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Signaling or Marketing? The Role of Discount Control Mechanisms in Closed-End Funds

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Abstract

We study the relevance of signaling and marketing as explanations for the discount control mechanisms that a closed-end fund may choose to adopt in its prospectus. These policies are designed to narrow the potential gap between share price and net asset value, measured by the fund's discount. The two most common discount control mechanisms are explicit discretion to repurchase shares based on the magnitude of the fund discount and mandatory continuation votes that provide shareholders the opportunity to liquidate the fund. We find very limited evidence that a discount control mechanism serves as costly signal of information. Funds with mandatory voting are not more likely to delist than the rest of the CEFs in general or whenever the fund discount is large. Similarly, funds that explicitly discuss share repurchases as a potential response do not subsequently buy back shares more often when discounts do increase. Instead, the existence of these policies is more consistent with marketing explanations because the policies are associated with an increased probability of issuing more equity in subsequent periods.

JEL Codes: G10; G23

Keywords: closed-end funds; discount; signaling; repurchases; continuation vote

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1. Introduction

The persistence of closed-end fund discounts has sparked an enduring debate in the literature. Closed-end funds (CEFs) as well as the publicly traded shares that constitute their portfolios are traded on stock exchanges. However, there exists a prevailing discrepancy between the price of a closed-end fund and the market value of its underlying portfolio. Typically, closed-end funds trade at a discount to their net asset value (NAV) although the shares of the fund are issued at an IPO price that usually exceeds the initial NAV. The puzzling willingness of investors to buy closed-end funds at IPO while they could instead buy an open-end fund without a discount has generated considerable academic research. The various explanations for the existence of the fund discount include: the fees that managers charge as a fraction of assets under management (Boudreaux, 1973; Ross, 2005), market frictions and the tax overhang (Malkiel, 1977; Chay, Choi, and Pontiff, 2006; Day, Li, and Xu, 2011), liquidity (Malkiel, 1977; Lee, Shleifer, and Thaler, 1991; Berk and Stanton, 2007), investors' irrationality (Lee, Shleifer, and Thaler, 1991), and managerial ability (Berk and Stanton, 2007).

In our study, we investigate potential signaling mechanisms at the disposal of closed-end fund managers who commit to explicit policies of fund discount control. These policies are designed to reduce the undervaluation of the fund's share price relative to NAV. Discount control mechanisms (DCMs) typically include discretionary share repurchases and mandatory continuation votes that are triggered by the fund discount falling below a pre-specified level. Since repurchasing shares or liquidating the fund can greatly reduce assets under management and the resulting compensation for the management company, it is costly to managers if these mechanisms are implemented and these costs would fall disproportionately on managers with poor performance. For instance, highly skilled managers with ability to generate positive abnormal performance would have a lower probability of losing a mandatory continuation vote than managers with inferior performance. Thus, skilled managers who commit to this DCM find it less costly to do so than their counterparts with potentially inferior future performance. To the extent that expected firm performance is reflected in the discount at which the fund trades relative to NAV, and since there is heterogeneity in the costs that fund managers face when committing to a DCM, adopting policies of discount control could serve as a costly signal of management skill.

However, some policies of discount control do not require a commitment on the part of the fund managers. While continuation votes are mandatory, the typical language regarding share

repurchases indicates that the management team can utilize its discretion to decide the timing and the amount of any share repurchases. Thus, the announcement of discretionary repurchase programs as a mechanism to control the discount is not necessarily a costly information signal: Managers can costlessly announce their intention to consider share repurchases under certain circumstances in an attempt to control the discount the fund but not carry out any actual repurchases when the fund discount increases substantially. On the other hand, the firm commitment to hold continuation votes and thus give shareholders the opportunity to decide whether to liquidate or convert to an open-end structure could more clearly serve as a costly signal of managerial skill. This costly signal would reduce the information asymmetry between fund managers and fund shareholders.

If managers do not have a stake in the fund, they would not benefit from a reduction in the discount. Since management company compensation is typically proportional to the assets under management, managers would have an incentive to resist liquidation or engage in share repurchases. In addition, Barclay, Holderness, and Pontiff (1993) demonstrate that even in the presence of substantial managerial stock ownership or blockholders affiliated with the fund manager, such large shareholders tend to use their voting power to secure private benefits that do not accrue to other shareholders and thus veto liquidation proposals. As a result, discounts would persist, even in the presence of mandatory continuation votes.

Alternatively, we suggest that the announcement of discount control mechanisms at IPO allows managers to subsequently extract rents by increasing assets under management. Skilled managers can capitalize on fund's past performance and the investor expectations of future performance increase the size of the fund by engaging in seasoned equity offerings or rights offerings. On the other hand, managers that generate a large discount may become entrenched.

We collect a database of equity-oriented UK closed-end funds. Compared to their US counterparts, the total assets of UK CEFs constituted a sizeable proportion of the mutual fund universe.[1] The amount of institutional ownership is also much more pronounced in the UK (see Dimson and Minio-Kozerski, 2001). In addition, DCMs are much more prevalent in the UK: A large proportion of UK closed-end funds have mandatory continuation votes (about 60% of the

[1] In the UK, the assets of equity closed-end funds represent 17% of the total assets of equity open-end funds, compared to 1.2% in the US as of December 2016 (see Investment Company Institute (2017), The Association of Investment Companies (2016), and The Investment Association (2016)).

funds in our sample), whereas such a policy is relatively rare in the U.S. (less than 1% of closed-end funds have a continuation vote provision in their IPO prospectuses).

Since DCMs became popular in the fund industry, their effectiveness has been questioned in the popular press.[2] During the period of the global financial crisis, funds have witnessed substantial increase in fund discounts, low share price relative to NAV, despite discount control policies in place.

To investigate whether the discount control provisions that CEFs announce in their IPO prospectuses can be interpreted as costly information signals or whether they are merely a marketing device, we assess the likelihood that a DCM leads to the intended outcome. First, we investigate the determinants of the probability that a CEF is delisted. While we find that it is less likely for large funds to delist and that large discounts over the previous year contribute to increasing the probability of liquidation or open-ending a fund, the explicit device that allows shareholders to vote on the future of the fund has no impact on the probability of delisting. Moreover, funds with mandatory voting are even less likely to delist when faced with large fund discounts. The same holds for funds in which the management company has a stake: the commitment to hold continuation votes for such funds when interacted with the management company stake contributes to even lower the likelihood to delist. It appears that the benefit of reducing the discount that would accrue to the management company in case it has a stake in the fund is far outweighed by the rents it would capture if the fund continues to operate.

Second, we evaluate the likelihood that a fund engages in share repurchases and its relation to the corresponding mechanism of discount control announced by closed-end funds that involves explicit discretion to repurchase shares when discount is large. We find that funds with these provisions are not more or less likely to repurchase their own shares, regardless of the level of the discount. To the contrary, all funds appear to engage in an increased level of repurchase activity when discounts widen. Having announced the potential to repurchase shares at IPO leads to even lower likelihood to implement this action if the management company has a stake in the fund. So, while we do find evidence of a reduction in the outstanding shares of a fund following a large discount episode, this reduction is unrelated or in some cases negatively related to the announcement of a policy of discount control that is supposed to implement share repurchases.

[2] For example, see Financial Times (2010), addressing corporate governance issues and credibility of discount control policies in the wake of the financial crisis.

Our findings suggest that the announcement of a discount control mechanism at IPO does not constitute a costly information signal for the fund. Rather, we find support for the alternative hypothesis that these policies are essentially a marketing tool used by fund managers to expand compensation by increasing assets under management. We document that both funds with that explicitly discuss share repurchases or have mandatory voting provisions are more likely to issue a large percentage of new shares in subsequent periods. That finding also holds for funds with substantial management ownership.

We further investigate the impact that discount control mechanisms have on closed-end fund discounts in the months following the IPO. While funds with mandatory voting appear to be trading at a higher premium immediately after IPO than the rest of the funds, the premium sinks into a deeper discount by the end of the first year of trading. After 24 months, funds with DCMs have discounts that are about twice as large on average as funds with no DCM commitment. We also do not find evidence that funds that have announced policies to reduce the discount at IPO have different long-term performance than the rest of the funds. Long-short portfolios of funds with different DCM classifications all have insignificant risk-adjusted returns.

Overall, our results demonstrate that the commitment to take actions to reduce the discount that a substantial fraction of closed-end funds indicates at IPO does not represent a costly signal intended to reduce the information asymmetry between shareholders and the managers. Rather, our findings are more consistent with DCMs being a marketing tool that allows managers to grow their assets under management. Our study contributes to the understanding of agency frictions in closed-end funds or delegated portfolio management in general. Our results corroborate with the findings of Wu, Wermers, and Zechner (2016) who show that unlike open-end funds, for which there exists a convex flow-performance relationship as investors react to past fund performance, in the closed-end fund industry management companies expand their assets under management when investor demand is strong, but fail to reduce them when investor demand is weak.

Our study is closely related to the strand of literature that investigates the predictions of signaling models in relation to the CEF discount. Johnson, Lin, and Song (2006) investigate the signaling value of managed distribution policies and argue that the commitment to minimum dividend payments is an effective tool in substantially reducing the CEF discount. However, Wang and Nanda (2011) provide evidence that funds are often forced to adopt managed distribution policies due to shareholder pressure. They put forward an agency cost hypothesis and demonstrate

that managed distribution policies do not necessarily improve fund performance when agency problems between managers and investors are present.

Contrary to the two studies mentioned above, we focus on the adoption of a DCM at fund's inception, where the discount control triggers and the specific mechanisms in place are outlined in the IPO prospectus. This approach allows us to appreciate the signaling value of DCM pre-commitment.

In addition, we contribute to the strand of literature that investigates the information content in IPO prospectuses in relation to IPO pricing. Hanley and Hoberg (2010) provide evidence that greater informative content in prospectuses results in more accurate offer prices. Contrary to their findings, our results indicate that the presence of explicit commitment to a discount control policy in the IPO prospectus of CEFs does not constitute a costly information signal. There is little evidence that it leads to lower NAV discounts after IPO and the long-term performance of funds with DCMs announced at inception is indistinguishable from the performance of the rest of the CEFs.

Our paper is related to the literature on the sources of the CEF discount. One of the earliest explanations for the existence of the discount attributes it to the fees that managers charge as a fraction of assets under management (see Boudreaux, 1973; Gemmill and Thomas, 2002; Ross, 2002a). However, the empirical evidence in support of that explanation is mixed: differences in fees generally fail to explain the cross-sectional variation in discounts (Malkiel, 1977; Lee, Shleifer, and Thaler, 1991; Kumar and Noronha, 1992). Berk and Stanton (2007) develop a model in which the discount is obtained as a result of the trade-off between managerial ability and fees charged.[3] Market frictions are an alternative channel for the emergence of the CEF discount. The role of taxes has been investigated in a number of studies with mixed empirical evidence (Malkiel, 1977; Brickley, Manaster, and Schallheim, 1991; Kim, 1994; Elton, Gruber, and Blake, 2005; Chay, Choi, and Pontiff, 2006; Day, Li, and Xu 2011). Liquidity is another factor that has been shown to play a role in explaining the CEF discount. Specifically, Malkiel (1977) and Lee, Shleifer, and Thaler (1991) consider the role of the illiquid holdings of CEFs that lead to the divergence between the fund's NAV and its market value. Cherkes, Sagi, and Stanton (2009) offer a model in which the discount results from the trade-off that exists between the management fees

[3] See also Ross (2002b), Arora, Ju, and Ou-Yang (2003), and Ferguson and Leistikow (2004).

that investors pay and the liquidity benefits that accrue from holding the fund rather than the underlying assets.

Another strand of literature attributes the CEF discount to investors' irrationality. According to the investor sentiment theory that Lee, Shleifer, and Thaler (1991) offer, CEFs trade at a discount as a compensation for greater share-price volatility induced by investors' irrationality – a noise traders' risk premium. See also Pontiff (1995, 1997), Klibanoff, Lamont, and Wizman (1998), Kumar and Lee (2006), and Hwang (2011) among others for empirical support of the investors' irrationality hypothesis.

The remainder of the paper is structured as follows. Section 2 describes the sample and summary statistics. It also discusses the different types of discount control mechanisms that closed-end funds commit to in their IPO prospectuses. Section 3 presents the results. In Section 3.1, we explore the delisting behavior of funds as a function of the discount they trade at and their commitment to hold continuation votes. Section 3.2 analyses the likelihood of funds to engage in share repurchases given their stated (although not binding) objective to do so in the face of widening discounts. Section 3.3 examines the role that discount control mechanisms have in expanding the assets under management via secondary equity offerings or rights offerings in response to past fund performance and investor expectations of future fund performance. Section 3.4 explores the implications of stated policies of discount control on closed-end fund discounts and long-term performance. Section 4 concludes.

2. Data

In the UK, closed-end funds attract a sizeable amount of funds compared to the open-end fund sector.[4] By December 2016, the British closed-end equity funds accounted for £105,721 million of funds under management which represent 17% of the assets under management of open-end funds (The Association of Investment Companies (2016), The Investment Association (2016)). By the end of 2016, there were 443 active closed-end funds, including 107 venture capital trusts, 27 property funds, 15 hedge funds, and 23 private equity funds.

[4] Contrary to the US, where CEFs market capitalization is less than 1.5% of the aggregate market value of US open-end stock funds (The Investment Company Institute, 2017).

We consider UK closed-end funds with IPOs between January 1992 and December 2016. The sample consists of 238 equity-oriented funds traded on the London Stock Exchange. We exclude venture capital trusts, hedge funds, and private equity and property funds. We also exclude funds with finite life. The sample contains both live and delisted funds.

We obtain share prices, returns, net asset values (NAVs), and number of shares outstanding from Datastream and Bloomberg. All companies listed in the UK are required to disclose blockholder ownership in excess of 3%. We obtain data on the management company stake in a fund from its annual reports. We further build a hand-collected database of discount control mechanisms (DCMs) introduced at inception from funds' IPO prospectuses and annual reports. There are four main types of DCMs that are typically employed by CEFs.

- *Share buybacks* are the most common tool to correct imbalances between the demand and supply of shares and thus control the level of the discount to NAV that fund's shares may trade at. Share repurchases in the secondary market are typically realized up to a certain percentage of the shares in issue (usually 14.99%). Typically, the directors seek authority from shareholders to repurchase shares at each annual general meeting of the company. Prospectuses offer varying degrees of specifics on the use of share buybacks as a mechanism to narrow the NAV discount. They range from the announcement of the existence of an authority to repurchase shares indicating the instances when it will be exercised to stipulating a trigger point, i.e., the NAV discount raising above a certain threshold that the Board will use as guidance on when to intervene with repurchases in the secondary market. The making and timing of buybacks however is predominantly at the discretion of the Board.
- A *redemption facility* is an alternative mechanism used by some funds to narrow the NAV discount. Such facility enables shareholders to periodically redeem some of their shares (usually up to about 25% of the shares in issue) at net asset value less costs. Similarly to share buybacks, funds may implement a redemption offer if a pre-specified NAV discount threshold is reached. Although redemption facilities allow shareholders to redeem shares on a periodic basis, the directors typically exercise their discretion to operate the facility.
- *Tender offers* are also offered usually at the Board's discretion and there may or may not be an NAV discount trigger attached to them. They are made available to all shareholders for a predetermined number of shares at a pre-specified price (below NAV).

- *Continuation votes* are the sole discount control mechanism that is not applied at the directors' discretion but is instead mandatory. They provide shareholders with the possibility to vote on the future of the fund (e.g., to liquidate or open-end the fund). If a continuation vote is not passed, the fund's directors are obliged to put forward proposals to reconstruct or liquidate the fund. Continuation votes are either periodic (annual or occurring at pre-determined periods, usually following a longer initial period post-IPO before the first continuation vote is held), or they may be triggered by the level of the NAV discount (i.e., a discount floor provision).

We sort DCMs in two categories depending on whether or not the fund's directors can exercise discretion in putting the mechanism in place. A mandatory voting category comprises funds with periodic continuation votes and discount floor provisions. A buyback discretion category is represented by share buybacks, redemption facilities and tender offers that are exercised at the directors' discretion without a pre-specified NAV discount trigger or that the board may adopt at its discretion if the fund's discount to NAV passes a certain level. We classify funds with respect to their DCM policies using the information contained in their IPO prospectuses obtained via Bloomberg or company websites. Further, we rely on annual reports which often contain information on the exercise of a certain DCM, or the provisions of the articles of association of the fund.

In Table 1, we report the number of active closed-end funds per year for each of the two DCM categories. On average, there are 109 funds that are active each year in the 1994-2016 period. Out of the 238 funds in our sample, 134 have delisted during the period. In total, there are 142 funds in our sample with provisions that require mandatory voting, either periodic or conditional on a discount trigger. For 50 funds, the directors have the discretion to buy back shares, while the remaining 45 funds have no DCM in place at IPO.[5]

Table 2 presents descriptive statistics of our sample of closed-end funds. In Panel A, we report the breakdown of the funds by size based on the market capitalization in the month of the IPO. The median fund has a market capitalization of about £47 million, while the average size goes up to £75 million. About 5% of the funds in our sample have a market capitalization of more than

[5] Prior to 2000, only a small proportion of closed-end funds had buyback discretion at inception. The most-often cited reason behind the introduction of share repurchases to manage NAV discounts is the abolition of the Advance Corporation Tax in April 1999. Prior to that date, share repurchases would impose an additional tax liability since they qualified as distributions for tax purposes. See also the discussion in Oswald and Young (2002).

£200 million. All of these large funds have a form of stated policy of discount control at IPO. Funds with buyback discretion tend to be substantially larger on average, about twice as large as the rest of the funds in the sample. In Panel B, we report the geographical focus of the funds' portfolios. A fund is classified as Global if it has less than 80% of its assets in any one geographical area. Alternatively, a fund is attached to a particular geographical area if it has more than 80% of its assets in securities in that area. In our sample, 38% of the funds invest predominantly in UK equities. The Global focus accounts for 36% of the sample, which is also the most popular category for funds with any form of discount control mechanism in place.

3. Discussion of Results

3.1. Mandatory Voting and Fund Delisting

Nearly half of the funds in our sample offer shareholders the possibility to vote on the future of the company either at regular intervals or when the fund starts trading at a certain level of discount to its NAV. Such mandatory discount control mechanism that the funds announce in their IPO prospectuses could be interpreted as a costly signal of the future performance of the fund. Managers of funds that trade at large discounts face an increased probability of liquidating or open-ending the fund. To the extent that the fund premiums reflect expectations of superior fund performance, managers who expect their fund to outperform would have an incentive to signal their type to investors by adopting an explicit discount control policy.

We first test whether it is indeed costly for fund managers to commit to a mandatory voting policy at the inception of the fund. To this end, we run a linear regression model of the probability of liquidation of a fund in any given year on a dummy variable taking the value of one if the fund has mandatory voting and zero otherwise, the average fund discount over the previous year, as well as the fund market value, the return of the fund and the market return at the end of the previous year. Results are presented in Table 3.

The size of the fund measured as the log of fund's market value at the end of the previous year is inversely related to the probability of liquidation: large funds are less likely to delist. Interestingly, by itself, the level of the discount at which the fund has traded over the previous year does not seem to have any effect on the probability of delisting. When in addition we consider the presence of a mandatory voting provision at IPO, this mechanism of discount control does not seem to affect fund liquidations either. The strongest predictors of the probability to delist remain

the size of the fund and the prevailing market return in the year prior to delisting. Since a considerable portion of the assets held by the closed-end funds in our sample are not concentrated in any single geographical region, we take the return of the MSCI World Index as the market return.[6]

However, a striking pattern emerges once we consider the interaction of the mandatory voting provision with the past fund discount (columns 5 and 6 in Table 3). While funds that have traded at a discount over the past year face a higher probability to delist over the following year, funds that have adopted mandatory voting are significantly less likely to delist if their discount widens. The discount control mechanism that allows shareholders to vote on open-ending or liquidating funds that have been trading at a discount works precisely in the opposite direction: such funds are even less likely to delist than funds with no mandatory voting in place.

Among UK closed-end funds, it is not uncommon that the management company holds a stake in the fund it manages.[7] On the one hand, managerial ownership can be regarded as contributing to the alignment of the interests between shareholders and managers. On the other hand, to preserve private benefits, managerial ownership may pose a barrier towards the open-ending of a fund. In order to evaluate the impact of the stake that the management company may have in the fund, we augment our specification by adding an indicator variable that takes the value of one if the management company has a beneficial stake in the fund and zero otherwise. Our results show that the presence of management company stake does not have an impact on the probability of open-ending or liquidating the fund. When we control for managerial ownership, the pattern of decreased likelihood to delist for funds with mandatory voting trading at a discount still persists.[8]

To verify whether the pattern we uncover is not due to the interaction of the fund discount with other variables that may be relevant for the likelihood of the fund to delist, we augment our baseline linear probability model with interaction terms of the fund discount with the management company stake dummy, fund size, previous year's fund return, and the return of a broad market index.

[6] Alternatively, since a third of the funds in our sample have a UK equity focus, we consider a specification where the market portfolio is represented by the MSCI UK index. The results remain largely unchanged.
[7] The management company has a blockholder stake (either directly or indirectly) in about a third of the funds in our sample. We collect data on managerial ownership from the first annual report post-IPO. All companies listed in the UK are required to report blockholder stakes when they exceed 3%.
[8] In unreported results, we also consider a logit model for the probability of liquidation. All results remain qualitatively the same.

The results that we report in Table 4 demonstrate that the pattern that we uncovered earlier remains particularly strong. In all specifications, funds remain significantly less likely to delist when discounts widen if they have a mandatory voting provision. Interestingly, we also find some evidence, however weak, that funds in which the management company owns a stake are also less likely to liquidate or open-end in the face of increased discounts. Our findings are in line with Barclay, Holderness, and Pontiff (1993) who argue that managers or blockholders who are affiliated with them tend to resist open-ending a fund to preserve their private benefits even though they bear the wealth effects of widened discounts.

We further extend our baseline specification by adding interaction terms of the mandatory voting dummy with the set of controls. We present our results in Table 5. We still find very strong evidence that funds that commit to mandatory voting are less likely to delist when the discounts widen. In addition, we reveal a clearer pattern of the role of the management company stake in funds' delisting probabilities. It appears that funds that have explicitly committed in their IPO prospectuses to hold continuation votes would delist less frequently if the management company has a stake in the fund.[9] This evidence gives further support to the hypothesis that closed-end fund shareholders have little capacity to control or discipline managers. While open-end funds face outflows in response to poor performance, in closed-end funds management companies tend to resist open-ending or liquidating the fund to preserve benefits.

Overall, our analysis of fund delisting provides evidence that discount control policies in the form of a firm commitment to hold continuation votes, either periodically or subject to a discount floor provision, are not costly. Announcing mandatory votes in the IPO prospectus does not translate in a higher probability to wind-up the fund.

3.2. Share Repurchases and the Stated Policy of Buyback Discretion

An alternative mechanism to control the level of the discount a fund is trading at is by repurchasing shares in the open market. For 21% of the funds in our sample, the mechanism of discount control that they announce at inception involves the authority to buy back shares or a redemption facility operated at the discretion of the board. The rationale behind share market repurchases typically referred to in the IPO prospectus is that they are expected to enhance the

[9] In Tables 4 and 5, we control for year fixed effects. Removing those controls does not change the results.

NAV per share for the remaining shareholders or to reduce the discount to NAV at which the fund shares are trading.

Signaling theory suggests that reducing the information asymmetry between managers and shareholders would induce a positive price reaction to the announcement of share repurchases. However, it is not straightforward to interpret the announcement of potential repurchase programs as a costly information signal as announcing potential share buybacks does not represent a firm commitment. The board of the fund would have the full discretion to decide on whether to seek authority from shareholders to repurchase shares and subsequently, whether to carry out such market repurchases.[10] As well, while repurchase tender offers have a much higher cost attached to them than open market repurchases (Fried (2000)), they still do not represent a mandatory commitment.

To assess the extent to which closed-end funds that announce buyback discretion in their IPO prospectuses are more likely to subsequently repurchases shares than funds that do not consider share repurchases at inception, we consider the following exercise. We regress an indicator variable of whether a fund has carried out share repurchases in year *t* on a buyback discretion dummy, the level of the discount the fund was trading at in year *t-1*, as well as a set of controls including the fund market value and its return at the end of the previous year and the return of the MSCI World index at the end of year *t-1*. We report these results in Table 6.

Regardless of whether a fund has buyback discretion or not, it is more likely to carry out buybacks in the subsequent year if the fund has been trading at a discount in the year before. Buyback discretion by itself does not predict the likelihood of carrying out share repurchases.[11] Even when considering the level of previous year's discount for funds with buyback discretion (by including the interaction term $BuybackDiscretion*Disc_{t-1}$ in columns 5 to 8), we do not find that these funds are more likely than their peers to operate a buyback program in the subsequent year in the face of widened discounts.

[10] For example, the IPO prospectus of Aberdeen Latin American Income Fund states the following: "It is the Directors' intention to implement an active discount management policy through the use of share buybacks to seek to maintain the price at which the Ordinary Shares trade relative to their prevailing net asset value at a discount of no more than 5%. The making and timing of share buybacks is subject to a number of legal and regulatory restrictions and other factors and will also remain at the absolute discretion of the Board. Accordingly, there is no guarantee that the Board's discount management policy will achieve its objective or always be, or be capable of being, implemented."

[11] We define share repurchases as a reduction in the number of shares outstanding in any given year of 5% or more. Varying the level of the threshold (1%, 3%) or treating buybacks as a continuous variable does not change our findings. Instead of our baseline linear probability model, we also consider a logit specification. The results remain qualitatively the same.

Our results in Table 6 suggest that it is more likely for large funds to repurchase shares. As well, funds whose return has dropped in the previous year are significantly more likely to offer their shareholders the possibility to buy back shares in the subsequent year. To verify whether the results we document are driven to some extent by the interaction of fund size and fund return with the level of the fund discount or the DCM implying buyback discretion of the fund, we extend our baseline specification to include these interactions. The results are reported in Tables 7 and 8.

Our results remain robust to the inclusion of interaction effects with the level of the discount the fund was trading at over the previous year. We find evidence that large funds, as measured by the logarithm of fund's market value at the end of the previous year, are more likely to implement share buybacks if their discounts have widened. However, it still remains the case that funds that announce buyback discretion in their IPO prospectuses as a measure to control the level of the discount do not appear to be more or less likely than their peers to act on their DCM policy promise when the need arises.

We find that funds in which the management company has an ownership stake are not more likely to carry out buybacks even when the fund has been trading at a discount. However, they are significantly less likely to implement share repurchases if the fund has announced the potential to engage in buybacks as a measure of discount control. Our results echo the findings on agency and governance issues in closed-end funds. Barclay, Holderness, and Pontiff, 1993) argue that unlike open-end funds, shareholders in closed-end funds cannot effectively discipline fund managers by the threat of capital outflows. Blockholders that are affiliated with management tend to block open-ending proposals to preserve private benefits that do not accrue to other shareholders. Wu, Wermers, and Zechner (2016) document a convex relationship between growth in assets under management and fund premiums and find that CEFs management companies tend to resist reducing AUM when investor demand is weak. See also Khorana, Wahal, and Zenner (2002), Gemmill and Thomas (2004).

Similarly to our analysis on fund delisting behavior, we do not find evidence that the stated objective to carry out buybacks in an attempt to reduce the discount a fund is trading at can be interpreted as a costly signal. Funds with buyback policies announced at IPO are not more likely to effectively implement them than the rest of the closed-end fund universe.

3.3. Discount Control Mechanisms and Fund Expansion

Our analysis of the DCMs that closed-end funds indicate their intention to revert to with a certain level of commitment reveals a robust pattern. First, funds that have announced a firm commitment to hold continuation votes either at predetermined frequencies or when a trigger discount level is reached, do not seem to delist more frequently than funds with no such commitment. CEFs with mandatory voting are liquidated even less frequently than their peers when discounts widen. Second, funds that have indicated the potential to repurchase shares which represents no firm commitment on behalf of the fund but is rather operated at the full discretion of the board, also do not seem to repurchase shares more often than funds with no such provisions. Increased discounts do not induce funds with buyback discretion to trigger the DCM more often either. Managerial ownership in the fund exacerbates the issue: funds in which managers have a stake and that have a discretionary DCM in place are even less likely to reduce their assets under management.

Our findings indicate no evidence in support of a signaling hypothesis for the existence of policies of discount control that closed-end funds state in their IPO prospectuses. Rather, they are more in line with the interpretation that DCMs serve as a marketing tool that allows management companies to subsequently increase their assets under management.

In open-end funds, the possibility to issue shares on demand allows managers that are perceived as being skilled to grow their assets under management. With management fees proportional to the assets they manage, managers increase their compensation and can fully capture the economic rents from exploiting their skill, while shareholders break even in expectation (Berk and Green, 2004). In the closed-end fund industry, however, shares are not continuously adapted to investor demand. Instead, fluctuations in investor demand are reflected in the premium or the discount at which CEF shares are trading. Alternatively, CEF managers can increase their compensation by issuing new shares through seasoned equity offerings or rights offerings. To the extent that there are decreasing returns to scale in the CEF industry, existing fund shareholders do not have an incentive to favor an increase in the assets under management. Thus, increase in fund size could reflect a transfer of rents from shareholders to managers.

We argue that DCMs offer a channel that enables fund managers to capitalize on fund performance and investor perceptions and increase their assets under management (AUM). To study the extent to which fund managers use the announcement of continuation votes or share

repurchases as a tool to facilitate AUM extension, we conduct the following exercise: We regress an indicator variable of whether a fund has issued new shares in any given year *t* on buyback and mandatory voting dummies, a dummy variable for managerial ownership as well as on the average fund discount in year *t-1*, the past fund return and the fund size as measured by the logarithm of fund's market capitalization, as well as the previous year's return of the MSCI World index. We define new share issuances as an increase of more than 5% in the number of shares outstanding.[12]

The results in Table 9 provide strong evidence that fund managers leverage on the announcement of a discount policy at IPO, regardless of whether it involves discretionary or mandatory actions on the part of management, which allows them to issue new shares later on during the life of the fund. In line with the current literature that investigates managerial power in capturing CEFs rents[13], we find that managers tend to increase the size of the fund given good past performance and high investor expectations of the future performance of the fund as captured by the fund premium. In addition, funds with a management company stake are more likely to increase the AUM with subsequent share issuances.

Our findings indicate that funds that have adopted a policy of discount control involving share buybacks are more likely to increase in size, since they do not repurchase shares more often than their peers but at the same time they are involved in significantly more share issuances. We proceed by verifying whether such funds are also larger at IPO. If that is the case, such finding would give further support to the hypothesis that DCMs are used as a marketing device that increases managerial power to extract CEFs rents. Since the average closed-end fund with stated buyback discretion at IPO is about twice as large as the rest of the funds at launch, as documented in Table 2, the prevailing evidence that closed-end funds are characterized by sizeable dis-economies of scale (see Wu, Wermers and Zechner, 2016) would indicate a shift in rents from shareholders to managers.

To verify whether funds with DCMs are also larger at IPO, we run a linear regression of the market capitalization of a fund *i* at IPO on indicator variables taking the value of one whether the fund has mandatory voting or alternatively, buyback discretion, and zero otherwise. The results are contained in Table 10. We find consistent evidence that funds that announce buybacks as a

[12] Results remain robust to varying the threshold to 1%, 3% or 10% or alternatively considering share issuances as a continuous variable.

[13] For example, see Wu, Wermers, and Zechner (2016) who investigate the determinants of AUM expansions at the management company level.

measure of discount control are launched with a bigger market capitalization than the rest of the closed-end funds. Our results are in line with the marketing hypothesis maintained by Weiss (1989), Peavy (1990), Lee, Shleifer, and Thaler (1991), and Hanley, Lee, and Seguin (1996), who argue that closed-end funds IPOs are sold to investors that face relatively large information processing costs and thus become more prone to the influence of marketing devices.

3.4. Policies of Discount Control and Fund Performance

In the previous section, we have provided evidence against the hypothesis that DCMs are used as a signaling mechanism at IPO. Rather, fund managers exploit the announcement of discount control policies to expand their assets under management, both by offering larger funds at IPO and by subsequently issuing more shares. Given the decreasing returns to scale in the closed-end fund industry, issuances are hardly in the interest of existing shareholders, potentially with the exception of rights issues. And since we find no evidence that DCMs are put into practice more often for funds that announce them at IPO than for the rest of the CEFs, we would not expect that any potential benefits from adopting a policy of discount control accrue to fund investors.

To investigate the performance benefits from DCM adoption, we first obtain the closed-end fund discount in event time after IPO for the three different DCM categories of funds: (i) funds with no DCM commitment, (ii) funds that indicate the potential for share repurchases, and (iii) CEFs that announce a firm engagement to hold continuation votes. Table 11 presents the average closed-end fund discount in event time during the first 24 months post-IPO. Column 1 reports the average discount for all funds in the sample. We see that, on average, funds trade at a 1.5% premium within the months of IPO and gradually sink into a discount four months after IPO. At the end of the first year, the average fund trades at about 6% discount, which further increases to 11% after the second year. The pattern we document is largely consistent with earlier literature on the CEFs discount post-IPO (Weiss, 1989; Peavy, 1990). CEFs prices adjust relatively slowly compared to industrial IPOs and most of the price decline occurs gradually over the course of the first 3 to 4 months before the funds start trading at an increasing discount.

We further break down our sample according to the discount control mechanism the funds announce at IPO. In columns 2-4, we report the average discounts for funds with no DCM, funds that incorporate the potential of discretionary buybacks, and funds that commit to continuation votes. We note that funds with DCMs trade at a higher premium on average, reaching 1.6% on

average in the month of the IPO for funds with continuation vote commitment. In addition, the premium at which funds trade persists longer for funds with either a discretionary or a mandatory DCM. It takes four months on average for DCM funds to start trading at a discount, twice as long compared to no-DCM funds. Four months after IPO, the no-DCM funds trade at a discount that is twice as large as the discount of funds with buyback discretion and about 5 times larger than the average discount of funds with mandatory voting. Thus, the pattern we document suggests that the adoption of a DCM policy seems to bring value to investors, at least during the first months after IPO.

However, the trend reverses within the first year after IPO. By month 12, funds with mandatory voting already trade at the steepest discount of 7%, followed by funds with buybacks at about 5%. Funds with no DCM do not undergo such a steep revision of discounts, trading at 2 to 3% discount for the last 9 months of year 1. By the end of the second year, funds with DCMs continue trading at larger discounts, approximately twice as large as the average discount of no-DCM funds. Our findings are indicative of investors revising their expectations about future fund performance. The adoption of policies of discount control at IPO does not seem to have a lasting impact on closed-end fund discounts. The announcement effect of DCMs quickly dissipates. Funds that declare their commitment to engage in policies of discount control do not trade consistently at lower discounts which provides further support to the hypothesis that such policies act primarily as a marketing tool, rather than as a costly signal of managerial skill.

To further understand the long-term performance implications of the adoption of DCMs, we construct buy-and-hold portfolios of funds based on their discount control policy at IPO. Specifically, we consider the following portfolios: three portfolios that are long in funds with mandatory voting and short in either the rest of the funds, or funds with no explicit discount control policy, or alternatively funds which announce discretionary buybacks, and a portfolio that is long in funds with discretionary buybacks and short in funds with no DCMs in place. We hypothesize that if DCMs bring value to investors in the long run, we would see that reflected in the long-term risk-adjusted performance of the four long-short portfolios.

We consider different risk model specifications: a single-factor CAPM, a three-factor Fama/French model, and a four-factor model, augmented with momentum. Since more than a third of the closed-end funds in our sample invest less than 80% of their assets in any one geographical area and thus have a predominantly global focus, as documented in Table 2, we consider the MSCI

World index as the market portfolio. We also use the Global SMB, HML and momentum factors from Ken French's website.

In Table 12, we report the long-term risk-adjusted performance of equal-weighted and value-weighted portfolios of closed-end funds. The first line of results contains the CAPM alphas, the alphas adjusted for the three-factor Fama/French model, and momentum. Across all specifications, we do not find evidence that equity-oriented CEFs generate significant alpha. In the last four rows, we report the risk-adjusted returns of the four long-short DCM portfolios. For all specifications, we obtain consistently insignificant alphas that range between -8 to 19 basis points per month.[14]

In line with our findings in event-time, we do not find any evidence that the commitment to a policy of discount control, either firm or discretionary, brings any long-term value to investors. This is not a surprising result since closed-end funds that announce DCMs at IPO are not more likely to eventually implement them when discounts rise than the rest of the funds. Our results are in stark contrast to the literature that examines the effect of explicit policies implemented as an attempt to reduce the NAV discount of CEFs. Johnson, Lin and Song (2006) find that funds that adopt a managed distribution policy at some point in their lifespan which prescribes a minimum payout target that the fund commits to distribute to shareholders every year irrespective of fund performance, trade at significantly lower discounts than other funds and earn greater excess returns following the adoption of the policy. To the contrary, our findings on the performance of funds that announce discretionary buybacks or continuation votes at IPO suggest that the commitment to such policies to reduce the discount is not costly for fund managers. Subsequently that fact is revealed in investors' expectations about future fund performance through the evolution of the fund discounts.

4. Conclusion

In this paper, we examine the role of discount control mechanisms as a signaling device that closed-end funds adopt at IPO. The underlying reason behind such policies commonly referred to in IPO prospectuses is the deliberate attempt to reduce the discount to NAV at which a fund may

[14] Given that about 40% of the funds in our sample have portfolios that are invested in predominantly UK equities, we also consider an alternative specification of the factor models and take the MSCI UK index as the market portfolio, and the European SMB, HML, and momentum factors from the Ken French's website. The results remain vastly unchanged.

be trading. More than half of the funds in our sample adopt a policy that commits them to hold continuation votes, either at fixed intervals or when the fund sinks in a discount lower than a pre-specified trigger level. Such a mandatory voting commitment gives shareholders the opportunity to decide on the future of the fund -- whether it should be liquidated or open-ended. Alternatively, a fifth of the funds in our sample announce the possibility that the fund engages in share repurchases, either via buybacks in the open market or through a redemption facility, where in some cases there is a discount trigger attached. This second measure of discount control lacks the firm commitment of continuation votes and is applied at the full discretion of the board. However, we do not find support that either policy of discount control can be interpreted as a costly information signal. Funds that adopt mandatory voting are not more likely to delist than the rest of the funds in our sample. Moreover, our results show consistently that funds that commit to hold continuation votes are significantly less likely to unwind or open-end when discounts widen compared to their peers. Similarly, funds that announce the potential for buybacks are not more likely to indeed carry out share repurchases in the face of large discounts.

In addition, while funds that adopt a DCM sell on average at a larger premium during the first few months after IPO, the pattern reverses relatively fast so that they sink into deeper discounts as early as the end of the first year after listing. We find no enduring relation between fund discounts and the adoption of discount control mechanisms at IPO. The long-term performance of long-short portfolio strategies that invest in funds conditional on their policies of discount control have risk-adjusted performance that is indistinguishable from zero.

Our results indicate an alternative interpretation of the adoption of discount control mechanisms by closed-end funds. We observe that funds that announce discretionary buybacks or commit to holding continuation votes are more likely to issue shares later. We find evidence that managerial ownership poses a barrier towards open-ending or liquidating a fund. In addition, funds in which the management company has a stake are more likely to grow the size of their funds. Thus, our findings suggest that fund managers may leverage on adopting policies of discount control to capture rents by subsequently expanding their assets under management. Consequently, our study sheds more light on the agency frictions that exist in the closed-end fund industry.

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Table 1. Number of Active Funds

This table reports the number of closed-end funds per year for each of the discount control mechanism (DCM) categories we consider. The last row reports the number of delisted funds for each category. The sample covers funds with IPOs between January 1992 and December 2016.

	All Funds	No DCM	Buyback Discretion	Mandatory Voting
1994	36	9	0	27
1995	54	12	1	40
1996	71	16	3	51
1997	80	20	3	56
1998	89	23	6	59
1999	106	29	9	67
2000	129	31	14	83
2001	150	33	17	99
2002	152	31	20	100
2003	144	28	22	93
2004	133	26	22	85
2005	127	21	27	79
2006	125	20	26	79
2007	123	18	28	77
2008	120	18	28	74
2009	115	16	27	72
2010	117	16	28	73
2011	113	14	28	71
2012	111	14	29	68
2013	104	12	26	66
2014	104	12	27	65
2015	106	12	29	65
2016	105	11	29	65
Full Sample	238	45	50	142
Delisted Funds	134	34	22	77

Table 2. Summary Statistics

This table presents the breakdown of funds across discount control mechanism (DCM) categories based on fund size and geographic focus. Panel A reports the number of funds within each size category. The market capitalization of each fund is measured at IPO. The last two rows report the average and median size of a fund across DCM categories. Panel B reports the number of funds with a given geographic focus across DCM categories and listing status. The sample covers funds with IPOs between January 1992 and December 2016.

	All Funds	No DCM	Buyback Discretion	Mandatory Voting	Delisted Funds
Panel A: Fund Size					
<20 million	32	4	6	22	17
20-100 million	128	22	23	83	63
100-200 million	24	5	8	11	6
>200 million	13	0	8	5	7
N/A	41	14	5	14	41
Total	238	45	45	142	134
Average Size	75.10	51.39	124.16	62.93	63.72
Median Size	46.68	33.22	66.62	42.05	36.85
Panel B: Geographic Focus					
UK	90	26	16	47	61
Global	86	7	20	59	41
Asia	35	6	6	23	14
Europe	14	3	4	7	11
North America	9	2	3	4	5
Latin America	4	1	1	2	2

Table 3. Delistings

This table reports the results of a linear regression of the probability of liquidation of a closed-end fund in year *t* on an intercept, an indicator variable of whether the fund has mandatory voting, the average discount of the fund in year *t-1* ($Disc_{t-1}$), an indicator variable of whether the fund has a non-zero management company stake (*MngmtCoStake*), the fund's market value at the end of year *t-1* ($Size_{t-1}$), the return of the fund at the end of year *t-1* ($FundRet_{t-1}$), the return of the MSCI World index at the end of year *t-1* ($MarketRet_{t-1}$), and an interaction terms of the mandatory voting indicator variable *MandatoryVoting* with $Disc_{t-1}$. The sample covers the period between January 1994 and December 2016. Robust standard errors are given in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MandatoryVoting			-0.00368	0.00101	0.0344	0.0414*	0.0325	0.0386
			(0.0214)	(0.0208)	(0.0239)	(0.0238)	(0.0243)	(0.0243)
$Disc_{t-1}$	-0.0326	-0.00299	-0.0323	-0.00312	0.232*	0.260**	0.230*	0.255**
	(0.0836)	(0.0860)	(0.0839)	(0.0862)	(0.135)	(0.126)	(0.135)	(0.127)
*MandatoryVoting * Disc*$_{t-1}$					-0.450***	-0.463***	-0.446***	-0.455***
					(0.160)	(0.152)	(0.161)	(0.153)
MngmtCoStake							-0.0252	-0.0347
							(0.0239)	(0.0290)
$Size_{t-1}$	-0.0479***	-0.0727***	-0.0479***	-0.0726***	-0.0495***	-0.0750***	-0.0491***	-0.0747***
	(0.00973)	(0.0110)	(0.00975)	(0.0110)	(0.00957)	(0.0108)	(0.00959)	(0.0108)
$FundRet_{t-1}$	0.0183	0.0253	0.0183	0.0253	0.0181	0.0250	0.0180	0.0248
	(0.0164)	(0.0204)	(0.0164)	(0.0204)	(0.0167)	(0.0208)	(0.0167)	(0.0208)
$MarketRet_{t-1}$	0.0107	-0.760***	0.0107	-0.760***	0.0115	-0.820***	0.0115	-0.827***
	(0.0321)	(0.127)	(0.0322)	(0.128)	(0.0319)	(0.127)	(0.0319)	(0.127)
Constant	0.286***	0.408***	0.289***	0.407***	0.275***	0.399***	0.276***	0.402***
	(0.0464)	(0.0583)	(0.0471)	(0.0569)	(0.0461)	(0.0552)	(0.0461)	(0.0554)
Observations	1,826	1,826	1,826	1,826	1,826	1,826	1,826	1,826
Number of funds	188	188	188	188	188	188	188	188
Year FE	No	Yes	No	Yes	No	Yes	No	Yes

Table 4. Delistings: Interactions with Past Discounts

This table reports the results of a linear regression of the probability of liquidation of a closed-end fund in year *t* on an intercept, an indicator variable of whether the fund has mandatory voting, the average discount of the fund in year *t-1* ($Disc_{t-1}$), an indicator variable of whether the fund has a non-zero management company stake (*MngmtCoStake*), the fund's market value at the end of year *t-1* ($Size_{t-1}$), the return of the fund at the end of year *t-1* ($FundRet_{t-1}$), the return of the MSCI World index at the end of year *t-1* ($MarketRet_{t-1}$), and interaction terms of the mandatory voting indicator variable, past fund size, fund return and market return with $Disc_{t-1}$.The sample covers the period between January 1994 and December 2016. Robust standard errors are given in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)
MandatoryVoting	0.0421*	0.0414*	0.0365	0.0383	0.0465*
	(0.0247)	(0.0240)	(0.0248)	(0.0242)	(0.0253)
$Disc_{t-1}$	0.272**	0.130	0.257**	0.262**	0.0194
	(0.130)	(0.218)	(0.130)	(0.129)	(0.238)
$MandatoryVoting*Disc_{t-1}$	-0.460***	-0.474***	-0.451***	-0.455***	-0.497***
	(0.153)	(0.157)	(0.157)	(0.153)	(0.162)
MngmtCoStake	-0.00947	-0.0283	-0.0368	-0.0344	0.00789
	(0.0292)	(0.0291)	(0.0300)	(0.0290)	(0.0327)
$Size_{t-1}$	-0.0756***	-0.0757***	-0.0763***	-0.0744***	-0.0827***
	(0.0110)	(0.0112)	(0.0109)	(0.0108)	(0.0118)
$FundRet_{t-1}$	0.0248	0.0243	0.0514	0.0247	0.0721**
	(0.0207)	(0.0209)	(0.0327)	(0.0208)	(0.0361)
$MarketRet_{t-1}$	-0.833***	-0.803***	-0.827***	-0.812***	-0.830***
	(0.128)	(0.124)	(0.127)	(0.127)	(0.127)
$MngmtCoStake * Disc_{t-1}$	-0.283*				-0.394**
	(0.164)				(0.177)
$Size_{t-1} * Disc_{t-1}$		0.0425			0.0846
		(0.0489)			(0.0553)
$FundRet_{t-1} * Disc_{t-1}$			-0.191		-0.341*
			(0.165)		(0.203)
$MarketRet_{t-1} * Disc_{t-1}$				-0.135	0.278
				(0.355)	(0.415)
Constant	0.404***	0.400***	0.410***	0.400***	0.424***
	(0.0556)	(0.0559)	(0.0552)	(0.0552)	(0.0573)
Observations	1,826	1,826	1,826	1,826	1,826
Number of funds	188	188	188	188	188
Year FE	Yes	Yes	Yes	Yes	Yes

Table 5. Delistings: Interactions with DCM Type

This table reports the results of a linear regression of the probability of liquidation of a closed-end fund in year *t* on an intercept, an indicator variable of whether the fund has mandatory voting, the average discount of the fund in year *t-1* ($Disc_{t-1}$), an indicator variable of whether the fund has a non-zero management company stake (*MngmtCoStake*), the fund's market value at the end of year *t-1* ($Size_{t-1}$), the return of the fund at the end of year *t-1* ($FundRet_{t-1}$), the return of the MSCI World Index at the end of year *t-1* ($MarketRet_{t-1}$), an interaction term of the mandatory voting indicator variable with $Disc_{t-1}$, as well as interaction terms of fund size, fund return and market return in year *t-1* with *MandatoryVoting* .The sample covers the period between January 1994 and December 2016. Robust standard errors are given in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)
MandatoryVoting	0.0495*	0.0954	0.0384	0.0402	0.103
	(0.0256)	(0.0806)	(0.0244)	(0.0246)	(0.0842)
$Disc_{t-1}$	0.265**	0.259**	0.259**	0.254**	0.274**
	(0.127)	(0.126)	(0.129)	(0.127)	(0.129)
MandatoryVoting$*Disc_{t-1}$	-0.458***	-0.469***	-0.459***	-0.452***	-0.478***
	(0.153)	(0.156)	(0.155)	(0.153)	(0.160)
MngmtCoStake	0.0315	-0.0434	-0.0344	-0.0343	0.0192
	(0.0379)	(0.0280)	(0.0292)	(0.0289)	(0.0370)
$Size_{t-1}$	-0.0765***	-0.0661***	-0.0747***	-0.0742***	-0.0680***
	(0.0111)	(0.0138)	(0.0109)	(0.0108)	(0.0146)
$FundRet_{t-1}$	0.0250	0.0253	0.0188	0.0245	0.00685
	(0.0207)	(0.0207)	(0.0317)	(0.0208)	(0.0353)
$MarketRet_{t-1}$	-0.836***	-0.837***	-0.829***	-0.800***	-0.806***
	(0.128)	(0.129)	(0.127)	(0.135)	(0.143)
*MandatoryVoting** *MngmtCoStake*	-0.150***				-0.138***
	(0.0509)				(0.0491)
*MandatoryVoting**$Size_{t-1}$		-0.0144			-0.0131
		(0.0165)			(0.0175)
*MandatoryVoting**$FundRet_{t-1}$			0.00815		0.0244
			(0.0314)		(0.0381)
*MandatoryVoting**$MarketRet_{t-1}$				-0.0273	-0.0471
				(0.0585)	(0.0680)
Constant	0.403***	0.370***	0.403***	0.399***	0.369***
	(0.0555)	(0.0676)	(0.0555)	(0.0553)	(0.0703)
Observations	1,826	1,826	1,826	1,826	1,826
Number of funds	188	188	188	188	188
Year FE	Yes	Yes	Yes	Yes	Yes

Table 6. Buybacks

This table reports the results of a linear regression of the probability of share buybacks in year *t* on an intercept, an indicator variable of whether the fund has buyback discretion, the average discount of the fund in year *t-1* ($Disc_{t-1}$), an indicator variable of whether the fund has a non-zero management company stake (*MngmtCoStake*), the fund's market value at the end of year *t-1* ($Size_{t-1}$), the return of the fund at the end of year *t-1* ($FundRet_{t-1}$), the return of the MSCI World index at the end of year *t-1* ($MarketRet_{t-1}$), and an interaction terms of the buyback discretion variable with $Disc_{t-1}$. Buybacks are defined as a reduction in the number of shares outstanding of 5% or more. The sample covers the period between January 1994 and December 2016. Robust standard errors are given in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BuybackDiscretion			0.00509	0.000526	0.0124	0.00403	0.0168	0.00734
			(0.0367)	(0.0372)	(0.0363)	(0.0370)	(0.0393)	(0.0400)
$Disc_{t-1}$	0.343***	0.328***	0.344***	0.328***	0.363***	0.338***	0.366***	0.341***
	(0.0962)	(0.0965)	(0.0966)	(0.0969)	(0.111)	(0.111)	(0.110)	(0.111)
BuybackDiscretion * $Disc_{t-1}$					-0.0950	-0.0462	-0.106	-0.0548
					(0.231)	(0.234)	(0.232)	(0.235)
MngmtCoStake							-0.0249	-0.0192
							(0.0685)	(0.0670)
$Size_{t-1}$	0.0418***	0.0363***	0.0417***	0.0363***	0.0418***	0.0363***	0.0423***	0.0366***
	(0.0107)	(0.0134)	(0.0107)	(0.0134)	(0.0107)	(0.0135)	(0.0110)	(0.0136)
$FundRet_{t-1}$	-0.0346**	-0.0566***	-0.0346**	-0.0566***	-0.0349**	-0.0567***	-0.0351**	-0.0568***
	(0.0159)	(0.0214)	(0.0158)	(0.0214)	(0.0160)	(0.0214)	(0.0160)	(0.0214)
$MarketRet_{t-1}$	0.0696	-0.463*	0.0697	-0.462*	0.0697	-0.459*	0.0698	-0.463*
	(0.0451)	(0.261)	(0.0451)	(0.263)	(0.0451)	(0.263)	(0.0452)	(0.264)
Constant	-0.0459	-0.0323	-0.0466	-0.0325	-0.0490	-0.0335	-0.0501	-0.0333
	(0.0410)	(0.0740)	(0.0415)	(0.0748)	(0.0426)	(0.0751)	(0.0431)	(0.0751)
Observations	1,821	1,821	1,821	1,821	1,821	1,821	1,821	1,821
Number of funds	188	188	188	188	188	188	188	188
Year FE	No	Yes	No	Yes	No	Yes	No	Yes

Table 7. Buybacks: Interactions with Past Discounts

This table reports the results of a linear regression of the probability of share buybacks in year *t* on an intercept, an indicator variable of whether the fund has buyback discretion, the average discount of the fund in year *t-1* ($Disc_{t-1}$), an indicator variable of whether the fund has a non-zero management company stake (*MngmtCoStake*), the fund's market value at the end of year *t-1* ($Size_{t-1}$), the return of the fund at the end of year *t-1* ($FundRet_{t-1}$), the return of the MSCI World Index at the end of year *t-1* ($MarketRet_{t-1}$), and interaction terms of the buyback discretion variable, past fund size, fund return and market return with $Disc_{t-1}$. Buybacks are defined as a reduction in the number of shares outstanding of 5% or more. The sample covers the period between January 1994 and December 2016. Robust standard errors are given in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)
BuybackDiscretion	0.0305	0.00514	0.00959	0.00820	0.0265
	(0.0408)	(0.0397)	(0.0401)	(0.0400)	(0.0414)
$Disc_{t-1}$	0.311***	-0.156	0.344***	0.332***	-0.124
	(0.107)	(0.152)	(0.111)	(0.108)	(0.182)
$BuybackDiscretion*Disc_{t-1}$	-0.144	-0.0495	-0.0726	-0.0636	-0.133
	(0.246)	(0.236)	(0.236)	(0.236)	(0.250)
MngmtCoStake	-0.114**	-0.00377	-0.0190	-0.0194	-0.0891
	(0.0553)	(0.0668)	(0.0675)	(0.0673)	(0.0590)
$Size_{t-1}$	0.0398***	0.0281**	0.0382***	0.0370***	0.0320**
	(0.0137)	(0.0124)	(0.0140)	(0.0136)	(0.0132)
$FundRet_{t-1}$	-0.0568***	-0.0552***	-0.0792***	-0.0571***	-0.0605**
	(0.0214)	(0.0210)	(0.0271)	(0.0214)	(0.0300)
$MarketRet_{t-1}$	-0.431	-0.431	-0.459*	-0.476*	-0.405
	(0.263)	(0.263)	(0.264)	(0.262)	(0.264)
$MngmtCoStake*Disc_{t-1}$	1.010				0.890
	(0.641)				(0.683)
$Size_{t-1}*Disc_{t-1}$		0.157***			0.139**
		(0.0502)			(0.0587)
$FundRet_{t-1}*Disc_{t-1}$			0.160		0.0380
			(0.128)		(0.171)
$MarketRet_{t-1}*Disc_{t-1}$				0.228	-0.0463
				(0.342)	(0.416)
Constant	-0.0515	-0.00804	-0.0405	-0.0347	-0.0277
	(0.0758)	(0.0722)	(0.0773)	(0.0754)	(0.0753)
Observations	1,821	1,821	1,821	1,821	1,821
Number of funds	188	188	188	188	188
Year FE	Yes	Yes	Yes	Yes	Yes

Table 8. Buybacks: Interactions with DCM Type

This table reports the results of a linear regression of the probability of share buybacks in year *t* on an intercept, an indicator variable of whether the fund has buyback discretion, the average discount of the fund in year *t-1* ($Disc_{t-1}$), an indicator variable of whether the fund has a non-zero management company stake (*MngmtCoStake*), the fund's market value at the end of year *t-1* ($Size_{t-1}$), the return of the fund at the end of year *t-1* ($FundRet_{t-1}$), the return of the MSCI World Index at the end of year *t-1* ($MarketRet_{t-1}$), an interaction term of the buyback discretion indicator variable with $Disc_{t-1}$, as well as interaction terms of fund size, fund return and market return in year *t-1* with *BuybackDiscretion*. Buybacks are defined as a reduction in the number of shares outstanding of 5% or more. The sample covers the period between January 1994 and December 2016. Robust standard errors are given in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)
BuybackDiscretion	0.0453	0.0917	0.00643	0.0112	0.0790
	(0.0421)	(0.0793)	(0.0411)	(0.0420)	(0.0845)
$Disc_{t-1}$	0.324***	0.345***	0.342***	0.340***	0.329***
	(0.110)	(0.112)	(0.111)	(0.111)	(0.111)
BuybackDiscretion * $Disc_{t-1}$	-0.0981	-0.0669	-0.0582	-0.0545	-0.107
	(0.233)	(0.226)	(0.234)	(0.234)	(0.224)
MngmtCoStake	0.160	-0.00712	-0.0199	-0.0192	0.159
	(0.112)	(0.0713)	(0.0667)	(0.0670)	(0.112)
$Size_{t-1}$	0.0404***	0.0409***	0.0366***	0.0365***	0.0420***
	(0.0137)	(0.0155)	(0.0135)	(0.0136)	(0.0155)
$FundRet_{t-1}$	-0.0570***	-0.0574***	-0.0590***	-0.0568***	-0.0630***
	(0.0215)	(0.0214)	(0.0224)	(0.0214)	(0.0235)
$MarketRet_{t-1}$	-0.433*	-0.454*	-0.465*	-0.458*	-0.426
	(0.262)	(0.265)	(0.263)	(0.264)	(0.263)
*BuybackDiscretion*MngmtCoStake*	-0.338***				-0.330***
	(0.121)				(0.128)
BuybackDiscretion$Size_{t-1}$		-0.0203			-0.00738
		(0.0224)			(0.0256)
*BuybackDiscretion** $FundRet_{t-1}$			0.0156		0.0418
			(0.0434)		(0.0542)
BuybackDiscretion$MarketRet_{t-1}$				-0.0534	-0.0958
				(0.106)	(0.124)
Constant	-0.0566	-0.0510	-0.0331	-0.0341	-0.0638
	(0.0754)	(0.0821)	(0.0750)	(0.0752)	(0.0816)
Observations	1,821	1,821	1,821	1,821	1,821
Number of funds	188	188	188	188	188
Year FE	Yes	Yes	Yes	Yes	Yes

Table 9. Issuances

This table reports the results of a linear regression of the probability of share issuances in year *t* on an intercept, an indicator variable of whether the fund has mandatory voting or buyback discretion, the average discount of the fund in year *t-1* ($Disc_{t-1}$), an indicator variable of whether the fund has a non-zero management company stake (*MngmtCoStake*), the fund's market value at the end of year *t-1* ($Size_{t-1}$), the return of the fund at the end of year *t-1* ($FundRet_{t-1}$), the return of the MSCI World Index at the end of year *t-1* ($MarketRet_{t-1}$), and an interaction terms of the buyback discretion variable and the mandatory voting variable with $Disc_{t-1}$. Issuances are defined as an increase in the number of shares outstanding of 5% or more. The sample covers the period between January 1994 and December 2016. Robust standard errors are given in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)	(6)
BuybackDiscretion			0.0741***	0.0637**	0.0550**	0.0484*
			(0.0272)	(0.0277)	(0.0279)	(0.0285)
MandatoryVoting			0.0467***	0.0417**	0.0425**	0.0390**
			(0.0179)	(0.0172)	(0.0177)	(0.0173)
$Disc_{t-1}$	-0.492***	-0.496***	-0.488***	-0.493***	-0.487***	-0.493***
	(0.102)	(0.107)	(0.103)	(0.107)	(0.102)	(0.106)
MngmtCoStake					0.109**	0.100**
					(0.0454)	(0.0444)
$Size_{t-1}$	0.00392	0.00347	0.00144	0.00144	0.000267	0.000525
	(0.00749)	(0.00712)	(0.00761)	(0.00722)	(0.00741)	(0.00718)
$FundRet_{t-1}$	0.0345**	0.0330*	0.0348**	0.0331*	0.0356**	0.0337*
	(0.0164)	(0.0179)	(0.0165)	(0.0180)	(0.0164)	(0.0179)
$MarketRet_{t-1}$	0.00453	0.275	0.00527	0.315	0.00546	0.351
	(0.0468)	(0.398)	(0.0468)	(0.401)	(0.0467)	(0.401)
Constant	0.135***	0.132***	0.0996***	0.0975*	0.104***	0.0954*
	(0.0377)	(0.0508)	(0.0365)	(0.0505)	(0.0359)	(0.0507)
Observations	1,821	1,821	1,821	1,821	1,821	1,821
Number of Funds	188	188	188	188	188	188
Year FE	No	Yes	No	Yes	No	Yes

Table 10. Size at IPO

The table reports the results of a linear regression of the market capitalization of fund *i* at IPO on an intercept and two indicator variables of whether the fund has a mandatory voting and a buyback discretion. The sample covers funds with IPOs between January 1992 and December 2016. Robust standard errors are given in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)	(6)
MandatoryVoting	-0.279*	-0.238*			0.0499	-0.0355
	(0.144)	(0.128)			(0.159)	(0.159)
BuybackDiscretion			0.515***	0.407**	0.555***	0.378*
			(0.180)	(0.160)	(0.213)	(0.202)
Constant	3.994***	3.186***	3.705***	2.996***	3.665***	3.025***
	(0.116)	(0.316)	(0.0728)	(0.255)	(0.134)	(0.300)
Observations	197	197	197	197	197	197
R-squared	0.020	0.264	0.050	0.275	0.050	0.275
Year FE	No	Yes	No	Yes	No	Yes

Table 11. Average Discount in Event Time

This table presents the average fund discount in event time for all funds, as well as for funds with no discount control mechanism (DCM), funds with buyback discretion and funds with mandatory voting. The discount for each fund is calculated as one minus the price of the fund divided by the NAV of the fund. The discount at IPO is calculated using the first end-of-day price and NAV following an IPO. Event month 1 is the first month after the IPO. Panel A reports equal-weighted discounts, and Panel B presents value-weighted average discounts, where weights are determined using the fund size at IPO.

Event month	All Funds	No DCM	Buyback Discretion	Mandatory Voting
IPO	-1.49	-1.38	-1.15	-1.63
1	-1.21	-0.80	-1.89	-1.09
2	-0.61	1.48	-0.10	-1.40
3	-0.14	1.40	-0.87	-0.33
4	1.51	3.86	1.89	0.71
5	2.62	3.51	2.62	2.37
6	2.69	3.09	3.44	2.30
7	2.70	2.52	4.03	2.31
8	3.55	1.08	5.27	3.61
9	5.02	2.61	5.80	5.39
10	5.03	3.02	5.91	5.26
11	4.62	2.23	5.60	4.97
12	5.83	1.82	5.49	7.12
18	9.52	6.77	8.72	10.57
24	10.59	5.62	9.57	12.26

Table 12. Long-term Performance

The table reports the risk-adjusted returns (alphas) of equal-weighted and value-weighted portfolios of all closed-end funds in our sample, funds with mandatory voting, funds with discretionary buybacks, funds with no discount control mechanism (*no-DCM*), as well as long-short portfolios of funds with mandatory voting and the rest of the funds (*MandatoryVoting minus Rest*), funds with mandatory voting and no-DCM funds (*MandatoryVoting minus no-DCM*), funds with mandatory voting and funds with discretionary buybacks (*MandatoryVoting minus DiscretionaryBuybacks*), and funds with discretionary buybacks and no-DCM funds (*DiscretionaryBuybacks minus no-DCM*). We report CAPM alphas, where the MSCI World index represents the market portfolio, 3-factor Fama/French alphas, where in addition to the MSCI World index as the market portfolio we use the SMB and HML European factors obtained from Ken French's website, and 3-factor Fama/French with momentum alphas, where we use the European momentum factor from the Ken French's website. The sample covers the period between January 1994 and December 2016. Robust standard errors are given in parentheses. ***, ** and * indicate significance at the 1%, 5%, and 10% level.

	Equal-weighted			Value-weighted		
	CAPM	3-factor FF	3-factor FF with Mom	CAPM	3-factor FF	3-factor FF with Mom
All	-0.0019	-0.0023	-0.0015	-0.0012	-0.0008	-0.0006
	(0.0019)	(0.0017)	(0.0018)	(0.0019)	(0.0016)	(0.0017)
MandatoryVoting minus Rest	-0.0001	0.0005	0.0009	-0.0001	0.0008	0.0007
	(0.0011)	(0.0011)	(0.0011)	(0.0012)	(0.0011)	(0.0012)
MandatoryVoting minus no-DCM	0.0007	0.0013	0.0015	0.0005	0.0019	0.0017
	(0.0013)	(0.0012)	(0.0013)	(0.0014)	(0.0014)	(0.0014)
MandatoryVoting minus DiscretionaryBuybacks	-0.0008	-0.0001	0.0002	-0.0006	0.0000	0.0001
	(0.0015)	(0.0015)	(0.0015)	(0.0014)	(0.0014)	(0.0014)
DiscretionaryBuybacks minus no-DCM	-0.0006	-0.0006	-0.0006	-0.0013	-0.0003	-0.0006
	(0.0016)	(0.0016)	(0.0016)	(0.0016)	(0.0016)	(0.0017)

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