0.308 (0.71)	-0.522 (-1.58)	-0.723** (-1.98)	0.040 (0.12)
	Sentiment	0.373 (1.51)	0.016 (0.09)	0.142 (0.68)	0.353* (1.84)
	SMB	-22.095* (-1.87)	-24.471*** (-2.77)	-10.539 (-1.08)	-7.180 (-0.79)
	UMD	14.701 (1.05)	-8.283 (-0.78)	-10.915 (-0.93)	19.383* (1.79)
	Volatility	0.022* (1.81)	0.031*** (3.44)	0.035*** (3.48)	0.016* (1.71)
	No. of obs.adj. R^2	177 0.070	177 0.108	177 0.085	177 0.061
Quintile 2	Intercept	1.833*** (4.55)	0.069 (0.32)	0.151 (0.66)	0.754** (2.49)
	Sentiment	-0.136 (-0.60)	-0.293** (-2.40)	0.000 (-0.00)	-0.442** (-2.57)
	SMB	-29.648*** (-2.72)	-18.406*** (-3.20)	-2.320 (-0.38)	-36.681*** (-4.54)
	UMD	31.068** (2.41)	37.455*** (5.40)	45.432*** (6.13)	15.807 (1.62)
	Volatility	-0.025** (-2.28)	0.017*** (2.81)	0.009 (1.41)	0.003 (0.31)
	No. of obs.adj. R^2	177 0.169	1777 0.269	177 0.219	177 0.163
Quintile 3	Intercept	0.346 (0.90)	0.650** (2.36)	0.474* (1.70)	0.760** (2.58)
	Sentiment	-0.337 (-1.56)	0.027 (0.18)	0.008 (0.05)	-0.015 (-0.09)
	SMB	-66.762*** (-6.50)	-23.849*** (-3.23)	-21.328*** (-2.85)	-39.778*** (-5.05)
	UMD	39.745*** (3.26)	30.001*** (3.43)	-14.586 (-1.64)	29.186*** (3.07)
	Volatility	0.009 (0.89)	-0.007 (-0.89)	-0.013* (-1.71)	-0.018** (-2.20)
	No. of obs.adj. R^2	177 0.349	177 0.221	177 0.042	177 0.307
Quintile 4	Intercept	1.616*** (4.43)	0.942*** (3.34)	0.346 (0.99)	1.196*** (4.32)
	Sentiment	-0.256 (-1.23)	0.203 (1.26)	0.012 (0.06)	-0.184 (-1.17)
	SMB	-11.001 (-1.13)	6.462 (0.86)	12.817 (1.37)	-11.604 (-1.57)
	UMD	54.272*** (4.61)	44.619*** (4.90)	52.206*** (4.70)	32.306*** (3.62)
	Volatility	-0.007 (-0.66)	0.004 (0.49)	0.011 (1.19)	-0.018** (-2.32)
	No. of obs.adj. R^2	177 0.177	177 0.142	177 0.107	177 0.184
Quintile 5 (big)	Intercept	0.814*** (3.07)	-0.426 (-1.47)	-0.308 (-1.00)	1.912*** (6.65)
	Sentiment	-0.532*** (-3.56)	0.387** (2.37)	0.421** (2.44)	-0.385** (-2.308)
	SMB	13.437* (1.89)	-27.070*** (-3.49)	-1.002 (-0.12)	-2.999 (-3.39)
	UMD	23.341*** (2.76)	11.882 (1.29)	5.268 (0.54)	16.679* (1.83)

Table 4 (cont.). Quintile regression of value premium onto sentiment per size

		BE/ME	OCF/price	NI/price	Sales/price
	Volatility	0.009 (1.24)	0.033*** (4.21)	0.024*** (2.87)	-0.022*** (-2.74)
	No. of obs.adj. R^2	177 0.112	177 0.239	177 0.077	177 0.112

Notes: significant at p < 0.01 (***), p < 0.05 (**); p < 0.1 (*).

expected discount rate overshoots on growth stocks relative to value listings during pessimistic cycles.

As an extended test controlling for the firm size, we sort our sample firms into size quintile portfolios ranging 1 (smallest) through 5 (biggest). In this manner, we can contrast the fundamental and psychological standpoints and observe a varying degree of sentimental effect on the value premium in the cross-section of firm size. As small firms are relatively more influenced by investor sentiment than larger listings, the expected discount rate should be steeper on the former than the latter during pessimistic periods. Given that, if the value premium were more explained by the psychological perspective, the sentiment factor should either weaken or be negatively associated with the value premium. Table 4 conducts size quintile regressions (OLS) with the same set of models identified in Table 3. Based on the book value to market value (BE/ME) ratio, the investor sentiment (Sentiment) appears effectively explain the value premium of largest firms (quintile 5) and this lends support to the psychological argument. The sentiment factor is weak for smaller sized (quintiles 1 o 4). However, as the signs of the investor sentiment index are reversed, positive, or insignificant based on the net income to price ratio (NI/price) and for the smallest stock portfolio (quintile 1). In terms of the sales to price ratio (Sales/price), we have evidence of the sentiment factor for some size portfolios (quintiles 2 and 5). Overall, we find that investor sentiment can play an important role in determining the value premium of large-cap companies in our sample.

Conclusion

In line with the literature, this research confirms strong and conspicuous value premiums in the Korean stock market using sample firms listed on the KRX's Main Board and the KOSDAQ from 2000 until 2014. Further, we show evidence that not only value listings but also growth stocks are affected by market sentiment. There exists a positive relation between the value premium and investor sentiment and this association can be firmly established once the systemic and firm size risks are controlled for. The implication is that, while growth investing can be relatively dominant in a pessimistic cycle under depressed investor sentiment, value strategy can outperform in an optimistic period. On one hand, according the fundamental approach to the positive association between investor sentiment and the value premium, given that payoffs to growth companies are expected in later future than their value stock issuers, a change in the discount rate poses a bigger risk on the former. On another hand, the psychological perspective to the positive association explains that stock valuation can be influenced by bias-prone investor sentiment.

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