The Post-Offering Price Performance of Closed-End Funds

Kathleen Weiss

Kathleen Weiss is an Assistant Professor of Finance, University of Michigan, Ann Arbor.

■ The pricing of closed-end funds has intrigued investors, policymakers, and economists since the late 1920s, when these securities grew at a remarkable pace. Unlike open-end funds which continually offer new shares to the investing public, closed-end funds fix the total number of shares outstanding at the initial public offering (IPO). While investors in an open-end fund may redeem their shares directly to the mutual fund at net asset value (NAV), holders of closed-end funds buy and sell their shares in the open market. Since the share value of a closed-end fund is determined by the price in the stock market, investors have no guarantee that the shares will be worth the underlying net asset value. Researchers have been especially interested in the fact that many funds trade at a significant discount from NAV. Although several studies have examined the existence of discounts and premiums in closed-end funds, the pricing of these securities remains puzzling.[1] A recent resurgence in IPOs of closed-end funds has refocused attention on these securities. In particular, both the business press and academic researchers note anomalies in the aftermarket price performance of closed-end funds shares.[2]

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[1]See for example, Anderson [1], Anderson and Born [2], Boudreaux [4], Brauer [6], Brickley and Schallheim [7], Malkiel [15], Pratt [17], Richards et al. [18], and Thompson [21].

[2]Articles in the business press on this subject include Donlan [10], Laderman [13], and Laing [14]. Two contemporaneous studies by Peavy [16] and Anderson and Born [3] also examine the closed-end fund IPO phenomena and find results similar to those presented here.

Exhibit 1. Amount Offered By Initial Public Offerings of Closed-End Funds (in $ millions)

Type of Fund	1985	1986	1987	1985–1987
Bond Funds	$240	$1,820	$6,764	$8,824
	(1)[a]	(6)	(20)	(27)
U.S. Stock Funds	200	2,180	2,063	4,444
	(1)	(13)	(8)	(22)
Foreign Stock Funds	58	480	600	1,138
	(1)	(7)	(7)	(15)
Total	$498	$4,480	$9,427	$14,406
	(3)	(26)	(35)	(64)

[a]Number of funds.

The objective of this paper is to document the post-offering price performance and investor clientele for a sample of 64 closed-end funds that went public from 1985–1987. The three main issues to be studied are: *(i)* the daily index-adjusted return behavior over 120 trading days following the offer, *(ii)* the discount or premium to NAV from the fifth week of seasoning to the twenty-fourth week, and *(iii)* the relative participation of individual and institutional investors in purchasing closed-end fund shares at the IPO.

I.Data and Methodology

The sample consists of 64 initial public offerings of closed-end funds during 1985–1987 for which price data are available for 120 trading days following the offer. The funds are identified from two sources: *Going Public: The IPO Reporter* and N-2 registration statement filings at the Securities and Exchange Commission. Three of the 64 funds are dual purpose funds that offer both capital appreciation and income shares.[3] The Appendix lists the 64 closed-end funds' gross proceeds and type of fund by offer date.

Exhibit 1 presents summary data from *Investment Dealer's Digest Corporate Database (IDD)* and the offering prospectus on the number and amount offered by closed-end fund IPOs by year and type of fund. The sample consists of 27 bond funds (42.2% of the sample), 22 U.S. stock funds (34.4% of the sample), and 15 foreign stock funds (23.4% of the sample). Only three IPOs, or 4.7% of the sample, occur in 1985. In contrast, 26 IPOs, or 40.6% of the sample, are offered in 1986, while 35 IPOs, or 54.7% of the sample, occur in 1987. The growing popularity of bond funds during this three-year period is evident. During 1985 and 1986, seven out of 29 closed-end fund IPOs, or 24.1% of the sample, are bond funds; in 1987, 20 of 35, or 57.1%, are bond funds.

Exhibit 1 also shows the dollar amount of IPOs of closed-end funds by year and type. The total value of IPOs by closed-end funds increases from $498 million in 1985 to $4.48 billion in 1986 and $9.43 billion in 1987. In addition, the average value of these IPOs increases appreciably during this period, from $166 million in 1985 to $172 million in 1986 and $269 million in 1987.

Bond funds account for $8.8 billion or 61.3% of the total value of closed-end fund IPOs; the corresponding amount for U.S. stock funds and foreign stock funds is $4.4 billion (30.8%) and $1.1 billion (7.9%), respectively. The average amount offered is also substantially larger for bond funds ($326 million) than it is for U.S. stock funds ($202 million) and foreign stock funds ($76 million).

In order to examine the post-offering price performance of each fund, daily stock prices for the first 120 trading days are collected from *Standard & Poor's Daily Stock Price Record* for American and New York Stock Exchange listed securities for a total of 67 closed-end fund shares. To adjust daily returns for market movements, data are collected on a market index for each closed-end fund. The following indices correspond to the type of fund examined. The Shearson Lehman Bond Index, collected from daily editions of the *Wall Street Journal,* is used to adjust the returns of bond funds. The S&P 500 is used in computing the market-adjusted returns of domestic stock funds while the FT-Actuaries World Indices (expressed in U.S. dollars) supplied by Goldman, Sachs and Company is used to adjust the returns of foreign stock funds.[4]

The daily unadjusted return for each fund i on day t is calculated as:

[3]For a thorough definition and examination of dual purpose funds, see Ingersoll [12]. Thus, 64 IPOs effectively result in 67 different fund shares producing 67 series of returns and discounts.

[4]The FT-Actuaries World Indices are jointly compiled by The Financial Times Limited, Goldman, Sachs and Company, and County NatWest/Wood Mackenzie in conjunction with the Institute of Actuaries and the Faculty of Actuaries. FT-Actuaries World Indices is a trademark and service mark of The Financial Times Limited.

$$R_{it} = \frac{P_{it} + D_{it} - P_{it-1}}{P_{it-1}}, \quad (1)$$

$t = 1, ..., 120,$
$i = 1, ..., 67,$

where P_{it} and P_{it-1} are the prices for time t and $t-1$ and D_{it} is any dividend paid by fund i over time t.

Raw returns are adjusted for changes in the value of the appropriate market index on the same day t as follows:

$$AR_{it} = R_{it} - I_t, \quad (2)$$

where I_t is the percentage change in the value of the index on day t.

The adjusted returns are cumulated over T periods following the fund's offer date in the following manner:

$$CAR_{iT} = \left[\prod_{t=1}^{T} (1 + AR_{it})\right] - 1, \quad (3)$$

for

$T = 1, ..., 120.$

The mean cross-sectional daily cumulative return is:

$$CAR_T = \frac{1}{67} \sum_{i=1}^{67} CAR_{iT}. \quad (4)$$

In order to compute the statistical significance of the CARs for each time T the standard deviation of the daily adjusted returns for each day t must first be calculated:

$$SAR_t = \left[\frac{1}{66} \sum_{i=1}^{67} (AR_{it} - AR_t)^2\right]^{1/2}, \quad (5)$$

where

$$AR_t = \frac{1}{67} \sum_{i=1}^{67} AR_{it}. \quad (6)$$

[5]The choice of using any one of the three standard deviations in the t-statistic, *(i)* the mean standard deviation of the adjusted returns, *(ii)* the daily standard deviation of the adjusted returns, or *(iii)* the daily standard deviation of the cumulative adjusted returns, does not materially affect the results.

Exhibit 2. Mean Initial Returns For IPOs of Closed-End Funds (t-statistics in parentheses)

Type of Return		All Funds	Bond Funds	U.S. Stock Funds	Foreign Stock Funds
Unadj.	Mean	0.373%	-0.519%	-0.524%	3.225%
		(1.28)	(-1.62)	(-1.26)	(3.59)
	Median	0.000%	0.000%	0.000%	-0.625%
Index Adj.	Mean	0.325%	-0.657%	-0.556%	3.305%
		(1.10)	(-1.88)	(-1.35)	(3.66)
	Median	-0.523%	-0.106%	-0.926%	-0.569%

Bond fund returns are adjusted by the Shearson Lehman Bond Index, U.S. stock fund returns are adjusted by the S&P 500, and foreign stock fund returns are adjusted by the appropriate foreign index provided by Goldman, Sachs and Company.

The standard deviation used in calculating the test statistic is the mean standard deviation of the adjusted returns over the sample period:[5]

$$SAR = \frac{1}{20} \sum_{t=1}^{120} SAR_t. \quad (7)$$

The test statistic is computed as:[6]

$$t\text{-}statistic = \frac{CAR_T}{SAR\left[\frac{T}{N}\right]^{1/2}}. \quad (8)$$

To observe the pattern of premiums and discounts to NAV during the first 24 weeks of trading, weekly data on both NAVs and corresponding stock prices are obtained from *Barron's* for funds that are listed at least five weeks after the offering. Fifty-six funds in the sample are reported in *Barron's* at least one month following the offering, including 24 bond funds, 18 U.S.

[6]There are problems with using data from the IPO event period in estimating the standard deviation of adjusted daily returns as well as using a sample that has a clustering of events. Perhaps the most important drawback is the lack of a base period in measuring the standard deviation of daily returns. This tends to bias upward the estimate of the standard deviation and consequently to bias downward the t-statistic. However, there are additional biases associated with the test statistic that may affect the results in the opposite direction. For a thorough discussion of the above problems see Brown and Warner [8].

Exhibit 3. Mean Daily Cumulative Index-Adjusted and Unadjusted Returns in Ten-Day Intervals (*t*-statistics in parentheses)

Day	All Funds	Bond Funds	U.S. Stock Funds	Foreign Stock Funds	All Funds	Bond Funds	U.S. Stock Funds	Foreign Stock Funds
	Mean Daily Index-Adjusted Cumulative Returns				*Mean Daily Unadjusted Cumulative Returns*			
1	0.325%	-0.657%	-0.566%	3.305%	0.373%	-0.519%	-0.524%	3.225%
	(1.10)	(-1.88)	(-1.35)	(3.66)	(1.28)	(-1.62)	(-1.26)	(3.59)
10	-1.230%	-1.461%	-2.396%	0.910%	-0.225%	-0.963%	-0.422%	1.315%
	(-1.31)	(-1.32)	(-1.83)	(0.31)	(-0.24)	(-0.94)	(-0.32)	(0.46)
20	-2.401%	-1.948%	-2.602%	-2.862%	-1.207%	-1.634%	-1.167%	0.205%
	(-1.81)	(-1.24)	(-1.41)	(-0.70)	(-0.78)	(-1.13)	(-0.62)	(0.05)
30	-3.302%	-1.137%	-6.478%	-2.194%	-1.378%	-1.609%	-4.039%	3.002%
	(-2.03)	(-0.59)	(-2.86)	(-0.44)	(-0.86)	(-0.91)	(-1.77)	(0.60)
40	-3.334%	-1.074%	-7.167%	-1.397%	-0.799%	-1.834%	-4.221%	6.080%
	(-1.77)	(-0.48)	(-2.74)	(-0.24)	(-0.43)	(-0.90)	(-1.60)	(1.06)
50	-4.297%	-2.260%	-9.238%	-0.326%	-1.079%	-2.480%	-5.618%	8.091%
	(-2.04)	(-0.91)	(-3.16)	(-0.51)	(-0.52)	(-1.09)	(-1.090	(1.27)
60	-6.428%	-3.254%	-13.335%	-1.425%	-2.899%	-3.720%	-7.704%	5.693%
	(-2.79)	(-1.20)	(-4.17)	(-0.20)	(-1.28)	(-1.49)	(-2.38)	(0.85)
70	-8.640%	-5.340%	-14.761%	-5.024%	-3.875%	-4.204%	-8.460%	3.555%
	(-3.48)	(-1.82)	(-4.27)	(-0.66)	(-1.59)	(-1.56)	(-2.42)	(0.47)
80	-9.885%	-5.448%	-16.524%	-7.411%	-4.125%	-4.121%	-8.341%	2.193%
	(-3.72)	(-1.74)	(-4.48)	(-0.91)	(-1.58)	(-1.43)	(-2.24)	(0.27)
90	-12.914%	-6.271%	-19.114%	-14.821%	-6.141%	-4.363%	-10.471%	-2.648%
	(-4.58)	(-1.89)	(-4.88)	(-1.72)	(-2.22)	(-1.43)	(-2.65)	(-0.31)
100	-12.598%	-5.523%	-19.105%	-14.776%	-6.398%	-4.471%	-11.414%	-2.127%
	(-4.24)	(-1.58)	(-4.63)	(-1.63)	(-2.19)	(-1.39)	(-2.74)	(-0.23)
110	-13.647%	-5.934%	-21.661%	-14.716%	-7.078%	-4.968%	-12.816%	-2.032%
	(-4.38)	(-1.61)	(-4.99)	(-1.55)	(-2.31)	(-1.47)	(-2.93)	(-0.21)
120	-15.054%	-6.207%	-23.217%	-17.735%	-9.247%	-5.534%	-15.632%	-5.934%
	(-4.63)	(-1.62)	(-5.14)	(-1.79)	(-2.89)	(-1.57)	(-3.42)	(-0.60)

stock funds, and 14 foreign equity funds.[7] Weekly premiums and discounts are computed for each fund from the fifth week of seasoning through the twenty-fourth week. The data are then averaged across the entire sample as well as each of the three subsamples.

[7]The following funds are not included in the analysis because of data limitations: Counsellors Tandem Securities Fund, Decision/Capital Fund, Gemini II (Income and Capital), High Income Advantage Trust, Lincoln National Convertible Securities Fund, MFS Governments Markets Income Fund, Progressive Income Equity, Schafer Value Trust, The Taiwan Fund, and Worldwide Value Fund.

II. Empirical Results

A. Daily Returns

Exhibit 2 contains data on the unadjusted and index-adjusted initial returns for closed-end fund IPOs. The average initial unadjusted return for all 67 funds is 0.373% which is not significantly different from zero. This result contrasts sharply with the 10.69% average initial return found by Ibbotson, Sindelar, and Ritter [11] for firms going public from 1985–1987.[8] Both bond

[8]The Ibbotson, Sindelar, and Ritter returns include both best efforts and firm commitment offerings and excludes the returns on closed-end funds.

and U.S. stock funds sustain negative unadjusted returns for the first trading day (-0.519% and -0.524%, respectively), but neither of these average returns are statistically significant. In contrast, foreign stock funds experience, on average, a significant unadjusted initial return of 3.225%. This average initial return, however, is primarily driven by the large positive return associated with Templeton Emerging Markets (38.75%) and The Taiwan Fund (14.58%). When the raw returns are adjusted for market movements, the results do not differ substantially from the unadjusted returns. This is not surprising given the small average change in the value of the index on a daily basis.

Examination of returns during the first 120 trading days after the offering reveals a substantial average decline in the value of the funds. Cumulative returns, both unadjusted and index-adjusted, are listed by ten-day intervals in Exhibit 3. Although the initial returns are positive, on average, for the sample of funds, both index-adjusted and unadjusted cumulative returns become increasingly negative following the offering. After 120 days, the average cumulative index-adjusted return is -15.054%; this is significant at the 1% level. Fifty-eight funds, or 86.6% of the entire sample, experience negative index-adjusted cumulative returns over the 120 trading days.[9]

Exhibit 3 shows that the average cumulative index-adjusted return to bond funds, U.S. stock funds, and foreign stock funds differ during the time period. On average, bond funds have a cumulative 120 day loss of -6.207% which is not significantly different from zero. Moreover, 20 (74.1%) of the bond funds experience negative index-adjusted returns during the 120 days. By comparison, the average cumulative index-adjusted return for U.S. stock funds after 120 days is a significant -23.217%. Twenty-three stock funds (95.8%) sustain negative cumulative index-adjusted returns over the time period. Foreign stock funds perform better than U.S. stock funds, but do worse than bond funds. The average cumulative index-adjusted return for foreign stock funds is -17.735%, which is statistically different from zero at the 10% level. Of the 14 foreign funds offered, 13 (93.3%) have negative index-adjusted returns over the 120 days.

The unadjusted returns presented in Exhibit 3 follow the same pattern as the index-adjusted returns for both the total sample and three subsamples. However, the raw returns are less uniformly negative, reflecting the fact that most of the offerings occurred during periods in which the value of the indices subsequently rose.

B. Premiums and Discounts on Closed-End Funds

Unlike open-end mutual funds, closed-end funds provide no guarantee that the funds' shares will be worth the underlying NAV. For this reason, the substantial decline in the value of closed-end funds in the first six months following the initial public offering may represent the divergence of the funds' stock price from NAV. By examining the patterns of discounts and premiums in closed-end funds, the fall in stock price can be associated with the performance of the underlying portfolio of securities.

Exhibit 4 presents the average weekly premium or discount beginning one month after the offering for the entire sample of funds and for each of the three subsamples. While bond funds trade at a statistically insignificant average discount of 0.012% after twenty-four weeks, U.S. stock funds have a corresponding significant average discount of 10.019%. Foreign stock funds trade at an even larger average discount of 11.424% after twenty-four weeks, even though the average 120 day index-adjusted cumulative return is less than that of U.S. stock funds.

Not all closed-end funds trade at a discount to net asset value after 24 weeks of trading. Fourteen bond funds (58.3%) actually trade at premiums after the 24 week period, whereas only two U.S. stock funds (11.1%) and two foreign funds (14.3%) trade at a premium after an equivalent period of time.[10]

[9]Although Chalk and Peavy [9] find no evidence of significant abnormal returns to IPOs from day 2 to day 190 after the offering, Ritter [20] documents an average -8.41% mean market-adjusted cumulative return one year after the offering for a sample of 1,503 IPOs that were issued from 1975–1985. This negative return does not include the initial return.

[10]Although 11 funds (Gemini II has both income and capital shares) are eliminated from this discussion since they are not reported in *Barron's* by the fifth week of seasoning, eight of the funds do have discounts disclosed by the twenty-fourth week. By type, these funds include: *(i)* Bond Funds, e.g. Lincoln National Convertible Securities Fund (12.12%), MFS Governments Markets Income Fund (2.46%), High Income Advantage Trust (4.73%); *(ii)* U.S. Stock Funds, e.g. Progressive Income Equity Fund (-7.78%), Counsellors Tandem Securities (-10.29%), Schafer Value Trust (11.94%); and *(iii)* Foreign Stock Funds, e.g. The Taiwan Fund (76.79%), Worldwide Value Fund (-15.04%).

Exhibit 4. Mean Premium or Discount (-) From Net Asset Value By Week (*t*-statistics in parentheses)

Week	All Funds	Bond Funds	U.S. Stock Funds	Foreign Stock Funds
5	4.765%	5.277%	4.843%	3.788%
	(3.52)	(3.32)	(3.16)	(0.86)
6	4.768%	5.042%	3.867%	5.460%
	(3.49)	(3.15)	(2.04)	(1.30)
7	3.877%	5.363%	2.386%	3.249%
	(2.97)	(3.35)	(1.32)	(0.84)
8	3.297%	4.580%	1.971%	2.805%
	(2.34)	(2.91)	(0.99)	(0.64)
9	2.547%	4.665%	0.750%	1.229%
	(1.95)	(2.71)	(0.43)	(0.33)
10	2.171%	4.935%	0.143%	0.041%
	(1.49)	(2.84)	(0.08)	(0.01)
11	1.154%	3.782%	-0.876%	-0.739%
	(0.81)	(2.20)	(-0.48)	(-0.17)
12	0.310%	3.439%	-2.038%	-2.036%
	(0.18)	(2.10)	(-1.15)	(-0.34)
13	-0.090%	2.713%	-2.234%	-2.153%
	(-0.06)	(1.68)	(-1.26)	(-0.47)
14	-1.730%	1.890%	-5.073%	-3.641%
	(-1.17)	(1.15)	(-2.79)	(-0.81)
15	-2.230%	0.966%	-5.216%	-3.888%
	(-1.61)	(0.62)	(-2.82)	(-0.94)
16	-2.312%	0.532%	-5.262%	-3.394%
	(-1.47)	(0.32)	(-2.87)	(-0.66)
17	-2.999%	1.315%	-6.387%	-6.043%
	(-1.91)	(0.85)	(-3.61)	(-1.21)
18	-4.175%	0.739%	-7.615%	-8.181%
	(-2.68)	(0.51)	(-4.12)	(-1.69)
19	-5.058%	0.857%	-8.562%	-10.694%
	(-2.96)	(0.58)	(-4.79)	(-1.98)
20	-5.335%	0.183%	-9.139%	-9.909%
	(-3.21)	(0.12)	(-5.60)	(-1.85)
21	-5.514%	0.310%	-9.282%	-9.591%
	(-3.50)	(-0.20)	(-5.18)	(-2.01)
22	-5.317%	-0.133%	-9.718%	-8.549%
	(-3.27)	(-0.08)	(-5.21)	(-1.77)
23	-5.608%	0.110%	-10.074%	-9.671%
	(-3.51)	(0.06)	(-4.96)	(-2.16)
24	-6.081%	-0.012%	-10.019%	-11.424%
	(-3.58)	(-0.00)	(-5.52)	(-2.97)

One factor that immediately contributes to the discount is that investors in closed-end funds directly bear the cost of the underwriting spread and miscellaneous expenses. Hence, at the offering, closed-end funds are issued at a premium to NAV. The offer price less issuing costs make up the funds available to the portfolio manager and is, therefore, the true net asset value. Since underwriting costs typically account for an average of 7.5% of the total issue, it is unlikely that the large average negative return associated with IPOs of closed-end funds can be explained entirely by the decline in net assets associated with the offering expenses. Anderson and Born [2] and Malkiel [15] have cited the following factors as additional determinants of discounts: *(i)* the fund's unrealized capital gains, *(ii)* the fund's distribution policy, *(iii)* the liquidity of the securities in which the fund manager invests, and *(iv)* the quality and compensation of the fund's management. Although there is empirical evidence that indicates these variables explain some of the variation in discounts and premiums, the relationship of the fund's stock price to its underlying net asset value remains anomalous.

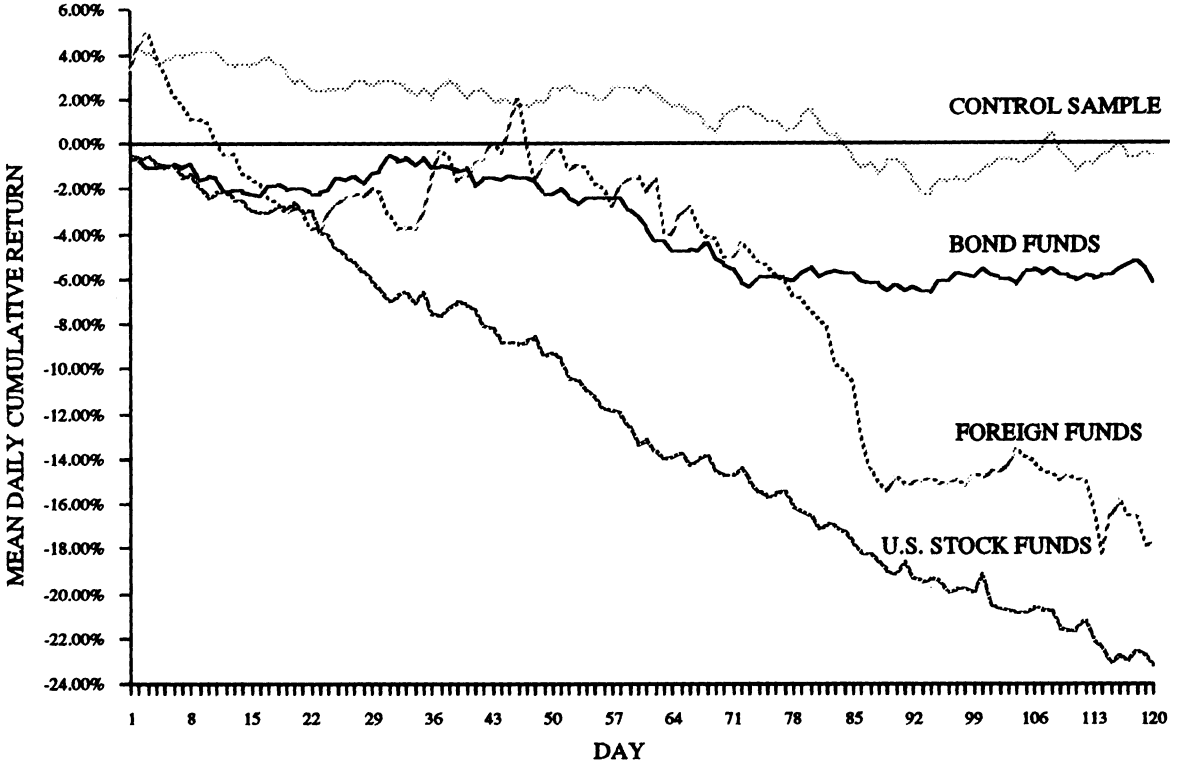
C. Individual Versus Institutional Investors In IPOs of Closed-End Funds

The preceding analysis has presented evidence of substantial wealth declines, on average, to investors in closed-end fund IPOs. The primary objective of closed-end funds is to provide diversification services to small shareholders while allowing the fund manager the ability to maintain a fixed asset base. Selling fees, as a part of the underwriter spread, are large in the case of closed-end fund IPOs, indicating retail rather than institutional sales. This larger fee, in turn, provides the retail broker with an incentive to aggressively sell the issue to individual investors. More than one underwriter has admitted that closed-end fund shares are "sold not bought." Large institutions presumably do not have the diversification needs supplied by closed-end funds and would not be as active an investor in this market.[11] Therefore, the purpose of this section is to document the relative participation of institutional versus individual investors in purchasing shares of closed-end fund IPOs in order to assess to what extent individuals are affected by the decline in value associated with closed-end funds.

In order to compare and contrast the relative level of selling fees and institutional ownership for closed-

[11]It must be noted that investment companies, by the Investment Company Act of 1940, are restricted in their holdings of other investment companies.

Exhibit 5. Mean DAily Cumulative Index-Adjusted Returns for IPOs of Closed-End Funds and the Control Sample of IPOs



end fund IPOs, a control sample of 59 equity IPOs between 1986–1987 was identified from the IDD database.[12] The daily returns for the control sample of IPOs are gathered from two sources, the Center for Research in Securities Prices and *Standard & Poor's Daily Stock Price Record.* The daily returns associated with the control are market-adjusted by the corresponding return on the S&P 500 and are cumulated over the 120 trading days. *T*-statistics are calculated in the same manner as those for the closed-end funds reported previously.[13] Selling fees for initial public offerings of both the control sample and the closed-end fund are also collected from IDD.

In measuring the participation of institutional investors in the closed-end fund market, one would ideally like to directly observe retail versus institutional ownership. To the author's knowledge, however, no readily available data exists that chronicles the daily participation of these two types of investors. Alternatively, the percentage of equity in both the control sample and in closed-end funds that is owned by large institutional investors is published on a quarterly basis in *Spectrum 3: 13(f) Institutional Stock Holdings Survey.* For each closed-end fund and corresponding control IPO, data on the percentage of equity owned by 13(f) institutions at the end of the first, second, and third quarter following the offering are collected.[14]

Exhibit 5 shows the post-offering price performance of the control sample relative to the corresponding price performance for the entire sample of closed-end

[12]Originally, 61 IPOs were identified for the control sample to match the 61 closed-end funds reported on IDD. However, five IPOs had to be dropped due to insufficient price data.

[13]The October 19, 1987 market break appears to have little or no effect on the price performance of both closed-end funds and the control sample. When each of these samples are broken into two groups, those affected by the market break and those that are not, the difference in 120-day returns are not significant. In addition, the 24-week discount from NAV for the closed-end fund sample does not significantly differ between those funds that are potentially affected by the market break and those that are not.

[14]A 13(f) institution is an institution with at least $100 million invested in publicly traded securities.

Exhibit 6. Difference in Means For Control Sample of Equity IPOs and Closed-End Fund IPOs on Institutional Participation and Underwriter Selling Fees

	Closed-End Fund IPOs	Control Sample of IPOs	*T*-Statistic
Number of Firms	61	59	
Amount Offered (in millions)	$224.81	$204.09	0.39
Selling Fee	4.49%	3.71%	8.25
Institutional Holdings			
First Quarter	3.50%	21.82%	5.97
	(44)	(51)	
Second Quarter	5.00%	26.02%	6.31
	(54)	(54)	
Third Quarter	4.68%	28.59%	7.09
	(56)	(54)	

funds, as well as the three subsamples. The average first trading day return to the control sample is a statistically significant 3.61%; the corresponding return for the closed-end fund sample is 0.33%. By the end of the 120 trading days, the average cumulative index-adjusted return for the control sample is not significantly different from zero at -0.55%, while the corresponding return for closed-end funds is -15.05%. Therefore, on average, the control sample performed significantly better than the corresponding sample of closed-end funds during the first 120 trading days following their respective offerings.

Exhibit 6 compares the offering characteristics and institutional participation for the control sample and the closed-end fund sample. On average, the sample of closed-end funds offered $225 million in equity while the control sample offered slightly less at $204 million. Since both the selling fee and the amount of institutional ownership is likely to vary with offering size, it is important to note that there is no significant difference in offering size across the two samples.[15]

The data reveal significant differences in both the selling fees and institutional ownership across the two samples. The average selling fee associated with IPOs of closed-end funds is 4.49% with a corresponding average selling fee for the control sample of 3.71%. With a *t*-statistic of 8.25, this difference is statistically significant at the 1% level.

Institutional ownership of equity is significantly higher for the control sample of IPOs than for closed-end funds in all three quarters following the offering. The average percentage of equity owned by institutional investors at the end of the first quarter is 3.50% for the sample of closed-end funds and 21.82% for the control group. The corresponding *t*-statistic is 5.97, indicating that this difference is also significant. The disparity in the level of institutional ownership between the two samples persists throughout the three quarters. In fact, the level of institutional ownership in closed-end funds does not change substantially over the three quarters, while it rises approximately seven percentage points for the control sample during the same time period.

In order to estimate the average dollar value gain or loss to holders of closed-end funds versus other equity IPOs, the average percentage of individual holdings over the first two quarters for each fund is multiplied by the amount offered and the 120-day cumulative unadjusted return. For the 54 closed-end funds that have institutional holdings reported, the mean loss in value per offering for individual investors is an estimated -$21.3 million compared to a $8.7 million average gain to individual shareholders in the control sample of 54 IPOs.

III. Conclusion

This study has documented the price behavior of closed-end funds after an initial public offering. The comparison of aftermarket price performance of closed-end funds with a control sample of similar size equity IPOs indicates that closed-end funds, on average, underperform other initial public offerings. The results show that IPOs of U.S. stock and foreign stock closed-end funds experience significant losses in value. Although bond funds also exhibit average price declines, these declines are smaller than those for U.S. stock and foreign stock funds and are not statistically significant.

The difference between the net asset value and the stock price of closed-end funds at the end of 24 weeks of trading is largest for the U.S. stock and foreign stock funds. Bond funds, on the other hand, have little or no divergence from net asset value by the end of the time period.

[15]Ritter [19] has shown that underwriting spreads decrease with the size of the offering. The comparison sample of IPOs has been controlled for size to mitigate any effects of economies of scale in going public.

The larger selling fees associated with closed-end funds IPOs provides an incentive for retail brokers to market these securities to individual investors. A comparison of institutional holdings between IPOs of closed-end funds and a control sample of equity IPOs indicates that the type of investor that is most affected by the substantial decline in value are individuals.

Since January 1988, however, the majority of closed-end fund IPOs have consisted of bond funds. Those funds, foreign and U.S. stock funds, exhibiting the worse post-offering price performance in this study are rarely offered in the present time period. The disappearance of equity closed-end fund IPOs may suggest that market forces have limited the type of fund offered to those which do not experience either significant price declines or large discounts to NAV.

References

1. S. Anderson, "Closed-End Funds Versus Market Efficiency," *Journal of Portfolio Management* (Fall 1986), pp. 63–65.
2. S. Anderson and J. Born, "Closed-End Funds: What Causes Discounts?" *AAII Journal* (July 1987), pp. 9–12.
3. ———, "The Selling and Seasoning of Investment Company Offerings," Unpublished Working Paper, Auburn University, 1988.
4. K.J. Boudreaux, "Discounts and Premiums on Closed-End Mutual Funds," *Journal of Finance* (May 1973), pp. 515–521.
5. G.A. Brauer, " 'Open-Ending' Closed-End Funds," *Journal of Financial Economics* (December 1984), pp. 491–507.
6. ———, "Closed-End Fund Shares' Abnormal Returns and the Information Content of Discounts and Premiums," *Journal of Finance* (March 1988), pp. 113–127.
7. J.A. Brickley and J.S. Schallheim, "Lifting the Lid on Closed-End Investment Companies: A Case of Abnormal Returns," *Journal of Financial and Quantitative Analysis* (March 1985), pp. 107–117.
8. S.J. Brown and J.B. Warner, "Event Studies With Daily Returns," *Journal of Financial Economics* (March 1985), pp. 3–31.
9. A. Chalk and J. Peavy, "Initial Public Offerings: Daily Returns, Offering Types and the Price Effect," *Financial Analysts Journal* (September/October 1987), pp. 65–69.
10. T.G. Donlan, "Five-Month Fizzles: What Lots of Closed-End Fund IPOs Are," *Barron's* (August 8, 1988), pp. 50–52.
11. R.G. Ibbotson, J.L. Sindelar, and J.R. Ritter, "Initial Public Offerings," *Journal of Applied Corporate Finance* (Summer 1988), pp. 37–45.
12. J.E. Ingersoll, Jr., "A Theoretical and Empirical Investigation of the Dual Purpose Funds: An Application of Contingent Claims Analysis," *Journal of Financial Economics* (January/March 1976), pp. 83–123.
13. J.M. Laderman, "Buying a Closed-End Fund: Let the Investor Beware," *Business Week* (October 13, 1986), p. 150.
14. J.R. Laing, "Burnt Offerings: Closed-End Funds Bring No Blessing to Shareholders," *Barron's* (August 10, 1987), pp. 6–7 and 32–36.
15. B. Malkiel, "The Valuation of Closed-End Investment Company Shares," *Journal of Finance* (June 1977), pp. 847–859.
16. J.W. Peavy, "Closed-End Fund New Issues: Pricing and fter-market Trading Considerations," Working Paper 87-18, SFIM, Southern Methodist University, 1988.
17. E.J. Pratt, "Myths Associated With Closed-End Investment Company Discounts," *Financial Analysts Journal* (July/August 1966), pp. 79–82.
18. R.M. Richards, D.R. Fraser, and J.C. Groth, "The Attraction of Closed-End Bond Funds," *Journal of Portfolio Management* (Winter 1982), pp. 56–61.
19. J. Ritter, "The Costs of Going Public," *Journal of Financial Economics* (December 1987), pp. 269–281.
20. ———, "The Long Run Performance of Initial Public Offerings," Unpublished Working Paper, University of Michigan, 1989.
21. R. Thompson, "The Information Content of Discounts and Premiums on Closed-End Fund Shares," *Journal of Financial Economics* (June/September 1978), pp. 151–186.

Appendix. Offering Characteristics for IPOs of Closed-End Mutual Funds, February 1985–November 1987 (in chronological order)

Fund Name	Amount Offered (in millions)	Offer Date	Fund Type
Gemini II (CAP)	$100.00	850215	U.S. Stock
Gemini II (INC)	100.00	850215	U.S. Stock
ML Convertible Securities (CAP)	102.00	850725	Bond
ML Convertible Securities (INC)	138.00	850725	Bond
The First Australia Fund	58.00	851212	Foreign Stock
Pilgrim Regional BankShares	90.00	860124	U.S. Stock
The Italy Fund	66.00	860226	Foreign Stock
Growth Stock Outlook Trust	125.00	860306	U.S. Stock
The First Australia Prime Income Fund	750.00	860417	Bond

Fund Name	Amount Offered (in millions)	Offer Date	Fund Type
First Financial Fund	92.00	860501	U.S. Stock
Regional Financial Shares Investment Fund	115.00	860514	U.S. Stock
The France Fund	90.00	860530	Foreign Stock
The Scandinavian Fund	65.00	860617	Foreign Stock
Lincoln National Convertible Securities Fund	90.00	860619	Bond
Ellsworth Convertible Growth and Income Fund	45.00	860620	Bond
The Global Yield Fund	570.00	860630	Bond
Decision/Capital Fund	40.00	860709	U.S. Stock
The Germany Fund	75.00	860718	Foreign Stock
EquityGuard Stock Fund	18.50	860814	U.S. Stock
The Gabelli Equity Trust	400.00	860814	U.S. Stock
Worldwide Value Fund	60.00	860819	Foreign Stock
Global Growth and Income Fund (CAP)	50.00	860903	Foreign Stock
Global Growth and Income Fund (INC)	50.00	860903	Foreign Stock
Schafer Value Trust	252.00	860925	U.S. Stock
The Zweig Fund	300.00	860925	U.S. Stock
Counsellors Tandem Securities Fund	40.00	861023	U.S. Stock
Cypress Fund	97.75	861023	U.S. Stock
Liberty All-Star Equity Fund	510.00	861024	U.S. Stock
MFS Municipal Income Trust	310.00	861118	Bond
Royce Value Trust	100.00	861119	U.S. Stock
Kleinwort Benson Australian Income Fund	55.00	861120	Bond
The Taiwan Fund	24.36	861216	Foreign Stock
Duff and Phelps Selected Utilities	1,200.00	870121	U.S. Stock
Quest for Value Dual Purpose Fund (CAP)	225.00	870213	U.S. Stock
Quest for Value Dual Purpose Fund (INC)	225.00	870213	U.S. Stock
TCW Convertible Securities Fund	200.00	870226	Bond
Templeton Emerging Markets Fund	100.00	870226	Foreign Stock
MFS Multimarket Income Trust	1,100.00	870305	Bond
Colonial Municipal Income Trust	260.00	870319	Bond
First Boston Income Fund	240.00	870408	Bond
Nicholas-Applegate Growth Equity Fund	100.00	870410	U.S. Stock
Blue Chip Value Fund	85.00	870415	U.S. Stock
H & O Healthcare Investors	55.00	870423	U.S. Stock
The Asia Pacific Fund	86.50	870424	Foreign Stock
Morgan Grenfell SMALLCap Fund	50.00	870507	U.S. Stock
MFS Government Markets Income Trust	850.00	870520	Bond
Progressive Income Equity Fund	50.00	870529	U.S. Stock
Nuveen Municipal Value Fund	1,500.00	870617	Bond
Scudder New Asia Fund	84.00	870618	Foreign Stock
Clemente Global Growth Fund	75.00	870623	Foreign Stock
Putnam High Income Convertible and Bond Fund	125.00	870709	Bond
The Global Government Plus Fund	520.00	870724	Bond
The United Kingdom Fund	50.00	870806	Foreign Stock
The Helvetia Fund	120.00	870819	Foreign Stock
ACM Government Income Fund	600.30	870821	Bond
Financial News Composite Fund	73.90	870918	U.S. Stock
Allstate Municipal Income Trust	300.00	870922	Bond
Dreyfus Strategic Municipals	450.00	870923	Bond
Nuveen California Municipal Income Fund	60.00	871007	Bond

Fund Name	Amount Offered (in millions)	Offer Date	Fund Type
Nuveen New York Municipal Income Fund	27.60	871007	Bond
The New York Tax-Exempt Income Fund	20.00	871015	Bond
MuniInsured Fund	65.00	871019	Bond
MFS Income and Opportunity Trust	65.00	871022	Bond
High Income Advantage Trust	250.00	871023	Bond
High Yield Income Fund	95.00	871030	Bond
CIM High Yield Securities	36.50	871111	Bond