
Closed-end Fund IPOs: Sold not Bought

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Abstract

Closed-end fund IPOs are priced above their net asset value due to the sales load paid to the underwriters. In 3 to 5 months after the IPO, they start trading at a discount and 6 months after the IPO, the average raw return of CEF IPOs is -4.75%. Further, they underperform seasoned funds holding similar assets by 8.52%. By one year, the underperformance widens to 11.05%. These negative raw and abnormal returns are hard to explain as an equilibrium outcome without agency problems. Low ownership among institutions and discount brokerage clients suggests that CEF IPOs are mainly purchased by retail investors at full-service brokerage firms. I posit that brokers create demand for CEF IPOs and conduct intensive support to delay the subsequent price decline. In other words, CEF IPOs are sold, not bought.

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Closed-end funds offer you a significant advantage over traditional mutual funds: the discount. Morningstar® advertisement in Barron's June 3rd 1996 Issue

A closed-end fund (CEF) is a publicly traded fund that invests in securities such as domestic equity, foreign equity, or bonds with known values. Like operating companies, CEFs conduct initial public offerings (IPOs) and then start trading in the secondary market. The name “closed-end” refers to the fact that once a CEF goes public, the number of shares is fixed and the price is determined by supply and demand in the secondary market. The issuer has no obligation to redeem the shares at their net asset value (NAV) per share, unlike an open-end fund.

From 1986 to 2013, 993 closed-end funds went public in the U.S. and raised approximately \$403 billion (measured in 2014 dollars). In some years, such as 2003, CEF IPOs raised more capital than operating company IPOs. Even in the years when CEF IPOs raised less than operating company IPOs, an average retail investor is more likely to be allocated shares in a CEF IPO: During 1986 to 2013 institutions were allocated approximately 86% of the shares of operating company IPOs but retail investors received approximately 98% of the shares of CEF IPOs. Therefore, the performance of CEF IPOs is an important issue for retail investors.

Because the value of the underlying assets is publicly known, there is little information asymmetry in pricing a closed-end fund IPO. At the IPO, a CEF is usually priced above its NAV at a premium, to accommodate the sales load paid to the underwriters. Eventually, a CEF sells at a price below its NAV at a discount. Two questions naturally arise. First, how soon does this transition occur? Does it happen over days, months, or years? Second, does a seasoned fund simultaneously experience a similar transition in its price relative to its NAV? If not, then CEF IPOs underperform the seasoned funds, and investors owning the IPOs would have been unambiguously better off buying similar seasoned funds that have been public for at least a year.

With a sample of 993 U.S. closed-end fund IPOs from 1986 to 2013, I examine their performance using an event study by matching each IPO fund with the seasoned fund that is closest in market capitalization among the funds that hold similar underlying assets. In 3 to 5 months after the IPO, new CEFs start trading at a discount. In the first six months after the IPO, investors on average earn negative

raw returns of -4.75% (including dividends) and abnormal returns of -8.52% relative to the returns of seasoned CEFs. In one year, the negative abnormal returns widen to -11.05%. Recall that CEF IPOs raised approximately \$403 billion (not including overallocments) during the sample period, the underperformance of 11% amounts to a wealth transfer of \$44 billion, primarily from retail investors to CEF intermediaries and managers. This wealth transfer can be interpreted as the value of sales loads plus the present value of excessive management fees.¹

The negative raw and abnormal returns of closed-end fund IPOs extend the findings in Weiss (1989) and Peavy (1990), with the help of a bigger collection of CEF IPOs and a better selection of benchmarks. The two earlier studies are criticized in Cherkes, Sagi & Stanton (2009) for lacking both elements. The underperformance is also consistent with the strong negative relationship between the CEF premium and short-term abnormal returns documented in Pontiff (1995).

However, it is difficult to explain these negative raw and abnormal market returns of closed-end fund IPOs as an equilibrium outcome. Provided there are no agency problems between investors and stock brokers, and investors have access to full information on the expected returns of CEF IPOs and seasoned funds, CEF IPOs should not occur unless existing funds are selling at a sufficiently high premium, a condition that on average is not satisfied. Therefore, I propose an agency-based explanation as to why CEFs exist as an organizational form: the agency problems between brokers and less sophisticated retail investors, many of whom are customers of full-service brokerage firms, create the demand for CEF IPOs. As stated in Weiss (1989), “more than one underwriter has admitted that closed-end fund shares are ‘sold not bought.’”

My agency-based explanation explicitly posits that closed-end fund promoters benefit from the sales load and management fees, but at the cost of disappointed clients, whose disappointment varies with the fund’s aftermarket performance. This agency-based explanation for the creation of CEFs is different from the liquidity-based explanation in Cherkes, Sagi & Stanton (2009) and the sentiment-based hypothesis in Lee, Shleifer & Thaler (1991). All three theories predict that there will

¹ The fact that closed-end funds on average trade at a discount suggests that the present value of management fees exceed their management abilities and the liquidity benefits (Berk and Stanton (2007), Cherkes, Sagi & Stanton (2009)).

be fewer CEF IPOs when the discounts on existing CEFs are wide, but only my theory predicts underperformance relative to similar CEFs after the IPO.

Specifically, Cherkes et al. (2009) propose that closed-end funds transform relatively illiquid assets such as municipal bonds into liquid assets, and that they are created when there is higher demand for liquidity. The sum of the present value of liquidity benefits and management fees thus determines the discount/premium of a CEF.² Their theory predicts that unseasoned funds should earn comparable returns to seasoned funds since they both offer liquidity transformation in the same asset class. Yet I find that unseasoned CEFs of all categories, especially equity CEFs, reliably underperform seasoned CEFs. Even in a calendar time setting, the methodology used in Cherkes et al., unseasoned CEFs on average underperform seasoned funds by 0.85% per month in the first year after the IPO. Alternatively, Lee et al. (1991) argue that new CEFs are brought to the market when “noise traders” are too optimistic about the future returns of CEFs’ underlying assets. But this would suggest that noise traders should also prefer similar seasoned CEFs and new CEFs’ premium should be the same as seasoned funds. Yet from 1986 to 2013, the average premium of CEF IPOs is 6.69% higher than the average premium of seasoned CEFs, suggesting that new funds are more expensive.

I further document three regularities in the aftermarket of closed-end fund IPOs that are consistent with the hypothesis that CEF IPOs are sold not bought. First, institutional ownership in recent CEF IPOs is extremely low compared to operating company IPOs. This confirms that the majority of investors in CEF IPOs are retail investors. Second, more than 70% of equity CEFs and more than 90% of bond CEFs conduct IPOs in the second half of a month, especially in the last ten days. Such preference is not observed among operating companies. Anecdotally, practitioners from full service brokerage firms suggest that this timing could be related to the financial advisor’s agenda; advisors are more likely to promote CEF IPOs at the end of a month when they need to meet their monthly revenue quota.

The third regularity in the aftermarket of closed-end fund IPOs is the extensive price stabilization that occurs. The agency-based hypothesis takes into

² Elton, Gruber, Blake & Shachar (2013) show that closed-end bond funds in their sample actually hold more short maturity assets and the same level of cash as their open-end fund counterparts. This helps explain why on average the sum of liquidity benefits and management fees is negative, because not much liquidity benefit is provided by closed-end bond funds.

account a reputational cost to promote CEF IPOs, which is greater when the prices fall too rapidly after the IPO. To delay and camouflage the price decline, underwriters provide price support. The low turnover ratio of CEF IPOs, only 3.6% on the first day of trading versus 46% for operating company IPOs, permits effective price stabilization. From 1993 to 2012, 571 out of 594 CEF IPOs experienced price stabilization, as identified by having at least one trade executed at the offer price, and 60% of these 571 CEF IPOs had over 90% of the first day's transactions at the offer price. On average, I observe that CEFs' market prices decline once price stabilization ends. In fact, Mr. A. Michael Lipper, president of Lipper Analytical Services Inc., said that it was because the funds' broker-dealers "were defending other positions, causing share prices (of CEFs) to plunge more than they would have" otherwise, when discussing the suddenly widening discounts of CEFs in the aftermath of the October 19, 1987 stock market crash.³

I also look into individual investors' data at a large discount brokerage to provide additional evidence supporting my agency-based hypothesis.⁴ From 1991 to 1996, 8,386 households at this brokerage invested in closed-end funds and they seldom traded newly issued CEFs. The fact that neither discount brokerage clients nor institutions took big interests in new CEFs is consistent with the idea that CEF IPOs are mainly held by retail investors at full service brokerage firms.

The findings of my study contribute to three strands of literature. First, I propose an agency-based hypothesis that predicts not only the creation of closed-end funds but also their underperformance in the months after the IPO. Hanley, Lee & Seguin (1996) analyze the bid-ask spread and order size in the aftermarket of CEF IPOs and conclude that CEF IPOs are mainly marketed to a poorly informed public. Yet they do not explicitly consider the tradeoff involving dissatisfied clients faced by underwriters and managers. Hence they do not provide a prediction on the time-series pattern of CEF IPOs.

The liquidity-based and the sentiment-based hypotheses (Cherkes et al. (2009), Lee et al. (1991)), though providing time-series implications for closed-end fund IPOs, do not explain why financial intermediaries would sell financial

³ Michael Siconolfi, Launching of closed-end funds may ease, *Wall Street Journal*, November 30, 1987.

⁴ I thank Professor Terrance Odean for kindly providing this data. More detailed descriptions of the data can be found in Barber & Odean (2000).

securities with negative expected returns. My agency-based hypothesis suggests that it is because the benefits of selling CEF IPOs outweigh the cost of offering price support and potentially losing dissatisfied clients. When the seasoned funds trade at relatively higher prices, underwriting CEF IPOs becomes profitable partly due to a lower cost of price stabilization. Investors are also less likely to realize their mistake because the market prices of CEF IPOs decline more slowly. In a linear model, the solutions to maximizing profit are on the boundary.⁵ This means that underwriters will either sell as much as they can, or nothing at all, a pattern well supported by the scattered clustering of CEF IPOs during the 28-year sample period.

Second, this study documents the existence of overpriced IPOs by showing that closed-end fund IPOs have negative raw returns in the six months to one year after the IPO. This is the first time that seasoned fund returns are used in an event study as benchmarks to evaluate the aftermarket performance of CEF IPOs.⁶

Third, this study supports the view that marketing is important when promoting financial securities to individual investors. Marketing can help increase the demand elasticity of seasoned equity offering (Gao & Ritter (2010)) and attract mutual fund inflows (Jain & Wu (2000)). Hanley et al. (1996) provide indirect evidence that marketing is used to promote CEF IPOs. My study shows that price stabilization effectively boosts demand temporarily in the CEF IPO aftermarket, but results in an informationally less efficient market. As Benveniste, Erdal & Wilhelm (1998) and Fjesme (2015) argue, such manipulative action harms investors who receive primary shares or invest immediately after the IPO in the secondary market.

Lastly, this study addresses a broader question of why most funds (at least in the U.S.) are open-end. At the end of 2014, the market value of closed-end funds in the U.S. was \$289 billion, less than 2% of mutual fund assets.⁷ Stein (2005) points out that liquidation on demand is imposed by investors to prevent managers from sabotaging asset returns, but it also incentivizes managers to focus on short term

⁵ The underwriter's profit maximization problem is assumed to be linear because the sales load does not vary with market condition, and the cost is also assumed to be linear. The constraint is the total labor force that is linearly delegated into selling different funds.

⁶ Cherkes et al. (2009) also use the returns of seasoned fund portfolios to measure the relative performance of unseasoned fund portfolio, but they do it in a calendar time setting. In Section III, I discuss why I find much more economically and statistically significant underperformance than they report.

⁷ Data source: 2015 Investment Company Fact Book. http://www.icifactbook.org/fb_ch2.html#assets

returns. As a result, in equilibrium not enough capital is devoted to correcting large-scale security mispricing, such as existed in the dotcom bubble. Because CEF managers face lower liquidation risk, they could mitigate the limits of arbitrage problem raised in Shleifer & Vishny (1997). Yet the evidence presented in this study suggests that investors' concerns of agency problems are well grounded. CEF IPOs underperform their seasoned counterparts in the year after the IPO due to a simple reason—the fund's market price moves predictably from a premium to a discount relative to its NAV. The concern of agency problems is also reflected in the fact that almost all CEFs are restricted to investing in one narrow asset class, thereby preventing the correction of mispricing across asset classes. Other than agency problems, it is difficult to explain in a rational way why CEF IPOs repeatedly occur despite their negative raw returns and significant underperformance.

I. Data

Using information from CRSP, SDC, Morningstar, Bloomberg, and *Barron's*, I find 993 closed-end fund IPOs from 1986 to 2013.⁸ The sample is by far the biggest collection of CEFs used to comprehensively analyze the premium/discount pattern and the return performance of CEF IPOs. Cherkes et al. (2009), who use a sample of 658 CEF IPOs, criticize previous studies on CEF IPO returns because the sample sizes are too small. For example, the sample size of CEF IPOs in Peavy (1990) and Weiss (1989) is 41 and 64, respectively. The detailed procedure of sample construction is described in Appendix A.

The 993 closed-end fund IPOs are grouped into five categories based on their underlying assets: domestic equity, foreign equity, municipal bond, taxable fixed income, and other CEFs. These five categories are the same sector classifications as in Cherkes et al. (2009). Domestic equity CEFs mainly invest in general or specialized equity such as blue chip, health care, or small cap stocks. Foreign equity CEFs focus on equity investments in countries or in regions outside the United States. Municipal bond CEFs usually contain “municipal” in the funds' names and invest in bonds whose interest payments are exempt from Federal personal income

⁸ 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. I examine every security to make sure that it is indeed a CEF, not a BDC. The surge of Special Purpose Acquisition Companies (SPACs) happened between 2005 and 2007. For description of these companies and discussion on related topics, please see Riemer (2007), Jenkinson and Sousa (2011).

taxes. Municipal bond CEFs either focus on a single state or invest in multiple states' municipal bonds. Taxable fixed-income CEFs include funds focused on investment grade bonds, high yield bonds, mortgage bonds, loan participations, and worldwide fixed income securities such as sovereign debt. The rest of the CEFs mainly hold convertible or preferred securities, as well as MLPs and REITs. In general, they restrict the class of securities that they invest in. Table I shows the composition of the 993 CEF IPOs from 1986 to 2013 by year and fund category.

[Insert Table I Here]

Inspection of Table I suggests that issues of closed-end fund IPOs of different categories are clustered at different times from 1986 to 2013. For example, more foreign equity CEF IPOs occurred in 1990 and 1994, and in 2004-2007. Municipal bond CEF IPOs entered the market in the late 1980s but were most popular from 1991 to 1993, with 176 funds going public. Another wave of municipal bond fund IPOs was between 1998 and 2002, except in 2000 when there was no issuance at all, as investors focused on internet and technology stocks. As for taxable bond CEFs, there were 40 IPOs in 1988 alone, and another 52 from 1992 to 1993. Although municipal bond CEF IPOs almost came to a halt in 2004-2008, 29 taxable bond CEFs went public in 2003 and 2004. At the same time, "other" CEFs that invested in convertible and preferred securities and REITs also reached a peak in issuance. CEFs that focused on energy and natural resources later became available in 2007 and 2011. Though different types of CEFs arrived in the market at different times, they followed the trend of the macro economy: there was only 1 IPO in 2000 when the tech bubble peaked and 2 IPOs in 2008 when the economy was under downward pressure and the stock market fell as the real estate bubble collapsed.

The last column of Table I reports the proceeds raised in closed-end fund IPOs as a percentage of the total proceeds raised in operating company IPOs. In the late 1980s, CEF IPOs raised more money than operating company IPOs. Recently, this ratio declined to about one-third. Even so, retail investors are more likely to get CEF IPOs instead of operating company IPOs; the latter is more often allocated to institutional investors. Detailed discussion of CEF IPO ownership is in Section III A.

II. Underperformance of Closed-end Fund IPOs

A. Closed-end Fund Premium and Discount

Whether a closed-end fund trades at a premium or a discount is determined by its market price and its net asset value (NAV). Namely,

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

When the price is higher than NAV, a CEF trades at a premium. If the price is lower than NAV, the fund trades at a discount, which is normally expressed as a positive number. At the IPO, a CEF normally trades at a premium, which simply reflects the sales load paid to the underwriters. For example, a fund with a \$15 offer price and a 4.5% sales load will have an NAV of \$14.325, and usually starts to trade at the offer price. Unless the market price falls immediately after the IPO, which rarely occurs, the premium will last for a while. For 695 out of 993 CEFs with available data, they trade at an average premium of 6.42% (7.53% if value-weighted) at the first calendar-month end after the IPO.⁹ For 948 CEFs, they trade at a premium of 4.29% at the second calendar-month end (4.98% if value-weighted). Eventually, CEFs trade at a discount on average, a feature that is often used to lure investors, as shown in the *Barron's* advertisement at the beginning of this article.

So how long does it take a closed-end fund IPO to start trading at a discount? In Weiss (1989), the 64 CEF IPOs from 1985 to 1987 in her sample start trading at a discount in 12 weeks. Yet Cherkes et al. (2009, T_{disc} in Panel B Table 2) show that it takes almost a year for their sample of 725 CEF IPOs to start trading at a discount. In Figure I, I plot the average monthly premium/discount by fund category using 993 CEF IPOs from 1986-2013.¹⁰

[Insert Figure I Here]

As shown in Figure I, domestic equity, foreign equity and “other” closed-end fund IPOs on average start trading at a discount within 3 months. For municipal bond and taxable fixed-income CEFs, the transition from a premium to a discount takes less than 5 months after the IPO. Once slipping into a discount, no category of

⁹ Some of the first month-end data are not available because the IPO date is too close to the month end. For these CEF IPOs, the first month-end arrives only a couple days after the IPO date and their price and NAV might not be immediately available. The premium is higher than $[1/(1-4.5\%)]-1$ because prior to 1995, the sales load was as high as 6-7%. Another reason for the high average premium is that some foreign equity CEF IPOs had a premium of as much as 50% once they started trading.

¹⁰ Monthly premium or discount is calculated using price and NAV reported in Bloomberg, Morningstar, or *Barron's*. Bloomberg and Morningstar sometimes report the same number for the price (or NAV) for over a year, which suggests that backfilled stale prices (or NAVs) are reported. In this case, I hand collected data from *Barron's* print issue at the time. See the Appendix for more details.

CEFs comes back to trading at a premium on average. This is not to say that no 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 continued trading at a premium in the three years after the IPO. But on average trading at a discount is the norm and the scale of discount varies by category: municipal and taxable bond CEFs' monthly average discount is less than 5%, but domestic equity CEFs' discount is twice as large.

In unreported plots, I observe a pattern of closed-end fund IPOs that is similar to the pattern discussed in Lee et al. (1991) and Cherkes et al. (2009): new funds tend to follow a "hot" market of seasoned funds. From January 1988 to June 1990, municipal bond CEFs traded at a premium and a wave of new issues occurred in 1991-1993. Taxable fixed income CEFs traded at a premium from August 1988 to September 1989 and from January 1992 to August 1993; during both periods many new funds of this type went public. For "other" CEFs, they traded at a premium from October 2001 to August 2003, when the biggest wave of CEF IPOs of this category took place.

The clustering of closed-end fund IPOs is consistent with the market-timing (Baker & Wurgler (2000), Loughran & Ritter (1995)) and the pseudo market timing (Schultz (2003)) hypotheses about equity issuance.¹¹ Numerous empirical studies have documented IPO underperformance relative to seasoned stocks with similar characteristics in the long-run. At the aggregate level, Baker & Wurgler (2000) show that a relatively higher share of equity issues in the total new issuance of equity and debt can predict a lower stock market return in the following year. Graham & Harvey (2001) use survey evidence to show that managers consider overvaluation and undervaluation when deciding whether to issue equity or not. In the context of CEFs, the heavy clustering of IPOs implies that fund managers tend to bring new offerings to the market when seasoned funds are overvalued, either because of investors' irrationality or perceived liquidity benefits. CEF IPOs, especially those occurring in a wave, should be followed by poor abnormal returns. Since the CEF IPO premium on average diminishes within 3 to 5 months, my question is: how much do CEFs underperform in the short run and in the long run?

¹¹ The literature on market timing and equity issuance is well beyond the several studies I cite here. See Ritter (2011) for a survey on this topic.

B. Underperformance of Closed-end Fund IPOs

Previous studies provide different hypotheses on whether closed-end fund IPOs should underperform seasoned funds. Lee et al. (1991) posit investor irrationality as a reason for why anyone would buy CEF IPOs that are doomed to lose value shortly after the IPO. The existence of “noise traders” is critical, which allows stochastic optimism about future returns of a certain asset class. This suggests that noise traders should also prefer seasoned CEFs in the same category. To see if this argument holds, I calculate the average monthly premium difference between a portfolio of CEF IPOs from the current month and the last month (the IPO portfolio) and a portfolio of seasoned CEFs that are over 12 months old.

[Insert Table II Here]

In Table II, I report the average monthly premium difference between the two portfolios by weighting each fund’s premium equally or by fund size. Overall, both equal-weighted and value-weighted average premium differences are always significantly positive from 1986 to 2013, ranging from an equal-weighted 5.05% in municipal bond CEFs to 9.76% in domestic equity CEFs. Given the average premium of CEF IPOs at the first calendar month-end is 6.42% and 4.29% at the second month-end, these results are consistent with seasoned CEFs trading at par or at a small discount, but not a big premium when new funds enter the market. Otherwise, the premium difference will be smaller. When there are at least two funds in each portfolio, I arrive at similar results. These findings suggest that new CEFs are more expensive than seasoned funds in the same category, which cannot be fully justified by investor irrationality.

Berk & Stanton (2007) posit that the tradeoff between managerial ability and management fees explains the wide cross-sectional dispersion in closed-end fund premium/discount. The average discount of CEFs suggests that the present value of management fee exceeds the value-added by their management. Yet their study does not address the transition from premium to discount shortly after the IPO, though they also note the “apparent difference in the stock market performance of old and new funds.”

Cherkes et al. (2009) argue that because a closed-end fund is more liquid than its underlying assets, it serves as a liquidity transformation vehicle. Hence, the tradeoff between the liquidity benefits and management fee determines the

premium/discount of CEFs. Following their argument, new CEFs should earn comparable returns as seasoned funds holding similar illiquid assets because they both offer liquidity transformation. But a recent study by Elton, Gruber, Blake & Shachar (2013) casts doubt on this liquidity benefit hypothesis. They find that CEFs actually hold more short maturity assets and the same level of cash as their open-end fund counterparts in a sample of 54 bond CEFs from 1996 to 2006.¹²

Empirical studies on the performance of closed-end fund IPOs also disagree with each other. Peavy (1990) documents significant underperformance of CEF IPOs, especially equity CEF IPOs, relative to Treasury bills and stock market returns in the first 100 trading days after the IPO. Weiss (1989) also shows severe negative cumulative unadjusted returns of CEFs within 120 trading days after going public. Pontiff (1995) documents a strong negative relationship between the CEF premium and short-term abnormal returns computed using both the CAPM and Fama-French 3-factor model. This premium mean-reversion would predict negative abnormal returns after the IPO given that CEF IPOs on average trade at a premium. Cherkes et al. (2009) emphasize that after unlevering fund returns, only unseasoned bond CEFs underperform by 30 to 50 basis points per month, while the other types do not reliably underperform.¹³

The empirical studies mentioned above utilize either an event time or a calendar time setting. In an event study, each closed-end fund IPO is an observation and can be weighted equally or by the proportion of the market value that each fund represents. Accordingly, money is assumed to be invested either equally or proportionally in each IPO. The event study value weighting approach accurately represents how investors did because they hold the market portfolio in aggregate. The equal weighting event time approach implicitly assumes that more is invested when there are more IPOs, but that no more is invested in large IPOs than in small ones. With calendar time, each month is weighted equally, i.e. the same amount is

¹² 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.

¹³ CEFs with leverage have both net assets and total assets. Net assets is used to calculate the NAV. The difference between net assets and total assets is the assets financed by either preferred stocks or borrowing. Cherkes et al. (2009) collect the quarterly total assets data from funds' balance sheets from Capital IQ, available from 1993 forward. A fund's quarterly leverage ratio is calculated by dividing the difference between total assets and NAV by total assets. If quarterly leverage data is missing, then they assign a fund the average leverage of its fund category in that reporting period. The quarterly leverage is then interpolated to create a monthly time series.

invested in every time period, whether the actual IPO volume is low or high. However, this strategy is not very realistic. As shown in the Data Section, there are several periods of consecutive months when no CEF goes public and investors cannot invest in any CEF IPO. Another factor to consider is the effect of market timing. Both the market timing hypothesis (Loughran & Ritter (2000)) and the pseudo market timing hypothesis (Schultz (2003)) argue that weighting each month equally, instead of each offering, will understate the abnormal returns of IPOs. Hence, I believe that an event study framework is better for studying heavily clustered CEF IPOs. I also check the performance of CEF IPOs in a calendar time setting as a robustness test and arrive at the same conclusion as the event study.

Yet the aforementioned event studies on closed-end fund IPOs do not control for the return of seasoned funds. In the operating company IPO literature, the long-run performance of IPO is typically evaluated against a seasoned firm with no recent follow-on offerings and similar characteristics (such as size and book-to-market ratio). Seasoned firms went public prior to the IPO firms (sufficiently long ago, e.g. three or five years). In studying CEF IPOs, I focus on matching by fund type and fund size, since almost all CEFs have a price/NAV ratio near 1.0, whereas operating companies have a wide range of market-to-book ratio. I first match each CEF IPO with all seasoned funds of the same type with no recent issuance. Then I choose the seasoned fund with the closest fund size to the CEF IPO. One year is used to define seasoned funds because, unlike operating company IPOs, the underperformance of CEF IPO is primarily in the first year after the IPO.

Using this matching scheme, I find 484 unique seasoned funds to match 985 out of 993 closed-end fund IPOs from 1986 to 2013.¹⁴ The 8 CEF IPOs without a match are the first batch of municipal bond CEF IPOs in 1986 and 1987 when there was no seasoned municipal bond CEF. I then estimate the following regressions to compare the performance of CEF IPOs with the seasoned funds,

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

where $Ret_{t,i,j}$ is the return 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

¹⁴ A municipal bond closed-end fund that went public in 1988, for instance, might be used as a seasoned municipal 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.

category.¹⁵ I run the regressions using all CEFs together, and within each fund category. The independent variable is a dummy variable that equals 1 when the returns are of CEF IPOs and 0 otherwise. Hence, the coefficient $\beta_{t,i}$ indicates the level of CEF IPOs' underperformance compared with seasoned CEFs in the six months, one year or three years after the IPO. The intercept $\alpha_{t,i}$ reflects the average return of seasoned CEFs. When estimating the regression with all funds together, standard errors are clustered by IPO year and fund type to control for possible correlation of returns. The regression results are tabulated in Table III.

[Insert Table III Here]

Panel A Table III reports the regression results using returns at six months after the IPO, not including returns on the first trading day.¹⁶ In 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 in the six months after the IPO. This level of underperformance is statistically and economically significant. In untabulated results, I find that 827 out of 985, or 84% of CEF IPOs with matching seasoned funds underperform in the first 6 months. Since the average return of seasoned CEFs is 3.77% during the same time, the 8.52% underperformance implies that CEF IPOs on average earn a negative raw return of -4.75% in the six months after the IPO. Panel B reveals that by one year the average underperformance widens to 11.05%, with a negative raw return of -3.13%.

The underperformance of closed-end fund IPOs also exhibits variation across fund categories, although all categories present negative raw returns in the months after the IPO. Domestic and foreign equity CEF IPOs underperform the most: a remarkable 15.2% in six months and up to 25% in one year! Taxable fixed income and municipal bond CEF IPOs underperform by 6-7% in the first six months and about 8% in one year after the IPO. In unreported results, I find that only 10% of municipal bond CEF IPOs outperforms their seasoned counterparts in the first six months after the IPO. Out of the 29 CEF IPOs that outperform by more than 10% in the six months after the IPO, 13 are foreign equity funds.

¹⁵ If a CEF IPO has less than three years of return data when $t=3$ years, I measure the return until the delisting date. If a matching seasoned fund is delisted, I select another seasoned fund in the same category with the closest fund size as the IPO at the time of the delisting of the first seasoned fund.

¹⁶ The average first-day return, measured from the offer price to closing price, is 0.21%. The CEF IPO underperformance is not materially affected by whether the first-day return is included or not.

Panel C tabulates the regression results using the long-run returns of closed-end fund IPOs. In three years, CEF IPOs on average underperform the matching seasoned funds by 13.54%, only slightly greater than the 11.05% underperformance in the first year after the IPO. The variation across fund categories also becomes greater. Foreign equity CEF IPOs underperform their seasoned matches by 36.88%, whereas municipal bond CEF IPOs only underperform by 8.51%, similar to their one-year underperformance.

Overall, the coefficients of the closed-end fund IPO dummy are statistically and economically significant at the 1% level in each fund type from six months to three years after the IPO. The exception is foreign equity CEF IPOs' 1-year and 3-year underperformance, which are statistically significant at the 5% and 10% level, respectively. This confirms that the underperformance is not driven by a specific fund category. Except for foreign equity CEFs, almost all of the underperformance of CEF IPOs is in the first six months after the IPO.

To show that the underperformance is present across time, I then estimate the regressions again in subperiods. Specifically, subperiod 1 is from 1986 to 1990, subperiod 2 is from 1991 to 2000, subperiod 3 is from 2001 to 2007, and subperiod 4 is from 2008 to 2013. The year of 2008 is used to control for any potential industry-wide changes during and after the financial crisis.

[Insert Table IV Here]

Table IV presents the regression results in each subperiod for all closed-end funds and bond funds, respectively, using returns from the first six months of trading. Standard errors are clustered by IPO year and fund category. Panel A reveals that CEF IPO underperformance exists in all subperiods in the six months after the IPO. The underperformance of -9.01% from 2008-2013 is not statistically different from the -11.38% of the 1986-1990 subperiod. Panel B shows that the underperformance is not purely driven by equity CEF IPOs. Though the underperformance is less severe, bond CEF IPOs still underperform in all subperiods, ranging from -5.90% in 1991-2000 to -8.62% in 2008-2013.

I further test if my findings from the event study are robust to a calendar time setting as in Cherkes et al. (2009, Table 10). Following Cherkes et al., each month I create an unseasoned fund portfolio with CEFs less than 12-month old and a seasoned fund portfolio by fund category. Then I calculate the average monthly

excess returns of the seasoned fund portfolio relative to the unseasoned fund portfolio as defined in Cherkes et al. Table V reports the results.

[Insert Table V Here]

Inspection of Panel A Table V shows that all point estimates are significantly positive, indicating outperformance of seasoned closed-end funds in all categories. Unseasoned domestic equity funds underperform most, ranging from 0.91% to 1.35% per month. Unseasoned bond funds underperform least, ranging from 0.40% to 0.70% per month. In unreported results, the number-of-observations-weighted average of equal-weighted excess returns is 0.85% per month. This translates into an annual underperformance of 10.2%, quite similar to the event study result of 11.05% in Panel B Table III. If there are at least two funds in the seasoned and the unseasoned portfolios, as shown in Panel B, all point estimates are similar to Panel A.¹⁷

However, the above calendar time results are inconsistent with those reported in Cherkes et al. (2009) Table 10, so I repeat the analysis of monthly excess returns using data from 1986 to 2004, the same sample period as in Cherkes et al., to see if the differences arise from different sample selection.

[Insert Table VI]

Results tabulated in Table VI Column 1 and 3 are directly comparable to the raw excess returns reported in Cherkes et al. Table 10. The noticeable differences in point estimates are foreign equity CEFs (value-weighted) and “other” CEFs. I collect 99 foreign equity CEF IPOs from 1986 to 2004 and have 142 months of observations with available seasoned and unseasoned fund portfolios. By contrast, Cherkes et al. report 76 IPOs yet have 160 months of observations. The difference of 23 IPOs could generate the discrepancy. When there are at least two CEFs in the seasoned and unseasoned portfolios (Column 1 and 3 in Panel B), rather than a minimum of just one fund as in Panel A, the excess returns of seasoned foreign equity funds become significantly positive, doubling the magnitude reported in Panel A.¹⁸

¹⁷ The event study results reported in Table III show that most of the CEF IPO underperformance happens in the first 6 months after the IPO. But in the calendar time approach, I use portfolios with IPOs from prior 12 months, which is likely to downsize the underperformance. The reason to do so is because 1 year is usually used as a cut off point for being seasoned in prior literature. Second reason is that it increases the number of observations in the calendar time study.

¹⁸ As for other CEFs, the difference could be due to different classifications of fund type. The number of months used to calculate excess returns in taxable fixed income funds in Cherkes et al. is about 25 more than I report in Columns 1 and 3 in Panel A and the number of months in other CEFs is 25 less.

Cherkes et al. (2009) emphasize the unlevered excess returns to support their proposition that closed-end fund IPOs should earn comparable returns as the seasoned ones.¹⁹ They show that only municipal and taxable bond CEF IPOs reliably underperform after unlevering raw returns. First of all, the rationale for unlevering is not clear. No evidence is presented that seasoned and unseasoned funds have systematically different preferences towards leverage. Second, the sample periods used to calculate the raw and the unlevered excess returns are quite different. The unlevered returns use only 1993-2004 data, instead of 1986-2004, due to data limitation (See Cherkes et al. Appendix A.1 and A.3 discussion on CapitalIQ data and leverage calculation). The truncated sample reduces the number of observations and neglects the different nature of issuance activity in 1993-2004 and in 1986-1992. Particularly, 62 foreign equity funds went public from 1986 to 1992 but the issuance activity dried up afterwards. From November 1995 to May 1998, 27 out of 31 months have only 1 fund in the unseasoned foreign equity fund portfolio whereas over 73 funds are in the seasoned fund portfolio.²⁰ No foreign equity CEF and few domestic equity CEFs went public in 1998-2003. Issuance in both categories resumed in 2004.

To control for the different sample period, I use only 1993-2004 data to calculate the excess raw returns, tabulated in Columns 2 and 4 in Table VI. There is already an insignificant outperformance of foreign equity CEF IPOs even before unlevering the raw excess returns. Furthermore, since equity CEFs do not use leverage as commonly as do bond CEFs (see Elton et al. (2013)), this finding suggests the insignificant outperformance is due to different sample selection rather than unlevering raw excess returns. If at least two CEFs are in the seasoned and the unseasoned portfolios, all point estimates are significantly positive using data from 1993-2004, except for the categories of value-weighted foreign equity and “other” CEFs. In particular, seasoned domestic equity CEFs on average outperform the unseasoned ones by about 2% per month, which is economically significant.

Thus far, I document that closed-end fund IPOs present negative raw returns and underperform the matching seasoned funds significantly in the six months to

¹⁹ Leverage ratio = $\frac{\text{Total Assets} \cdot \text{NAV}}{\text{Total Assets}} = 1 - \frac{\text{NAV}}{\text{Total Assets}}$. See footnote 12.

²⁰ Only one foreign equity closed-end fund went public in the year of 1995 and 1996, both targeting the Russian stock market, which experienced a remarkable increase from late 1995 to early 1998. The 31 months from November 1995 to May 1998 count for 41% (31/76) of number of observations in 1993-2004.

one year after the IPO, patterns that are difficult to reconcile with an equilibrium model. This large underperformance immediately after the IPO is in contrast to the evidence from operating company IPOs; using 7,851 U.S. operating company IPOs from 1980 to 2013, they outperform the size-matching seasoned firms by 1%, and size and-book-to-market matching firm by 2.7% in the first six months after the IPO, not including the first-day return.²¹ The significant underperformance of CEF IPOs cannot be justified by the liquidity transformation hypothesis of Cherkas et al. (2009), or the investor irrationality in Lee et al. (1991), either; I show that in both cases seasoned funds dominate the IPOs. Whether it is the changes in CEF liquidity or the changes in CEF “popularity” among “noise traders,” previous studies better explain the time series and cross-sectional discount/premium pattern of seasoned funds. As for a CEF IPO, its underperformance is predicted by the initial premium that is artificially created by the agents—the CEF intermediaries.

So the questions are: how can closed-end fund be brought to the market despite their negative expected returns and significant underperformance? Does the short-run underperformance suggest that CEF IPOs, unlike the underpriced operating company IPOs, are overpriced?

III. Closed-end Fund IPOs: Sold but Not Bought

Operating company IPOs generally receive strong demand due to significant underpricing—21.6% on average from 1990-2013.²² One predictor for strong demand is the upward revision of the offering price (Hanley (1993)). From 1990 to 2013, 26.7% of U.S. operating company IPOs increased their final offer prices to be above the original filing range.²³ The underpricing to an extent is to compensate informed investors for revealing their private information (Benveniste & Spindt (1989)) and to mitigate winner’s curse that uninformed investors bear (Rock (1986)).

Compared to operating companies, closed-end fund IPOs face different supply-demand dynamics due to little underpricing and few CEF IPOs attract public attention like IPOs of Facebook, Twitter, or GoPro. The upside growth potential is also limited compared to companies in biotechnology and technology industries. Hence, a successful promotion of CEF IPO relies more heavily on marketing (Hanley

²¹See “Long-run returns on U.S. IPOs from 1970-2013”, <https://site.warrington.ufl.edu/ritter>.

²² Data from <http://site.warrington.ufl.edu/ritter/ipo-data/>

²³ Data from <http://site.warrington.ufl.edu/ritter/ipo-data/>

et al. (1996)), which can help create demand for financial securities. For example, Gao & Ritter (2010) show that companies employ investment bankers to provide marketing services to increase the transitory demand elasticity for their seasoned equity offerings. Jain & Wu (2000) document that mutual funds appearing in advertisements attract significantly more inflows without showing superior performance post advertisement. For CEFs, “more than one underwriter has admitted that CEF shares are ‘sold not bought’”, as stated in Weiss (1989).

In this section, I analyze three regularities in the aftermarket of closed-end fund IPOs: institutional ownership, the timing of going public, and price support. The main hypothesis is that CEF IPOs are “sold not bought”. Specifically, I posit that CEF IPOs are brought to the market because underwriters want to maximize profits by selling CEFs to individual investors. The underwriting activity lets underwriters collect the sales load and the present value of management fees but it also incurs varying reputational cost—the loss of clients who feel being ill-advised. When there is more underperformance, this feeling will be stronger. Also, the more rapidly the underperformance occurs, the more obvious that it is not just bad luck. When the market is more receptive towards CEFs, the reputational cost becomes lower because the aftermarket price of a CEF IPO is likely to be higher. Since the unit revenue of underwriting a CEF IPO is the same regardless of market conditions, selling CEF IPOs now becomes more profitable. If we assume linearity in the profit maximization objective function and the constraints, the solutions will always be on the boundary—underwriters either sell as much as they can, or nothing at all. The heavy clustering of CEF IPOs supports this idea that the issuance of CEF IPO is driven by underwriters’ profit maximization behavior.

A. Individual versus Institutional Ownership

The institutional ownership in closed-end funds supports the “sold not bought” hypothesis that CEF IPOs are promoted to retail investors but not sought after by the more sophisticated institutional investors. Pontiff (1995) suggests that the reason might be that investors in mutual funds want to avoid paying advisory fees twice: once to an open-end mutual fund advisor and once to the management of CEFs that are purchased by the mutual fund. Using 13-f filing data from Thomson Reuters from March 1990 to December 2013, I calculate the institutional ownership for different types of CEFs and for operating companies listed on the three major

U.S. exchanges: the New York Stock Exchange, American Stock Exchange (now NYSE MKT), and NASDAQ Stock Market. The results show that on average, CEFs are mostly held by individual investors. Table VII presents the average institutional ownership of operating companies and CEFs.

[Insert Table VII Here]

Panel A reports the average institutional ownership in operating companies in the first six months after the IPO and the all-time average. Panel B tabulates the same statistics for closed-end funds. First 6-month average uses the institutional holding reported within 6 months after the IPO date. All time average uses all available quarter-end institutional holding data. We see that CEFs have a much lower institutional ownership although the public float, typically 100%, is much higher than that of operating companies due to founders and employee's significant holdings. First 6-month average shows that 26% of operating company shares is held by institutions. Because public float is 30.4%, this suggests that 86% ($26\%/30.4\%$) of public float is in the hands of institutions.²⁴ Yet only 2.04% of CEFs are held by institutional investors, similar to what Hanley et al. (1996) report. They document that less than 5% of CEF IPOs were held by institutions at the first quarter-end after the IPO, using 65 IPOs from January 1988 to May 1989. From 1990 to 2013, the average institutional ownership in operating companies, using all quarter-end observations, is 42.7% (of shares outstanding) but only 6.85% in CEFs. These statistics are consistent with individual investors being the overwhelming majority of buyers of CEF IPOs.

The variation across fund categories in institutional ownership of closed-end funds is also significant. Municipal bond CEFs have the lowest institutional holdings, only 0.55% in the six months after the IPO, though they are the most issued in terms of IPO number (Table I). The highest institutional ownership is in foreign equity CEFs: the average of all quarterly holdings is 17.8%, nearly triples the average of all funds. In Section IV.A I show that municipal bond CEFs are not popular among discount brokerage clients, either. Instead, foreign equity CEF category is the most popular. Taken together, CEFs lack popularity among

²⁴See Table 21 on Jay Ritter's website (<https://site.warrington.ufl.edu/ritter>). In general, VC and buyout fund holdings do not file SEC 13-f forms. Instead, they file either a 13d or a 13g schedule depending on their stakes in the companies they invest in or whether their investment is active or passive. The 30.4% public float number has a downward bias because it does not include the overallotment shares.

institutions and discount brokerage investors, implying that other sales channel, mainly full service brokerage, plays the main role of promoting CEF IPOs.

Furthermore, the institutional ownership in closed-end funds increases relatively more from first six months average to all-time average: the all-time average more than triples the first 6-month average. This change suggests that institutions are more likely to buy CEFs already trading at a discount, which could be because institutions understand CEF IPOs underperform significantly in the first 6 months after the IPO. Though there is also some increase in the institutional ownership in operating companies, the relative change is not as big as in CEFs.

B. Clustering of the IPO day

In Figure II, I plot the number of closed-end fund IPOs by category from calendar day 1 to day 31 of a month. The chart reveals that CEF IPOs are more likely to occur in the second half of a month, especially in the last 10 days.

[Insert Figure II Here]

Figure II shows that more than 70% of equity CEF IPOs, more than 92% of bond CEF IPOs, and more than 95% of “other” CEF IPOs happen in the second half of the month.²⁵ In unreported results, I find no such pattern of operating company IPOs.

A discussion with practitioners from a full service brokerage firm suggests that this timing preference could be related to stockbrokers’ agenda at full service brokerage firms. Knowing that a closed-end fund IPO is not a particularly lucrative investment choice for their clients, financial advisors are more likely to promote it when they have difficulty generating enough revenue for the brokerage company. As a month-end approaches, whether a financial advisor can meet his or her monthly revenue quota becomes more obvious, and selling CEFs becomes more necessary. Underwriters, knowing this agenda of the financial advisors, cater to it by selecting IPO dates that fit the schedule of financial advisors.

Such timing preference could also be related to the exercise window of the overallotment options. For operating companies, underwriters can exercise an overallotment option to issue another 15% of shares offered in the 30 days after the final prospectus. For a closed-end fund IPO, the exercise window is 50% longer: the

²⁵ For 82 CEF IPOs retrieved from CRSP that are not recorded in SDC IPO dataset, I use the first day with available trading information as the IPO date. 26 out of the 82 CEF IPOs were recorded as going public in the first half of the month.

underwriters have 45 days to exercise the overallotment option. Investors typically receive month-end statements showing the cumulative capital gain or loss on a security, and the signal-to-noise ratio about whether a broker-recommended investment was a wise choice fades over time. Knowing that underwriters will provide price support for 45 days post IPO, CEFs choose to go public in the second half of a month. Hence if necessary, the price stabilization can last until the second month-end after the IPO, reducing the likelihood of being blamed for making bad investment recommendations.

C. Price Stabilization

Price stabilization is explicitly allowed in an IPO and is broadly documented in empirical studies of the new issues market for both operating companies and closed-end funds. Underwriters can create a short position at the IPO by allocating at least 115% of the new issue, with the 15% being the overallotment option shares. Later, underwriters can buy back up to 15% shares in the secondary market and retire them, treating them as if they were never issued. The share purchasing equivalently offers price support.²⁶ Hanley, Kumar & Seguin (1993) and Benveniste et al. (1998) show that price stabilization typically lasts for 10 trading days after operating company IPOs. Hanley et al. (1996) document that almost all CEF IPOs from 1988 to 1989 experienced price stabilization. These studies focus on changes in the bid-ask spread and buy-sell imbalances in the first month after the IPO.

Before discussing the intensity of price stabilization in the aftermarket of closed-end fund IPOs, I would like to first discuss why price support can be more effective at certain times. A graphical illustration of a stock's supply-demand relationship is depicted in Figure III.

[Insert Figure III Here]

In Figure III, I plot the initial supply of IPO shares as a vertical line. The kink in the middle of the supply curve represents the overallotment option of 15% more shares. The red lines describe the demand for CEF IPOs and the green lines for operating company IPOs. When demand moves a little, the intersection of supply and demand is likely to occur on the horizontal segment of the supply curve,

²⁶ Zhang (2004) shows that it can be optimal for the underwriters to oversell an issue and take a naked short position when there is weak demand, even though they expect to buy them back after the IPO. This overallocation behavior benefits the issuer because they get a higher expected offer price.

providing that the offer price was set initially to make this outcome likely. So the 15% overallocation is enough to stabilize the share price of CEF IPOs. However, if demand moves a lot, like in operating company IPOs, the intersection of supply and demand may get out of the horizontal segment of the supply curve. Hence the 15% overallocation can only ease part of the demand uncertainty and price stabilization will not be as effective as in CEF IPOs.

Since the demand curve is not observable, I use the turnover ratio on the first trading day to proxy for the demand of closed-end fund IPOs. Specifically, I compare the average first day turnover ratio of CEF IPOs with operating company IPOs.

[Insert Table VIII Here]

Inspection of Table VIII shows that the average turnover ratio of closed-end fund IPOs on day 1 is only 3.59%, compared to an average 46.05% for operating company IPOs in 1986-2013, 13 times high.²⁷ Again, if we consider the different level of public float between CEF IPOs (100%) and operating company IPOs (30%), the difference between the turnover ratios is even greater.

As mentioned in Section III.B, the window to exercise overallocation option is 45 days for closed-end fund IPOs, or about 30 trading days. So I use TAQ (Trade and Quote) data to compute the cumulative turnover ratio in the first 30 trading days after the IPO. TAQ data are available from 1993 to 2012, during which 625 CEFs went public. Daily trades are identified using ticker and are first merged with the monthly master file to acquire company name and CUSIP to make sure that each ticker indeed represents a CEF. 619 CEF IPOs can be matched with TAQ data but only 594 have available first trading day data.

In unreported results, I calculate the average daily turnover ratio in the first 30 trading days (excluding the first day) to be 0.38%. Multiplying by 29 and adding in the turnover ratio on day 1 equals 14.6%. Even if all transactions are seller initiated, the cumulative turnover ratio in the first 30 trading days is below the overallocation option of 15%. This suggests that price stabilization can be effective at preventing the market price from falling in the few weeks after CEF IPOs. If price support can be so effective, to what extent do underwriters engage in this action?

²⁷ The turnover ratio on the first trading day is from Jay Ritter's website, <https://site.warrington.ufl.edu/ritter>, Table 3B from "Initial Public Offerings: Updated Statistics".

Lewellen (2006) uses the fraction of trades executed at the offer price on the first trading day after the IPO to gauge the intensity of price support. The idea is that underwriters are most likely to stabilize by buying stocks at the offer price. 571 out of 594 closed-end fund IPOs with available data, or 96%, trade at least once at the offer price, suggesting that price stabilization is a common practice. In comparison, in Lewellen's sample of 1,422 Nasdaq IPOs from 1996 to 1999, only 527, or 37%, trade at least once at the offer price on the first trading day. Following Figure I in Lewellen, I plot the percentage histogram of all CEF's first-day trades executed at the offer price.

[Insert Figure IV Here]

Figure IV depicts the percentage of closed-end fund IPOs with higher than a certain fraction of trades at the offer price on the first trading day, conditional on having at least one trade executed at the offer price. Given that more than 96% of CEF IPOs from 1993-2012 have trades executed at the offer price, the histogram using all CEF IPOs looks very similar. The 571 CEF IPOs are further separated into two groups based on the general stock market (defined by the CRSP value-weighted index) going up or down on the first trading day.

When the stock market falls, CEF IPOs on average are more likely to receive price stabilization: 61% of CEF IPOs have at least 90% of transactions at the offer price on day 1 whereas 57% of CEF IPOs are stabilized when the market goes up. This result reveals intensive price stabilization; the underwriter purchase shares at the offer price after posting a limit order at this price. The histogram also implies net selling pressure on day 1: if trading is driven by net buying pressure, the price will rise and the fraction of trades executed at the offer price will decline.

The outcome of such intensive price stabilization is an aftermarket where the price of closed-end fund is artificially inflated at the offer price. Benveniste et al. (1998) posit that underwriters persuade initial investors to retain the ownership of overpriced shares. Lewellen (2006), on the contrary, views price stabilization as beneficial to retail investors. She finds that investment banks with a heavier weight in retail operation conduct more price support and that there is little retail selling pressure. Yet the two facts can also be interpreted as "masking the decline of price" being so successful that retail investors do not engage in selling the soon-to-be underperforming IPOs; whereas they would sell if the price immediately dropped in

fear of a negative cascade (Welch (1992)). In the case of CEF IPOs, the market price falls at the termination of price stabilization, contrary to Lewellen (2006, Page 648 discussion). In fact, when discussing the suddenly widening discounts of CEFs in the aftermath of the October 19, 1987 stock market crash, Mr. A. Michael Lipper, president of Lipper Analytical Services Inc., said that it was because the funds' broker-dealers "were defending other positions, causing share prices (of CEFs) to plunge more than they would have" otherwise.²⁸

So far I have presented evidence of 1) the turnover ratio on the first trading day and 2) the percentage of trades executed at the offer price to show that price stabilization is an effective and common practice in the aftermarket of closed-end fund IPOs. Next I examine 3) the abnormal return of CEF IPOs relative to seasoned funds, conditional on whether the stock market goes up or down after the IPO. Because seasoned funds are free of price stabilization, their return should reflect the fair return required by the underlying assets. Hence the difference between the buy-and-hold return of CEF IPOs and the seasoned funds should reflect only the impact of price support.

There are two reasons to focus on closed-end fund IPOs during market downturns. First, studies have shown that the prices of closed-end country funds are "sticky"; they do not move as much as their home country stock market but are more sensitive to movements in the broad world and U.S. market (Hardouvelis, LaPorta & Wizman (1994) and Bodurtha, Kim & Lee (1995)). When the share prices do react to country-specific news, it is when the country related news appears in prominent U.S. news source such as the *New York Times* (Klibanoff, Lamont & Wizman (1998)). These studies suggest that U.S. investors in CEFs are more affected by domestic news, which naturally includes news about general market movements. Further, conditioning on the general stock market instead of the matching seasoned fund avoids mechanical results.²⁹

The second reason to focus on market downturn is because psychology, marketing (consumer behavior research), and economics and finance research have

²⁸ Michael Siconolfi, Launching of closed-end funds may ease, Wall Street Journal, November 30, 1987.

²⁹ If the seasoned funds 100% correlate with the general stock market, then using it as the benchmark is the same as using the market index. However, since seasoned funds are not 100% correlated with market movement, measuring the CEF IPOs' abnormal return relative to the seasoned funds conditional on the seasoned funds is like measuring (a·b) conditional on whether b<0, which could create spurious results even when the reason that causes seasoned funds to go down is idiosyncratic.

recognized the influence of anchoring (see Tversky & Kahneman (1974), Kahneman (1992), Loughran & Ritter (2002)). For closed-end fund IPO investors, a plausible anchoring point is the offer price. When the market goes up, the share prices of CEF IPOs are more likely to go up because the NAV will be higher, as long as at least some of the proceeds were immediately invested. Hence price stabilization might be less necessary to prevent a price decline. Whereas when the market goes down, the share prices of CEF IPOs are more likely to decline without price support. To make the investors feel that their investment has not lost value so rapidly, underwriters have more incentive to provide price support. After controlling for seasoned funds' return, the effect of price support will be revealed. I predict higher abnormal returns but lower raw returns of CEF IPOs when the market goes down.

[Insert Figure V Here]

In Figure V I plot the average buy-and-hold raw return in the first 40 trading days of 981 closed-end fund IPOs from 1986 to 2013. The average buy-and-hold abnormal return is computed by subtracting the returns of matching seasoned funds during the same time. The sample is grouped by whether the stock market, measured by the CRSP Value-Weighted Index, goes up or down in the first 20 trading days after the IPO. The left panel in Figure V shows that the buy-and-hold raw return of CEF IPOs is higher when the stock market goes up. By a month after the IPO, the average raw return of CEF IPOs is 0.13% when the stock market goes up and -1.14% when the market goes down. More than 60% of CEF IPOs have buy-and-hold raw returns between -1% and 1%. The right panel in Figure V reverses the pattern we see in the left panel. When the market goes up, the matching seasoned funds gain 1.46% in 20 trading days, leaving the abnormal return of CEF IPOs to be -1.33%. When the market goes down, the seasoned CEFs lose 1.10%, resulting in the abnormal return of CEF IPOs to be only -0.04%.

This set of results is consistent with the hypothesis that underwriters conduct price stabilization more aggressively when the market declines. The inflection point indicates that price support typically lasts for 20 trading days after a closed-end fund IPO, deferring the underperformance of CEF IPOs relative to the seasoned funds. This phenomenon is robust to using market movements in 10, 15 or 25 trading days after CEF IPOs: the withdrawal of price stabilization always happens on average on the 20th trading day. Compared to operating company IPOs

(Hanley et al. (1993), Benveniste et al. (1998)), the price support for CEF IPOs lasts twice as long, and it is much more frequently employed.

IV. Household Investment in Closed-end Funds

In this Section, I use closed-end fund holdings and transactions data from a large discount brokerage to provide further evidence supporting the hypothesis that CEF IPOs are purchased primarily by the retail clients of full-service brokerage firms. I investigate whether or not individual investors at the discount brokerage are net buyers of CEF IPOs. The discount brokerage data is from January 1991 to December 1996, the same dataset used in a series of studies on retail investors' behavior.³⁰ It contains demographic information of households that had accounts at this discount brokerage, the month-end positions in various securities, trading records, as well as characteristics of each account. Out of the 78,000 households, about 11%, or 8,386 households, had investments in closed-end funds at some point during the six years. In total, 10,823 accounts had at least one month-end position in one or more CEFs, which is about 7% of the total accounts.

Of the 8,386 households, 24% of them are classified as affluent, i.e. with more than \$100,000 in equity at any point in time (not inflation adjusted), and 21% of them are active trader households, i.e. conducting more than 48 trades in any year. Both percentages are higher in the sample of closed-end fund investors than in the population of 78,000 households. This is partly because clients with a higher balance in equity almost always have more securities in their portfolio and hence they are more likely to invest in at least one CEF. CEF investors are older too: the average age is 54 while the average age of all investors at this discount brokerage is 50, and the difference is statistically significant. Again, this difference is at least partly due to older investors having more financial assets, and people with more financial assets are more likely to hold at least one CEF. Of the 10,823 accounts investing in CEFs, 19% are cash accounts and 44% are margin accounts. The rest are set up as IRA contributory and IRA rollover accounts, both of which are tax deferred. A household can have two accounts, one taxable and one tax deferred.

³⁰ I thank Professor Terrance Odean for kindly providing this data. More detailed descriptions of the data can be found in Barber & Odean (2000).

In Figure VI, I plot the market capitalization of all closed-end funds that went public since 1986 and the dollar amount of CEFs held by individual investors at this large discount brokerage from 1991 to 1996.

[Insert Figure VI Here]

In January 1991, the individual investors at the discount brokerage held less than \$60 million in CEFs in 2014 dollars. This amount steadily increased and peaked at the end of 1993, reaching above \$120 million. At the same time, the total market capitalization of post-1985 CEFs was over \$200 billion. In November 1996, 0.04% (\$75 million/\$184 billion) of post-1985 CEFs were held by investors at this discount brokerage. Meanwhile 0.08% of all common stocks were held by retail investors at this discount brokerage.³¹ The fact that a lower fraction of CEFs was owned by discount brokerage clients suggests that the retail clients of full service brokerage firms are more likely to own CEFs.

A. Closed-end Fund Investment Choices

The two most popular types of closed-end funds among investors at this discount brokerage are taxable fixed income CEFs and foreign equity CEFs. They are the most held categories in terms of depth—the percentage of monthly aggregate dollar investments and width—the number of households that invested in them.

[Insert Figure VII Here]

In the top panel of Figure VII, I plot the percentage of dollar investment in each type of closed-end fund from January 1991 to November 1996. At the beginning of 1991, more than 45% of the total investment concentrated in taxable fixed income CEFs. The market share later dropped to around 35% in 1994. Foreign equity CEFs rose from 20% of the total investment in January 1991 to about 35% in 1994. Post mid-1994, the investment in taxable fixed-income CEFs increased somewhat while the investment in foreign equity CEFs declined to below 30%. The sum of domestic equity and municipal bond CEFs remained around 25% from 1991 to 1996.

In the bottom panel of Figure VII, I plot the number of households that invested in each category of closed-end fund. Similar patterns are observed as in the

³¹ According to Barber & Odean (2000), investors at this discount brokerage held \$6.83 billion common stocks in 1996. The total market value of all publicly listed companies in the United States was \$8,484 billion (Work Bank http://data.worldbank.org/indicator/CM.MKT.LCAP.CD?order=wbapi_data_value_1996+wbapi_data_value&sort=desc&page=3), indicating that 0.08% (6.83/8,484) was held at this discount brokerage.

top panel. In 1991, 927 households held foreign equity CEFs and 1,162 households held taxable fixed-income CEFs. In 1993, both numbers increased to around 1,800. By the end of 1996, the number of households that invested in the two types of CEFs decreased to where they started in 1991. There was a steady decline in households holding domestic equity CEFs. Municipal bond CEFs remained the least popular funds in terms of number of household investors: even more households invested in “other” CEFs than in municipal bond CEFs.

Further investigation suggests that foreign equity closed-end funds were most popular because investors sought to gain access to emerging markets.³² This finding, together with the institutional ownership reported in Section III.A Table VII, implies that neither retail investors at the discount brokerage nor institutions were the major buyers of CEFs, especially of municipal bond and “other” CEFs. It further supports the hypothesis that CEF IPOs are more likely sold to retail investors at full service brokerages. Although I do not have direct evidence, the investors are likely to be clients of the brokerage firms in the underwriting syndicate.

I then use regression analysis to quantify how much investors prefer seasoned over unseasoned closed-end funds. The dependent variable is the aggregate dollar investment in a given fund in a certain month. The independent variables include a dummy variable that takes the value of 1 when a CEF is seasoned, prior-period performance, i.e. lagged returns up to three months, lagged market capitalization, lagged premium/discount, as well as fund type and year fixed effects. I also use a more stringent specification with the CEF fixed effects. Namely,

$$\text{Month-end Position}_{i,t} = \alpha_{i,t} + \beta_1 * \text{Dummy for being seasoned}_{i,t-1} + \beta_2 * \text{Ret}_{i,t-1} + \beta_3 *$$

$$\text{Ret}_{i,t-2} + \beta_4 * \text{Ret}_{i,t-3} + \beta_5 * \text{Market Cap}_{i,t-1} + \beta_6 * \text{Premium}_{i,t-1} +$$

$$\text{Closed-end Fund Type FE} + \text{Year FE} + (\text{Closed-end Fund FE}) + \text{Error}_{i,t}$$

[Insert Table IX]

Column 1 of Table IX reports the regression results using fund type and year fixed effects and column 2 uses closed-end fund fixed effects. The coefficient of the dummy variable for being a seasoned CEF suggests that, being a seasoned CEF is

³² Investment in foreign equity CEFs focusing on Germany mostly happened in the years immediately after the Berlin Wall fell. I believe it is the reunite of East and West Germany that created the investment opportunity. Hence there is some emerging market flavor even though West Germany was a developed region.

associated with \$165,573 more holdings. If using the fund fixed effect, the coefficient of the dummy variable is still statistically and economically significant. For the same fund, the month-end position increases by \$54,571 on average after becoming seasoned. The fund's size and the premium/discount of the previous month are also statistically significant in both specifications.

B. Closed-end Fund Trading

Consistent with closed-end fund IPOs being purchased by retail investors in full service brokerage, I find that discount brokerage clients are net buyers of seasoned CEFs. 512 of the 993 CEF IPOs had gone public by the end of 1996, and 431 were traded at least once by the investors at this discount brokerage. There were more buy trades than sell trades in each fund category, with the highest buy-sell imbalance of 65% to 35% in municipal bond CEFs. Over half of the 47,977 CEF transactions traded foreign equity CEFs: 15,081 buy trades and 10,786 sell trades. The second most popular category is taxable fixed income CEFs, with 7,856 buy trades and 5,375 sell trades. Despite the wave of municipal bond CEF IPOs in 1991-1993, they were the least traded.

In general, discount brokerage clients rarely bought closed-end funds that are newly issued. For example, only 9 municipal bond CEFs were purchased in a sporadic 15 days out of the first 120 trading days after their IPOs. The average purchase trade per day of those 15 days was 1009 shares. This is in stark contrast to the issuance activity of municipal bond CEFs from 1991 to 1996; 180 municipal bond CEFs went public and raised more than \$40 billion in 2014 dollars.

V. Conclusions

In this study, I document that closed-end fund IPOs underperform seasoned CEFs in the year after the IPO, with most of the underperformance coming in the first six months. From 1986 to 2013, 993 CEFs went public in the U.S. and they underperformed in all sub-periods and across fund categories. The average raw return of CEF IPOs is -4.75% in the six months after the IPO, underperforming size- and asset class-matched seasoned funds by 8.52%. In one year, the underperformance widens to -11.05%. In dollar terms, there is an economically material wealth transfer of \$44 billion (sales load and the present value of excessive management fee) from retail investors to CEF intermediaries from 1986 to 2013.

Based on this finding, I propose an agency-based explanation for why closed-end funds exist as an organizational form. Specifically, full-service brokerage firms face a tradeoff between the benefits of underwriting and the cost of price support and reputational cost. When the benefit outweighs the cost, they promote the soon-to-be underperforming CEF IPOs to retail investors, rather than investors proactively seeking to invest in them. Consistent with this “sold not bought” proposition are three regularities: a lack of institutional ownership, clustering of IPOs in the second half of the month, and the intensive price support after the IPO to defer price declines. Discount brokerage clients’ choices in CEFs and their trading behavior also suggest that retail investors at full service brokerage firms are the main buyers of CEF IPOs.

The findings in my study show that investors’ concerns over agency problems are indeed legitimate and help explain why the closed-end fund sector is small compared to open-end funds (Stein (2005)). CEF managers face less binding constraints by not committing to liquidation on demand, yet do not live up to the expectation of holding undervalued assets that take a longer time to converge to fundamental value (Elton et al. (2013), Pontiff (1997)).

Prior studies have documented that there are more closed-end fund IPOs when the discount from NAV on existing funds is smaller than normal, consistent with investor sentiment and liquidity transformation explanations for the creation of CEFs. Bringing CEFs to the market can be interpreted as another catering behavior, just as increasing the supply of stocks that pay dividends or with lower nominal share prices is done when stocks with these characteristics sell at a premium (Baker & Wurgler (2004), Baker, Greenwood & Wurgler (2009)).

The decision to invest in closed-end fund IPOs is not the only mistake that retail investors make. For example, they trade too frequently due to overconfidence, ignoring the trading cost that reduces their profit level. They also chase past returns of mutual funds, despite the extremely weak autocorrelation of mutual fund abnormal returns. A recent debate between Mr. John Bogle, founder of Vanguard Group and father of the retail index fund, and Mr. James Grant, editor of *Grant’s Interest Rate Observer*, suggested that more than an equilibrium level of investors choose to invest in actively managed mutual funds with high fees, though the

“accomplished investors” can do better (in actively managed funds).³³ Taken together with the findings in this study, we see that investors’ overconfidence and agency problems still have an impact on shaping an out-of-equilibrium outcome.

³³ Grossman and Stiglitz (1980) develop a model in which there is an equilibrium degree of informational inefficiency with index funds and actively managed fund coexisting. The empirical evidence suggests that the pre-fee returns on actively managed funds are not high enough, on average, for investors to be in equilibrium.

Appendix

A1: Closed-end Fund IPOs Sample Construction

In the SDC IPO dataset, I select new issuance with IPO flag and SIC code=6726 between 1986 and 2013 and restrict the listing exchanges to be one of the three major exchanges: American Exchange, NYSE, or NASDAQ. These screening criteria identify 1,189 observations. I first delete entries whose SIC codes are not 6726 unless the variable “CEF/Trust Flag” from SDC IPO dataset is “yes” and in CRSP their SIC is 6726. Then I delete duplicate entries with the same name but one with a missing CUSIP. For the rest with missing CUSIPs, I manually fill in their CUSIPs and PERMNO etc. by searching through CRSP using their names or tickers. Two observations with missing CUSIPs cannot be located: Thailand Fund and Levy Acquisition Corp and hence are deleted. Now 1,051 observations are left with available ticker, CUSIP and PERMNO information. SDC uses historical CUSIP so it is matched to NCUSIP in CRSP and Compustat. NCUSIP is not available in the stock header dataset in CRSP, where only the latest CUSIP is kept.

A special category of companies is the special purpose acquisition companies (SPAC): from 2005 to 2007, many SPACs went public with SIC code 6726 in the SDC database. However, they are not legitimate closed-end funds. So I delete them. There are several companies that are not covered in *Barron's* magazine throughout their life time, so these are not included in the sample either. At the end, 911 CEF IPOs were retrieved from the SDC IPO dataset from 1986 to 2013.

Another source of gathering closed-end fund IPOs is from CRSP. The second digit of the CRSP share code for CEF is 4 or 5. In CRSP, SIC codes change from time to time. So only selecting SIC code=6726 could miss some CEFs' earlier monthly records. Also, 6726 is assigned to business development companies (BDC), usually with “capital” in their names. These companies are deleted from the sample because they operate in a different way from CEFs. After selecting all companies with a second digit of share code being 4 or 5, I manually check if a given security is indeed a CEF. Three CEFs from Bull & Bear family were excluded because their prospectuses suggest that they were initially open-end mutual funds and later converted to CEFs. I find 82 additional CEFs that are not recorded in the SDC IPO dataset. In total, I gather 993 CEF IPOs from 1986 to 2013.

A2: Closed-end Fund Variable

The Net Asset Value (NAV) and price of closed-end funds are gathered from Morningstar Direct One and Bloomberg terminals. For existing CEFs, Bloomberg uses ticker as their identifiers. For CEFs that were liquidated, acquired, or delisted, Bloomberg assigns an identifier other than their original tickers. Morningstar Direct One uses SecID as the identifier for each CEF. There are two issues with the two data sources. The first is to determine whether price and NAV have been adjusted due to shares split or shares dividend. I manually check each monthly record whenever the cumulative factor to adjust price (CFACPR from CRSP) is not 1. The second issue is back filling or missing data. For example, a CEF went public in 1992 but the time series of price and NAV provided by Bloomberg or Morningstar may not start until 1994. Back filling data is apparent when the price or NAV data remain the same for a longer than normal period, like 12 months. When there is missing or stale back-filled data, I hand collect NAV and price data from weekly *Barron's* print issue at the time.

Institutional ownership is gathered from the Thomson Reuters dataset on WRDS. Under “Tools” I select “stock ownership summary”. There are some data entry errors regarding shares outstanding at quarter end, especially for closed-end funds that went public in 2005. The list of PERMNOs includes 90607, 90610, 90615, 90646, 90648, 90649, 90652, 90675, 90683, 90688, 90753, 90761, 83996, 89634, and 79447. After correcting these data errors, two CEFs were left with institutional ownership exceeding 100%: Morgan Stanley Emerging Markets Debt Fund (PERMNO=79447) in March 1995 (IO=1.0146, event month=20) and Morgan Stanley Russia & New Europe Fund (PERMNO=83996) in March 2000 (IO=5.7130, event month=42). The two outliers are not winsorized and they don't affect the average institutional ownership significantly given the number of observation is over 40,000. If there is total institutional ownership (in shares) but no quarter-end shares outstanding in the Thomson Reuters dataset, I collect the latter with information from CRSP monthly stock dataset.

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

Figure I shows the monthly average premium or discount of 993 closed-end funds in 1986-2013 from the time of their IPO to 60 months later. When price is greater than net asset value (NAV), the fund trades at a premium. Otherwise, the fund trades at a discount.

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

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.

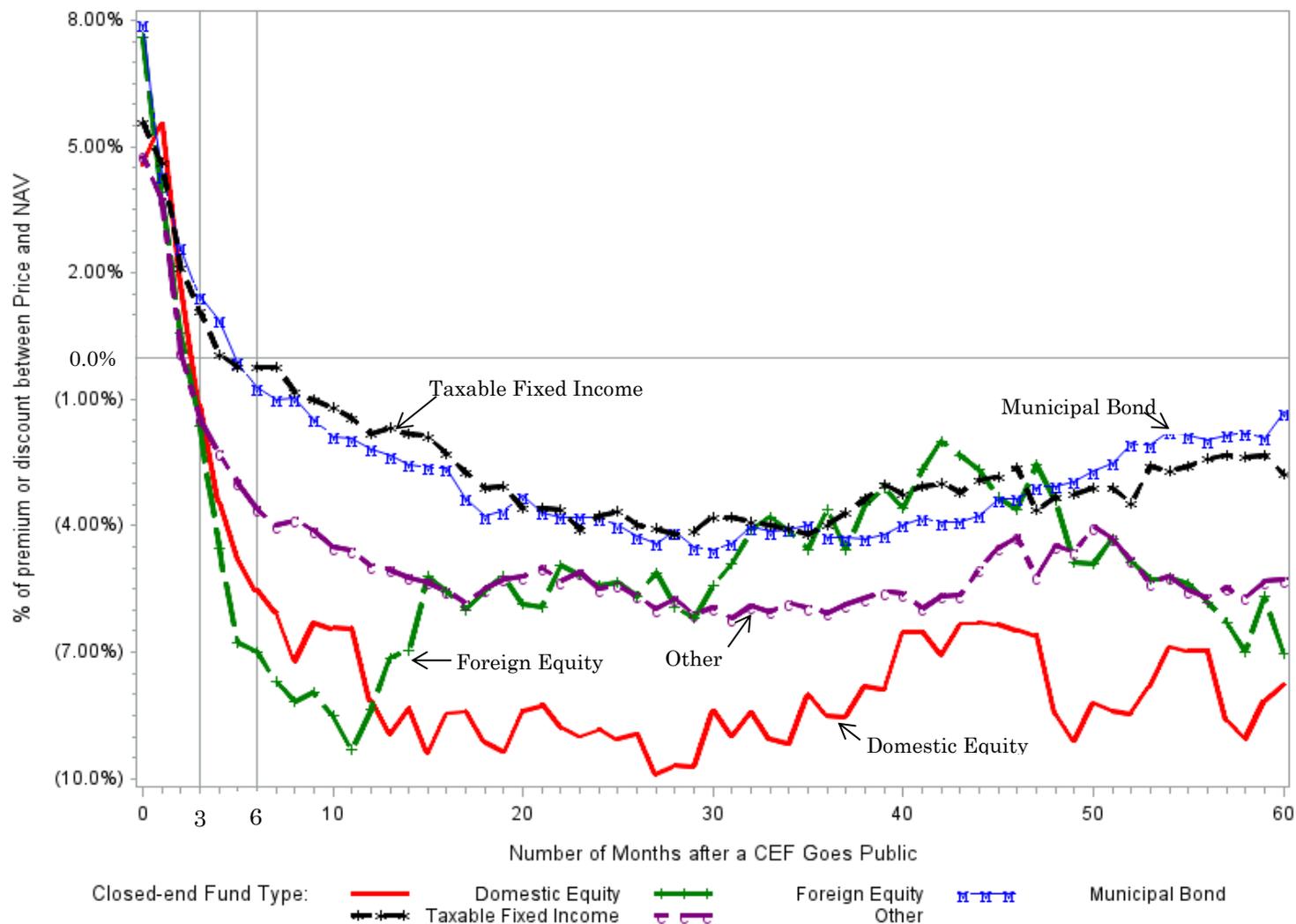


Figure II Number of Closed-end Fund IPOs by Day of the Month

This chart shows the number of closed-end fund IPOs by fund category and by calendar day of a month, using 993 CEF IPOs from 1986 to 2013.

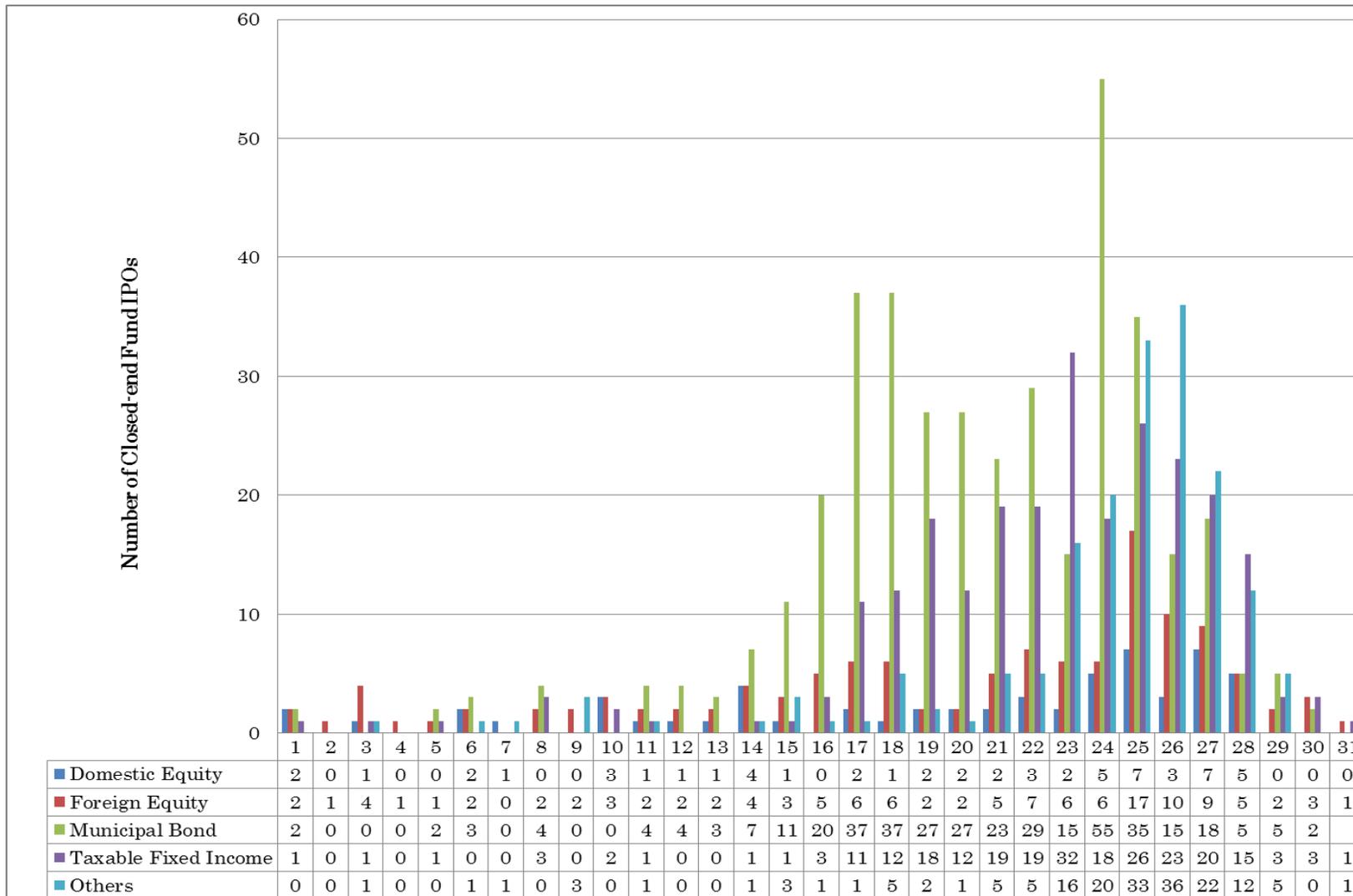
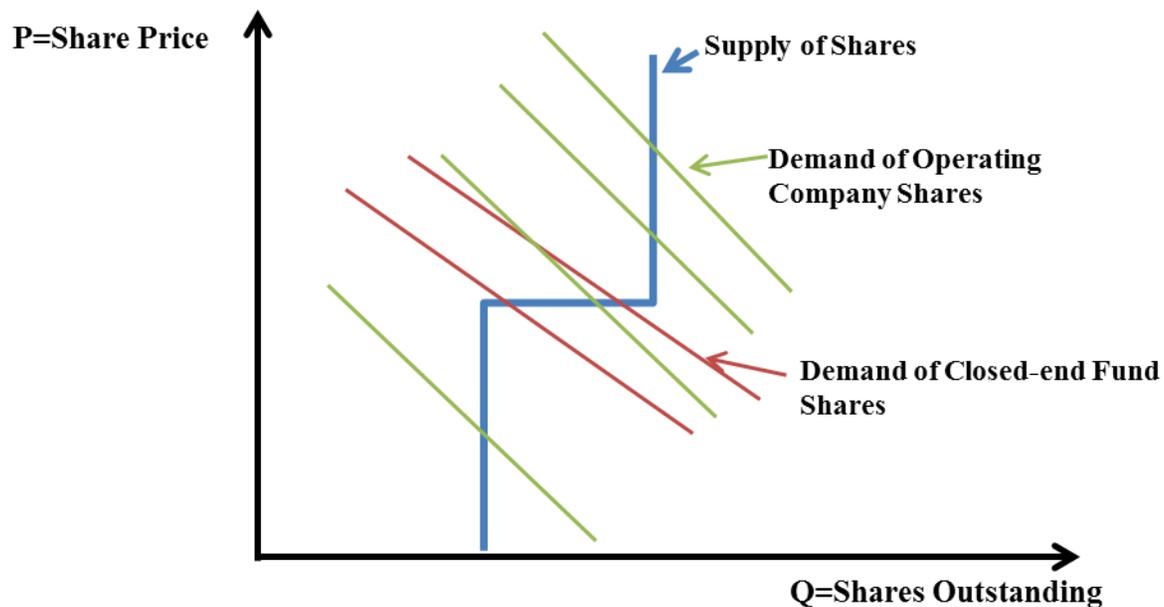


Figure III Demand and Supply of Closed-end Fund IPOs and Operating Company IPOs

The plot below describes the supply-demand dynamics in closed-end fund IPOs and in operating company IPOs. The supply curve represents the shares available for purchase at the IPO and the kink represents the 15% of over-allotment option usually granted to the underwriters in the IPO. The series of red lines represent the demand for closed-end fund IPO shares and the green lines represent the demand for operating company IPOs. The dispersion of demand for operating company shares is higher than for CEF shares. This plot is to illustrate why the turnover ratio after the IPO determines the effectiveness of price support.



Stock (level, as compared to flow) Demand and Supply

Figure IV Frequency of Trading at the Offer Price on the First Trading Day after Closed-end Fund IPOs, 1993-2012

The plot below shows the histogram of the percentage of all first-day trades executed at the offer price for 571 closed-end fund IPOs with at least one trade executed at the offer price from 1993 to 2012. The 571 CEF IPOs account for 96% of all CEF IPOs with first trading day data available in TAQ (Trade and Quote) and are separated into two groups based on whether the CRSP Value-Weighted Index goes up or down on the first trading day after the IPO. Each bar represents the fraction of CEF IPOs with a certain percentage of trades executed exactly at the offer price. For example, 85% and 89% of CEF IPOs, respectively, have at least 50% of transactions at the offer price. 57% and 61% of CEF IPOs, respectively, have at least 90% of transactions at the offer price.

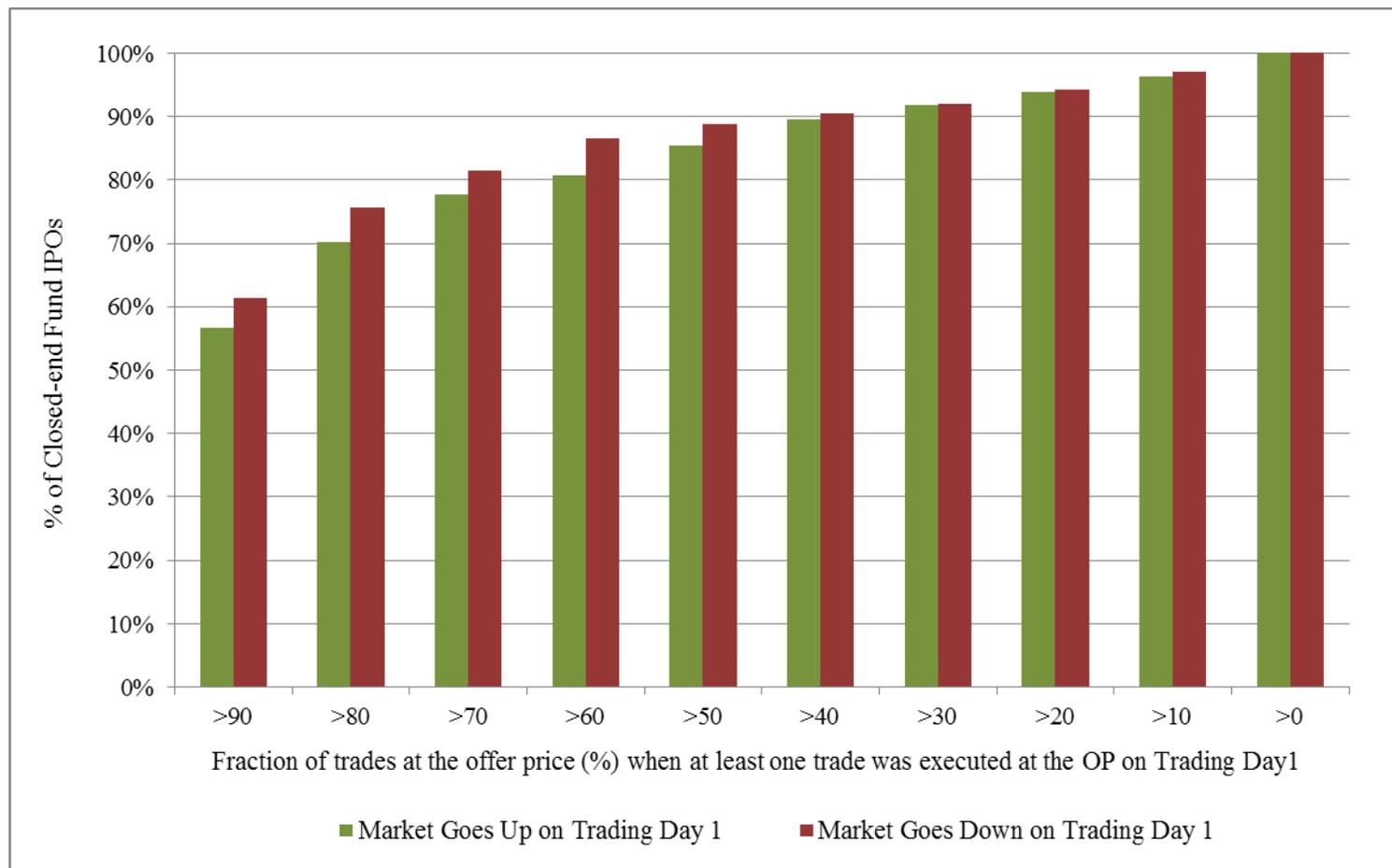


Figure V Buy-and-hold Raw and Adjusted Return of Closed-end fund IPOs from 1986 to 2013

The plots show the average buy-and-hold raw returns of 981 closed-end funds in the first 40 trading days after going public from 1986 to 2013. The left figure plots the raw buy-and-hold returns of CEF IPOs based on whether the CRSP Value-weighted Index goes up or down in the first 20 trading days after the IPO. The right figure shows the average abnormal buy-and-hold return, which are average buy-and-hold raw returns of CEF IPOs minus the average buy-and-hold return of matching seasoned CEFs. The right figure is also separated into two groups based on whether CRSP Value-weighted Index goes up or down. The vertical reference line is trading day 20, which is one month after the IPO.

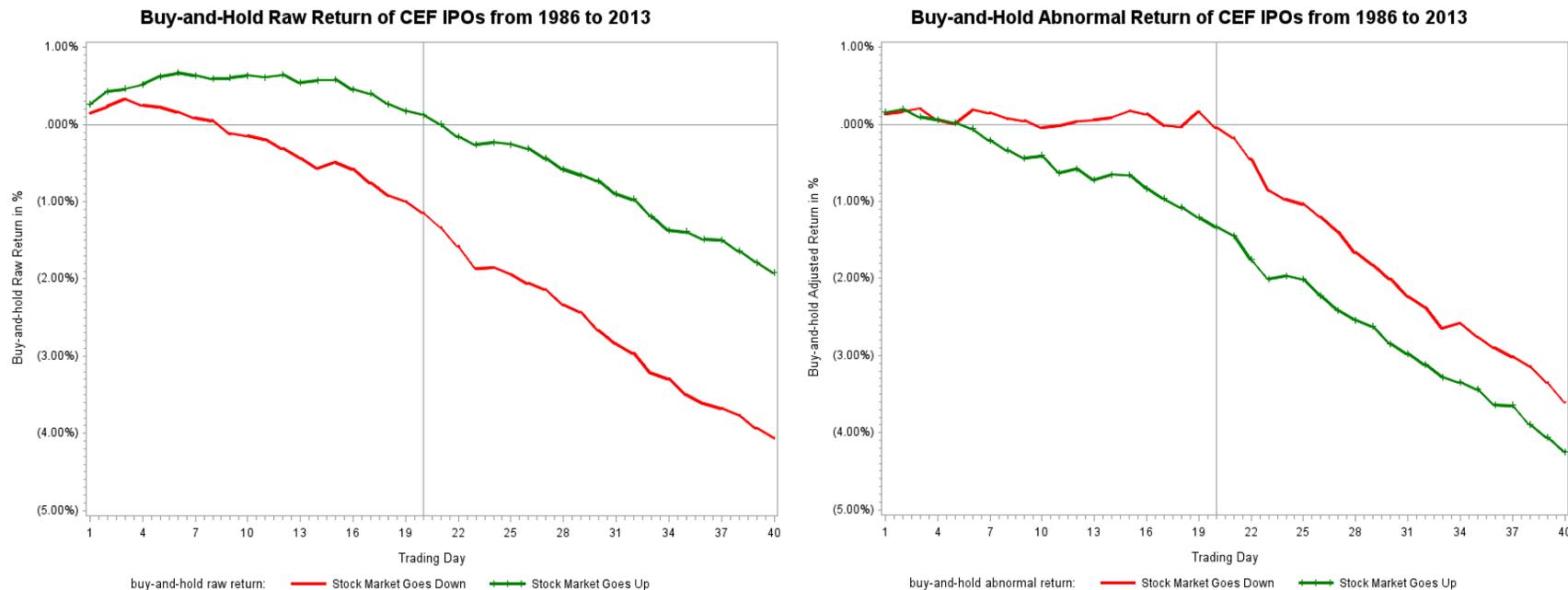


Figure VI Month-end Market Capitalization of Closed-end Funds

Figure VI-A on the left shows the aggregate month-end dollar value of closed-end funds held by investors at the discount brokerage firm from January 1991 to November 1996. Figure VI-B on the right shows the aggregate month-end market capitalization of all closed-end funds that went public between January 1986 and December 2013. Both series are in 2014 million dollars.

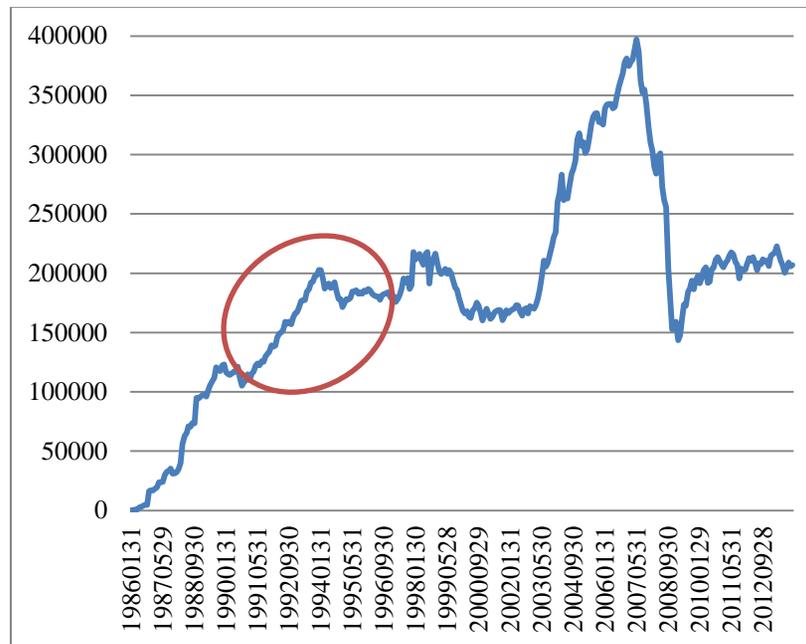
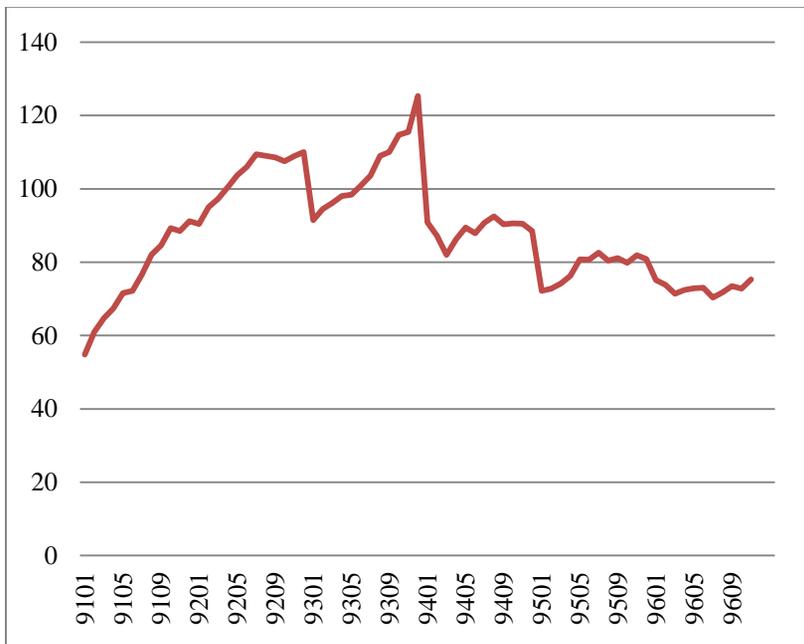


Figure VII Investment Choice of Closed-end Funds by Individual Investors

The plots below illustrate the investment choice of closed-end funds by individual investors at a large discount brokerage firm from January 1991 to November 1996. The top panel plots the month-end % of dollar investment in each closed-end fund category and the bottom panel plots the number of households that had investment in a given fund category.

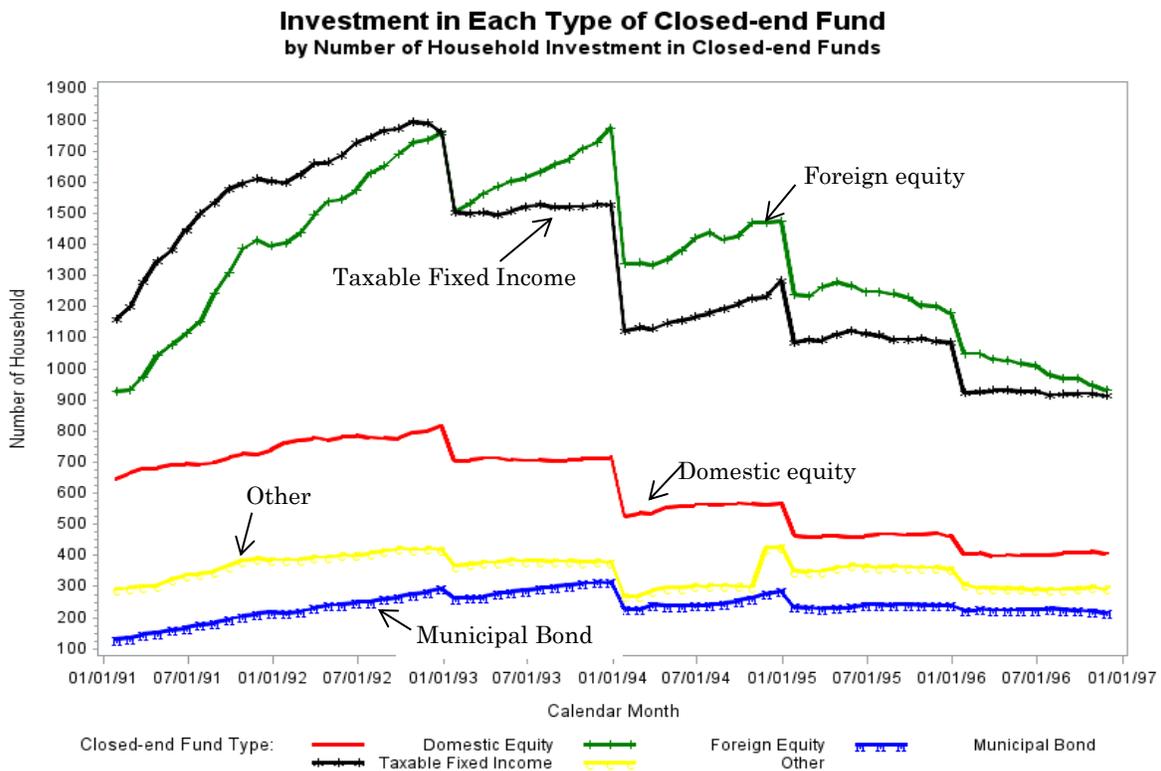
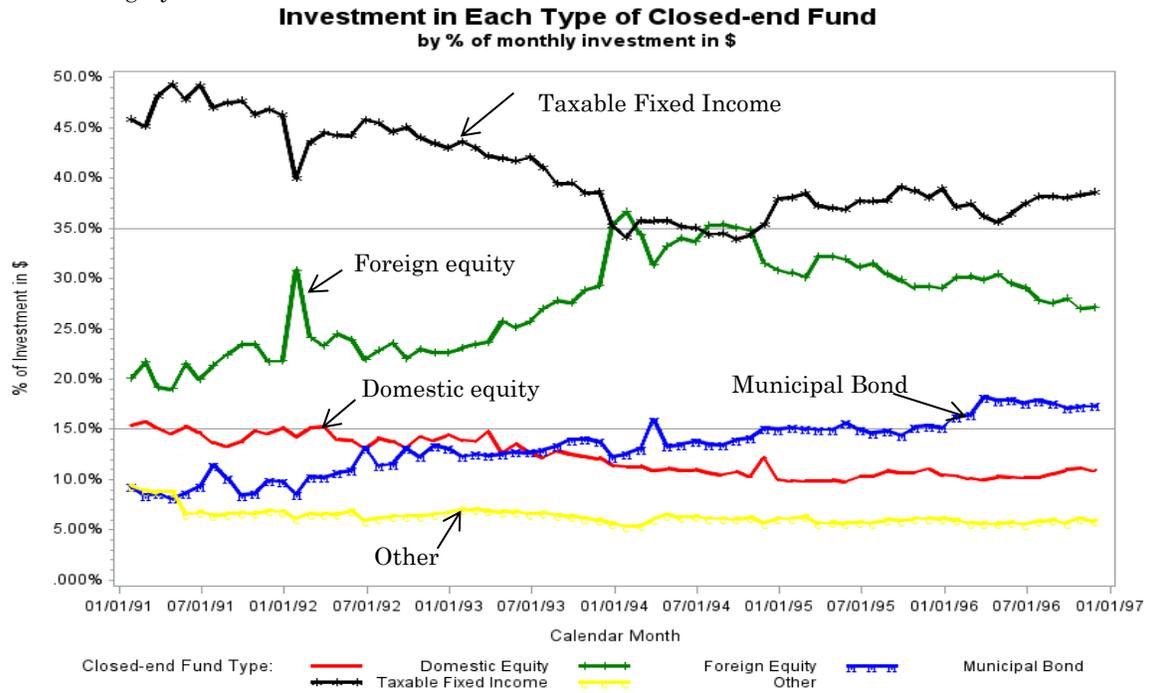


Table I Closed-end Fund IPOs from 1986 to 2013

The table below reports the number of closed-end fund IPOs and the market capitalization by fund type from 1986 to 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. Market capitalization is in 2014 million \$. Detailed sample collection is in Appendix A. Municipal Bond CEFs invest in bonds issued by municipalities. Taxable Fixed Income CEFs include funds that invest in high yield bond, investment grade bond, mortgage bond, loan participation, and other domestic taxable bond as well as funds that seek worldwide income. Domestic Equity includes general and specialized equity funds. Foreign equity refers to CEFs that invest in the securities of firms in other countries. Others include CEFs that mainly invest in preferred stocks or convertible securities.

Year	Domestic Equity		Foreign Equity		Municipal Bond		Taxable Fixed Income		Others		Total		As a % of other IPO's proceed
	N	Mkt. Cap	N	Mkt. Cap	N	Mkt. Cap	N	Mkt. Cap	N	Mkt. Cap	N	Mkt. Cap	
1986	10	4075.9	8	1096.1	1	671.1	3	3057.7	4	473.6	26	9374.3	32.80%
1987	4	682.9	7	1433.7	7	5286.7	10	9153.1	4	3335.8	32	19892.3	80.90%
1988	1	253.3	6	1426.7	14	5758.9	40	28304.9	3	2645.6	64	38389.3	509.70%
1989	1	174.7	7	1846.9	17	7992.1	13	4778.7	3	561.6	41	15353.9	152.60%
1990	2	98.8	21	5104.7	11	3814	5	1573.5	2	411.5	41	11002.5	140.10%
1991	1	815.9	3	378.5	33	12877.4	4	1641.4	1	175.1	42	15888.3	59.50%
1992	2	138.6	10	1674.1	66	16525.5	20	9577.9	2	369.4	100	28285.5	73.50%
1993	2	421.5	7	1978	77	11960	32	14719	4	857.6	122	29936	58.10%
1994	2	95.8	20	9460.9	4	736.3	9	1784.8	4	1191.1	39	13268.9	48.00%
1995	0	0	1	105	0	0	0	0	2	315.5	3	420.5	1.00%
1996	1	33.8	1	148.9	0	0	0	0	0	0	2	182.7	0.30%
1997	0	0	1	103.6	4	888.9	1	420.4	0	0	6	1412.8	3.00%
1998	0	0	0	0	10	1754	12	8617.7	1	291.5	23	10663.1	21.90%
1999	2	484.7	0	0	31	4060.8	1	370.6	1	129.4	35	5045.6	5.50%
2000	1	441	0	0	0	0	0	0	0	0	1	441	0.50%
2001	0	0	0	0	31	6317.7	4	1926.1	2	1088.6	37	9332.3	20.40%
2002	0	0	0	0	59	9232.1	5	2092.6	13	10403.9	77	21728.6	48.00%
2003	5	4623.9	0	0	8	2598.6	16	10289.9	20	13283.5	49	30795.8	250.40%
2004	10	4815.9	7	2296.6	0	0	13	7324.3	21	13088.7	51	27525.4	69.80%
2005	5	1691.1	7	2285.4	0	0	6	1570.5	29	20415.1	47	25962	74.70%
2006	4	4996.3	6	2591.4	1	231.2	5	1810.2	5	3153.6	21	12782.6	35.50%
2007	4	1070.3	9	7211.9	1	238.7	7	5028.1	20	18608.2	41	32157.1	77.90%
2008	0	0	1	157.6	0	0	1	133.2	0	0	2	290.7	1.20%
2009	0	0	0	0	8	1148.7	3	910.4	2	443	13	2502.1	17.10%
2010	0	0	0	0	1	216.3	11	4665.2	5	3588.5	17	8470	26.20%
2011	1	177.8	1	409.6	0	0	5	978.8	11	4727.7	18	6293.9	21.90%
2012	0	0	0	0	3	2758	9	5099.7	9	3857.8	21	11715.6	36.50%
2013	0	0	0	0	3	656.1	11	8044.9	8	4792.8	22	13493.8	34.20%
total	58	25091.9	123	39709.2	390	95723	246	133873.5	176	108209.1	993	402606.6	38.90%

Table II Closed-end Fund (CEF) IPO Premium, Calendar Time Results, 1986-2013

The table below reports the average monthly premium difference between the closed-end fund IPO portfolio and the seasoned CEF portfolio from 1986 to 2013, a total of 336 months. The monthly CEF IPO portfolio includes IPOs from the current and the last month. The monthly seasoned CEF portfolio includes CEFs that are over 12 months old. Namely,

$$\text{Monthly Premium Difference} = \frac{\sum \left[\left(\frac{\text{Price}}{\text{NAV}} \right)_{\text{IPO Portfolio}} - \left(\frac{\text{Price}}{\text{NAV}} \right)_{\text{Seasoned Portfolio}} \right]}{\text{Number of Months}}$$

Panel A reports the average monthly premium difference when there is at least 1 CEF in the monthly seasoned portfolio and 1 CEF in the IPO portfolio. Panel B requires at least 2 CEFs in each portfolio. Column 1 weights fund premium by fund size and Column 2 equally weights each fund premium. Number of observations indicates the number of months when both an IPO and a seasoned portfolio can be formed. Domestic Equity includes general equity CEFs and specialized equity CEFs. Foreign equity refers to CEFs that invest in other countries outside the United States. Taxable Fixed Income (FI) refers to CEFs that invest in high yield bond, investment grade bond, mortgage bond, loan participation, and other domestic taxable bond as well as funds that seek worldwide income. Municipal Bond (Muni) is CEFs that invest in bonds issued by municipalities. Others include CEFs that invest in MLPs, preferred stocks, and convertible securities.

Panel A: At least 1 CEF in seasoned and unseasoned portfolio			
Sector		Value-Weighted	Equal-Weighted
Muni	Monthly Premium Difference	6.29%	5.05%
	t-statistic	4.05	10.91
	N	129	129
Taxable FI	Monthly Premium Difference	4.43%	6.10%
	t-statistic	13.26	20.11
	N	180	180
Domestic Equity	Monthly Premium Difference	10.80%	9.76%
	t-statistic	3.91	3.44
	N	53	53
Foreign Equity	Monthly Premium Difference	6.30%	7.58%
	t-statistic	4.54	4.91
	N	97	97
Others	Monthly Premium Difference	5.27%	7.19%
	t-statistic	11.6	18.21
	N	141	141
Panel B: At least 2 CEFs in seasoned and unseasoned portfolio			
Sector		Value-Weighted	Equal-Weighted
Muni	Monthly Premium Difference	6.78%	5.10%
	t-statistic	3.17	8.75
	N	93	93
Taxable FI	Monthly Premium Difference	4.19%	5.99%
	t-statistic	10.31	18.96
	N	102	102
Domestic Equity	Monthly Premium Difference	12.50%	7.97%
	t-statistic	10.18	5.05
	N	16	16
Foreign Equity	Monthly Premium Difference	4.59%	5.01%
	t-statistic	2.81	2.48
	N	49	49
Others	Monthly Premium Difference	6.28%	6.63%
	t-statistic	18.52	13.43
	N	69	69

Table III Closed-end Fund (CEF) IPOs Performance, 1986 to 2013

The table below shows the regression results of raw percentage returns of 985 CEF IPOs and of their matching seasoned CEFs on a dummy variable that equals 1 when it is a CEF IPO, 0 when it is a seasoned CEF. Namely,

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

The intercept indicates the average raw return of seasoned CEFs and the coefficient of the dummy variable represents the average CEF IPO underperformance relative to the seasoned funds. Domestic Equity includes general equity 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 high yield bond, investment grade bond, mortgage bond, loan participation, and other domestic taxable bond as well as funds that seek worldwide income. Municipal Bond (Muni) CEFs invest in bonds issued by municipalities. 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 are two-way clustered by fund category and the year of IPO for all funds analysis, one-way clustered by the year of IPO for within category analysis.

* indicate statistically significant at 90% confidence interval;

** indicate statistically significant at 95% confidence interval;

*** indicates statistically significant at 99% confidence interval

	All Funds	Domestic Equity	Foreign Equity	Municipal Bond	Taxable FI	Other
Panel A: Post IPO Performance of Closed-end Fund, Six months after the IPO						
Dummy for new Closed-end Fund	-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: Post IPO Performance of Closed-end Fund, One Year after the IPO						
Dummy for new Closed-end Fund	-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: Post IPO Performance of Closed-end Fund, Three Years after the IPO						
Dummy for new Closed-end Fund	-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 IV Closed-end Fund IPOs Performance, Subperiod Results

The table below shows the subperiod regression results. The dependent variable is the percentage raw returns of closed-end fund IPOs and the matching seasoned CEFs at the 6-month after the IPO. The independent variable is a dummy variable that equals 1 when it is a CEF IPO, 0 when it is a seasoned CEF.

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

The intercept indicates the average raw return of seasoned CEFs and the coefficient of the dummy variable represents the average CEF IPO underperformance relative to the seasoned funds. Subperiod 1 is 1986-1990. Subperiod 2 is 1991-2000. Subperiod 3 is 2001-2007 and Subperiod 4 is 2008-2013. 2008 is used as a cutoff point to control for possible industry-wide changes that happened during and after the financial crisis. Panel A reports the underperformance of all CEFs in each subperiod. Panel B reports only bond funds (municipal bond and taxable fixed income) CEF IPO underperformance in each subperiod. Standard errors are two-way clustered by fund category and the year of IPO.

* indicate statistically significant at 90% confidence interval;

** indicate statistically significant at 95% confidence interval;

*** indicates statistically significant at 99% confidence interval

	1986 to 2013	1986 to 1990	1991 to 2000	2001 to 2007	2008 to 2013
Panel A: Post IPO Performance of All Closed-end Funds, Six months after the IPO					
Dummy for new Closed-end Fund	-8.52***	-11.38***	-6.85***	-8.58***	-9.01***
Standard Error	[1.50]	[3.64]	[0.92]	[1.37]	[1.18]
Intercept (%)	3.77***	3.01	2.92***	5.22***	3.80
Standard Error	[0.71]	[2.04]	[0.97]	[1.65]	[2.49]
Number of Observations	1,970	392	746	646	186
Adjusted R-squared	11%	8%	11%	16%	11%
Panel B: Post IPO Performance of Closed-end Bond Funds, Six months after the IPO					
Dummy for new Closed-end Fund	-6.48***	-6.60***	-5.90***	-6.75***	-8.62***
Standard Error	[0.21]	[0.93]	[0.35]	[0.53]	[1.37]
Intercept (%)	4.00***	4.11***	3.34***	5.15***	4.15
Standard Error	[0.75]	[1.06]	[1.05]	[0.64]	[2.31]
Number of Observations	1,256	226	608	312	110
Adjusted R-squared	16%	22%	14%	19%	16%

Table V Closed-end Fund (CEF) IPOs Performance, Calendar Time Results, 1986-2013

The table below reports the average monthly excess return of seasoned closed-end fund portfolios relative to unseasoned CEF portfolios, as defined in Cherkas et al. Table 10 (2009), using data from 1986 to 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 reports excess returns by equally weighting each fund return. Panel A reports when there is at least 1 CEF in the monthly seasoned portfolio and 1 CEF in the unseasoned portfolio. Panel B requires at least 2 CEFs in each portfolio. Number of observations is the number of months when an unseasoned and a seasoned portfolio can be formed.

Panel A: At least 1 CEF in seasoned and unseasoned portfolio			
Sector		Value-Weighted	Equal-Weighted
Muni	Monthly Excess Return	0.61%	0.62%
	t-statistic	5.89	5.81
	N	251	251
Taxable FI	Monthly Excess Return	0.40%	0.70%
	t-statistic	2.48	5.04
	N	278	278
Domestic Equity	Monthly Excess Return	0.91%	1.35%
	t-statistic	2.41	3.75
	N	196	196
Foreign Equity	Monthly Excess Return	0.89%	0.73%
	t-statistic	2.34	2.01
	N	210	210
Others	Monthly Excess Return	0.71%	0.94%
	t-statistic	2.06	3.20
	N	273	273
Panel B: At least 2 CEFs in seasoned and unseasoned portfolio			
Sector		Value-Weighted	Equal-Weighted
Muni	Monthly Excess Return	0.62%	0.62%
	t-statistic	6.40	6.37
	N	201	201
Taxable FI	Monthly Excess Return	0.32%	0.65%
	t-statistic	2.12	5.12
	N	248	248
Domestic Equity	Monthly Excess Return	0.92%	1.43%
	t-statistic	2.44	4.26
	N	115	115
Foreign Equity	Monthly Excess Return	1.19%	1.14%
	t-statistic	3.06	3.30
	N	153	153
Others	Monthly Excess Return	0.50%	0.72%
	t-statistic	2.53	4.25
	N	219	219

Table VI Closed-end Fund (CEF) IPOs Performance, Calendar Time Results, Ending in 2004

The table below reports the average monthly excess return of seasoned closed-end fund portfolios relative to unseasoned CEF portfolios, as defined in Cherkas et al. Table 10(2009). Columns 1 and 2 weight each fund return by fund size and Columns 3 and 4 report excess returns by equally weighting each fund return. Panel A reports when there is at least 1 CEF in the monthly seasoned portfolio and 1 CEF in unseasoned portfolio. Panel B requires at least 2 CEFs. Number of observations is the number of months when an unseasoned and a seasoned portfolio can be formed. This table offers comparison to Cherkas et al. Table 10 (2009). Columns 1 and 3 use data from 1986 to 2004, a total of 228 months, the same sample period as used in Columns 1 and 3 in Cherkas et al. Table 10 to calculate the raw monthly excess returns. Columns 2 and 4 use data from 1993 to 2004, a total of 144 months, presumably the same sample period as used in Columns 2 and 4 in Cherkas et al. Table 10 to calculate the unlevered monthly excess returns.

Panel A: At least 1 CEF in seasoned and unseasoned portfolio					
Sector		Value-Weighted		Equal-Weighted	
		1986-2004	1993-2004	1986-2004	1993-2004
Muni	Monthly Excess Return	0.50%	0.54%	0.53%	0.56%
	t-statistic	5.42	4.80	5.49	5.20
	N	181	121	181	121
Taxable FI	Monthly Excess Return	0.48%	0.34%	0.68%	0.56%
	t-statistic	2.50	1.57	4.24	2.72
	N	175	107	175	107
Domestic Equity	Monthly Excess Return	1.03%	1.32%	1.55%	1.91%
	t-statistic	2.02	1.88	3.15	2.81
	N	139	76	139	76
Foreign Equity	Monthly Excess Return	0.78%	-0.40%	0.51%	-0.77%
	t-statistic	1.50	-0.06	1.04	-0.11
	N	142	72	142	72
Others	Monthly Excess Return	0.34%	0.20%	0.70%	0.53%
	t-statistic	1.09	0.49	3.07	2.23
	N	172	107	172	107

Panel B: At least 2 CEFs in seasoned and unseasoned portfolio					
Sector		Value-Weighted		Equal-Weighted	
		1986-2004	1993-2004	1986-2004	1993-2004
Muni	Monthly Excess Return	0.52%	0.53%	0.52%	0.55%
	t-statistic	5.63	4.75	5.90	5.09
	N	168	112	168	112
Taxable FI	Monthly Excess Return	0.58%	0.37%	0.80%	0.64%
	t-statistic	2.99	1.73	5.20	3.33
	N	152	87	152	87
Domestic Equity	Monthly Excess Return	1.10%	1.69%	1.71%	2.37%
	t-statistic	1.95	2.86	3.37	3.76
	N	70	41	70	41
Foreign Equity	Monthly Excess Return	1.27%	0.90%	1.14%	1.27%
	t-statistic	2.48	1.49	2.59	2.27
	N	108	44	108	44
Others	Monthly Excess Return	0.44%	0.34%	0.75%	0.56%
	t-statistic	1.44	1.04	2.87	2.68
	N	125	76	125	76

Table VII Institutional Ownership in Closed-end Funds (CEFs) and Operating Companies

The table below reports the institutional ownership in operating companies and closed-end funds from 1990 to 2013, using quarterly 13-f filing data from Thomson Reuters. Panel A presents 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-month average uses the 13-f filings reported within 6 months after the IPO date. All time average uses all available quarterly 13-f filings data. Panel B presents the same statistics for different categories of CEFs. Domestic Equity includes general equity and specialized equity CEFs. Foreign equity refers to CEFs that invest in other countries outside the United States. Taxable Fixed Income CEFs include funds that invest in high yield bond, investment grade bond, mortgage bond, loan participation, and other domestic taxable bond as well as funds that seek worldwide income. Municipal Bond CEFs invest in bonds issued by municipalities. Others include funds that mainly invest in MLPs, preferred stocks and convertible securities.

Institutional Ownership in Closed-end Funds and Operating Companies 1990-2013						
Panel A: Institutional Ownership in Operating Companies						
	All Operating Companies	New York Stock Exchange	American Stock Exchange	NASDAQ Stock Market		
First 6-Month Average	26.0%	34.8%	17.9%	23.6%		
Number of Observations	12,518	2,861	385	9,268		
All Time Average	42.7%	56.6%	18.3%	39.2%		
Number of Observations	226,978	58,298	10,596	157,989		
Panel B: Institutional Ownership in Closed-end Fund						
	All Closed-end Funds	Domestic Equity	Foreign Equity	Municipal Bond	Taxable FI	Others
First 6-Month Average	2.04%	2.46%	6.33%	0.55%	1.87%	1.70%
Number of Observations	1,349	84	193	477	308	287
All Time Average	6.85%	9.61%	17.80%	2.39%	7.18%	8.43%
Number of Observations	40,310	2,090	5,602	17,591	9,967	5,060

Table VIII Average First-day Turnover for Closed-end Funds (CEFs), 1986-2013

The table below reports the average turnover ratio on the first trading day after closed-end fund IPOs from 1986 to 2013; NASDAQ trading volume is adjusted accordingly. The number of CEF IPOs and the first trading day turnover ratio are separated into the three exchanges where the CEF is listed. The last column reports the average turnover ratio on the first trading day after operating company IPOs for comparison purpose. The operating company turnover ratios are taken from Jay Ritter's website, where they are reported as a supplement to the 2010 *Journal of Financial Economics* article "The Marketing of Seasoned Equity Offerings" by Xiaohui Gao and Jay R. Ritter, using the algorithm for adjusted NASDAQ volume.

Year	No. of Closed-end Fund IPOs				Avg. Turnover Ratio of CEF IPOs				Avg. Turnover Ratio of Operating Company IPOs
	NYSE	Amex	Nasdaq	Total	NYSE	Amex	Nasdaq	Total	
1986	21	5	0	26	7.01%	4.71%	N/A	6.57%	19.80%
1987	27	5	0	32	16.10%	10.00%	N/A	15.20%	21.70%
1988	52	12	0	64	4.72%	3.00%	N/A	4.40%	23.70%
1989	37	3	1	41	3.53%	14.10%	0.52%	4.23%	28.10%
1990	34	7	0	41	14.70%	12.90%	N/A	14.40%	32.40%
1991	41	0	0	41	1.97%	N/A	N/A	1.97%	35.50%
1992	90	10	0	100	1.39%	2.44%	N/A	1.49%	32.00%
1993	82	40	0	122	1.75%	1.08%	N/A	1.53%	35.90%
1994	36	2	1	39	4.85%	0.51%	5.64%	4.65%	28.80%
1995	2	0	0	2	1.01%	N/A	N/A	1.01%	40.30%
1996	1	1	0	2	14.70%	9.48%	N/A	12.10%	39.80%
1997	6	0	0	6	0.29%	N/A	N/A	0.29%	35.60%
1998	22	1	0	23	0.57%	2.78%	N/A	0.67%	51.00%
1999	16	19	0	35	1.23%	1.65%	N/A	1.46%	82.70%
2000	0	0	0	0	N/A	N/A	N/A	N/A	69.70%
2001	17	20	0	37	2.01%	2.77%	N/A	2.42%	55.00%
2002	38	38	1	77	2.57%	0.71%	0.68%	1.63%	54.00%
2003	35	11	1	47	2.22%	2.35%	0.66%	2.20%	53.90%
2004	40	10	1	51	2.45%	2.42%	0.28%	2.41%	66.10%
2005	42	4	1	47	2.23%	2.04%	4.76%	2.27%	63.80%
2006	19	2	0	21	3.22%	5.32%	N/A	3.42%	65.50%
2007	35	4	2	41	2.69%	1.08%	1.21%	2.46%	63.50%
2008	2	0	0	2	2.09%	N/A	N/A	2.09%	58.10%
2009	9	4	0	13	2.24%	7.66%	N/A	3.90%	71.20%
2010	17	0	0	17	2.66%	N/A	N/A	2.66%	56.40%
2011	17	0	1	18	6.80%	N/A	5.83%	6.75%	76.00%
2012	21	0	0	21	4.66%	N/A	N/A	4.66%	79.40%
2013	22	0	0	22	5.36%	N/A	N/A	5.36%	76.60%
Total	781	198	9	988	3.83%	2.73%	2.31%	3.59%	46.05%

Table IX Investment in Old versus New Closed-end Funds (CEFs), 1991-1996

The table below reports the regression results. The dependent variable is the dollar value of the discount broker's clients' total month-end position in closed-end funds from 1991 to 1996. The control variables include a dummy variable that equals 1 when a CEF has been publicly traded for over 12 months, lagged returns up to three months measured in decimal point, lagged market capitalization of a CEF. A CEF's lagged premium/discount in previous month is measured in decimal point, i.e. 0.05 represents a 5% premium and -0.07 represents a 7% discount. All dollar amounts are not inflation adjusted. Specification 1 uses fund type and year fixed effects. Specification 2 uses CEF fixed effects. Reported standard errors are two-way clustered by year and the fund type.

$$\text{Month-end Position}_{i,t} = \alpha_{i,t} + \beta_1 * \text{Dummy for being seasoned}_{i,t-1} + \beta_2 * \text{Ret}_{i,t-1} + \beta_3 * \text{Ret}_{i,t-2} + \beta_4 * \text{Ret}_{i,t-3} + \beta_5 * \text{Market Cap}_{i,t-1} + \beta_6 * \text{Premium}_{i,t-1} + \text{Closed-end Fund Type FE} + \text{Year FE} + (\text{Closed-end Fund FE}) + \text{Error}_t$$

* indicate statistically significant at 90% confidence interval;

** indicate statistically significant at 95% confidence interval;

*** indicates statistically significant at 99% confidence interval

Independent Variables	(1)	(2)
Dummy for being older than 12 months ₋₁	165573.72*** [22821.03]	54571.47*** [10171.92]
RET ₋₁	54099.54 [40675.15]	-31141.18 [37583.33]
RET ₋₂	81928.08** [36663.52]	21701.28 [28898.69]
RET ₋₃	106434.84*** [35874.42]	53868.98** [24776.37]
Market Capitalization ₋₁	0.16*** [0.02]	0.14** [0.05]
Premium (or Discount) ₋₁	213748.56*** [57937.05]	362969.81*** [91649.23]
Constant	153176.68*** [27248.83]	119625.53 [.]
Fund Type FE	Yes	No
Year FE	Yes	No
Fund FE	No	Yes
Number of Observations	18,206	18,206
Adjusted R-Square	26%	85%