

HAVE INDIVIDUAL INVESTORS GROWN MORE SENTIMENTAL?

Francis E. Laatsch* and Christopher J. Contino*

Abstract

This paper extends Lee, Shleifer, and Thaler's [4] recent inquiry into the role of investor sentiment in closed end fund discounts and small stock returns. Data from the years 1988 through 1990 fail to confirm LST's result that discounts and small stocks are less strongly related in more recent periods. On the other hand, this study casts doubt on Lee, Shleifer, and Thaler's argument that investor sentiment is an important common element in closed end fund discounts. Discounts over the period studied herein do not exhibit the high level of correlation Lee, Shleifer, and Thaler found. In fact, several funds exhibit significant negative correlations in discounts.

INTRODUCTION

Lee, Shleifer, and Thaler [4] (herein LST) argue that investor sentiment is an important factor in both discounts on closed-end funds and in returns on small stocks. Having established that common explanations of closed-end discounts are not sufficient to explain the level of observed discounts, they argue that investor sentiment is a major factor in such discounts. They then proceed, in a portion of their study, to note that closed-end fund discounts and performance of small stocks are related. In particular, small stock returns display significant negative regression coefficients for changes in closed-end discounts in regressions of stock returns on changes in closed-end discounts and NYSE index returns. Similar regression coefficients for the largest decile of stocks for such regressions are positive and significant. Thus, small stocks appear to do well when discounts are narrowing while for large firms the opposite is true. LST divide their study into two time periods. For the later time period, the regression coefficients, for both small and large stocks, are not significant.

It can be argued that while small investors are disproportionately attracted to small stocks and closed-end funds, institutional investors avoid both, focusing their attention on larger stocks¹. LST's results support this dichotomy. Furthermore, if small investors are more susceptible to sentiment than are institutional investors, LST's regressions suggest that investor sentiment may drive both closed-end discounts and small stock returns.

LST note that the strength of their regression results have diminished in the more recent period of their study. They postulate that institutions have recently begun taking more interest in small stocks. Closed-end funds, meanwhile, remain attractive primarily to small investors. If investor sentiment is an important factor for small investors, then a sentiment-based relationship between small stocks and closed-end funds should be less evident in more recent time periods.

This study extends LST's work into the years 1988 through 1990 and discovers that, contrary to expectations, the relationship between closed-end fund discounts and small stock performance is now *stronger* than reported by LST. Furthermore, and in stark contrast to LST, correlations of the discounts of several of the funds are negative and statistically significant. This casts doubt on LST's argument that individual investor sentiment is an important *commonality* in the discounts on closed-end funds.

The persistence of discounts on closed-end funds has been of interest to researchers for some time². LST's review of three of the commonly given reasons for the discounts—agency costs, illiquidity of assets, and capital

*Bowling Green State University

gains tax liabilities—indicates they are not sufficient to explain discounts of more than a few percentage points. Thus, they propose that an "investor sentiment" factor is needed to explain the often observed discounts of 10 and 20 percent.

DATA AND METHODOLOGY

The refutable hypotheses of this study are based on the premises that uninformed investors trade on noise (i.e., without due regard for the "true" fundamental factors that determine securities' values), that individual investors are more likely than institutional investors to be uninformed, that large investors tend to avoid small stocks, thus making small stocks more likely to be influenced by investor sentiment than are large stocks, and that small, uninformed investors purchase closed-end funds, while institutions do not, making market psychology an important factor in closed-end fund discounts.

Given the above, returns on small stocks should inversely track closed-end discounts. Furthermore, assuming that investor sentiment is an important common factor in closed-end fund discounts, discounts of the various funds should be relatively highly correlated. Regressions of stock returns against discounts provides evidence on the first issue. Study of the correlations of the discounts of closed end funds addresses the second.

This study uses 156 weekly observations of discounts on sixteen closed-end diversified common stock funds as reported each Monday in the Wall Street Journal for the period from January, 1988 through December, 1990. Discounts/premiums for the two parts of the dual purpose funds in the study (Gemini II and Quest for Value) were added to create a net discount/premium for the dual purpose funds. Thus, fourteen series of discounts remain in the study (see Table 1). The returns data used in the study come from the CRSP tapes. Weekly returns are calculated as geometric average returns for each actual week (Monday through Friday). Decile size rankings are also taken from the CRSP tapes and used to create equal weighted portfolios of the stocks in each decile. The CRSP rankings are recomputed at the beginning of each calendar year; accordingly, these portfolios are rebalanced each January. The market return is proxied by the CRSP value weighted index, including dividends.

TABLE 1
Closed-End Funds Used In The Study

The Adams Express Company (ADX)	Niagara Share Corp. (NSC)
Baker, Fentress & Company (BKF)	Quest for Value (QDP)
Blue Chip Value (BCV)	Royal Value Trust (RVT)
Clements Global Group (CGG)	Source Capital (SCP)
Gemini II (GDP)	Tri-Continental Corp. (TCC)
General American Investors (GAI)	Worldwide Value (WWV)
Liberty All-Star Equity (LAE)	Zweig Fund (ZWF)

Correlations of the weekly discounts, and changes in these discounts, were computed using standard Pearson product-moment correlation. To examine the relationship between discounts and stock returns, an equally weighted index of discounts (EWD) is computed for each week (LST used a net asset value weighted index of discounts). Changes in this index of discounts are then regressed against each portfolio's returns and the market return:

Equation 1

$$R_{dt} = B_0 + B_1 (EWD_t - EWD_{t-1}) + B_2 (R_{mt}) + \epsilon_t$$

where R_{dt} indicates the return on the d th portfolio for week t , EWD_t is the equal weighted index of discounts for week t , R_{mt} is the market return for week t , and ϵ_t is the error term.

Lee, Shleifer, and Thaler [4] used monthly observations in their analyses. As only three years are used in this current study, use of monthly observations would greatly reduce the number of observations available. Nonetheless, to enhance comparability to LST, the above analyses are performed on the 36 monthly observations available to this study.

TABLE 2
Correlation Of Weekly Discounts

	ADX	BKF	BCV	CGG	GDP	GAI	LAE	NSC
ADX	1.00							
BKF	-0.48*	1.00						
BCV	-0.41*	0.39*	1.00					
CGG	-0.16*	0.24*	0.37*	1.00				
GDP	-0.46*	0.43*	0.42*	-0.09	1.00			
GAI	-0.13	0.27*	0.50*	0.20*	0.15	1.00		
LAE	-0.07	0.23*	0.45*	0.36*	0.06	0.45*	1.00	
NSC	-0.02	0.07	0.21*	-0.32*	0.32*	0.35*	0.11	1.00
QDP	-0.64*	0.51*	0.74*	0.38*	0.44*	0.40*	0.32*	0.11
RVT	-0.13	-0.02	0.06	0.16*	-0.00	0.18*	0.15	0.09
SCP	-0.02	0.24*	0.45*	0.50*	-0.12	0.39*	0.43*	0.10
TCC	0.70*	-0.44*	-0.30*	-0.08	-0.45*	0.02	-0.04	0.10
WWV	-0.48*	0.58*	0.77*	0.42*	0.57*	0.45*	0.54*	0.20*
ZWF	-0.24*	0.57*	0.57*	0.33*	0.35*	0.43*	0.42*	0.37*
EWD	-0.39*	0.56*	0.81*	0.46*	0.53*	0.60*	0.55*	0.33*

	QDP	RVT	SCP	TCC	WWV	ZWF	EWD
QDP	1.00						
RVT	0.15	1.00					
SCP	0.41*	0.12	1.00				
TCC	-0.38*	0.02	0.19*	1.00			
WWV	0.75*	0.11	0.45*	-0.39*	1.00		
ZWF	0.60*	0.10	0.53*	-0.11	0.67*	1.00	
EWD	0.83*	0.24*	0.60*	-0.18*	0.89*	0.80*	1.00

*significantly different from zero at the 5% level

RESULTS

Table 2 presents the correlations of weekly discounts of the funds. The average pairwise correlation is 0.20. Table 3 presents similar data for monthly observations. The average pairwise correlation for the monthly data is 0.16. LST reported the average pairwise correlation for monthly discounts to be 0.53. Note that Adams Express (ADX) and Tri-Continental (TCC) have significant negative correlations with the index of discounts (EWD) and a large positive pairwise correlation (0.70). In other words, the discounts of these two funds move together and appear to act rather differently from those of the remaining twelve. Perhaps this study's differences with LST are driven by these two funds. Removing Adams Express and Tri-Continental, the average pairwise correlation of the remaining twelve funds, based on weekly data, becomes 0.32; that for the monthly data rises to 0.24, still below that reported by LST.

TABLE 3
Correlation Of Monthly Discounts

	ADX	BKF	BCV	CGG	GDP	GAI	LAE	NSC
ADX	1.00							
BKF	-0.37*	1.00						
BCV	-0.40*	0.17	1.00					
CGG	0.07	-0.02	0.34*	1.00				
GDP	-0.49*	0.39*	0.40*	-0.38*	1.00			
GAI	-0.23	0.12	0.55*	-0.09	0.27	1.00		
LAE	-0.07	0.19	0.39*	0.17	0.10	0.46*	1.00	
NSC	-0.16	0.04	0.16	-0.62*	0.47*	0.47*	0.16	1.00
QDP	-0.61*	0.36*	0.69*	0.38*	0.30	0.43*	0.26	-0.09
RVT	0.01	-0.26	0.00	-0.06	0.01	0.08	0.02	0.08
SCP	0.00	-0.00	0.36*	0.39*	-0.11	0.39*	0.32	0.02
TCC	0.79*	-0.42*	-0.25	0.12	-0.58*	0.09	0.02	-0.06
WWV	-0.49*	0.34*	0.79*	0.24	0.58*	0.46*	0.51*	0.19
ZWF	-0.31	0.49*	0.59*	0.08	0.35*	0.58*	0.38*	0.37*
EWD	-0.41*	0.35*	0.79*	0.23	0.55*	0.67*	0.53*	0.31

	QDP	RVT	SCP	TCC	WWV	ZWF	EWD
QDP	1.00						
RVT	-0.07	1.00					
SCP	0.39*	0.03	1.00				
TCC	-0.37*	0.25	0.27	1.00			
WWV	0.66*	-0.05	0.41*	-0.38*	1.00		
ZWF	0.61*	-0.11	0.44*	-0.13	0.65*	1.00	
EWD	0.76*	0.13	0.54*	-0.17	0.88*	0.79*	1.00

*significantly different from zero at the 5% level

The correlations of changes in the discounts also support the idea that the relationships between discounts are substantially weaker during the 1988-1990 period than for the 1965 to 1985 period studied by LST. The average pairwise correlation for changes in weekly discounts is 0.03; that for monthly discounts is 0.02. LST report an average correlation for changes in discounts, based on monthly data, of 0.25. The authors will provide a complete table of these correlations upon request, but have omitted them for sake of brevity.

Table 4 presents the regression results for weekly data³. In the columns of Table 4 are listed the intercept coefficients (the B_0 's of equation 1) for each decile's regression, the coefficients for B_1 (changes in discounts), the coefficients for B_2 (the market return), and the adjusted R^2 's for the regressions. Under the B_1 and B_2 coefficients are reported their associated t-statistics. Note that only for the largest decile is the regression coefficient on the change in discount positive (although not statistically significantly different from zero). Of course, the adjusted R^2 increases with the size decile as does the importance of the market return in explaining the decile return. The last row reports regression results using the difference between small and large returns as the dependent variable. Changes in discounts show a significant relationship to these differences.

These regression results are broadly consistent with those reported by LST. In their study, however, the regression coefficient associated with changes in discounts, (B_1) in Equation 1, was not significant for decile 1 stocks for the second 123 month period they studied, but was significantly negative for an earlier 123 month period. LST conjecture that role of investor sentiment in small stocks may have recently diminished. This study, on the other hand, indicates that discounts and small stocks are strongly related. Have individual investors grown more sentimental?

TABLE 4
Regression Of Weekly Returns
On Changes In Discounts And Market Returns

Return On The Decile Portfolio	Intercept	(EWD _t -EWD _{t-1})	R _{mt}	Adj.R ²
1 (Smallest)	-0.0009	-0.0019 (-4.859)	0.4580 (5.820)	0.38
2	-0.0010	-0.0010 (-3.627)	0.5448 (9.559)	0.38
3	-0.0008	-0.0009 (-3.469)	0.5921 (11.439)	0.46
4	-0.0006	-0.0010 (-4.458)	0.6189 (13.226)	0.54
5	-0.0006	-0.0006 (-2.607)	0.6788 (15.412)	0.60
6	-0.0005	-0.0008 (-4.398)	0.7340 (18.741)	0.69
7	-0.0003	-0.0007 (-3.819)	0.7780 (20.428)	0.73
8	-0.0003	-0.0006 (-4.634)	0.8414 (32.645)	0.87
9	-0.0002	-0.0003 (-2.359)	0.9621 (43.267)	0.92
10 (Largest)	-0.0001	0.0001 (1.236)	1.0593 (113.777)	0.99
1 - 10 (Difference)	-0.0008	-0.0019 (-4.880)	-0.6013 (-7.450)	0.36

INTERPRETATION

The puzzle of discounts on closed-end funds remains as puzzling as ever. Lee, Shleifer, and Thaler's [4] argument that investor sentiment drives such discounts was made more plausible when they demonstrated that discounts and returns on small stocks were significantly related. However, LST also suggest that this relationship is weaker in more recent periods. This study finds this not to be the case. Over the period 1988 through 1990, small stock returns and discounts show a significant relationship. Investor sentiment, market psychology, or some other common factor, may be driving both discounts and returns on small stocks.

And yet the regression coefficients in Table 4 are significant and negative for each decile except the largest stocks. It isn't so much that small stocks and discounts are related, but that large stocks and discounts are not related. This pattern is also found in LST's results. This makes less plausible explanations of discounts and small stock returns which rely on uninformed noise traders. Decile 9 stocks are not particularly small, and have a fair amount of institutional ownership, yet their returns show significance against changes in discounts, both in this study and in LST's.

Furthermore, discounts over the period of this study are not highly correlated, compared to LST's results. Does investor sentiment affect closed-end discounts only on some funds? Why do discounts on Tri-Continental and Adams Express appear to move opposite discounts on the other funds?

Caution is advised. Ascribing too great a role for "investor sentiment" in discounts and in small stock returns is not warranted by the present evidence. Indeed, the regression results suggest that if any group of stocks is "out of

line" with discounts, it is the largest stocks, not the smaller stocks. Could it be that changes in discounts and stock returns reflect some unspecified, but nonetheless "fundamental" factor, while institutional traders move large stock prices (at the margin) in irrational ways? This study is hardly proof that this is the case. Nonetheless, advocates of the investor sentiment arguments must demonstrate more evidence that investor sentiment drives both closed-end fund discounts and small stock returns before one can accept such a claim.

ENDNOTES

1. The role of individual versus institutional investors regarding small firms is discussed in Strebel and Arbel [6], Arbel, Carvell, and Strebel [1], and Edelman and Baker [3].
2. Early work includes Boudreaux [2], Zweig [7], and Malkiel [5].
3. Results based on monthly data are not reported as the small number of observations resulted in each coefficient for the change in discounts being not significantly different from zero.

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