
Closed-end Fund IPOs: Sold, Not Bought

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Abstract

Closed-end fund IPOs are priced above their NAV due to the sales load paid to the underwriters. Within five months of the IPO, CEFs start trading at a discount. By six months post-IPO, the average raw return is -4.75%, underperforming seasoned funds by 8.52%. We explain how data mistakes in Cherkes, Sagi, and Stanton (2009 RFS) lead them to find much less underperformance than we document. We propose an agency hypothesis to explain the creation of CEFs despite these negative returns. We posit that full-service brokers/investment advisors create demand for CEF IPOs among their retail clients when the time-varying reputational cost is low. Intensive price support delays and obfuscates the subsequent price decline. In other words, CEF IPOs are sold, not bought.

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Closed-End Fund IPOs: Sold, Not Bought

Closed-end funds offer you a significant advantage over traditional mutual funds: the discount.

Morningstar® advertisement, Barron's June 3rd, 1996 Issue

1. Introduction

The closed-end fund (CEF) puzzle, as described in Lee, Shleifer, and Thaler (1991, hereafter LST) has two components: why do CEFs on average sell at a discount that varies cross-sectionally and over time, and why are new CEFs created, even though on average seasoned funds sell at a discount to their net asset value (NAV) per share? A closed-end fund initial public offering (IPO) is priced above its post-issue NAV because of the sales load. The sales load is the difference between the offer price and net proceeds received by the CEF when it goes public, and is paid to the underwriters of the IPO. CEF IPOs normally trade at a market price near the offer price for a few weeks, but on average within five months begin trading at a discount to NAV, which is the marked-to-market book value of assets. Eventually, seasoned funds, defined as those that have been publicly traded for over a year, on average trade at a sizable discount.

LST justify the creation of CEF IPOs by assuming that seasoned funds in the same asset class trade at a premium or a small discount at the time of issuing new CEFs, due to time-varying investor sentiment that is unusually positive when new funds are created. Essentially, they model a supply-side response to variation in relative prices: new funds are introduced by fund managers when investor sentiment is sufficiently positive. If swings in investor sentiment are not based on rational reasons, CEF promoters are taking advantage of the periods of irrational over-optimism.¹

¹ A strand of literature documents catering behavior by corporate managers when there is a relative valuation change for stocks with certain characteristics, such as paying dividends when the market-to-book ratio of dividend payers is higher, stock splits when stocks with a lower nominal share price have higher valuations, etc. In other words, there is a supply response to demand changes. See Baker and Wurgler (2004) and Baker, Greenwood, and Wurgler (2009).

Cherkes, Sagi, and Stanton (2009, hereafter CSS) provide an alternative explanation of CEF creation that is based on the ability of CEFs to buy and hold illiquid assets while permitting their shareholders to trade the CEF shares in liquid markets. They posit that CEF IPOs are created when there is strong demand for this liquidity transformation. The investor sentiment and liquidity transformation explanations both predict that although the returns on CEF IPOs may be low, there should not be negative abnormal returns relative to seasoned funds in the same asset class. This prediction follows from the assumption that recent IPOs and seasoned funds holding the same assets will be subject to the same swings in investor sentiment or liquidity desires.

Prior to CSS (2009), the conventional view was that CEF IPOs move rapidly from a premium to a discount, and reliably underperform the general market in a few months after the IPO (Weiss (1989), Peavy (1990)). The empirical results in CSS challenge the conventional view. CSS report that it takes a full year, on average, for CEF IPOs to fall to a discount. Furthermore, using seasoned funds as a benchmark, they find mixed evidence of underperformance. We document, however, that CEF IPOs reliably underperform seasoned funds during the year after issuance. Using the same calendar-time analyses as in CSS, we find that CEF IPOs underperform seasoned funds by 0.70% to 1.35% per month across five asset classes—domestic equity, foreign equity, municipal bonds, taxable fixed income, and others, a result that differs from CSS (Table 10). We also find that they fall to a discount within five months of the IPO, confirming the conventional view. Thus, there is a need for a theory to address the creation of CEFs that can predict such underperformance.

The reason that CEF IPOs underperform is simple: the premium on seasoned CEFs on average is not as high as the sales load when the new offerings occur. Using a comprehensive sample of 993 U.S. CEF IPOs from 1986-2013, we show that similar seasoned funds trade at an average discount of 2%, not a premium, when new funds enter

the market. The average premium difference between new and seasoned funds is 6.69%, and an economically and statistically significant difference exists in all five asset classes.²

We conduct an event study to compare the return of CEF IPOs to seasoned funds in the same asset class that are matched by size or premium, respectively. By six months post-IPO, CEF IPOs on average yield negative raw returns of -4.75% (including dividends) and abnormal returns of -8.52% or -6.53% relative to seasoned funds matched by, respectively, size or premium. In one year, the abnormal returns widen to -11.05% relative to size-matched seasoned funds. Surprisingly, the underperformance is worse than the average premium difference at the time of the IPO! Given the \$403 billion raised by CEF IPOs during the sample period, the 11% underperformance represents a significant wealth transfer of \$44 billion from investors to CEF promoters, who collect the sales load and the present value (PV) of excessive net management fees.³

A question naturally follows: why do investors buy CEF IPOs if seasoned funds on average trade at a discount at the time of the IPO and earn superior returns? In other words, if seasoned funds dominate CEF IPOs in terms of performance, with rational investors, what is the source of demand for CEF IPOs? One potential explanation for this seemingly unsustainable equilibrium, as proposed by “Money Doctors” (Gennaioli, Shleifer, and Vishny (2015)), is that investors value the trust they build with their brokers/financial advisors over time, which is not inevitably altered by bad returns.⁴ Nevertheless, this

² LST (1991) note that CEF IPOs “start out at a premium of almost 10 percent”, most of which is “a natural derivative of the underwriting and start-up costs”. They describe this as the “first part of the puzzle to be explained” and their investor sentiment approach “predicts new funds get started when old funds sell at premiums or at small discounts.” However, they do not directly examine the level of seasoned funds’ premium when new funds enter the market. In the 1980s, the typical sales load was 7%, whereas it has been 4.5% for most of the last twenty years, and in the last few years has been even smaller.

³ One caveat to this analysis is that the underlying assets of CEF IPOs can yield low returns due to investing in overpriced assets, in which case, the promoters do not gain, and the \$44 billion of underperformance is not entirely a wealth transfer to CEF promoters.

⁴ As of the writing of this paper, the regulations applying to financial advisors are the subject of debate. Financial advisors could be subject to stricter rules such as the fiduciary standard when making investment

equilibrium requires an agent who creates demand for financial products that are not in the best interest of his clients. As stated in Weiss (1989), “more than one underwriter has admitted that CEF shares are ‘sold not bought.’”

Hence, we propose an agency-based hypothesis for the creation of CEFs: CEF promoters only bring new funds to the market when the benefits outweigh the reputational cost. The benefits are the net sales load and the present value of net management fees, and the reputational cost stems from the loss of clients who recognize the post-IPO underperformance.⁵ If the CEF IPO’s premium disappears with a large and rapid price decline, even naïve investors would notice the underperformance. If the “fall to a discount” occurs over a long and varying period, it is less obvious. We provide evidence that underwriters actively, and successfully, delay the inevitable underperformance.

Our agency-based hypothesis predicts that there will be more CEF IPOs when the reputational cost of promoting CEF IPOs is lower, and when the benefit of doing so is higher. We find that two patterns associated with lower reputational costs, fewer recent CEF IPOs with price declines, and seasoned funds trading at a smaller discount than normal, both predict greater CEF IPO volume in the same asset class. The investor sentiment and liquidity transformation explanations of the CEF IPO puzzle make similar predictions, so this evidence does not distinguish between the three theories.

We document three regularities of CEF IPOs that are consistent with this agency-based hypothesis but are not predicted by alternative explanations for creating CEFs. The first regularity is aggressive price support, which delays the post-IPO price decline to mask

recommendations to their clients, whereas brokers might only need to follow the suitability rule. This study uses advisors and brokers interchangeably.

⁵ This agency-based framework is similar to the one described in Agarwal, Amromin, Ben-David and Evanoff (2016, Section 2.2), where they study the credit steering behavior of loan originating institutions. They analyze the incentives to selectively “steer” loan applicants to take on an inferior loan, which they are overqualified for, at an affiliated financial institution in order to boost the agency’s profitability. [what is “the agency”? isn’t the loan-originating institution the lender, not an affiliated financial institution?]

the underperformance. Price support can occur when an offer includes an overallotment option, which is normally 15% of the issue size. The underwriter then allocates 115% of the shares and submits limit orders at the offer price, potentially buying back up to 15% of the shares and treating them as if they were never issued. During 1993-2012, 96% of CEF IPOs experienced price support, identified by at least one first-day trade executed at the offer price. Most CEF IPOs have more than 90% of the first-day trades executed at the offer price. The average turnover ratio of only 3.6% on the first trading day, versus 46% for operating company IPOs, permits price support to work for CEF IPOs. Hanley, Lee, and Seguin (1996, hereafter HLS) also infer intensive price support for CEF IPOs by studying the aftermarket sell-to-buy imbalance and bid-ask spread changes. We find that on average CEF IPOs' market prices decline once price support ends. Thus, the magnitude of abnormal returns relative to seasoned funds in the first few weeks after the IPO is *larger* when there are positive returns on the aggregate market. This pattern is consistent with reputation consequences being more severe when raw returns are negative immediately after the IPO.

The second regularity is the clustering of CEF IPOs—approximately 90% of all CEF IPOs occur in the second half of the month, especially in the last ten calendar days. This pattern is not present among operating company IPOs and has not been documented before. Two potential explanations of the end-of-month CEF IPO pattern are: brokers who attempt to meet a monthly revenue quota may be more willing to bear reputational costs; and reputational costs may be lower if the month-end brokerage statement received by an investor does not show a price decline, and because prices rarely immediately decline, the saliency of the eventual underperformance is reduced. The third regularity is that holdings of recent CEF IPOs are low for both institutional investors and retail investors that have accounts at a discount brokerage firm. These results suggest that most investors in CEF IPOs are retail investors from full-service brokerages.

This study contributes to four strands of the literature. First, it proposes an agency-based explanation for the CEF IPO puzzle: brokers/managers promote CEF IPOs that are expected to underperform. In doing so, they simultaneously receive benefits and incur reputational costs. Hence, they launch CEF IPOs when the reputational costs are minimal, and when the underperformance relative to seasoned funds is smaller and slower than normal.⁶ As is true with Weiss (1989), LST (1991) and HLS (1996), our agency-based hypothesis predicts that CEF IPOs are sold to the “less sophisticated” public. We further find that the performance of recent CEF IPOs and the discount on seasoned funds are key determinants of new CEF IPO volume.

Second, our study documents that CEF IPOs have negative raw returns of -3.13% (Table 3 Panel B), and negative abnormal returns of -11.05% relative to seasoned funds one year after the IPO. Unlike earlier studies on CEF post-IPO performance that use Treasury-bills or the general stock market as benchmarks (Weiss (1989), Peavy (1990)), we measure abnormal returns relative to seasoned funds in the same asset class, as do CSS (2009).⁷ We find economically and statistically reliable inferior returns of CEF IPOs, concentrated in the first six months after the IPO. Such underperformance relative to seasoned funds is not predicted by LST (1991) nor CSS (2009). CSS posit “no difference in returns between new and seasoned funds managing very similar assets” (p. 286) due to seasoned funds trading at a premium “high enough to compensate for the underwriters’ fees” (p. 259) when new funds are created. Our empirical results challenge their assumptions.

⁶ This agency-based hypothesis differs from the “agency cost” in LST (1991); the latter refers to the management fees that erode fund NAV over time. The LST agency cost might explain why seasoned CEFs trade at a discount, but it does not explain the creation of new CEFs. The LST agency cost is similar in concept to the management fees in Berk and Stanton (2007), who argue that the tradeoff between managerial ability and management fees determines the variation in seasoned funds’ discounts. Their paper does not address the creation or underperformance of CEF IPOs.

⁷ Section 3 and the Internet Appendix explain the difference in results in more detail. Note that the calendar-time analysis in CSS (2009) does not match unseasoned funds with seasoned funds from the same asset class by any fund features, such as liquidity, size, or premium, at the time of the IPO.

We document reliable underperformance in all asset classes in our calendar-time analysis, unlike the mixed evidence in CSS (2009). On page 263, they state “It is clear ... that...the speed with which CEFs drop from their initial premium to a discount following their IPO is slower than the 120 days noted by Weiss (1989) in her small sample of (mostly equity) CEFs... In our much larger sample, the fall to a discount takes, on average closer to one year.” As we will show, the reasons that CSS fail to find reliable underperformance of CEF IPOs are 1) methodological choices that bias the abnormal returns that they compute upwards, and 2) obvious data errors that were not corrected and lead to the incorrect conclusion that it takes a full year for CEF IPOs to fall to a discount.

Third, our study suggests that marketing helps promote CEFs, as in the case of seasoned equity offerings (Gao and Ritter (2010) and Huang and Zhang (2011)) and mutual funds (Jain and Wu (2000)). HLS (1996) infer that CEF IPOs are promoted to the uninformed public. We interpret price support as a marketing effort that delays and obfuscates the underperformance of CEF IPOs.⁸ We show that price support boosts aftermarket demand and prices temporarily, but leads to less information efficiency. As Fjesme (2016) argues, such manipulative action harms investors who invest immediately after the IPO in the secondary market.

Fourth, this study sheds light on whether an open-end or closed-end structure is a better organizational form. Fama and Jensen (1983) argue that the open-end form is a response to agency problems, with a survival-of-the-fittest spirit. Stein (2005) posits that all funds being open-ended can be socially suboptimal because not enough capital is devoted to correcting large-scale mispricing like the dotcom bubble.⁹ However, CEFs usually restrict

⁸ Interestingly, Gennaioli et al. (2015) also suggest that managers pander instead of engaging in contrarianism when the signal-to-noise ratio of managerial skill is low.

⁹ As of the end of 2015, the total net assets of U.S. CEFs were \$261 billion, about 1.66% of that of mutual funds, per the 2016 Investment Company Fact Book, https://www.ici.org/pdf/2016_factbook.pdf.

themselves to investing in a specific asset class, and hence are unable to correct mispricing across asset classes. The evidence in this study shows that CEF investors suffer from severe agency problems, suggesting that the closed-end structure promotes agency problems. In other words, CEFs are a manifestation of, rather than a solution to, agency problems between investors and full-service brokerage firms.

2. Data

Using CRSP, SDC, Morningstar, Bloomberg, and *Barron's*, we identify 993 U.S. CEF IPOs during 1986-2013, excluding REITs.¹⁰ The detailed sample construction is described in the Internet Appendix. The sample is by far the biggest collection to comprehensively analyze the premium and discount pattern of CEF IPOs and their post-IPO performance. CSS (2009), using a sample of 658 CEF IPOs from 1986-2004, criticize previous studies on CEF IPO returns for having small sample sizes. For example, Peavy (1990) and Weiss (1989) have sample sizes of, respectively, 41 IPOs from 1986-1987 and 64 IPOs from 1985-1987. The unlevered results in CSS (2009, Table 10), however, rely on a sample of no more than 395 IPOs from 1993-2004 with available leverage data.

The 993 CEF IPOs are grouped into five categories based on their underlying assets: domestic equity, foreign equity, municipal bond, taxable fixed income (FI), and other, which are the same sector classifications as in CSS (2009). Domestic equity CEFs mainly invest in general or specialized equity such as health care or small cap stocks. Foreign equity CEFs focus on equity investments outside the United States, frequently those of a single country. Municipal bond CEFs invest in bonds issued by municipalities or states whose interest

¹⁰ During the sample period, many acquisition firms and business development companies (BDC) are also labelled as closed-end funds (SIC=6726) by either the SDC IPO dataset or CRSP. The surge of Special Purpose Acquisition Companies (SPACs) happened during 2005-2007. We examine every security in the sample to make sure that it is indeed a CEF, not a BDC or SPAC. For a description of SPACs and discussion on related topics, please see Riemer (2007) and Jenkinson and Sousa (2011).

payments are exempt from Federal personal income taxes. Taxable FI CEFs include funds holding investment grade bonds, high yield bonds, mortgage bonds, loan participations, and worldwide fixed income securities such as sovereign debt. The “other” CEFs mainly hold convertible or preferred securities, master limited partnership (MLP) shares, or REITs. In general, CEFs restrict the class of securities that they invest in. Table 1 lists the composition of the 993 CEF IPOs during 1986-2013 by year and fund type.

[Insert Table 1 Here]

Table 1 shows that CEF IPOs of different categories entered the market at different times during 1986-2013. For example, many foreign equity CEF IPOs occurred in 1990-1994 and in 2004-2007. Municipal bond CEF IPOs were most popular during 1991-1993, with 176 funds going public in this 3-year period. As for taxable FI CEFs, there were 40 IPOs in 1988 alone and another 52 during 1992-1993. Though municipal bond CEF IPOs almost disappeared in 2004-2008, 29 taxable FI CEFs went public in 2003-2004. Meanwhile, issuance of “other” CEFs investing in convertibles, preferreds, and REITs reached a peak in 2003-2005. Two years are noteworthy for the paucity of CEF IPOs: there was only one IPO in 2000 when the tech bubble peaked, and only two IPOs in 2008 when the stock market fell as the real estate bubble collapsed. The last column of Table 1 reports the proceeds of CEF IPOs as a percentage of the proceeds raised in operating company IPOs, with annual operating company IPO proceeds numbers reported on Jay Ritter’s website. In the late 1980s, CEF IPOs raised more money than operating company IPOs. Recently, CEF IPO proceeds have been dwarfed by that of operating company IPOs, but the latter are more often allocated to institutional investors, as we will show in Section 4.

3. Underperformance of Closed-end Fund IPOs

3.1. Closed-end Fund Premium and Discount

A CEF's premium/discount is determined by its market price and its net asset value (NAV). Namely,

$$\text{Premium (or Discount)} = \frac{\text{Price} - \text{Net Asset Value}}{\text{Net Asset Value}} \quad (1)$$

When the market price is higher than the NAV, a CEF trades at a premium. Otherwise, it trades at a discount, expressed as a positive number, e.g., a 5% discount. At the IPO, a CEF normally trades at a premium. For example, a fund with a \$15 offer price and a 4.5% sales load has an NAV of \$14.325, and usually starts trading at \$15.

Figure 1 shows that the average CEF premium immediately post-IPO is highly correlated with the sales load. Before 1995, just like the average spread of moderate-size operating company IPOs, the sales load of most CEF IPOs was 7%, similar to the average premium of CEF IPOs. During the remainder of our sample period, the sales load has typically been 4.5%, similar to the 4.5% premium of CEF IPOs.¹¹

[Insert Figure 1 Here]

The market price of a CEF IPO rarely falls immediately after the IPO, and the premium usually lasts for a while. At the first post-IPO end of the calendar month, 695 out of 993 CEFs with available data trade at an average premium of 5.41% (5.90% if size-weighted).¹² By the second month-end, 948 CEFs with available data trade at an average premium of 4.29% (4.98% if value-weighted).

On average, seasoned CEFs trade at a discount. The speed of this “fall to a discount” affects the magnitude of CEF IPOs’ short-term underperformance per period, although not

¹¹ Beginning in 2016, the typical sales load on CEF IPOs has fallen to below 2%, and most bond funds have been “term” funds with a liquidation date typically 5-7 years after the offer date, at which point the fund will be liquidated at NAV. The finite maturity reduces the present value of the excess management fees, because the management fees are typically over 1.0% per year. Both the lower sales load and the finite termination dates should result in the discounts staying closer to zero, with less underperformance during the first six months.

¹² For some CEF IPOs, the first month-end is just days after the IPO date and the NAV might not be available because the fund had not yet received the IPO proceeds. A few foreign equity CEF IPOs had a premium of as much as 50% when they first started trading.

necessarily the total. Weiss (1989) reports that 64 equity CEF IPOs from 1985-1987 on average started trading at a discount 12 weeks after the IPO. Jegadeesh, Kraussl, and Pollet (2015) show that publicly listed fund of funds structured as CEFs that hold unlisted private equity funds are issued at a premium of 4%, but three months later trade at a discount of more than 6%. CSS (2009, T_{disc} in Panel B of Table 2) emphasize that it took one year on average for a sample of 725 CEF IPOs to start trading at a discount, which, if true, would dilute the post-IPO short-run underperformance per period. Hence, they conclude that only “certain” (but not all) young funds contribute to the potential “puzzle associated with CEFs”.

[Insert Figure 2 Here]

Unlike CSS (2009), we do not find a long period of CEFs trading at a premium post-IPO, as shown in the average monthly premium/discount plot in Figure 2. Domestic equity, foreign equity and other CEF IPOs start trading at a discount three months after the IPO. Municipal bond and taxable FI CEFs take about five months to move from a premium to a discount. Once slipping into a discount, seasoned CEFs continue trading at a discount on average.¹³ The different results on the speed of “fall to a discount” between CSS (2009) and ours are probably due to their failure to correct for stale data provided in Bloomberg and Morningstar for numerous IPOs early in their sample period.¹⁴

Figure 2 also reveals that the eventual size of the discount varies by fund type: it is as small as 2-3% for municipal and taxable FI CEFs and as big as 8% for domestic equity

¹³ This is not to say that no seasoned fund ever trades at a premium post-IPO. For example, the average premium of foreign equity CEFs was as high as 29% in December 1989 and January 1990. A few municipal bond CEFs issued in 2001 also continued trading at a premium post-IPO for prolonged periods.

¹⁴ Bloomberg and Morningstar sometimes report the same number for the NAV for over a year, suggesting stale NAVs. For example, Morningstar reports the NAV of Painewebber Premier Income Fund (CRSP permno=78040) to be \$15 from November 1992 to December 1993, making its price always above NAV. In reality, its NAV ranges from \$15.20 to \$16.96 from November 1992 to December 1993, which is always above its price. When we observe such a pattern, we hand collected data from the print issues of *Barron's*. When we asked Cherkes, Sagi, and Stanton in October 2014 about whether they had corrected the data, they replied that they could no longer find their data files, but could not recall doing so. More details are in the Internet Appendix.

CEFs. In section 4.1, we show that new funds tend to follow a “hot” market for seasoned funds, during which the average discount narrows or even rises to a premium, a pattern also noted in LST (1991) and CSS (2009).

Each month t we form a CEF IPO portfolio with funds that went public in month t and $t-1$, and a seasoned portfolio with funds that have been traded for at least one year. If there is no CEF IPO in month t or month $t-1$, we do not include month t in the calculation. The average price/NAV ratio for the portfolio in month t , $Avg \frac{Price}{NAV}$, is either equally weighted or weighted by fund size. Then we compute the average premium difference between the two portfolios. Namely,

$$\text{Average Premium Difference} = \frac{\sum \left[\left(Avg \frac{Price}{NAV} \right)_{\text{IPO Portfolio}} - \left(Avg \frac{Price}{NAV} \right)_{\text{Seasoned Portfolio}} \right]}{\text{Number of Months with Observations}} \times 100\% \quad (2)$$

[Insert Table 2 Here]

Table 2 reports the equal- and value-weighted average premium (or discount) of the seasoned portfolio and the premium difference between the IPO portfolio and the seasoned fund portfolio, weighting each calendar month equally, for the five asset classes. Panel A shows that the average premium differences are significantly positive, ranging from 4% to 11% across the five fund types. Panel B shows comparable results if at least two funds are in each portfolio. Overall, the seasoned portfolios on average trade at a small discount (or even a small premium) when a CEF IPO occurs.

If the CEF IPOs’ premium on average disappears shortly after the IPO, as Figure 2 shows, the questions are: how much do they underperform relative to seasoned funds in the short run, and how long is the short run? Previous studies on CEF post-IPO performance mainly involve small samples and simple benchmarks, and occasionally comment on the “apparent difference in the stock market performance of old and new funds” (Berk and Stanton (2007)). For instance, Peavy (1990) shows that 41 CEF IPOs from January 1986 to

June 1987 significantly underperform Treasury bills and the stock market in their first 100 trading days. Weiss (1989) reports negative raw returns of 64 CEF IPOs from 1985-1987 in the 120 trading days post-IPO.¹⁵ In contrast to simple benchmarks, LST (1991) and CSS (2009) explicitly consider seasoned funds' performance when studying CEF post-IPO performance. Among studies that focus on the cross-sectional or time series variation in seasoned funds' premia/discounts, Pontiff (1995) documents a negative relation between CEF premia and returns.

LST (1991) build the investor sentiment theory on “noise traders” and their stochastic optimism about future returns of a certain asset class. Following this argument, seasoned funds and CEF IPOs would trade at similar premia when CEF IPOs occur, though LST do not directly compare the CEF IPO premium with that of seasoned funds. In other words, even if investor irrationality in LST (1991) can explain “noise traders” preferences across different asset classes, it cannot explain such preferences *within* an asset class.

[Insert Figure 3 Here]

Figure 3 plots the inflation-adjusted average monthly CEF IPO proceeds against the average premium from month $t-3$ to month $t-1$ of seasoned funds, using 1,581 month-fund type observations in 1986-2013. Figure 3 reveals a convex relationship between the average seasoned fund premium and the average monthly CEF IPO volume, with more proceeds raised when seasoned funds are trading at a smaller discount than normal. In Section 4.1, we confirm this relationship in a regression analysis.

CSS (2009) build the liquidity transformation theory assuming that CEFs' underlying assets are costly for individual investors to trade. In their framework, the

¹⁵ These two studies do not address the possibility that the sample CEF IPOs occurred when seasoned funds were selling at a premium equal to the sales load and thus, there was no underperformance relative to seasoned funds. In other words, their evidence does not directly address the argument in LST and CSS that there is no underperformance of CEF IPOs relative to seasoned funds, unlike the evidence presented here.

premium or discount reflects the present value of liquidity benefits relative to excessive management fees. Yet Elton, Gruber, Blake and Shachar (2013) show that CEFs hold more short maturity assets and the same level of cash as their open-end fund counterparts, using a sample of 54 bond CEFs in 1996-2006.¹⁶ Gemmill and Thomas (2016) document that UK-listed CEFs are less liquid than the principal underlying assets. As for post-IPO returns, CSS (page 286) posit “no difference in returns between new and seasoned funds” if both are managing similar assets, despite the “fall to a discount”. However, their framework’s implication partly contrasts with their empirical results, as they acknowledge. Section 3.3 discusses their study in more detail.

3.2. Event Study of Closed-end Fund IPO Underperformance

With a sample of 993 CEF IPOs, the first methodological question is whether to use an event study or a calendar-time analysis to record post-IPO returns. An event study views each IPO as an observation. Accordingly, money is assumed to be invested equally or proportionally in each IPO, with the latter accurately capturing investor achievement because investors as a whole hold the value-weighted market portfolio of CEFs. The calendar-time approach, as used in CSS (2009), weights each month equally, and assumes that each month receives the same investment, irrespective of the volume of recent IPOs. Though convenient for calculating statistical significance, the calendar-time approach does not accurately capture the return of the average investor. Another factor to consider is market timing. It suggests that weighting each month instead of each IPO equally underestimates abnormal returns if volume is positively correlated with mispricing (Loughran and Ritter (2000)). Hence, we conduct an event study to analyze the heavily clustered CEF IPOs. Nevertheless, all the results hold in a calendar-time analysis (Table 5).

¹⁶ The 54 CEFs exclude single-state municipal funds due to different tax rates across states. The open-end funds have the same managers, the same objectives, and the same fund family as the CEFs.

We start by matching CEF IPOs with seasoned funds of the same type, with the closest fund size, and without equity issuance in the last 12 months.¹⁷ Using this matching scheme, we find 484 unique seasoned funds to match 985 out of 993 CEF IPOs in 1986-2013.¹⁸ We then estimate the following regressions to compare the performance of CEF IPOs with their matching seasoned funds, where $Ret_{t,i,j}$ is the buy-and-hold return (BHR) of a given fund j , either IPO or seasoned; t indicates if the return is for six months, one year, or three years; and i represents the asset class.¹⁹

$$Ret_{t,i,j} = \alpha_{t,i} + \beta_{t,i} \times \text{Dummy} (= 1 \text{ if closed-end fund IPO}) + \text{error}_{t,i,j} \quad (3)$$

We run the regressions with all CEFs, and within each asset class. The independent variable is a dummy variable that equals 1 if the returns are of CEF IPOs and 0 otherwise. Hence, the coefficient $\beta_{t,i}$ indicates the level of CEF IPO underperformance relative to seasoned CEFs in the six months, one year, or three years after the IPO. The intercept $\alpha_{t,i}$ reflects the average return of size-matched seasoned funds. When estimating the regression with all funds, we cluster standard errors by IPO year and fund type to control for any correlation in returns. Table 3 reports the regression results.

[Insert Table 3 Here]

Panel A of Table 3 reports the regression results using 6-month post-IPO BHRs, not including returns on the first trading day. The average first-day return is 0.21%, measured from the offer price to closing price, and hence does not have a material impact on the post-IPO performance. In the column “All Funds”, the coefficient of the dummy variable is -8.52, meaning that on average CEF IPOs underperform by 8.52% relative to the seasoned CEFs

¹⁷ We also match by fund premium and the results are discussed in Section 3.4.

¹⁸ A municipal bond CEF that went public in 1988, for instance, might be used as a seasoned municipal bond CEF for municipal bond CEF IPOs in 1990, 1991, three IPOs in 1993, 2001 and 2009 so long it is still publicly traded. Some of the 1-year return periods will overlap, but not all. CEF IPOs without a match are early municipal bond CEF IPOs due to lack of a seasoned fund in the same fund category.

¹⁹ If a CEF IPO has less than three years of return data when $t=3$ years, we measure the return until the delisting date. If a matching seasoned fund is delisted, we select another seasoned fund in the same asset class with the closest fund size as the IPO at the time of the delisting of the first seasoned fund.

in the first six months post-IPO. This level of underperformance is statistically and economically significant. In unreported results, we find that 827 out of 985, or 84%, of CEF IPOs with matching seasoned funds underperform. Because the average return of seasoned funds is 3.77%, the 8.52% underperformance implies that CEF IPOs on average earn a negative BHR of -4.75% in the six months post-IPO (-4.54% if measured from the offer price). Panel B reveals that by one year after the IPO, the average underperformance widens to 11.05%, with a negative BHR of -3.13%.

The underperformance of CEF IPOs varies across fund types, though all types have reliable underperformance and negative average 6-month BHRs. Domestic and foreign equity CEF IPOs underperform most: a remarkable 15% in six months and up to 25% in one year! Taxable FI and municipal bond CEF IPOs underperform by 6-7% in the first six months and by about 8% in one year. In unreported results, we find that only 10% of municipal bond CEF IPOs outperform their size-matched seasoned fund in the six months post-IPO. 29 CEF IPOs outperform their size-matched seasoned funds by more than 10% in the six months after the IPO, 13 of which are foreign equity funds. The larger standard errors of foreign equity CEF returns are because many are country-specific funds.

Panel C tabulates the regression analyses on the long-run returns of CEF IPOs. In three years, CEF IPOs on average underperform the matching seasoned funds by 13.54%, slightly greater than the first-year underperformance of 11.05%. The variation across fund types becomes greater, too. Foreign equity CEF IPOs underperform seasoned funds by 36.88%, whereas municipal bond CEF IPOs only underperform by 8.51%, similar to the first-year underperformance.

Overall, the coefficients of the CEF IPO dummy are statistically and economically significant at the 1% level in almost all fund types, from six months to three years post-IPO. Thus, CEF IPO underperformance is not driven by a specific fund category. The exceptions

to statistical significance at the 1% level are foreign equity CEF IPOs' 1-year and 3-year underperformance, which due to the large standard errors are statistically significant only at the 5% and 10% level, respectively. Except for foreign equity CEFs, most of the underperformance comes in the first six months after the IPO.

To show that CEF IPOs underperform throughout the sample period, we repeat the regression analyses in subperiods. Subperiod 1 is 1986-1992; subperiod 2 is 1993-2004; and subperiod 3 is 2005-2013. Table 4 reports the subperiod regression results for all CEFs and closed-end bond funds, respectively, using post-IPO 6-month BHRs. Standard errors are clustered by IPO year and fund category. Panel A shows that post-IPO underperformance exists in all subperiods, and is of remarkably similar magnitude. Panel B reveals that similar to the results in Table 3, bond funds have less severe, yet statistically and economically significant underperformance in all subperiods.

[Insert Table 4 Here]

3.3. Calendar-time Underperformance of Closed-end Fund IPOs

Tables 3 and 4 present event-study results, where each CEF IPO is weighted equally. Next, we conduct a calendar-time analysis. Following CSS (2009, Table 10), each month we form an unseasoned fund portfolio with CEFs less than 12-months old and a seasoned fund portfolio, for each fund category. We calculate the average difference between the monthly returns of the seasoned portfolio and the unseasoned portfolio, equally weighting each month when both portfolios have CEFs in them. If there have been no CEFs in an asset class in the past 12 months, no return difference is calculated.

[Insert Table 5 Here]

Panel A of Table 5 reports significantly positive monthly return differences, i.e., seasoned CEFs outperform in all categories during 1986-2013. Unseasoned domestic equity funds underperform the most, by 0.91% on a value-weighted basis and 1.35% equal-

weighted basis. Unseasoned bond funds underperform the least, ranging from 0.40% to 0.70% per month. In unreported results, the overall average of the equal-weighted difference in returns is 0.85% per month. This number translates into an annual underperformance of 10.2%, close to the event study result of 11.05% in Panel B of Table 3. If there are at least two funds in the seasoned and the unseasoned portfolios, we arrive at similar levels of underperformance, as shown in Panel B of Table 5.²⁰ To sum up, the underperformance of CEF IPOs is robust to using both event study and calendar-time analysis.

The calendar-time results in Table 5 are inconsistent with those reported in CSS (2009, Table 10), who report “economically significant overperformance” for foreign equity CEF IPOs, mixed evidence for domestic equity IPOs, and no evidence for “other” IPOs. In contrast, we document significant underperformance for unseasoned domestic equity, foreign equity, and other CEFs, and find stronger underperformance for muni and taxable FI unseasoned CEFs than do CSS.

We repeat the calendar-time analysis for the subperiod of 1986-2004, and of 1993-2004, respectively, as in CSS to see if the difference in sample periods can reconcile the differences between our results and theirs. Our subperiod results, reported in Internet Appendix Table A1, show insignificant underperformance of unseasoned foreign equity CEFs, especially from 1993-2004. The insignificant underperformance of unseasoned foreign CEFs is driven by the extremely high returns on two foreign equity CEF IPOs from 1995 and 1996 that invested in the Russian stock market when no other foreign equity CEFs went public. There are many months when the unseasoned portfolio only includes one of these two CEFs. When funds are value-weighted, we also document insignificant

²⁰ The event study results in Table 3 show that most of the CEF IPO underperformance happens in the first 6 months after the IPO. In the calendar-time approach, we use portfolios with IPOs from the prior 12 months, which is likely to dilute the underperformance. The reason to do so is because one year is usually used as being seasoned in the literature. A second reason is that using 12 rather than 6 months increases the number of months with an unseasoned portfolio in the calendar-time approach, given the clustering of CEF IPOs.

underperformance for the unseasoned portfolio in the category of other CEFs in the subperiod results. More details are reported in Internet Appendix Section A3.

Our subperiod results find reliable underperformance, however, for all four of the other asset categories. As with our inability to replicate the CSS results on the speed with which CEF IPOs move from a premium to a discount, our inability to replicate their underperformance results is probably due to their failure to correct for stale Bloomberg and Morningstar price or NAV data, as discussed in footnote 14.

For our full sample period from 1986 to 2013, Panel B of Table 5 reports calendar-time results when the portfolios are required to have at least two funds. For the Foreign Equity category, the average monthly underperformance is 1.19%, higher than the 0.89% in Panel A when the portfolios are permitted to have only one fund. This difference in returns shows the impact on the overall results of the higher returns following the Russian country fund IPOs in 1995 and 1996.

3.4. CEF IPO Performance with Matching on Premium

In this section, we test whether CEF IPOs underperform premium-matched seasoned funds, in contrast to size-matched seasoned funds.²¹ To a large degree, this procedure amounts to using the seasoned CEF with the highest premium as a benchmark against the CEF IPO in the same asset class. The average premia are reported in Internet Appendix Table A2. Because these premium-matched seasoned funds are most likely experiencing high demand and hence provide lower future returns, we predict less severe CEF IPO underperformance. Following the same design as in Table 3, where size-matched

²¹ A CEF IPO is included in the sample if its first available month-end premium is within the second calendar month-end after the IPO. Matching seasoned funds are of the same fund type as CEF IPOs and are closest in month-end premium. There are 37 CEFs that went public from 1925-1985 and are used in the fund type and size matching analysis, but for which we have not collected the monthly NAVs.

seasoned funds are used, we repeat the regression analysis with CEF IPOs and their premium-matched seasoned funds in Table 6.

[Insert Table 6 Here]

As expected, the short-run underperformance of CEF IPOs relative to premium-matched seasoned funds is less severe relative to Table 3, but is still statistically and economically significant. It is also worth noting that the intercept, which represents the average 6-month BHR on seasoned funds, is 1.93% for all funds in Panel A of Table 6, versus 3.77% in Panel A of Table 3. This lower intercept suggests that premium-matched seasoned funds have lower returns than size-matched seasoned funds. Panel B of Table 6 shows that by one year post-IPO, CEF IPOs on average underperform by 7%, compared to the 11.05% underperformance based on size matching as reported in Table 3. Subperiod results in Internet Appendix Table A3 show that the results are robust to different time periods.

One concern about matching on fund size for foreign equity funds is that the geographical region of investment for an IPO and its size-matched seasoned fund might be very different.²² For example, a European fund IPO might be matched to a seasoned Taiwan fund. Compared to Table 3, Table 6 reports less severe underperformance and smaller standard errors of foreign equity CEF IPOs relative to seasoned funds, suggesting that premium-matching does a better job of finding similar funds. Consequently, the premium-matched 13.31% underperformance in the first 12 months in Table 6 is more significant than the size-matched underperformance of 25.37% reported in Table 3.

4. Closed-end Fund IPOs: Sold, Not Bought

²² One can also argue that municipal bond CEFs focusing on one state such as California or New York are different from municipal bond CEFs investing in different states. The premium-matching can result in closer matches if state-level effects are important to control for.

Thus far, we have shown that CEF IPOs yield negative raw returns and significantly underperform matching seasoned funds in the year after the IPO, with most of the underperformance in the first six months. It is hard to justify this short-run underperformance as an equilibrium outcome because the negative raw returns are avoidable by investing in seasoned funds instead of IPOs. The large short-run inferior returns of CEF IPOs contrast with the evidence from operating company IPOs. Table A4 in the Internet Appendix shows that, in the first six months post-IPO, U.S. operating company IPOs from 1986 to 2013 outperform size-matched seasoned firms by 1.22%, and size and book-to-market matched seasoned firms by 2.13%, not including the first-day return.

The CEF IPOs' underperformance is not predicted by the liquidity transformation hypothesis (CSS (2009)) nor the investor sentiment hypothesis (LST (1991)). These two explanations predict more CEF IPOs when discounts on seasoned funds are smaller than normal, yet neither predict that CEF IPOs underperform seasoned funds in the same asset class. We next address the question: How are CEFs brought to the market despite their negative raw returns and significant underperformance?

Unlike operating companies, few CEF IPOs attract strong demand from investors, except for some foreign equity fund deals. This is partly due to little underpricing, and partly due to limited growth potential.²³ Not surprisingly, HLS (1996) infer that CEF IPOs are marketed to less sophisticated investors, whose demand for financial securities can be created.²⁴ In this section, we propose an agency-based hypothesis for CEF creation: CEF promoters maximize profits by selling CEF IPOs to retail investors within brokers' reach as

²³ CEFs, like REITs and MLPs, are required under U.S. tax law to distribute almost all income to shareholders to avoid being taxed at the corporate level. Thus, they are unable to reinvest earnings in positive NPV projects.

²⁴ Gao and Ritter (2010) and Huang and Zhang (2011) document that marketing is effective in promoting seasoned equity offerings. They show that the marketing service conducted by underwriters (usually in the format of road shows) is beneficial to the issuers via increasing the transitory demand elasticity or shifting up and flattening demand. Jain and Wu (2000) document that mutual funds that advertise attract more inflows without providing superior performance post-advertisement.

long as the benefits outweigh the costs of doing so. As Weiss (1989) states, “more than one underwriter has admitted that CEF shares are ‘sold not bought’”.

Under this agency hypothesis, CEF IPO volume will correlate with the benefits of selling CEF IPOs relative to the reputational costs of doing so. The benefits are the net sales load and the PV of net management fees. The reputational costs are the loss of clients who recognize the underperformance of new CEFs. A linear objective function with capacity constraints yields boundary solutions to the profit maximization problem: CEF promoters either sell as much as possible or nothing at all *within* a fund type, a pattern that fits the issuance activity in the sample period. Three regularities support this agency hypothesis: a high frequency and intensity of price support in the few weeks post-IPO, the clustering of CEF IPOs in the second half of the month, and high retail ownership. Consistent with our agency-based hypothesis, we find that less obvious recent post-IPO underperformance, as measured by the fraction of recent CEF IPOs experiencing price declines, and smaller seasoned fund discounts can predict greater IPO volume in the same asset class.

4.1 Determinants of closed-end fund IPO volume

The following Tobit regression investigates the determinants of CEF IPO volume, using monthly data from 1986 to 2013. The dependent variable is the inflation-adjusted monthly proceeds of CEF IPOs. The explanatory variables are the potential determinants of CEF IPO volume, measured as the average values from the previous three months. Months with missing values from the prior three months are assigned the average value of its asset class. Subscripts t and j indicate the month and the fund type, respectively. Recent CEF IPOs refer to those that went public in the last five months. Thus, the fraction of recent IPOs with a price decline is the average fraction of IPOs from the prior five months, averaged over months $t-3$, $t-2$, and $t-1$.

$$\begin{aligned}
\text{Closed-end fund IPO Proceeds}_{t,j} = & \\
& \alpha_j + \beta_{1j} \times \text{fraction of recent CEF IPOs with a price decline}_{t-3,t-1,j} + \\
& \beta_{2j} \times \text{seasoned fund premium 2nd quartile}_{t-3,t-1,j} + \\
& \beta_{3j} \times \text{seasoned fund premium 3rd quartile}_{t-3,t-1,j} + \\
& \beta_{4j} \times \text{seasoned fund premium 4th (top) quartile}_{t-3,t-1,j} + \\
& B \times \text{controls}_{t-3,t-1,j} + \text{error}_j
\end{aligned} \tag{4}$$

The fraction of recent CEF IPOs with a market price lower than the offer price captures how obvious the CEF IPO underperformance is. The more obvious the underperformance is, the higher the reputational costs become. Seasoned funds premium quartiles are three dummy variables that indicate whether the seasoned fund premium is between the 25th and the 50th percentile, the 50th and the 75th percentile, or above the 75th percentile in each fund type. As in CSS (2009, Table 9), we also control for the Pastor-Stambaugh (2003) level of aggregate liquidity, the aggregate illiquidity (Sadka (2006), not available after the end of 2008), the University of Michigan Consumer Sentiment Index (top-third income households), the term spread (10-year minus 1-year Treasury constant maturity rate, measured as a percentage), the S&P 100 volatility index, and the percentage corporate bond spread (AAA corporate bond yield minus Treasuries).²⁵

[Insert Table 7 Here]

Panel A of Table 7 reports the mean and the standard deviation (in parentheses) of the key variables in the Tobit regressions, as well as the lower cutoff points for the dummy variables. Panel B of Table 7 shows the Tobit regression results. Inspection of Panel B suggests that taxable fixed income, foreign equity, and other CEF IPOs are sensitive to how obvious the underperformance of recent IPOs is. A one standard deviation increase in the fraction of recent foreign equity CEF IPOs with a price decline translates to \$261.9 million

²⁵ One variable not included here is the tax difference in CSS (2009). Gürkaynak, Sack, and Wright (2007) argue that it is difficult to evaluate the tax effect on the yield curve, partly because large groups of Treasury investors, such as pension funds, are already tax-exempt. The tax advantage provided by Treasury securities at the state and local level also depends on where the investors reside.

less proceeds in the current month. This is a large effect given that the standard deviation of monthly foreign equity CEF IPO proceeds is \$410.6 million. When seasoned funds trade at a smaller discount or a higher premium than normal, there will also be more new funds of the same fund type, as predicted by the investor sentiment hypothesis, the liquidity transformation hypothesis, and our agency hypothesis. Overall, the results in Table 7 are consistent with the agency-based hypothesis.

4.2. Price Support

It is common practice for both operating company and CEF IPOs to include an overallocation option, where a short position is created at the IPO by allocating at least 115% of the new issue: the additional 15% is the overallocation option shares. If there is weak demand once trading starts, underwriters can buy back up to 15% of the shares in the aftermarket and retire them, as if they were never issued. This share purchasing, if it occurs, is termed price support.²⁶

Given the relatively weak demand for CEF IPOs, we posit that it is critical for CEF promoters to conduct price support, when necessary, to keep the aftermarket price afloat so that investors do not immediately incur a loss in CEF IPOs.²⁷ But how easy is it to support the price of CEF IPOs? And to what extent do underwriters engage in such activity? HLS (1996) document that almost all CEF IPOs from 1988 to 1989 received price support by

²⁶ Zhang (2004) shows that it can be optimal for the underwriters to oversell an IPO and take a naked short position when there is weak demand, even though they expect to buy some shares back after the IPO. This overallocation behavior benefits the issuer because they get a higher expected offer price. Zhang assumes that some of the investors receiving shares will become buy-and-hold investors, but are less likely to do so if instead they needed to acquire the shares in the aftermarket.

²⁷ Price support may add liquidity to the CEF IPOs, and hence contribute to the willingness to accept lower returns for CEF IPOs. We compare the average turnover ratio of CEF IPOs with their size- or premium-matched seasoned funds in the four weeks post-IPO. New funds have only slightly higher turnover than matched seasoned funds, which cannot justify the severe inferior returns of CEF IPOs relative to their matched seasoned funds in the same asset class, unless the liquidity premium is implausibly large, given that CEF IPOs underperform seasoned funds by 8.52% in the first 6 months, an annualized 17% rate.

analyzing the changes in the bid-ask spread and buy-sell imbalance in their first month of listing. Is such intensive price support still occurring?

[Insert Table 8 Here]

Table 8 shows that from 1986 to 2013, the average turnover ratio of CEF IPOs on the first trading day is only 3.6%, much lower than the 46.1% turnover ratio for operating company IPOs. The low turnover also lasts through the entire 45-day overallotment exercise window. Using TAQ (Trade and Quote) data from 1993 to 2012, when 625 CEFs went public, we locate 594 CEFs with available data and compute the cumulative turnover ratio during their first 30 trading days. The cumulative turnover ratio of these CEF IPOs, not reported in Table 8, is only 14.6%, which means that the 15% overallotment option on average can fully absorb selling pressure, even if all trades are seller-initiated.

Empirically, we identify price support by trades executed at the offer price on the first trading day, and the fraction of such trades among all trades reflects the level of price support, assuming that IPOs are most likely to be stabilized at the offer price (Lewellen (2006)).²⁸ Accordingly, we find that 571 out of 594, or 96% of all CEF IPOs from 1993 to 2012, receive price support on the first trading day. Even more astonishingly, the majority of these CEF IPOs experience an intense level of price support: over 90% of the trades were at the offer price, especially when the stock market falls.²⁹ In contrast, out of 1,422 Nasdaq operating company IPOs from 1996 to 1999, only 37% experienced any price support, and less than 2% have such an intensive level of price support (Lewellen (2006)).

So far, the evidence of a low turnover ratio and a high fraction of trades executed at the offer price indicates that extended price support is a common practice for CEF IPOs.

²⁸ Leonard, Nixon, Shrider, and Shull (2010) identify CEF IPOs as price supported if the closing price is within a \$0.25 bound of the IPO price. Their sample includes 245 CEF IPOs from 2002 to 2006 and reports similar results as we do in this section.

²⁹ Figure A2 in the Internet Appendix plots the frequency of CEF IPO transactions at the offer price, conditional on the market return being positive or negative.

Next, we gauge the impact of price support by contrasting the short-run buy-and-hold return (BHR) of CEF IPOs against their size-matched seasoned funds, which are free of price support. We also control for the aggregate stock market return to control for the impact of anchoring, as documented in psychology, marketing, economics, and finance research (Tversky and Kahneman (1974), Kahneman (1992), Loughran and Ritter (2002)).³⁰

For CEF IPO investors, a plausible anchoring point is the offer price, making them sensitive to the aftermarket price dropping below the offer price. When the equity market rises, new funds' prices are more likely to rise if the underlying assets are invested in the equity market, making price support less necessary. However, if the market retreats, new funds' prices are more likely to fall, giving underwriters more incentive to support the price and postpone the inevitable price decline. Hence, we predict that when the stock market goes down, CEF IPOs, especially non-bond CEF IPOs, will have lower raw returns but higher abnormal returns than matched seasoned funds that are free of price support. For bond funds, the predictions are less clear, given that bond and stock returns had very low correlation during our sample period.

[Insert Figure 4 Here]

Figure 4 plots the average BHR and the buy-and-hold abnormal return (BHAR) in the first 40 trading days post-IPO for 981 CEF IPOs from 1986 to 2013, based on whether the CRSP value-weighted index goes up or down in the first 20 trading days. The top plots use domestic equity, foreign equity, and other CEF IPOs, or "stock funds". The bottom plots use municipal bond and taxable FI CEF IPOs, or "bond funds". Plots on the left show the average BHRs of CEF IPOs and those on the right show the average BHARs of CEF IPOs

³⁰ Research also suggests that CEF investors respond to the aggregate stock market even when the fund holds assets in other classes. For example, U.S. investors in foreign equity CEFs pay more attention to domestic news than news in the country where the fund invests (Hardouvelis, LaPorta, and Wizman (1994), Bodurtha, Kim, and Lee (1995)). When foreign equity CEFs' prices do react to country-specific news, it is when such news appears in prominent U.S. news outlet such as the *New York Times* (Klibanoff, Lamont, and Wizman (1998)).

against the size-matched seasoned funds. The top left plot indicates that the average one-month BHR of stock funds is 0.4% when the stock market goes up and -2.9% when it goes down. The top right plot reverses the pattern just seen on the left: when the market goes up, the BHAR of CEF IPOs is -1.9% because they did not gain as much as their size-matched seasoned funds. When the market goes down, the seasoned CEFs lose 3.7%, leaving the BHAR of CEF IPOs at 0.8%, thanks to intensive price support.

These results confirm our prediction that price support is more aggressive in down markets, especially for stock funds. The top right plot of Figure 4 also suggests that price support is used in many cases for about 20 trading days after the IPO, with the abnormal returns pattern being robust to using a 10, 15, or 25 post-IPO trading-day market return to define up and down markets. Compared to operating company IPOs usually having ten days of price support (Hanley et al. (1993), Benveniste et al. (1998)), price support for CEF IPOs apparently lasts twice as long.

Such intense price support results in an artificially inflated market price maintained at or near the offer price of a CEF IPO, which could harm investors who invest immediately after the IPO (Fjesme (2016)). Lewellen (2006) and Benveniste et al. (1998) propose different interpretations on how price support affects retail investors' welfare: the former argues price support benefits retail investors, and the latter argues against it. The evidence in Figure 4 suggests that once price support ends, the market price of CEF IPOs on average falls, a finding that is contrary to Lewellen's discussion (2006, page 648).

4.3. Clustering of the IPO Day

Figure 5 shows the number of CEF IPOs in each asset class on each calendar day of the month. We can see that CEF IPOs are more likely to occur in the second half of a month, especially in the last 10 days. Almost 89% of all CEF IPOs, especially bond and other funds,

happen in the second half of the month, a pattern not observed in operating company IPOs.³¹

[Insert Figure 5 Here]

Discussions with financial advisors at a full-service brokerage firm suggest that this timing preference could be related to the agenda of stockbrokers. Brokers know that a CEF IPO, though yielding a higher commission, is not a particularly lucrative investment for their clients, even compared with seasoned funds. Therefore, they are more likely to promote it when having difficulty generating enough revenue for the brokerage firm. As a month end approaches, whether they can meet the monthly revenue quota or guideline becomes clearer, and selling CEFs becomes more attractive for these brokers. Underwriters respond to this incentive by selecting IPO dates that fit the brokers' schedule.

Another reason for the clustering of CEF IPOs towards the end of the month could be due to the fact that brokerage firms tend to issue account statements at month-end. Suppose that the signal-to-noise ratio about whether a broker-recommended investment was a wise choice fades over time. The window for underwriters to exercise a CEF IPO's 15% overallotment option is usually 45 days, instead of 30 days for operating company IPOs. Therefore, CEFs going public in the second half of a month allow their prices to be supported until the second month-end post-IPO, reducing the likelihood of looking like a bad investment when investors receive brokerage statements showing the cumulative capital gain or loss on a security at month-end.

4.4. Institutional and Retail Ownership

Using Thomson Reuters 13-f filing data from March 1990 to December 2013, we compute the average, median, and maximum institutional ownership in CEFs and

³¹ For the 82 CEF IPOs retrieved from CRSP, 56 CEFs have their first trading day in the first half of the month, which we assume is the IPO date. Excluding these CEF IPOs retrieved from CRSP, 94% of all CEF IPOs occur in the second half of the month.

operating companies listed on the New York Stock Exchange, American Stock Exchange (now NYSE MKT), and Nasdaq. The results are reported in Table 9.

[Insert Table 9 Here]

Table 9 shows that institutional ownership in CEFs, despite a typical public float of 100%, is much lower than in operating companies, whether in the first six months or afterwards. Pontiff (1995) hypothesizes that the lack of institutional interest is due to mutual fund investors avoiding double advisory fees: both to an open-end mutual fund advisor and to the CEF managers. Panel A reports that institutions hold about 26% of operating company shares in the first six months of trading. With an average public float of 30% shortly after the IPO, 87% (26%/30%) of the public float is in the hands of institutions.³² Yet institutions hold only 2% of CEF shares. Consistent with our results, HLS (1996) report that institutions at the first post-IPO quarter-end hold less than 5% of CEF shares, using 65 IPOs from January 1988 to May 1989. These statistics indicate that retail investors are the overwhelming majority of CEF IPO investors.

Institutions do buy seasoned funds: the all-time average (net of the first six months), albeit low, more than triples the first six-month average, suggesting that institutions probably know that CEF IPOs materially underperform seasoned funds shortly after the IPO. Institutional shareholdings also vary a lot across fund type. Municipal bond CEFs have the lowest institutional shareholdings, only 0.55% in the first six months post-IPO. Foreign equity CEFs have the highest institutional shareholdings: the all-time average is 18%, more than twice as high as the overall average.

³² In general, VC and buyout funds do not file 13-f forms, but a 13d or a 13g form, depending on their stakes in the companies they invest in or whether their investment is active or passive. The 30% public float number has a slight downward bias because it typically does not include overallotment shares, which causes an upward bias in the 87% institutional ownership number.

Interestingly, retail investors at a discount brokerage also prefer seasoned CEFs over recent CEF IPOs.³³ From 1991 to 1996, 180 municipal bond CEF IPOs went public and raised \$40 billion (2014 dollars). However, in unreported results, we find that only 9 municipal bond CEFs were purchased within the first 120 trading days after the IPO by our sample investors during 1991-1996. Additional discussion about the retail investors at the discount brokerage is in the Internet Appendix Section A5.

5. Conclusions

We are the first to document that U.S. closed-end fund IPOs reliably underperform size- or premium-matched seasoned funds in the same asset class, especially in the first half year post-IPO. From 1986 to 2013, 993 CEFs went public and on average produced a 6-month raw return of -4.75% from the first close, underperforming size and asset class-matched seasoned funds by 8.52%. The underperformance is present in all subperiods and asset classes. The first-year underperformance widens to 11.05%, translating into an economically material wealth transfer of about \$44 billion from primarily retail investors to CEF promoters.

We propose an agency-based explanation for why CEF IPOs are created despite their predictably disappointing returns. We posit that CEF IPOs are “sold, not bought”: investors rarely proactively seek to invest in CEF IPOs but are persuaded to do so by full-service brokerage firms that maximize their self-interest. CEF promoters benefit from the sales load and the present value of management fees in excess of costs when a CEF IPO occurs. The reputational cost is the loss of clients who recognize the subsequent underperformance. The benefits of sponsoring a CEF IPO exceed the costs when the

³³ We thank Terrance Odean for kindly providing this data. Please see Barber and Odean (2000) for detailed descriptions of the data.

expected underperformance is sufficiently small and delayed, which occurs when existing CEFs of the same asset class sell at a smaller discount than normal. We find that fewer recent CEF IPOs with price declines, and seasoned funds trading at smaller discounts than normal, predict greater monthly CEF IPO volume. Consistent with this agency-based hypothesis are three regularities: intensive post-IPO price support to delay and obfuscate the price decline, clustering of CEF IPOs in the second half of the month, and lack of participation from institutions and discount-brokerage retail investors.

Our explanation for the creation of CEF IPOs resolves half of the closed-end fund puzzle. Our agency-based explanation does not address the other half of the puzzle, which is why there is time variation in the average discount. The investor sentiment and liquidity transformation hypotheses address this part of the puzzle.

Our results differ dramatically from those in Cherkas, Sagi, and Stanton (2009) in terms of how long it takes before CEF IPOs start trading at a discount and the magnitude and reliability of their underperformance in the first six months and one year after the IPO. Such discrepancies are probably driven by the use of stale data during the first half of their sample period that they failed to correct for, which has a material effect on their conclusions of weak underperformance over a prolonged period. Using hand-collected data from *Barron's* and other sources, we find that on average domestic equity, foreign equity, and other CEFs start trading at a discount within three months of the IPO, and taxable and municipal bond CEFs start trading at a discount within five months. The quick transition from trading at a premium to a discount contributes to the significant underperformance per period after a CEF goes public. The economically large underperformance in the months after an IPO rejects the ability of the liquidity transformation or investor sentiment hypotheses to fully explain the creation of CEF IPOs.

Our findings have important policy implications in terms of how to evaluate whether a financial product is a good investment. In recent years, there has been a policy debate about whether financial advisors should be held to a fiduciary standard or a suitability standard. Investing in a CEF IPO may be suitable for a diversified investor. Yet, given our evidence that all categories of CEF IPOs on average have negative raw returns in the first six months and economically significant negative abnormal returns relative to existing marketable securities that an investor could otherwise purchase, it is hard to imagine that most CEF IPOs, as traditionally structured, could meet the fiduciary standard. Recent CEF IPOs, however, have had lower sales loads, and most have termination dates, at which point the fund will be liquidated at its NAV. Both changes should result in less short-run underperformance for investors, but also less of an incentive to create new CEFs.

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Figure 1 Closed-end Fund IPOs Premium and Sales Load by Year

Description: Figure 1 plots the annual mean of the percentage sales load of closed-end fund IPOs and their premium as of the first month-end post-IPO from 1986 to 2013. The mean sales load is 5.20% for the 746 CEF IPOs for which sales load information is available. The mean first-month premium is 5.41% for the 695 CEF IPOs for which information is available. The X-axis represents the year of CEF IPO. The Y-axis represents the premium and sales load in percentage.

Interpretation: The mean closed-end fund premium shortly after going public closely tracks the mean sales load received by the underwriters.

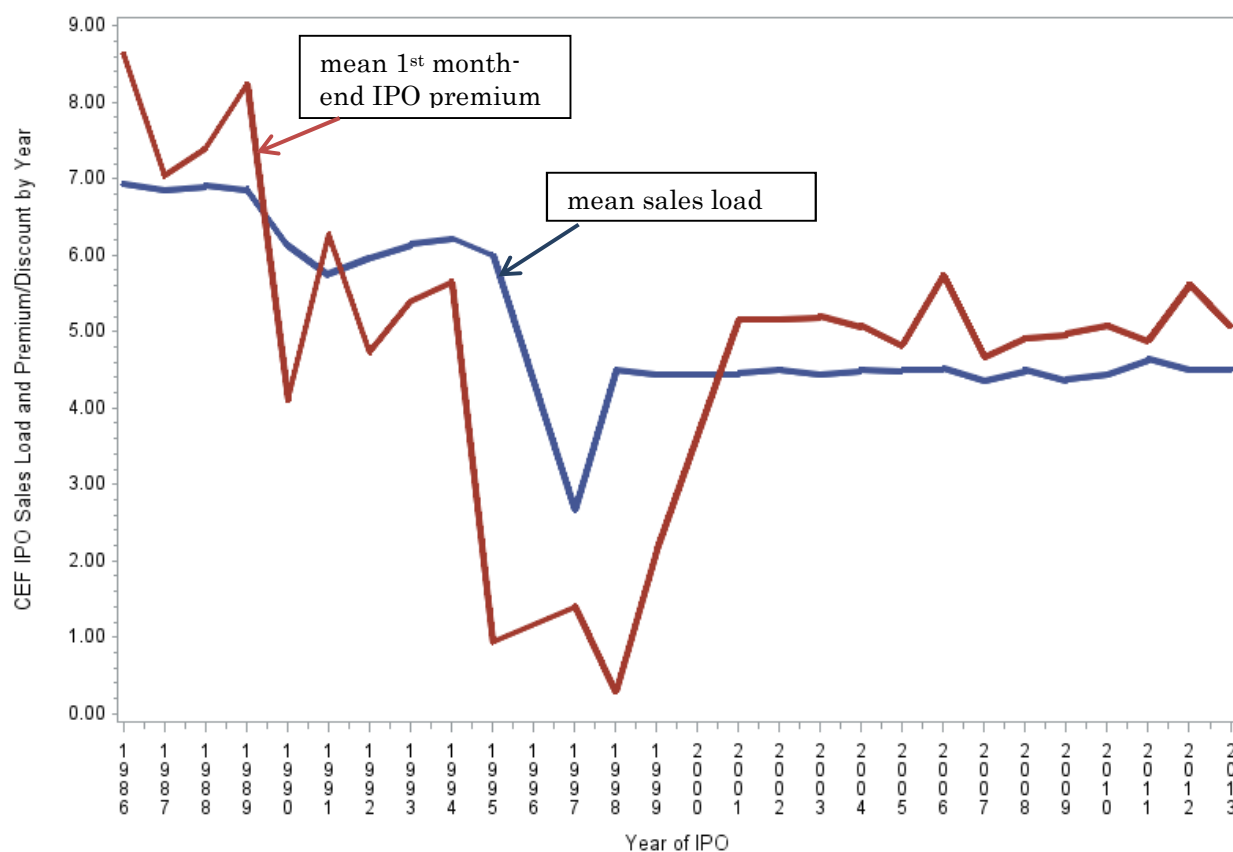


Figure 2 Closed-end Fund Monthly Premium or Discount by Type and Event Month

Description: Figure 2 shows the monthly average premium or discount of 993 closed-end funds in 1986-2013 from the time of their IPO to 60 months post-IPO. When the market price is higher than net asset value (NAV), the fund trades at a premium. Otherwise, the fund trades at a discount. A discount is a negative premium.

$$\text{Premium (or Discount)} = \frac{\text{Price} - \text{Net Asset Value}}{\text{Net Asset Value}}$$

At event month=0, number of observation (N) =695; at event month=1, N=948; at event month=2, N=976; at event month=5, N=982.

Interpretation: On average, equity funds fall to a discount within three months of the IPO and bond funds fall to a discount within five months.

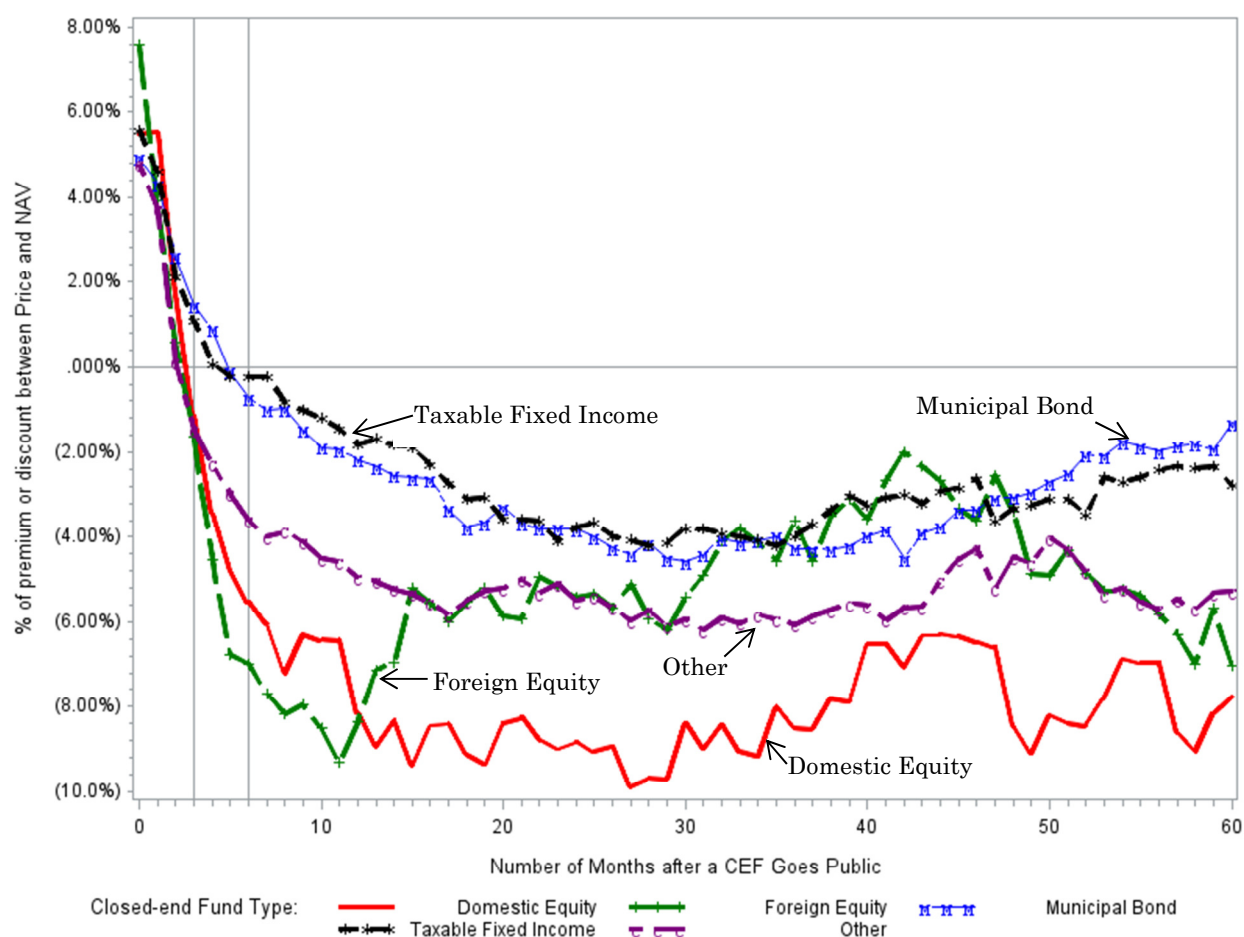


Figure 3 Average Monthly CEF IPO Proceeds by Seasoned Fund Premium

Description: Figure 3 shows the average monthly closed-end fund IPO proceeds when seasoned funds in the same asset class are trading at different premium (or discount) level. The quarterly average premium is measured from month $t-3$ to month $t-1$. The proceeds are inflation adjusted, measured in millions of 2014 dollars. The y-axis is for the average monthly CEF IPO proceeds. The number of asset class-months in each of the three bins are, respectively, 204, 1084, and 293, going from less than -10% to above 0%. The total of 1,581 asset class-months is less than 333 months $\times$ 5 asset classes due to some asset classes not having seasoned fund premium information at the beginning of the sample period.

Interpretation: When existing funds are at a large discount from NAV, few new funds are created; when there is a premium or small discount, many more funds come to market and raise money.

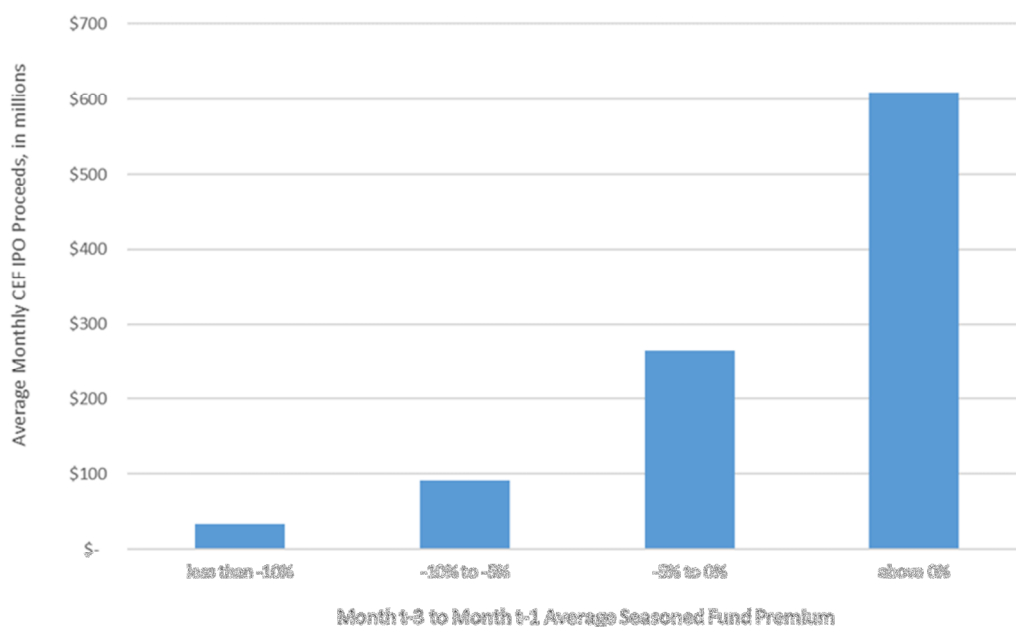


Figure 4 Buy-and-hold Raw and Abnormal Return of Closed-end Fund IPOs, 1986-2013

Description: Figure 4 shows the average raw and abnormal buy-and-hold returns (BHRs) of 981 closed-end funds from 1986-2013 in the first 40 trading days after the IPO, depending on whether the CRSP value-weighted index goes up or down in the first 20 trading days post-IPO. The red dash lines are when stock market goes down. The green solid lines are when stock market goes up. The top figures show the BHR of domestic equity, foreign equity and other CEF IPOs, or “stock funds”. The bottom figures show the BHR of municipal bond and taxable fixed income CEF IPOs. The figures on the left are the average raw BHRs of CEF IPOs. The figures on the right are the average abnormal BHRs of CEF IPOs relative to the average BHRs of size-matched seasoned funds. The vertical reference line is the 20th trading day, or about one calendar month after the IPO.

Interpretation: When post-IPO market returns are negative, new CEF stock funds tend to decline, but they have higher abnormal returns than when the market rises, suggesting that price support by underwriters temporarily delays the inevitable underperformance.

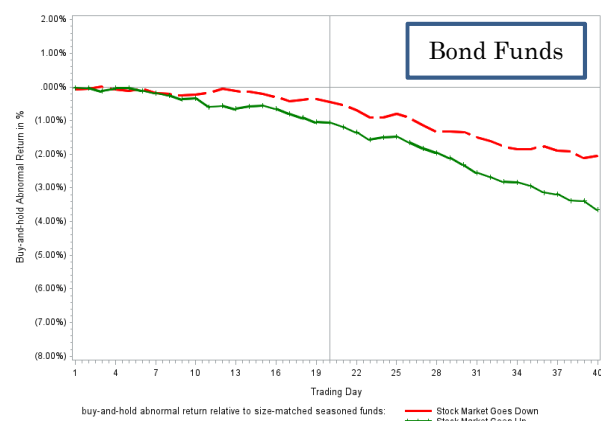
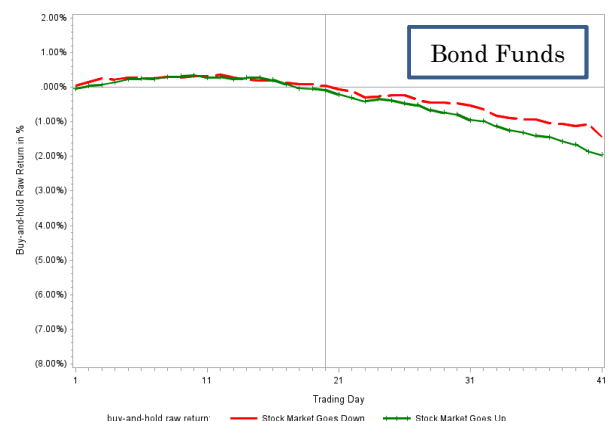
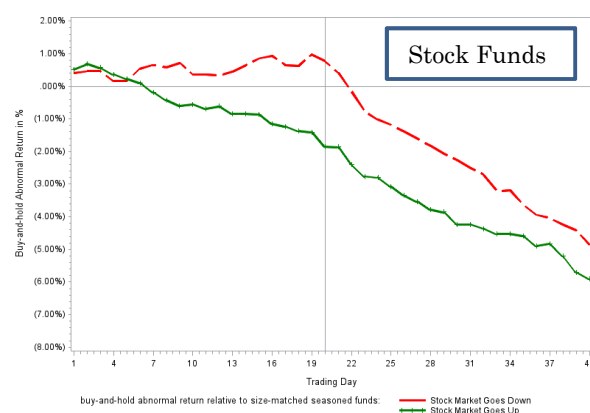


Figure 5 Number of Closed-end Fund IPOs by Day of the Month

Description: Figure 5 shows the number of closed-end fund IPOs by asset class and by calendar day of a month, using 993 CEF IPOs from 1986 to 2013.

Interpretation: CEFs rarely go public during the first half of the month (a pattern not observed for operating company IPOs).

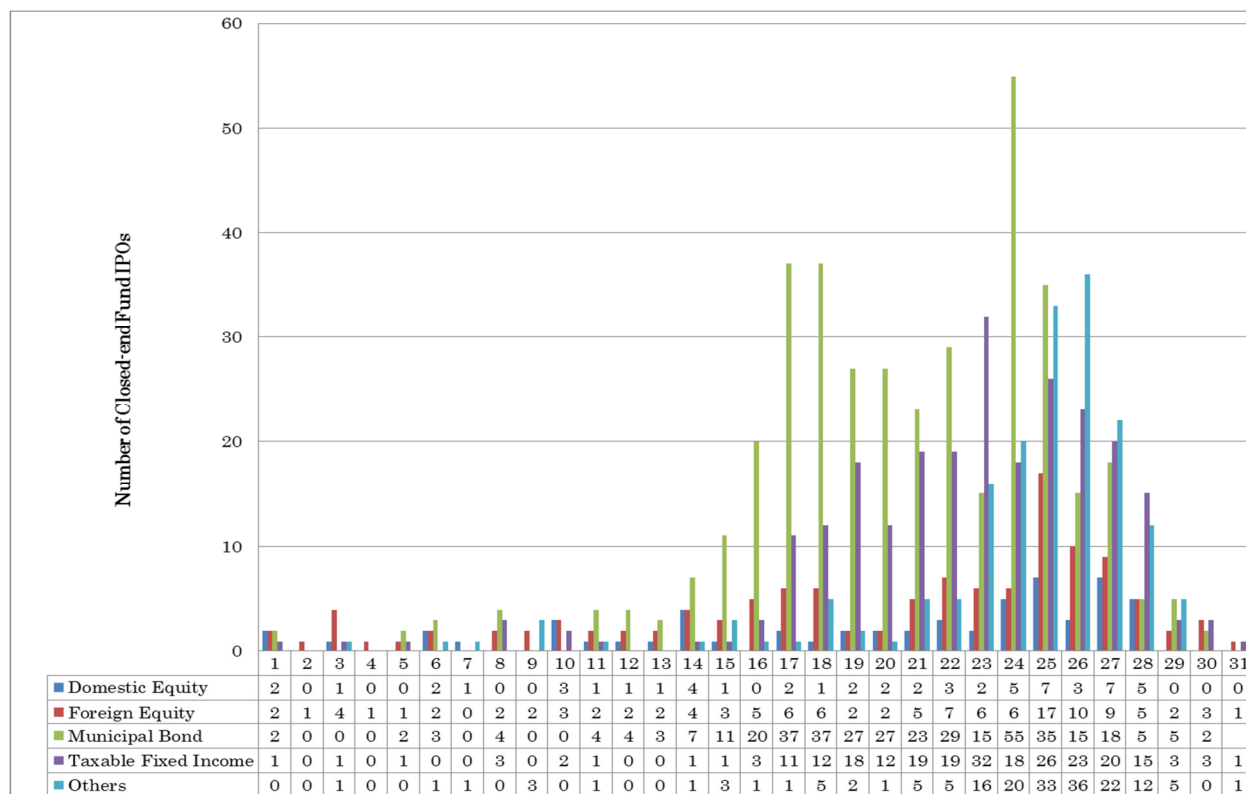


Table 1 U.S. Closed-end Fund IPOs from 1986 to 2013

Description: Table 1 reports the number of closed-end fund Initial Public Offerings (IPOs) and the proceeds by fund type from 1986-2013. The last column reports the aggregate proceeds of CEF IPOs as a percentage of the total proceeds raised by operating company IPOs in the same year. Proceeds are in 2014 million \$. Domestic Equity includes general equity CEFs and specialized equity CEFs. Foreign equity refers to CEFs that invest in non-U.S. equities. Municipal Bond CEFs invest in bonds whose interest payments are exempt from Federal income taxes. Taxable Fixed Income CEFs include funds that invest in high yield bonds, investment grade bonds, mortgage bonds, loan participations, and other domestic taxable bonds as well as funds that seek worldwide income. Others include CEFs that mainly invest in preferred stocks, MLPs, or convertible securities.

Interpretation: CEF IPOs are clustered, and the clustering depends on the asset class.

Year	Domestic Equity		Foreign Equity		Municipal Bond		Taxable Fixed Income		Others		Total		As % of other IPOs' proceeds
	N	Proceeds	N	Proceeds	N	Proceeds	N	Proceeds	N	Proceeds	N	Proceeds	
1986	10	4,076	8	1,096	1	671	3	3,058	4	474	26	9,374	32.8%
1987	4	683	7	1,434	7	5,287	10	9,153	4	3,336	32	19,892	80.9%
1988	1	253	6	1,427	14	5,759	40	28,305	3	2,646	64	38,389	509.7%
1989	1	175	7	1,847	17	7,992	13	4,779	3	562	41	15,354	152.6%
1990	2	99	21	5,105	11	3,814	5	1,574	2	412	41	11,003	140.1%
1991	1	816	3	379	33	12,877	4	1,641	1	175	42	15,888	59.5%
1992	2	139	10	1,674	66	16,526	20	9,578	2	369	100	28,286	73.5%
1993	2	423	7	1,978	77	11,960	32	14,719	4	858	122	29,936	58.1%
1994	2	96	20	9,462	4	736	9	1,785	4	1,191	39	13,269	48.0%
1995	0	0	1	105	0	0	0	0	2	316	3	421	1.0%
1996	1	34	1	149	0	0	0	0	0	0	2	183	0.3%
1997	0	0	1	104	4	889	1	420	0	0	6	1,413	3.0%
1998	0	0	0	0	10	1,754	12	8,618	1	292	23	10,663	21.9%
1999	2	485	0	0	31	4,061	1	371	1	129	35	5,046	5.5%
2000	1	441	0	0	0	0	0	0	0	0	1	441	0.5%
2001	0	0	0	0	31	6,318	4	1,926	2	1,089	37	9,332	20.4%
2002	0	0	0	0	59	9,232	5	2,093	13	10,404	77	21,729	48.0%
2003	5	4,624	0	0	8	2,599	16	10,290	20	13,284	49	30,796	250.4%
2004	10	4,816	7	2,297	0	0	13	7,324	21	13,089	51	27,525	69.8%
2005	5	1,691	7	2,285	0	0	6	1,571	29	20,415	47	25,962	74.7%
2006	4	4,996	6	2,591	1	231	5	1,810	5	3,154	21	12,783	35.5%
2007	4	1,070	9	7,212	1	239	7	5,028	20	18,608	41	32,157	77.9%
2008	0	0	1	158	0	0	1	133	0	0	2	291	1.2%
2009	0	0	0	0	8	1,149	3	910	2	443	13	2,502	17.1%
2010	0	0	0	0	1	216	11	4,665	5	3,589	17	8,470	26.2%
2011	1	178	1	410	0	0	5	979	11	4,728	18	6,294	21.9%
2012	0	0	0	0	3	2,758	9	5,100	9	3,858	21	11,716	36.5%
2013	0	0	0	0	3	656	11	8,045	8	4,793	22	13,494	34.2%
Total	58	25,092	123	39,709	390	95,723	246	133,874	176	108,209	993	402,607	38.9%

Table 2 CEF IPO Premium, Calendar-Time Results, 1986-2013

Description: Table 2 reports the average monthly premium (or discount) of seasoned CEFs and the premium difference between the CEF IPO portfolio and the seasoned fund portfolio from 1986-2013. The IPO portfolio includes IPOs from the current and the last month. The seasoned fund portfolio includes CEFs that are over 12 months old. The monthly portfolio price over NAV ratio is either equally weighted, or size weighted. Number of months measures the months when both an IPO portfolio and a seasoned portfolio can be formed.

$$\text{Average Premium Difference} = \frac{\sum[(\text{Avg.} \frac{\text{Price}}{\text{NAV}})_{\text{IPO Portfolio}} - (\text{Avg.} \frac{\text{Price}}{\text{NAV}})_{\text{Seasoned Portfolio}}]}{\text{Number of Months with Observations}} \times 100\%$$

Panel A reports the average monthly premium (or discount) of seasoned CEFs and the premium difference when at least 1 CEF is in the seasoned portfolio and 1 CEF is in the IPO portfolio. Panel B requires at least 2 CEFs in each portfolio. Domestic Equity includes general and specialized equity CEFs. Foreign equity refers to CEFs that invest in non-U.S. equity. Taxable Fixed Income (FI) refers to CEFs that invest in taxable bonds. Municipal Bond (Muni) CEFs invest in tax-exempt bonds. Others include CEFs that invest in MLPs, preferred stocks, and convertible securities. Newey-West standard errors are reported in parentheses.

Interpretation: Immediately after the IPO, the average premium on the IPOs is higher than for seasoned funds in all asset classes, and seasoned funds are generally selling at a small discount.

Panel A: At least 1 CEF in seasoned and IPO portfolio					
Sector		Value-Weighted		Equal-Weighted	
		Premium Difference	Seasoned Premium (or Discount)	Premium Difference	Seasoned Premium (or Discount)
Muni	Mean	4.77%	-0.26%	4.73%	-0.13%
	Standard Error	(0.46%)	(0.44%)	(0.43%)	(0.44%)
	Number of Months: 129				
Taxable FI	Mean	4.43%	0.25%	6.10%	-1.41%
	Standard Error	(0.42%)	(0.37%)	(0.38%)	(0.35%)
	Number of Months: 180				
Domestic Equity	Mean	10.84%	-5.46%	9.76%	-4.55%
	Standard Error	(2.66%)	(1.17%)	(2.81%)	(0.97%)
	Number of Months: 53				
Foreign Equity	Mean	5.40%	-1.06%	7.79%	-3.57%
	Standard Error	(1.47%)	(1.15%)	(1.54%)	(0.94%)
	Number of Months: 97				
Others	Mean	5.27%	-1.45%	7.19%	-3.49%
	Standard Error	(0.56%)	(0.35%)	(0.48%)	(0.42%)
	Number of Months: 141				
Panel B: At least 2 CEFs in seasoned and IPO portfolio					
Muni	Mean	4.67%	0.02%	4.65 %	0.15%
	Standard Error	(0.55%)	(0.51%)	(0.50%)	(0.48%)
	Number of Months: 93				
Taxable FI	Mean	4.19%	0.87%	5.99%	-0.90%
	Standard Error	(0.50%)	(0.40%)	(0.40%)	(0.34%)
	Number of Months: 102				
Domestic Equity	Mean	12.47%	-7.03%	7.97%	-3.09%
	Standard Error	(1.36%)	(0.77%)	(1.92%)	(1.57%)
	Number of Months: 16				
Foreign Equity	Mean	3.06%	0.79%	4.51%	-0.90%
	Standard Error	(1.26%)	(1.53%)	(1.41%)	(1.42%)
	Number of Months: 49				
Others	Mean	6.28%	-1.90%	6.63%	-2.49%
	Standard Error	(0.41%)	(0.33%)	(0.63%)	(0.65%)
	Number of Months: 69				

Table 3 Closed-end Fund IPOs Performance, 1986 to 2013

Description: Table 3 reports the regression results of percentage buy-and-hold returns (BHRs) of 985 CEF Initial Public Offerings (IPOs) and their matching seasoned CEFs on a dummy variable that equals 1 when the return is of a CEF IPO, 0 otherwise. Seasoned funds are matched by fund type and size.

$$\text{Ret}_{t,i,j} = \alpha_{t,i} + \beta_{t,i} \times \text{Dummy} (= 1 \text{ if closed-end fund IPO}) + \text{error}_{t,i,j}$$

The intercept indicates the average BHR of seasoned CEFs. The coefficient of the dummy variable represents the average CEF IPO underperformance relative to the size- and category-matched seasoned funds. Domestic Equity includes general and specialized equity CEFs. Foreign Equity refers to CEFs that invest in other countries outside the United States. Taxable Fixed Income (FI) CEFs include funds that invest in taxable bonds. Municipal Bond (Muni) CEFs invest in bonds whose interest payments are exempt from Federal income taxes. Others include CEFs that invest in MLPs, preferred stocks, and convertible securities. Panel A and B present the regression results at six months and one year after the IPO, respectively, not including the first-day return. Panel C tabulates the regression results at 3 years after the IPO. Standard errors in brackets are two-way clustered by fund category and the year of IPO for the all funds analysis, one-way clustered by the year of IPO for the within category analysis. Significance at the 0.01, 0.05, and 0.10 levels is indicated by ***, **, and *, respectively.

Interpretation: For the all funds column, the dummy shows that the average IPO underperforms its matched seasoned fund by 8.52%, and the intercept of 3.77 shows that the average seasoned fund has a 3.77% return in the six months after an IPO occurs.

	All Funds	Domestic Equity	Foreign Equity	Municipal Bond	Taxable FI	Other
Panel A: 6-month BHR Post-IPO Performance of Closed-end Funds						
Dummy for new CEF	-8.52***	-14.69***	-15.20***	-6.73***	-6.09***	-9.12***
Standard Error	[1.50]	[2.42]	[2.77]	[0.67]	[0.63]	[0.77]
Intercept (%)	3.77***	3.69**	2.45	4.56***	3.14***	3.91**
Standard Error	[0.71]	[1.68]	[5.10]	[0.93]	[0.95]	[1.89]
Number of Observations	1,970	116	246	764	492	352
Adjusted R-squared	11%	25%	8%	20%	12%	15%
Panel B: 1-year BHR Post-IPO Performance of Closed-end Funds						
Dummy for new CEF	-11.05***	-15.63***	-25.37**	-8.50***	-8.04***	-9.31***
Standard Error	[2.58]	[2.99]	[10.71]	[0.93]	[0.92]	[1.25]
Intercept (%)	7.92***	5.60	17.50	6.24**	5.93***	8.42**
Standard Error	[2.07]	[3.22]	[13.10]	[2.37]	[1.83]	[3.29]
Number of Observations	1,970	116	246	764	492	352
Adjusted R-squared	6%	17%	6%	15%	9%	6%
Panel C: 3-year BHR Post-IPO Performance of Closed-end Funds						
Dummy for new CEF	-13.54***	-18.73***	-36.88*	-8.51***	-10.49***	-10.69***
Standard Error	[3.99]	[4.97]	[18.31]	[1.69]	[2.28]	[2.98]
Intercept (%)	24.37***	25.03**	46.16*	17.92***	21.36***	27.13***
Standard Error	[4.86]	[8.84]	[23.43]	[2.81]	[2.67]	[8.32]
Number of Observations	1,970	116	246	764	492	352
Adjusted R-squared	3%	5%	4%	7%	4%	2%

Table 4 Closed-end Fund IPOs Performance, Subperiod Results

Description: Table 4 reports the subperiod regression results using 985 out of 993 CEF Initial Public Offerings (IPOs) with available size-matched seasoned funds. The dependent variable is the percentage 6-month buy-and-hold return (BHR) of CEF IPOs and their matching seasoned CEFs. Seasoned funds are matched by fund type and size. The independent variable is a dummy variable that equals 1 when the return is of a CEF IPO, 0 otherwise.

$$\text{Ret}_{t,i,j} = \alpha_{t,i} + \beta_{t,i} \times \text{Dummy} (= 1 \text{ if closed-end fund IPO}) + \text{error}_{t,i,j}$$

The intercept measures the average BHR of seasoned CEFs. The coefficient of the dummy variable represents the average CEF IPO underperformance relative to the size- and category-matched seasoned funds. Subperiod 1 is 1986-1992. Subperiod 2 is 1993-2004. Subperiod 3 is 2005-2013. Panel A reports the performance of all CEFs in each subperiod. Panel B reports only bond funds (municipal bond and taxable fixed income) CEF IPO performance in each subperiod. Standard errors in parentheses are two-way clustered by fund category and the IPO year. Significance at the 0.01, 0.05, and 0.10 levels is indicated by ***, **, and *, respectively.

Interpretation: The regression results show reliable underperformance of CEF IPOs in all subperiods, with the underperformance of bond funds not quite as severe as for all funds.

	1986 to 2013	1986 to 1992	1993 to 2004	2005 to 2013
Panel A: 6-month BHR Post-IPO Performance of All Closed-end Funds				
Dummy for new Closed-end Fund	-8.52***	-8.50***	-7.99***	-9.73***
Standard Error	[1.50]	[2.62]	[0.96]	[1.44]
Intercept (%)	3.77***	4.06**	3.61***	3.66*
Standard Error	[0.71]	[1.51]	[0.93]	[2.27]
Number of Observations	1,970	676	890	404
Adjusted R-squared	11%	7%	16%	13%
Panel B: 6-month BHR Post-IPO Performance of Closed-end Bond Funds				
Dummy for new Closed-end Fund	-6.48***	-5.48***	-6.91***	-7.81***
Standard Error	[0.21]	[0.37]	[0.42]	[1.21]
Intercept (%)	4.00***	5.35***	3.20***	3.17*
Standard Error	[0.75]	[0.99]	[0.49]	[1.56]
Number of Observations	1,256	472	634	150
Adjusted R-squared	16%	19%	18%	13%

Table 5 Closed-end Fund IPOs Performance, Calendar-Time Results, 1986-2013

Description: Table 5 reports the average difference in the monthly return of seasoned closed-end fund portfolios minus unseasoned CEF portfolios, using data from 1986-2013, a total of 336 months. Being publicly traded for 12 months is used to define whether a fund is seasoned or unseasoned. Column 1 weights each fund return by fund size and Column 2 weights each fund equally. Panel A requires at least one CEF in the monthly seasoned portfolio and one CEF in the unseasoned portfolio. Panel B requires at least two CEFs in each portfolio. The number of months counts the months for which both an unseasoned and a seasoned portfolio can be formed. Standard errors are reported in parentheses.

Interpretation: The calendar-time results in this table are consistent with the event-time results in Tables 3 and 4, and the patterns are similar for VW and EW results.

Panel A: At least 1 CEF in seasoned and unseasoned portfolio			
Sector		Value-Weighted	Equal-Weighted
Muni	Monthly Return Difference	0.61%	0.62%
	Standard Error	(0.10%)	(0.11%)
	Number of Months	251	
Taxable FI	Monthly Return Difference	0.40%	0.70%
	Standard Error	(0.16%)	(0.14%)
	Number of Months	278	
Domestic Equity	Monthly Return Difference	0.91%	1.35%
	Standard Error	(0.38%)	(0.36%)
	Number of Months	196	
Foreign Equity	Monthly Return Difference	0.89%	0.73%
	Standard Error	(0.38%)	(0.36%)
	Number of Months	210	
Other	Monthly Return Difference	0.71%	0.94%
	Standard Error	(0.34%)	(0.29%)
	Number of Months	273	
Panel B: At least 2 CEFs in seasoned and unseasoned portfolio			
Sector		Value-Weighted	Equal-Weighted
Muni	Monthly Return Difference	0.62%	0.62%
	Standard Error	(0.10%)	(0.10%)
	Number of Months	201	
Taxable FI	Monthly Return Difference	0.32%	0.65%
	Standard Error	(0.15%)	(0.13%)
	Number of Months	248	
Domestic Equity	Monthly Return Difference	0.92%	1.43%
	Standard Error	(0.38%)	(0.34%)
	Number of Months	115	
Foreign Equity	Monthly Return Difference	1.19%	1.14%
	Standard Error	(0.39%)	(0.35%)
	Number of Months	153	
Other	Monthly Return Difference	0.50%	0.72%
	Standard Error	(0.20%)	(0.17%)
	Number of Months	219	

Table 6 CEF IPOs Premium-matched Performance, 1986 to 2013

Description: Table 6 reports the regression results of percentage buy-and-hold returns (BHRs) of 919 CEF IPOs and their premium- and category-matched seasoned CEFs on a dummy variable that equals 1 when the return is of a CEF IPO, 0 otherwise. Namely,

$$\text{Ret}_{t,i,j} = \alpha_{t,i} + \beta_{t,i} \times \text{Dummy} (= 1 \text{ if closed-end fund IPO}) + \text{error}_{t,i,j}$$

The intercept indicates the average BHR of seasoned CEFs. The coefficient of the dummy variable represents the average CEF IPO underperformance relative to the premium- and category-matched seasoned funds. A CEF IPO is included in the sample if its first available month-end premium is within the second month-end after the IPO. Matching seasoned funds are of the same category of CEF IPOs and are closest in terms of month-end premium. However, due to data limitation, only funds that went public after 1986 (inclusive) are used as seasoned funds candidates. 37 CEFs went public between 1925 and 1985 and are included in the analysis based on fund category and size matching (see Table 3). Panel A and B present the regression results at six months and one year after the IPO, respectively, not including the first-day return. Panel C tabulates the regression results using 3-year BHR post-IPO. Standard errors are two-way clustered by fund category and IPO year for all funds analysis, one-way clustered by IPO year for within category analysis. Significance at the 0.01, 0.05, and 0.10 levels is indicated by ***, **, and *, respectively.

Interpretation: The underperformance with premium-matched seasoned funds is a little less than in Table 3, with size-matched seasoned funds, but the standard errors are generally lower here.

	All Funds	Domestic Equity	Foreign Equity	Municipal Bond	Taxable FI	Other
Panel A: 6-month BHR Post-IPO Performance of Closed-end Fund						
Dummy for new CEF	-6.53***	-11.55***	-13.00***	-5.39***	-4.20***	-7.01***
Standard Error	[1.25]	[3.32]	[3.48]	[0.52]	[1.00]	[0.99]
Intercept (%)	1.93*	1.02	-1.23	3.31**	1.16	2.16
Standard Error	[1.03]	[2.13]	[4.89]	[1.29]	[1.33]	[2.57]
Number of Observations	1,838	82	212	750	466	328
Adjusted R-squared	7%	18%	8%	13%	4%	9%
Panel B: 1-year BHR Post-IPO Performance of Closed-end Fund						
Dummy for new CEF	-7.00***	-11.13**	-13.31***	-7.11***	-4.91***	-4.62***
Standard Error	[1.13]	[3.84]	[3.43]	[1.03]	[0.92]	[1.23]
Intercept (%)	3.82**	2.44	2.73	4.80*	2.58	4.36
Standard Error	[1.61]	[4.20]	[6.22]	[2.70]	[2.00]	[3.75]
Number of Observations	1,838	82	212	750	466	328
Adjusted R-squared	4%	9%	4%	10%	3%	2%
Panel C: 3-year BHR Post-IPO Performance of Closed-end Fund						
Dummy for new CEF	-6.32***	-12.14	-19.20***	-5.25**	-4.79*	-1.17
Standard Error	[1.99]	[9.00]	[6.44]	[1.97]	[2.49]	[4.14]
Intercept (%)	16.77***	19.14	23.73**	14.51***	15.59***	18.51**
Standard Error	[2.53]	[11.45]	[9.79]	[2.20]	[2.62]	[7.08]
Number of Observations	1,838	82	212	750	466	328
Adjusted R-squared	1%	1%	3%	3%	1%	0%

Table 7 Determinants of Closed-end Fund IPO Volume, 1986 to 2013

Description: Table 7 reports the mean and standard deviation (in parentheses) of the key variables in Panel A and the Tobit regression results in Panel B. The dependent variable is the inflation-adjusted monthly CEF IPO proceeds of each fund type, measured in 2014 millions \$. The independent variables are the trailing three-month averages, using data from 1986-2013, a total of 336 months (333 after deleting the first three months) for each fund type. Months with missing values are assigned the average value of its fund type. Namely,

$$\text{Closed-end fund IPO Proceeds}_{t,j} = \alpha_j + \beta_{1j} \times \text{fraction of recent CEF IPOs with a price decline}_{t-3,t-1,j} + \beta_{2j} \times \text{seasoned fund premium 2nd quartile}_{t-3,t-1,j} + \beta_{3j} \times \text{seasoned fund premium 3rd quartile}_{t-3,t-1,j} + \beta_{4j} \times \text{seasoned fund premium 4th (top) quartile}_{t-3,t-1,j} + B \times \text{controls}_{t-3,t-1,j} + \text{error}_j$$

The first variable records the fraction of recent CEF IPOs with a market price lower than their offer price. Recent CEF IPOs are those that went public in the past five months. Seasoned funds premium quartile are three dummy variables that indicate whether the seasoned fund premium is between the 25th and the 50th percentile, the 50th and the 75th percentile, or above the 75th percentile in each fund type. Following CSS (2009, Table 9), we also control for the Pastor-Stambaugh level of aggregate liquidity, the Sadka measure of aggregate illiquidity (which stops at the end of 2008), the University of Michigan Consumer Sentiment Index (top-third income households), the term spread in percentage (10-year minus 1-year Treasury constant maturity rate), the S&P 100 volatility index, and the corporate bond spread in percentage (AAA corporate bond yield minus Treasuries). Robust standard errors, reported in the bracket, are clustered by IPO year. Significance at the 0.01, 0.05, and 0.10 levels is indicated by ***, **, and *, respectively.

Interpretation: In general, CEF IPO proceeds are larger when recent CEF IPOs have done better, and when seasoned funds are selling at a premium or small discount.

Panel A: Descriptive Statistics	Municipal Bond	Taxable FI	Domestic Equity	Foreign Equity	Other
Proceeds of CEF IPO, inflation-adjusted, 2014 million dollars	291.5 (610.6)	408.4 (764.9)	90.6 (379.7)	136.4 (410.6)	334.1 (866.6)
Fraction of recent CEF IPOs with a price decline	0.547 (0.231)	0.577 (0.226)	0.699 (0.176)	0.620 (0.220)	0.623 (0.235)
Seasoned fund premium 2 nd quartile cutoff (%)	-3.99	-5.74	-9.61	-9.67	-7.39
Seasoned fund premium 3 rd quartile cutoff (%)	-1.78	-2.76	-6.32	-5.79	-5.46
Seasoned fund premium 4 th quartile cutoff (%)	0.85	0.17	-3.66	-3.25	-3.19
Panel B: Regression Results	Municipal Bond	Taxable FI	Domestic Equity	Foreign Equity	Other
Fraction of recent CEF IPOs with a price decline	-403 [338]	-1132* [586]	68 [811]	-1330*** [379]	-1513* [897]
Seasoned fund premium 2 nd quartile	445 [304]	63 [335]	-488 [401]	324 [281]	245 [407]
Seasoned fund premium 3 rd quartile	594* [346]	755** [320]	617* [351]	359 [263]	1390** [576]
Seasoned fund premium 4 th (top) quartile	1864*** [362]	1111*** [300]	-256 [447]	778** [320]	1896** [884]
Controls	Yes	Yes	Yes	Yes	Yes
Constant	-3633*** [1430]	-944 [1487]	-5240*** [1898]	382 [1160]	-1207 [2765]
Number of Observations	333	333	274	274	274
Pseudo R Squared	4%	3%	4%	4%	4%

Table 8 Average First-day Turnover for Closed-end Funds, 1986-2013

Description: Table 8 reports the average turnover ratio (volume/shares issued) on the first trading day for IPOs from 1986-2013. Nasdaq trading volume is adjusted to account for double-counting before 2004. The number of CEF IPOs and the first trading day turnover ratio are separated into the three exchanges where a CEF is listed. The last column reports the average turnover ratio of operating company IPOs on the first trading day for comparison purposes. The operating company (Other IPOs) turnover ratios are taken from Jay Ritter's website, where they are reported as a supplement to Gao and Ritter (2010), using their algorithm for adjusting Nasdaq volume.

Interpretation: First-day turnover is much lower CEFs than for operating company IPOs.

Year	No. of Closed-end Fund IPOs				Avg. Turnover Ratio of CEF IPOs				Avg. Turnover Ratio of Other IPOs
	NYSE	Amex	Nasdaq	Total	NYSE	Amex	Nasdaq	Total	
1986	21	5	0	26	7.0%	4.7%	N/A	6.6%	19.8%
1987	27	5	0	32	16.1%	10.0%	N/A	15.2%	21.7%
1988	52	12	0	64	4.7%	3.0%	N/A	4.4%	23.7%
1989	37	3	1	41	3.5%	14.1%	0.5%	4.2%	28.1%
1990	34	7	0	41	14.7%	12.9%	N/A	14.4%	32.4%
1991	41	0	0	41	2.0%	N/A	N/A	2.0%	35.5%
1992	90	10	0	100	1.4%	2.4%	N/A	1.5%	32.0%
1993	82	40	0	122	1.8%	1.1%	N/A	1.5%	35.9%
1994	36	2	1	39	4.9%	0.5%	5.6%	4.7%	28.8%
1995	2	0	0	2	1.0%	N/A	N/A	1.0%	40.3%
1996	1	1	0	2	14.7%	9.5%	N/A	12.1%	39.8%
1997	6	0	0	6	0.3%	N/A	N/A	0.3%	35.6%
1998	22	1	0	23	0.6%	2.8%	N/A	0.7%	51.0%
1999	16	19	0	35	1.2%	1.7%	N/A	1.5%	82.7%
2000	0	0	0	0	N/A	N/A	N/A	N/A	69.7%
2001	17	20	0	37	2.0%	2.8%	N/A	2.4%	55.0%
2002	38	38	1	77	2.6%	0.7%	0.7%	1.6%	54.0%
2003	35	11	1	47	2.2%	2.4%	0.7%	2.2%	53.9%
2004	40	10	1	51	2.5%	2.4%	0.3%	2.4%	66.1%
2005	42	4	1	47	2.2%	2.0%	4.8%	2.3%	63.8%
2006	19	2	0	21	3.2%	5.3%	N/A	3.4%	65.5%
2007	35	4	2	41	2.7%	1.1%	1.2%	2.5%	63.5%
2008	2	0	0	2	2.1%	N/A	N/A	2.1%	58.1%
2009	9	4	0	13	2.2%	7.7%	N/A	3.9%	71.2%
2010	17	0	0	17	2.7%	N/A	N/A	2.7%	56.4%
2011	17	0	1	18	6.8%	N/A	5.8%	6.8%	76.0%
2012	21	0	0	21	4.7%	N/A	N/A	4.7%	79.4%
2013	22	0	0	22	5.4%	N/A	N/A	5.4%	76.6%
Total	781	198	9	988	3.8%	2.7%	2.3%	3.6%	46.1%

Table 9 Institutional Ownership in Closed-end Funds and Operating Companies

Description: Table 9 reports the mean, median and maximum institutional ownership in operating companies and closed-end funds from 1990-2013, using quarterly 13-f filing data from Thomson Reuters. Observations with institutional ownership outside the [0, 1] range are excluded, although numbers above 100% are possible when there is significant short-selling. Panel A reports the institutional ownership in operating companies listed in the three major U.S. exchanges (New York Stock Exchange, American Stock Exchange (now NYSE MKT) and Nasdaq Stock Market). First 6-months numbers are from the 13-f filings reported within six months after the IPO date. All-time numbers use all quarterly 13-f filings data, except for the first six months. N, the number of observations, is the number of quarterly or semi-annual 13-f reports used.

Interpretation: With the exception of foreign equity funds, institutional ownership of CEFs is exceptionally low in the six months after the IPO. For seasoned funds, institutional ownership remains much lower than for other operating companies.

	Operating Companies	Closed-end Funds					
		All	Domestic Equity	Foreign Equity	Municipal Bond	Taxable FI	Others
Panel A: Institutional ownership in the first six months							
Mean	25.88%	2.04%	2.46%	6.33%	0.55%	1.87%	1.70%
Median	21.48%	0.56%	0.72%	2.47%	0.24%	0.68%	0.65%
Max	99.98%	62.47%	33.62%	62.47%	11.01%	37.86%	23.05%
N	12,421	1,349	84	193	477	308	287
Panel B: Institutional ownership all-time (net of first six months)							
Mean	44.17%	7.00%	9.91%	18.15%	2.44%	7.34%	8.83%
Median	41.27%	2.96%	7.04%	14.85%	1.29%	3.82%	7.03%
Max	99.99%	97.33%	97.33%	84.36%	86.54%	72.69%	73.95%
N	152,637	38,959	2,006	5,408	17,114	9,658	4,773