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Abstract

Using a unique hand-collected dataset, we show that shareholder activism designed to open U.S. based closed-end funds has become more frequent since the SEC's reform of the proxy rules in 1992 ("the 1992 Reform") that lifted restrictions on shareholder communication. We document a dual relationship between activism and funds' discounts: a high discount increases the probability of activism, while a high probability of ex post open ending reduces the ex ante discount. We provide evidence that the ease of shareholder communication and coordination is a major determinant for the emergence of activism. This holds for the time series – activism has become much more common following the 1992 Reform – as well as for the cross section – activism is more likely in funds that exhibit low costs of communication. Our results shed new light on shareholder activism and on limits to arbitrage.

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1. Introduction

Activism by hedge funds and other market participants has increased in volume in recent years. With the goal of making financial gains, a typical strategy employed by activists is to buy shares of a firm, and then lead an action of intervention – such as restructuring or management replacement – inside the firm so as to directly increase its value. The tools used to implement such actions include shareholder proposals, media campaigns, and proxy contests. Such *activist strategies* are very different from the traditional *pure trading strategies*, by which market participants acquire positions in potentially mispriced assets and passively wait for price convergence. The trade off between the two types of strategies was theoretically studied by Bolton and von Thadden (1998), Kahn and Winton (1998), and Maug (1998).

In this paper, we empirically study shareholder activism in closed-end funds (CEFs). A closed-end fund is an investment firm, whose own shares are traded in the market. An empirical fact is that the prices of these funds tend to trade at substantial discounts from their net asset values (NAVs), often for long periods of time. Two main explanations for the discount emerged in the literature.[1] The first one is based on agency conflicts between shareholders and fund managers that decrease the actual value held by shareholders relative to the current NAV (see Ross (2002) and Berk and Stanton (2006)). The second one is that discounts arise due to the presence of irrational traders, and persist due to the constraints that prevent arbitrageurs from making a profit from the resulting mispricing (see Lee, Shleifer, and Thaler (1991)). Indeed, Pontiff (1996) and, more recently, Gemmill and Thomas (2002), have provided empirical evidence consistent with the view that arbitrageurs might be limited in their ability to purchase discounted funds while shorting the funds' underlying assets for the length of time necessary to profit from the correction in fund prices.[2]

Closed-end funds provide a unique opportunity to analyze shareholder activism because the potential increase in the value of a fund following intervention is clearly defined by the discount from NAV. Indeed, when targeting closed-end funds, activists usually attempt to open-

[1] Attempts to explain the discounts by arguing that the methods used to calculate NAVs overstate the value of the assets due to tax liabilities or illiquidity of the underlying assets are unpersuasive (Malkiel (1977)).

[2] Ignoring all limits to arbitrage, Thompson (1978), Brauer (1988) and Pontiff (1995) show that discounted funds provide profitable arbitrage opportunities. Specifically, abnormal returns can be earned through a passive strategy of buying the shares of CEFs with high discounts and shorting the shares of low discount CEFs. For a thorough review of the closed-end-fund literature, see Dimson and Minio-Kozerski (1999).

end them, knowing that if they are successful, the discount will be eliminated altogether. Prior research on closed-end funds recognizes the possibility of this form of activism, but argues that it is very costly and difficult to execute (Lee, Shleifer, and Thaler (1991)) and may fail due to resistance of managers and blockholders (Barclay, Holderness, and Pontiff (1993)). Indeed, activism has been quite rare in the U.S. closed-end fund industry until the early 1990s. Since 1992, however, when the SEC made changes to its rules relaxing constraints on communication among shareholders of public corporations, this type of activism has become very common. Several arbitrageurs have become very active in initiating proxy contests and referendums targeted at open-ending or liquidating deeply discounted closed-end funds.[3] Most of these attempts have been met with resistance from funds' managements. Still, quite a few of them have succeeded, despite such resistance, or have become credible enough to cause a significant shrinkage of the discount.[4]

We have three goals in this paper. Our first goal is to document the phenomenon of shareholder activism in closed-end funds. Using an extensive hand-collected dataset of all activities in domestic and international equity funds based in the U.S. over the period 1989 - 2003, we document an increasing trend of strong and frequent activism. We document the form of these activists' attacks and their consequences.

Our second goal is to study the relation between shareholder activism in closed-end funds and the discounts at which these funds trade. We capture an interesting dual relation. On the one hand, the probability that a fund will be attacked by activists increases in the size of the discount at which the fund is traded. This suggests that arbitrageurs perceive that they can make higher profits by attacking funds that are trading at larger discounts, or, they do not seem to believe that measurement issues, as mentioned before, are the main factors driving these discounts. On the other hand, the probability of an ex-post open ending has a negative effect on

[3] We sometimes refer to the shareholder activists as arbitrageurs. As will become clear later, this is quite consistent with the nature of these shareholders, most of which are hedge funds.

[4] Activism can also be pursued via takeovers. In such a case, the arbitrageur acquires control over the firm, and makes restructuring decisions without being dependent on the votes of other shareholders. A recent evaluation of the takeover mechanism vs. the proxy contest mechanism in a general corporate setting is performed by Bebchuk and Hart (2001). Interestingly, takeovers are virtually non-existent in the closed-end fund industry. One reason may be that they are subject to the famous free-rider problem, identified by Grossman and Hart (1980). We believe, however, that the main reason is the anti-pyramiding provision, of the Investment Company Act of 1940, which prevents registered investment companies from holding more than 3% of the shares of other registered investment companies. This prevents obvious potential activist arbitrageurs from attempting a takeover of a closed-end fund.

the ex-ante discount. This suggests that there is a rational component in the discount. When an attack, which subsequently may lead to convergence of the firm's share price to its NAV, is likely, the forward-looking share price anticipates the attack and the discount falls.[5] This feedback effect from activists' expected actions to the ex-ante share price is present in the models of Kahn and Winton (1998) and Maug (1998), and is expected to decrease the profitability of activism. Thus, a necessary condition for activism to occur is that the feedback effect is not too strong. This is indeed consistent with our data.

Our third goal is to shed light on the determinants of shareholder activism (other than the discount). The time-series evidence points to the importance of coordination and communication among shareholders in enabling activism. Before the 1992 Reform, communication among shareholders was severely restricted by the SEC, which required pre-approval prior to any type of communication among shareholders. The change in 1992 lifted many of these restrictions, and thus made communication and coordination much easier. This, indeed, led to a dramatic increase in the number of attacks on closed-end funds.[6] This is, perhaps, not surprising: in order to lead an attack on a discounted closed-end fund, an activist needs to communicate with many other shareholders and convince them to vote for his plan. Thus, the ability to communicate and coordinate should be an important factor in determining whether such activism will be attempted. In the language of Kahn and Winton (1998) and Maug's (1998) models, the ability to communicate can be thought of as a decrease in the cost of activism or as an increase in its probability of success.

To establish the importance of communication and coordination more firmly, we look for evidence also in the cross section. We use variables that proxy for the cost of communication at a given fund, and test whether these variables explain differences in the probability of an attack in the cross section. We use three such variables. The first is turnover, which measures the frequency at which the shares of the closed-end fund change hands. We argue that a high

[5] It should be noted, however, that despite this strong effect, discounts have not decreased after 1992, when the attacks became much more common, compared to their levels during 1988-1992. This suggests that other forces that generate discounts became stronger in the late 1990s. After 2000, however, overall discounts have been declining. The explanation of what generally determines the level of the discount is beyond the scope of this paper.

[6] In Section 2, we provide a broad discussion of the SEC's change in its rules governing stockholder communication and its implications. Additional references are Pound (1991), who provides an excellent discussion of the restrictions in the old rules and their detrimental effect on the proxy process, and Choi (2000), who documents an increase in number of proxy contests and shareholder proposals in public corporations following the 1992 Reform.

turnover rate indicates greater costs of communication, since it suggests that shareholders are changing frequently, which makes it difficult to locate and inform them of an attacker's intent. Pound (1988) was the first to suggest this variable as a proxy for the cost of communication. The second variable is the percentage of institutional ownership in the fund. Institutional investors typically hold larger positions and are more in tune with the market. Thus, they are easier to locate and notify regarding an activist's intent. We hypothesize that a greater percentage of institutional ownership indicates smaller communication costs. The third variable that we use is the average size of trade in the fund's shares. We argue that larger trades indicate that, on average, shareholders hold bigger positions in the fund, and thus the fund has fewer shareholders, which makes communication easier.[7] Our cross-sectional tests show that, after the law reform of 1992, these variables are indeed important in explaining the probability of an attack, and that their effects are consistent with our expectations. Most interesting, perhaps, is the effect of turnover, which is also a measure of liquidity. Our results suggest that, while liquidity makes the workings of financial markets more efficient in many respects, it could be an impediment for activism. This is consistent with the models of Bolton and von Thadden (1998) and Kahn and Winton (1998).

Overall, our paper contributes to two different literatures. The first one is the growing literature on shareholder activism. We provide direct evidence on activism occurring over more than a decade in one of the most puzzling assets traded in financial markets. We analyze the interaction between market prices and activism, and study the determinants of activism. [8]

The second literature to which we contribute is the one on limits of arbitrage. One of the main debates in financial economics centers on the possibility that arbitrageurs are constrained in

[7]Ideally, we are interested in knowing the number of shareholder accounts for each fund, and use that as a proxy for costs of communication. However, despite our efforts, we were not able to get a version of this variable that is accurate enough for our purposes. See Section 4 for more details.

[8] Several other papers provide empirical analysis of shareholder activism. They include: Dodd and Warner (1983), DeAngelo and DeAngelo (1989), Gordon and Pound (1993), Ikenberry and Lakonishok (1993), Carleton, Nelson, and Weisbach (1998), Del Guercio and Hawkins (1999), and Gillan and Stark (2000). Our paper differs from these papers in that the activists in our sample are profit-seeking arbitrageurs (most other papers focus on pension funds, which may have different objectives), and their targets are closed-end funds, for which the gain from intervention can be more easily defined. As a result, the issues analyzed in our paper are quite different. In the closed-end fund literature, Brauer (1984) and Del Guercio, Dann, and Partch (2003) study open-ending. They have much smaller samples and analyze different questions.

their arbitrage activities. Different authors have emphasized different factors that lead to limits on arbitrage activities. Campbell and Kyle (1993) focus on fundamental risk, i.e., the risk that the fundamentals of the underlying assets will change while the arbitrage strategy is being pursued. DeLong, Shleifer, Summers, and Waldmann (1990) argue that noise-trading risk, i.e., the risk that noise trading will increase mispricing, may render arbitrage activities unprofitable. Shleifer and Vishny (1997) point out that capital constraints constitute a limit of arbitrage. Other authors focus on transaction and holding costs (Mitchell and Pulvino (2001) and Pontiff (1996)) and on short-sales constraints (Geczy, Musto, and Reed (2002) and Lamont and Thaler (2003)).

One of the main examples provided by proponents of the limits-of-arbitrage view concerns the wide spread discounts in closed-end funds (CEFs). Our paper highlights a new source that prevents discounts from declining: limits of communication and coordination among shareholders. Thus, such limits can be perceived as another limit of arbitrage. At the core of this argument lies the importance of communication in financial markets. This can be due to two different reasons. First, when small shareholders are passive, and not easily motivated to act, communication by activists can make them more aware of the consequences of their actions, and thus can get their cooperation. Second, communication may be important because different agents may not agree on the true value of the asset in question. Some may think that open-ending a discounted closed-end fund is in the best interest of the shareholders of the fund, because mangers charge too high fees (as is suggested by the theoretical work of Berk and Stanton (2004) and Cherkes, Sagi, and Stanton (2005)). Others may think that open-ending a discounted closed-end fund is not in the best interest of shareholders because closed-end funds are efficient in managing long-term portfolios and holding illiquid assets, and thus could provide higher long-term returns than open-end funds (as is suggested by the theoretical work of Stein (2005)).[9] In light of such disagreement, arbitrageurs who want to initiate a proxy contest designed to open-end a fund need to be able to communicate with other shareholders and convey their view of the world to them.

The remainder of this paper is organized as follows. In Section 2 we trace the history of the SEC regulations of the proxy process. We also provide some institutional details and examples of activism in the closed-end fund industry. Section 3 describes the unique dataset

[9] This disagreement can be viewed as the 'model risk' in the terminology of Lee, Shleifer and Thaler (1991).

used for the empirical analysis in this paper. In Section 4 we develop the methodology used for the empirical analysis and present our empirical results on the relations between activism and closed-end funds' discounts and the effects of communication costs. Section 5 concludes.

2. Background

2.1. SEC Regulation of the Proxy Process

2.1.1. Regulation prior to 1992: Limitations on Shareholder Communication

Dissident shareholders have two main avenues by which they can impose changes in a corporation. They can initiate a proxy contest to replace the board of directors and achieve ultimate control over the corporation, or they can make a shareholder proposal to improve corporate governance measures, alter corporate decisions, etc. The issues raised by dissidents in proxy contests and shareholder proposals are resolved by shareholders' voting. In the voting process, also called the proxy process, the dissident shareholders try to get the proxies of other shareholders to cast their votes in support of the changes they wish to make.[10]

The rules governing the proxy process were first established by the Securities and Exchange Commission (SEC) in 1935 under the authority granted by Section 14(a) of the Securities Exchange Act of 1934. In establishing the rules, the intent of the SEC was to insure that shareholders were accurately informed about voting issues and that voting was fair, honest, and immune from manipulation by soliciting parties. One of the first rules enacted by the SEC required any party soliciting proxies (requesting votes) from other shareholders to register and disclose certain information. The proxy solicitation documents were reviewed by the SEC, which often required significant changes before approval.

The proxy rules evolved significantly after 1935. The most significant amendments were enacted in 1956. These amendments created major deterrents to communication among shareholders throughout a proxy process. The central feature of the 1956 amendments was a change in the definition of a proxy solicitation. Previously, solicitation had been defined to involve only a formal request for a shareholder's vote. Under the new definition, a solicitation

[10] There is a fundamental difference between the voting on a proxy context and the voting on a shareholder proposal, in that the outcome of the latter does not bind the management.

consisted of *any* communication under circumstances reasonably calculated to influence voting decisions. This liberal interpretation of solicitation dramatically expanded the power of the SEC to require registration and review of proxy communications. In addition, public statements; analyses of voting issues; and any impromptu communications made through television, speeches or on the radio were severely restricted. Finally, the new proxy rules placed restrictions on communications containing complex, sophisticated, or forward-looking language (such as predictions regarding future sales or attacks on the competency of the management).

Clearly, these rules had a stifling effect on stockholder communication. By placing almost *any* communication among shareholders under the control of the SEC, and by making it difficult to disseminate detailed and predictive information in proxy campaigns, the regulations limited the provision of private information on voting issues. Providers of private information had to bear the direct costs of dealing with the SEC – such as filing costs, costs of delay, and risk of being disapproved. They had to give up anonymity, and bear the risk of being sued when the communication might be interpreted as violating the regulations.[11] Thus, the regulations disturbed the working of the voting market considerably. Importantly, the impact of the regulations fell probably mostly on dissidents, who typically start the proxy process at a disadvantage relative to the incumbent management.

2.1.2. The 1992 Reform: Enhanced Shareholder Communication

The limitations on shareholder communication prior to the 1992 Reform have been subject to wide criticism. Pound (1991) summarizes the criticism from an academic point of view. In October 1992, the SEC enacted major revisions in the proxy rules in order to increase shareholder communication.

The new rules relaxed the prevailing definition of a proxy solicitation to exclude any communication by shareholders when not directly seeking the power to vote as proxy for other shareholders, as long as the shareholders' motive was only to gain pro rata with other shareholders. The 1992 amendments also specifically excluded shareholders' public statements of their voting intentions and/or voting rationale (including public speeches, press releases,

[11] Note that lawsuits are possible even if the communication passes SEC scrutiny. Pound (1991, pp 269-278) provides an excellent discussion of this issue and other implications of the 1956 regulations.

newspaper advertisements, and internet communications) from the definition of a solicitation. These changes effectively allowed independent shareholders to freely engage in communication during (and before) a proxy process without being monitored by the SEC, and without bearing the liability imposed by the restrictions on proxy solicitations.[12]

2.2. Activism in the Closed-End Fund Industry

2.2.1. The Activists

One of the distinctive features of our study is the ability to identify the arbitrageurs that are active in the CEF market, the funds that they are involved in, and the extent of coordination among them. Indeed, only a handful of arbitrageurs tend to actively engage in attempts to liquidate or open-end CEFs. Consider, for example the following passage from a recent Business Week article:

> "Some institutions are more aggressive than others. A few groups are known for their activism: Newgate Management Associates, based in Greenwich Conn., Harvard College, City of London Investment Management, Lazard Freres & Co., and Phillip Goldstein, who runs Opportunity Partners, a $40 million hedge fund that specializes in closed-end funds in Pleasantville, N.Y. Their stake in a closed-end fund does not guarantee an open-ending, but the odds are higher."[13]

In our review of the histories of the equity CEFs in our database, it became evident that the arbitrageurs that are mentioned in the previous quote are, with minor exceptions, the ones that tend to engage in activism.[14]

Since some of the activist activity that we focus on is relatively unexplored in the literature, we now proceed with a detailed description of two activists' attempts at open-ending

[12] In 1998, the SEC instituted another pro-dissidents reform in the proxy rules. This reform made it easier for shareholders to include a broader range of proposals in companies' proxy materials. This reform was particularly important for closed-end funds in that it required directors to include in its proxy materials stockholder proposals to replace the fund's advisors. Furthermore, subsequent rulings by the SEC made such proposals mandatory rather than advisory if the proposal received a favorable vote by a majority of the shares outstanding. Since we do not have sufficient time series data subsequent to this change, we are unable to study the implications of the 1998 reforms in this paper.

[13] Toddi Gutner, *When the lead comes off closed-end funds*, BUSINESS WEEK, Sep.29, 1997.

[14] Other key players include Ron Olin, Bankgesellschaft Berlin AG, and Laxey Partners Limited.

CEFs. These examples reflect some key commonalities in the behavior of dissident shareholders and managements. These commonalities are: One, activists target deeply discounted funds. Two, the attacks are conducted by more than one arbitrageur, and communication among them and other shareholders plays a role. Three, the management objects to the open-ending attempt and fights it over an extended period of time. Four, the arbitrageurs use various tools, including shareholder proposals and proxy contests. Finally, in both examples, the open-ending attempts ended up being successful, although, as we show later, many other attempts in our data failed.

2.2.2. Activist Example I: The Growth Fund of Spain

The Growth Fund of Spain conducted an IPO in early 1990. The fund's prospectus required that if a discount of greater than ten percent persisted for twelve weeks, and if a shareholder owning ten percent or more of the fund's shares submitted a written request, the fund would have to propose a plan of reorganization to open the fund. If the proposal garnered three-fourths of the outstanding shares, the managers would be required to open-end the fund. Such requirements written into a fund's Corporate Charter or Bylaws are referred to as "lifeboats." In early 1996 management submitted a preliminary proxy statement inviting the fund shareholders to the annual meeting to be held the following May indicating that both the discount and written request conditions were met (PRE 14A filed on March 8th 1996). Management indicated its opposition to open-ending, however. Since the vote in favor was only 30 percent of the outstanding shares the proposal failed (N-30D filed on July 30th 1996). At the same meeting shareholders also considered a proposal by Cargill Financial Markets PLC that the fund make a practice of making repurchases at three-month intervals. This proposal did pass with a majority of the voting shares. Shortly thereafter Cargill Financial Markets sent a letter to the fund requesting that a proposal that the fund be converted into an open-end investment company be included in the proxy materials for the Fund's 1997 annual meeting of shareholders. The management chose, however, not to include Cargill's proposal in the proxy material thus thwarting the attempt to open-end (see both SC 13D filed on November 22nd 1996 and DEF 14A filed on April 9th 1997).

In June 1997, the fund's largest shareholder, Bankgesellschaft Berlin AG, expressed its interest in eliminating the fund discount, which at the time was 19 percent. It suggested

measures including open-ending, tender offers, and liquidation. It also suggested that it may increase its holdings to gain a majority, seek representation on board, or solicit a proxy (SC 13D filed June 18th 1997). By October 1997, Bankgesellschaft Berlin sent a letter requesting that its nominees, rather than the fund's nominees be included on the proxy ballot for the meeting of shareholders (SC 13D/A filed October 8th 1997). By the time the letter was sent Bankgesellschaft Berlin had increased the shares it held to 9.2 percent of shares outstanding. The fund then replied that the Bank's letter had arrived too late, and the Bank's nominees would not be included for consideration in the special meeting scheduled for early December.

In response, Bankgesellschaft Berlin decided to solicit its own proxies for the upcoming special meeting in December. The Bank proposed two nominees to the board and asked shareholders that they return the Bank's proxy, not the fund's (PREC14A filed November 3rd 1997, SC 13D/A filed November 4th 1997 and DEFC14A filed November 6th 1997). The fund responded with a letter, (DEFA14A filed November 24th 1997) to shareholders suggesting that the Bank's intention is to realize a short-term gain, while diminishing the long-run return of the fund. Bankgesellschaft Berlin then responded by sending a letter to the fund's managers demanding a proposal that the fund be open-ended. By this time the Bank had increased its holdings of the fund's shares to 11 percent (SC 13D/A filed November 26th 1997). In addition, the Bank sent a letter to shareholders announcing that at the December special meeting, the Bank's nominees received a plurality of votes and would take office upon the upcoming merger transaction. The Bank's nominees won the board positions by a landslide: 8,663,028 to 1,772,125 over the fund's nominees (SC 13D/A filed December 16th 1997 and N-30D filed August 3rd 1998).

In September of 1998, the newly elected board of the fund filed a proposal that the fund be converted into an open-end investment company (PRE 14A filed September 11th 1998). The proposal passed with 11,399,716 votes in favor and only 221,207 against.

2.2.3. *Activist Example II: The Emerging Germany Fund*

As an example of how fast and effective the actions of activist arbitrageurs can be, consider the case of The Emerging Germany Fund. In mid-March 1997 the fund submitted its proxy filing including a shareholder proposal filed by Phillip Goldstein, "recommending that the

board of directors expedite the process to ensure the Fund's shares can be purchased and/or sold at net asset value" (DEF 14A filed March 18th 1997). These proxy filings revealed that the fund's largest shareholder was Lazard Freres & Co, one of the institutions mentioned earlier as sympathetic to dissident activities, with 9.1 percent of shares outstanding. The fund advised shareholders to oppose this proposal in the upcoming shareholder meeting in April and it was indeed defeated (2.7 million for, 3.6 million against, while 1 million abstained). By the end of 1997 both Phillip Goldstein and another prominent dissident, Ron Olin, jointly held 14 percent of the fund's outstanding shares (see DFRN14A filed January 11th 1999). In addition, Bankgesellschaft Berlin, FMR Corp. and Lazard Freres & Co. were beneficial owners of 14 percent, 10 percent, and 10 percent, respectively, of the fund's outstanding shares. (DEF 14A filed March 6th 1998).

In early 1998 the fund adopted a managed distribution policy under which it would distribute to its shareholders on a quarterly basis approximately 2.5 percent of NAV, for a total of at least 10 percent annually. The managed distribution policy was intended "to enhance shareholder value" (see N30-D filed March 2nd 1998).

On March 27th, 1998, Phillip Goldstein again submitted a letter to the fund's management advising of Goldstein's plan to attend the fund's annual shareholder meeting on April 27 and to nominate himself and three others for election as directors of the fund. He also advised of his intention to submit four proposals for consideration by the shareholders, including proposals that essentially would require open-ending the fund and firing the fund's investment advisers. During the course of this increasingly hostile battle, Mr. Goldstein was an active participant in electronic "discussions" on an Internet discussion board and some of the messages that Mr. Goldstein posted to the board addressed the very proposals that Mr. Goldstein wanted shareholders to consider at the annual shareholders' meeting. Of course, such public discussions among and between the firm's stockholders would have been prohibited prior to the 1992 rule changes. On April 8, 1998 the fund withdrew its notice of the April 27, 1998 meeting and commenced a lawsuit against both Mr. Goldstein and Ron Olin, alleging violation of the proxy solicitation rules and beneficial ownership disclosure provisions of U.S. federal securities laws (PRE 14A filed April 8th 1998 and PRE 14A filed April 27th 1998).

Throughout 1998 there was also additional buying into the fund by Deep Discount Advisors, Inc. and Ron Olin Investment Management Company. They became beneficial holders of approximately 14.5% of the outstanding shares as of November 6, 1998. In a letter dated November 6, 1998 to the fund, Deep Discount advisors Inc. requested that the Board nominate Mr. Olin and three of his associates as Directors of the fund for the next annual stockholders' meeting, scheduled for January 26, 1999. The letter made it clear that if elected, this dissident slate of directors would take the necessary steps to open-up the fund.

Seeing the writing on the wall, in late 1998 the management made a number of proposals designed to open-up the fund (DEF 14A filed January 4th 1999). All of the proposals were accepted at the shareholder meeting held on January 26, 1999 and the fund announced that it would convert to an open-end, no-load mutual fund at the close of business from Monday, May 3, 1999. With the announcement, the fund's discount from its NAV virtually disappeared.

Panels A and B in Figure 1 provide illustrations of the evolution of both of these dissident attacks and the funds' discount.

[Insert Figure 1 here]

3. Data

Based on the Center for Research in Security Prices ("CRSP") database, we gathered information on all closed-end funds that were in existence at any time over the period 1988 through 2002. We then reduced this sample to funds managing either domestic or international equity, including specialized equity funds. Eliminated from the sample were closed-end funds investing in convertible bonds, preferred stocks, taxable bonds, real estate, private equity, and municipal debt. We also excluded exchange-traded funds, funds incorporated outside the U.S, and funds for which we were unable to obtain NAV information. We cross checked our list of funds with various Barron's publications to ensure that our sample encompassed all public equity funds that were traded sometime after 1988. We conducted a similar comparison using data obtained from Lipper and various Morningstar's Principia publications for all closed-end funds. The resulting sample includes 142 closed-end funds that were traded sometime over the period 1988-2002.

Based on this sample, we hand-collected all reports filed with the SEC through Edgar. Since the information on Edgar is typically not available prior to the mid-90s, we examined Lexis Nexis for filings in earlier years. We retrieved registration statements, proxy related materials, and annual reports from this database. We also searched for news stories using databases such as Factiva (formerly Dow Jones Interactive), Proquest, Lexis Nexis, as well as news published on the Internet. For each fund, we then summarized all events that might potentially be related to the activism of the kind discussed previously. These events include any attempt of open-ending, merger, or liquidation, as well as funds' decisions to repurchase shares and conduct rights offerings, Based on these data, we constructed a detailed timeline of dissident activity whether successful or not.

To assess the completeness of the resulting fund activity we acquired various monthly publications from Thomas Herzfeld Advisors. These publications provide a thorough description of the full universe of closed-end funds' corporate activities ranging from liquidations and mergers that have already been consummated to outstanding and unresolved activities (such as tender offers, rights offerings, and dissident activity). We then checked to make sure that the events outlined in the Herzfeld publication match those compiled from the sources described earlier.

Since our regression analysis hinges on the construction of indicator variables for various degrees of activist activity, we constructed two fund activity indicators, denoted "Open-Ending Attempts" and "Open-Endings." For "Open-Endings" the indicator variable receives the value '1' if an open-ending, merger, or liquidation occurred in a given year and zero otherwise. The variable "Open-Ending Attempts" receives the value '1' if an attempt (either by the management or a dissident) had been made to open-end or liquidate the fund in a given year and zero otherwise.

Table 1 Panel A reports the summary statistics of the major fund characteristics variables (the mean, median, and standard deviation for all existing funds in each year). We acquired monthly NAV and price data from Securities Data Corporation (SDC). In a few cases in which the data is missing we obtained the NAV and price data from Herzfeld Advisors. Following the practice in the literature, fund discounts are calculated as (NAV-Price)/NAV. In most years, about 80%-90% of the CEFs trade at a discount, similar to the numbers documented in the prior

research. Institutional holdings are taken from Thomson Financial's Spectrum Data, and insider holdings are taken from Thomson Financial's Lancer Analytics. We obtained information on price, volume, return, dividend, market capitalization, and turnover rate from CRSP. Fund age is calculated as the time, in years, since the fund was first listed on CRSP. The annual dividend yield is calculated as the difference between the annual buy-and-hold return with dividends and the buy-and-hold return without dividends.

Table 1 Panel B lists the summary statistics of the fund policy variables for the full sample period and sub-periods (1988-1992, 1993-1998, 1999-2002). We collected information on the existence of a staggered board, supermajority, special meeting, and confidential voting by examining the funds' filings with the SEC.[15] Information on lifeboat provisions, which are commitments contained in the fund's Bylaws or Articles of Incorporation to take action(s) (including converting the fund to an open-end status) to reduce the discount in certain circumstances, were obtained from Thomas Herzfeld Advisors and other source documents. Finally, information on management fees was obtained from SDC. We find that most of these variables have some but little variation within the same fund. To disentangle time trends from composition effects, we separately report the summary statistics in each period for old and new funds, depending on whether the fund has been in our sample for more than three years.

[Insert Table 1 here]

Figure 2 plots the time trends of open-ending attempts and actual open-endings, liquidations and mergers into open-end funds from 1988 to 2003.[16] As can be seen from the graphs, there is a clear upward trend in open-ending attempts after the 1992 Reform in the SEC's rules governing stockholder communications, especially after 1994. In early 1990s, only 3-4% of the funds were subject to activists' attacks. In the peak of 1999-2000, it rose to 27% of the sample funds. The number of actual open endings, however, did not change much following the legal reform, implying that most of the attempts after 1992 did not lead to actual open ending.

[Insert Figure 2 here]

[15] We do not present statistics on confidential voting since there is little cross-sectional variation in this variable.

[16] Information is retrieved for one more year into 2003 because in the analysis open-ending activities will be regressed on lagged variables.

Among the open-ending attempts, 56.5% involved proxy contests, and 4.3% escalated to law suits. Among the actual open-endings, about 39.4% where implemented without a proxy contest, including 8 cases (13.8% of all open-endings in the sample) where funds were open-ended after shareholders approved manager-initiated proposals without public dissident actions. The rest 60.6% of the open-endings happened only after the dissidents took over the board after proxy contests.[17]

4. Empirical Results

4.1. Review of CEF Discounts

To set the stage for the empirical analysis, we begin with a review of the key cross-sectional determinants of CEF discounts that have been documented in the literature. Most of the existing work focuses on noise-trader risk, agency costs, market frictions (e.g., tax liabilities) and costs to pure-trading arbitrage (e.g., transaction costs) as the main explanations for the discounts. Table 2 presents a brief overview of our sample data, as well as the results of regressions based on the full sample, i.e., 1988 through 2002. The dependent variable is *DISCOUNT*, defined as (NAV-Price) / NAV. The first column provides results based on a pooled regression with year fixed effects, while the second column provides results based on a Fama-MacBeth type regression.

[Insert Table 2 here]

We start with funds' market values and share prices. Pontiff (1996) argues that high transaction costs increase the costs of arbitrage trading, and thus generate a higher degree of mispricing, i.e., a higher discount. He argues that transaction costs are greater for small funds and funds with a low market price. The rationale for the inclusion of market price is that the bid-ask spread tends to be relatively fixed at low prices. As a result, low-price securities tend to have higher proportional transaction costs. We include these variables in the regression along with

[17] In equilibrium, however, the success of an open-ending is actually negatively correlated with the occurrence of a proxy contest (the correlation coefficient is -0.16). We interpret the relation as that proxy contests are more likely to be used when activists anticipate more resistance from the management (and therefore the ex ante probability of success is lower, other things equal). This is because proxy contests are both more costly and more forceful.

share turnover as an alternative measure of liquidity.[18] We measure fund size by the market capitalization (*MV*) of the fund in log dollars; market price (*P*) of the fund shares is also expressed in log dollars; and share turnover (*TO*) is given by the yearly share volume scaled by the number of shares outstanding. We find that market capitalization does not impact the magnitude of the discounts when other characteristics are controlled for. However, the results in Table 2 indicate that a lower share price is indeed associated with a higher discount, consistent with Pontiff (1996). Similarly, share turnover is inversely related to fund discount, consistent with the notion that more liquid CEFs tend to trade at lower discounts.[19]

The second variable we focus on is also motivated by Pontiff (1996). The pure-trading arbitrage of CEFs requires taking opposite positions in the underlying assets. Consequently, the ease of replicating the fund's portfolios is a determinant of the cost of arbitrage. Specifically, the more unconventional the underlying assets, the more costly the arbitrage activity, and the more likely it is that price will deviate from NAV. On the other hand, a CEF might be created precisely because investors are willing to pay a premium for the hard-to-replicate fund's assets, which could lead to higher premium or lower discount. Which effect dominates is an empirical question. Similar to Pontiff (1996) and Gemmill and Thomas (2002), we use the residual standard deviation of a fund's NAV return (*STDNAV*) as a proxy for the replicability of the fund's underlying portfolio. The residual is calculated from a regression of a fund's NAV return, in excess of the risk-free rate, on the Fama-French three-factor model plus an additional momentum factor. These four factors were all obtained from Ken French's web site. To these factors we add two MSCI international indices, representing the European and the Far East markets. We find that the effect of *STDNAV* on discount is negative and significant in the two specifications, suggesting that the second effect dominates the first.

[18] The turnover variable will be used subsequently in our analysis as a measure of communication costs.

[19] It is possible that the inverse relation between fund discount and share price is driven by a mechanical correlation given that the denominator of the dependent variable, NAV, is highly correlated with price (the correlation exceeds 0.9). We therefore consider two alternative liquidity measures that do not involve price or NAV normalization (results are not reported). The first measure, following, Bekaert, Harvey, and Lundblad (2005), is the proportion of zero-return days for each fund-year, where days without any price change reflect very thin trades (or no trades). The second measure is based on Pastor and Stambaugh (2003) who argue that illiquidity can be proxied by a stronger relation between daily returns and signed lagged dollar volume. We estimate for each fund-year these liquidity measures. We find that for both measures higher illiquidity is indeed associated with higher fund discounts although only the second measure is marginally significant. This result is consistent with the evidence in Cherkes, Sagi, and Stanton (2005) who show that while systematic liquidity is a significant factor in the discounts of all CEFs (including bond funds), the effect is insignificant among the subset of domestic equity funds.

The next variable we include is dividend yield. A dividend payout is essentially a partial liquidation of the fund, and thus should move the price closer to the NAV. Pontiff (1996, 2005) argues that it should be easier to execute a pure-trading arbitrage on a fund with a higher dividend yield since the higher payout reduces the expected holding cost, and thus such funds should be associated with lower discounts. Further, higher dividends increase the liquidity of the assets because the cash flows become more front-loaded. The regression results show that dividend yield (*DIV*) is significantly negatively related to the discount (at the 2.5% level), consistent with the finding by Pontiff (1996). A one percentage point increase in the dividend yield is associated with 0.3-0.5 percentage point decrease in the discount.

To proxy for agency costs, we include the expense ratio (*FEES*) and the proportion of a fund's shares held by insiders (*INSIDER*). Fees do not seem to be related to deeper discounts.[20] A lack of relation between fees and discount is also documented by Malkiel (1977), Barclay, Holderness and Pontiff (1993), Gemmill and Thomas (2002) and Del Guercio, Dann, and Partch (2003). On the other hand, higher insider ownership is overall significantly associated with a higher discount, consistent with the hypothesis regarding insiders' private benefit of control.

Another variable we consider is fund age (*AGE*). The literature has documented that CEFs go public when investors' demand for their assets is high. This leads to funds trading at a premium after their initial public offering, which over time turns into a discount. The regression results are consistent with this pattern, although the statistical significance is low.

Lastly, we consider the presence of a lifeboat provision (*LIFEBOAT*). Such provisions entail the commitment of a fund to take action(s) to reduce the discount in certain circumstances. Lifeboat provisions vary in their rigidity, from promises of remedial measures (such as share repurchase) to a firm commitment of open-ending when the discount rises above a certain threshold. A lifeboat dummy is coded as one if the fund has genuine lifeboat provision or specifies explicit dates of a tender offer or a share repurchase. As expected, *LIFEBOAT* appears to reduce discounts, but the magnitude is moderate. The existence of a lifeboat provision reduces the discount by 1.4-1.8 percentage points, with marginal significance.

[20] The result does not change much if *FEES* is replaced with the residuals from a regression of *FEES* on fund characteristics that could affect expenses for non-agency related reasons: fund size; turnover; the fund being primarily invested in international stocks, specialized stocks, or small-cap stocks; and a time trend.

Our regressions also include year dummies. For a robustness check, Column 3 of Table 2 considers a more parsimonious alternative to year dummies. Following Lee, Shleifer and Thaler (1991), we use the difference between the return on small stocks and large stocks as a proxy for investor sentiment. The results show that the proxy for sentiment is significantly related to the discount in the expected negative direction.

Overall, a handful of covariates are able to explain a reasonable portion of the cross-sectional variation in fund discounts: they jointly explain 18.2% of the total variation in *DISCOUNT* at the fund-year level with the inclusion of year dummies. We will include these covariates as we proceed to analyze the relation between discounts and activist arbitrage activity.[21]

4.2. Analysis of Shareholder Activism

4.2.1. Closed-End Fund Discounts around Open-Ending Attempts: Overview

The focus of this paper is the analysis of shareholder activism intended to open-end closed-end funds. Before presenting the formal analysis in which we model the relation between closed-end fund discounts and shareholder activism, we begin with a simple event study that traces out the path of discounts around open-ending attempts. Specifically, we present average fund discounts and abnormal discounts measured over a period beginning three years prior to an identified activist activity through three years subsequent to such an event. Our goal is to provide a simple test linking shareholder activism and one of its key determinants – fund discounts.

Table 3 presents the results. In the left panel ("All Sample") funds that are actually open-ended are treated as having discounts equal to zero post open-ending; while in the right panel ("Surviving Sample") funds drop out of the sample after they are open-ended (as they cease to be closed-end funds). For each sample we present the evolution of fund discounts, both in raw and abnormal levels. The path of the average fund discount in raw level is presented in the column

[21] Another potential variable in explaining the discount is funds' tax overhang. Direct data on funds' tax overhang is not available. Dimson and Minio-Kozerski (1999) report weak relation between tax overhang and discount, which we confirm using hand-collected data (from the Edgar web site) of our sample funds' unrealized capital gains in 2001. Further, we find no relation between the tax overhang in 2001 and the open-ending attempts in the subsequent year.

denoted "Unadjusted." The average discount in excess of the mean discount of all funds in the same calendar year is presented in the column denoted "Adj. for Year Fixed Effect." The average discount in excess of a fund's own historical average is presented in the column denoted "Adj. for Fund Historical." We measure a fund's historical average discount using information leading to event year t-3. Finally, the average discount that adjusts for both year fixed effects and fund historical levels is presented in the column "Adj. for Both."

[Insert Table 3 Here]

We observe that funds that are subsequently attempted tend to have higher-than-normal (as compared to other funds in a given year, or their own history) discounts. The discounts drop substantially during the attempt. In the three years subsequent to open-ending attempts discounts drift further down (see the left panel in which we view open-ended funds as zero-discount funds), or rebound slightly (see the right panel in which open-ended funds are not counted). Consider column (2) for example. From three to one year before an attempt a fund is likely to have discount 6-7 percentage points higher than other funds in the same year. This difference drops to zero when an open-ending attempt happens. In the three years after the attack, the fund discount is 2-3 percentage points lower than its peers. This evidence suggests that activists are more likely to target deeply discounted funds, and their activity, to a large extent, eliminates abnormal discounts. The documented decline in post-event discounts is partly driven by the inclusion of funds that are open-ended. When we exclude such funds, as in column (8), for example, it can be seen that activism forces discounts back to their normal "long-run" levels, as the abnormal discounts are insignificantly different from zero in the three years post-event.

4.2.2. Activism and Discounts: Model Specification

The occurrence of an open-ending attempt and the fund discount are simultaneously determined: Deeply discounted CEFs are more likely to be attempted, as open-ending of such funds provides higher profitability to dissidents. At the same time, in a world with rational expectations, a CEF discount should decrease if the market expects that the fund is susceptible to an open-ending motivated attempt. Thus, a simple reduced-form regression of observed attacks on observed discounts could underestimate the sensitivity of attacks to discounts and would underplay the rational-expectation component in both activist attempts and CEF discounts.

The structural model underlying our analyses reflects these effects. It can be written as:

$$\begin{aligned} &ATTEMPT^{*}_{i,t} = \beta\, DISCOUNT_{i,t-1} + \gamma X_{i,t-1} + \varepsilon_{i,t}, \\ &ATTEMPT_{i,t} = I(ATTEMPT^{*}_{i,t} > 0), \\ &DISCOUNT_{i,t} = \mu_1 X_{i,t} + \mu_2 Z_{i,t} + \omega_{i,t},\ Z \neq \Theta, \\ &\rho = corr\left(\varepsilon_{i,t}, \omega_{i,t-1}\right) \leq 0. \end{aligned} \tag{1}$$

In (1), subscripts *i* and *t* index for fund and year, respectively. $ATTEMPT^{*}_{i,t}$ is a latent variable for the propensity of fund *i* to be under an open-ending attempt in year *t*, and $ATTEMPT_{i,t}$ is the observed binary outcome. As discussed later, we conduct our analysis for two different binary variables; one capturing all open-ending attempts and the other only actual open endings. $DISCOUNT_{i,t}$ is the fund discount. $X_{i,t}$ is a vector of fund characteristics or market conditions. $Z_{i,t}$ is a vector of instrumental variables that affect discounts directly and affect the probability of attacks only through their effect on discounts. We assume all residual disturbances are jointly normally distributed.

A key feature of the model is that the first equation and the third equation in (1) may be linked because the unobserved shock in *ATTEMPT* may negatively affect the residual discount (i.e., $\rho = corr\left(\varepsilon_{i,t}, \omega_{i,t-1}\right) \leq 0$). The idea is that shocks to the probability of an open-ending attempt may be observed by market participants (even if they are not observed by researchers) and thus, given some degree of rational expectations, affect the price of the fund in the financial market (and hence the discount). An example of such a shock is the emergence of arbitrageurs that target CEFs of a particular type. Due to this feature of the model, identifying the system in (1) requires that the set of $Z_{i,t}$ variables is not empty.

The model in (1) falls into the general class of a probit model with an endogenous continuous variable. It differs from a linear simultaneous system in that $ATTEMPT^{*}$ is an unobserved latent variable. Therefore the two endogenous observed variables – *ATTEMPT* and *DISCOUNT* – cannot be solved as linear functions of the exogenous variables, and the conventional instrument variable method does not apply. The model also differs from the typical selection-based models in that the endogenous continuous variable (*DISCOUNT*) is observable

in both states (*ATTEMP={0,1}*),[22] which affords us more information than is required by the commonly used selection-controlled estimation, such as the Heckman two-step method. Two methods that have been used extensively in the labor economics literature are well-tailored for our model specification and data availability: a two-stage conditional maximum likelihood (2SCML) method introduced by Rivers and Vuong (1988), and a full-information maximum likelihood (FIML) method applied in Evan, Oates, and Schwab (1992). We applied both methods and got similar results. We report those from the Rivers and Vuong (1988) method for its tractability in computation, ease of interpretation, and the nested test of exogeneity that comes with it.[23] This method has not been applied much in the finance literature. One exception is Rauh (2005).

To begin the estimation, we rewrite the first equation in (1) as:

$$ATTEMPT_{i,t}^{*} = \beta\, DISCOUNT_{i,t-1} + \gamma X_{i,t-1} + \theta\varpi_{i,t-1} + \eta_{i,t}, \qquad (2)$$

where $\varepsilon_{i,t} = \theta\varpi_{i,t-1} + \eta_{i,t}$ is a linear projection of $\varepsilon_{i,t}$ onto $\omega_{i,t-1}$. Testing the null hypothesis $H_0 : corr\left(\varepsilon_{i,t}, \omega_{i,t-1}\right) = 0$ is equivalent to testing $H_0 : \theta = 0$. Most importantly, $\eta_{i,t}$ is orthogonal to all the other variables in equation (2).

Equation (2) is estimated using a two-step procedure. In the first step, we estimate the *DISCOUNT* equation in (1) and save the residuals $\hat{\varpi}_{i,t-1}$. In the second step, we estimate equation (2) using the probit method, where $\omega_{i,t-1}$ is replaced with $\hat{\varpi}_{i,t-1}$. If $H_0 : \theta = 0$ is not rejected, the system is reduced to a simple probit model. Otherwise, the endogeneity of $DISCOUNT_{i,t-1}$ should not be ignored.

We use three identifying variables that enter the *DISCOUNT* equation but not the *ATTEMPT* equation (directly):[24]

[22] In a typical selection based model, the endogenous variable (e.g., price, wage) is observable only in one of the two states indexed by the endogenous dummy variable (e.g., only when a transaction happens, or a person is employed).

[23] Also see Rivers and Vuong (1988) for a discussion of their test in comparison with Heckman's (1978) generalized two-stage simultaneous probit (G2SP) method. Rivers and Vuong (1988) indicate that the two methods have comparable asymptotic properties, but their method is easier to implement, and fares more favorably in limited sample.

[24] Our results do not change qualitatively if we use only two of these variables as identifying variables.

- *DIV*: Funds that pay high dividends should have lower discounts since the payout is essentially a partial liquidation of the fund. The effect can be quite big given that dividends are expected to be paid over the whole future horizon. For arbitrageurs who attack the fund, however, taking the discount as given, the effect of the dividend is very small, given that they only plan to hold the shares for a short period. Thus, dividends ought not to be a factor driving activists' activities.

- *LIFEBOAT*: A lifeboat indicates some commitment on the fund side to remedial actions aimed at narrowing the discount (including open-ending the fund). The level of commitment in a lifeboat and its credibility to investors vary. Rational discounts should fully price in the potential effect of lifeboats. Thus, conditional on the magnitude of the discount, the existence of a lifeboat should not affect the probability of an attempt.

- *SMB*: Empirically the aggregate CEF discount co-moves with the return of small-cap stocks, and is highly correlated with the Fama-French small-minus-big factor (*SMB*) return. Several explanations are possible for the underlying economic forces, including the retail investor sentiment explanation (Lee, Shleifer, and Thaler (1991)), and rational explanations based on aggregate liquidity (Cherkes, Sagi, and Stanton (2005)) or the predictability of the small firm risk premium by CEF discount (Swaminathan (1996)). Our model can incorporate both rational and behavioral explanations about the co-movement between CEF discount and *SMB* return. The important identification restriction is that activists are not affected by this co-movement.

The regression includes year fixed effects to capture market conditions (such as interest rates) and noise trader sentiment. Other covariates include variables that would also appear in the *ATTEMPT* equation: *MV*, *STDNAV*, *AGE*, *TO*, *FEES*, *GOV*, and *INSIDER*. *GOV* is an index (0-3) aggregated over the existence of staggered board, supermajority, and special meeting. The higher the index, the more power the managers have over outside shareholders (thus governance is worse).[25]

[25] Special meetings are usually called by managements, and thus can be used to shorten the time available for dissidents to collect proxies. See Pound (1988). Our data also provides information about the existence of confidential voting. However, there is virtually no cross-sectional variation in this provision.

A few points regarding the execution of the estimation method are in order. First, as a feature of probit analysis, the estimation of Equation (2) identifies the coefficients $\left\{\beta/\sigma_\eta, \gamma/\sigma_\eta, \theta/\sigma_\eta\right\}$ up to scale. It has been a convention to report probit estimates by normalizing the variance of the disturbance term ε to be unit. Given that $\sigma^2_\eta = \left(1-\rho^2\right)\sigma^2_\varepsilon$, we need to rescale the coefficients from (2) by $1/\sqrt{1-\rho^2}$ to get the coefficients in the original system (1). Second, though $\hat{\varpi}_{i,t-1}$ enters equation (2) for estimation, it is not a conventional covariate as the *X* variables in the same equation. More specially, $\hat{\varpi}_{i,t-1}$ is not a "determinant" of an attempt, and the coefficient in front of $\hat{\varpi}_{i,t-1}$ should not be interpreted as the partial effect of a unit change of the residual discount on the propensity of an attempt. In fact, $\hat{\varpi}$ should be integrated out to obtain consistent estimates of $\{\beta, \gamma\}$ in the original system (1). Third, the probit coefficients are not of direct interest to researchers. The interesting parameters are the average partial effect (APE) of the covariates, that is, the average effect of a unit change in the covariates on the incremental probability of an attempt.

As a result of these considerations, we compute the parameters $\left\{\tilde{\beta}, \tilde{\gamma}\right\}$ with $\hat{\varpi}$ integrated out, which are related to those from (2) by a scaling factor: [26]

$$\tilde{\beta} = \hat{\beta}/\left[\left(1-\hat{\rho}^2\right)\left(1+\frac{\hat{\theta}^2\hat{\sigma}^2_{\varpi}}{\left(1-\hat{\rho}^2\right)}\right)\right]^{1/2};\ \tilde{\gamma} = \hat{\gamma}/\left[\left(1-\hat{\rho}^2\right)\left(1+\frac{\hat{\theta}^2\hat{\sigma}^2_{\varpi}}{\left(1-\hat{\rho}^2\right)}\right)\right]^{1/2}. \tag{3}$$

They serve to compute the sample analogue of the average partial effects of the covariates:

$$\begin{aligned} E\left[\partial\Phi\left(\tilde{\beta}DISCOUNT + \tilde{\gamma}X\right)/\partial DISCOUNT\right] &= E\left[\tilde{\beta}\phi\left(\tilde{\beta}DISCOUNT + \tilde{\gamma}X\right)\right] \\ E\left[\partial\Phi\left(\tilde{\beta}DISCOUNT + \tilde{\gamma}X\right)/\partial X\right] &= E\left[\tilde{\gamma}\phi\left(\tilde{\beta}DISCOUNT + \tilde{\gamma}X\right)\right] \end{aligned}. \tag{4}$$

It is important to note that our main analysis includes open ending attempts initiated by outside investors as well as by management. To the extent that open ending is never in the best interest of fund managers (they might lose their jobs, or the amount of assets under management

is likely to decrease), we interpret "voluntary" open-ending as an equilibrium decision made by managers after assessing the pressure from outside investors. That is, a voluntary open ending is more likely to happen when the fund would be more susceptible to attacks had the management not preempted. Thus, and given that all voluntary cases eventually require formal shareholders approval, they can be viewed as outcomes of incentive dynamics similar to those in other cases.[27] In sensitivity analysis, we get similar results excluding the voluntary open-endings.

Finally, some funds saw open-ending attempts over multiple years. We classify these multi-year actions into two categories. First, if the attempt in a later year is either an attempt on the fund by a different activist, or a distinctly new round of attack by the same activist, we count it as a new event. Second, in about 10.7% of the multi-year events, the attempt in a later year represents continuation of the same event from the last year. Given that such continuation cases do not in general involve a decision by the arbitrageur to launch a new attack, we do not count them as new cases. Sensitivity analysis shows that the results are qualitatively similar with the inclusion of these cases.

4.2.3. Activism and Discounts: Results

Table 4 reports the results on the determinants of open-ending attempts and actual open-endings. The dependent variable in panel A is a dummy for the occurrence of an attempted open-ending, including both (ex post) successful and unsuccessful resolutions, at the fund-year level. The dependent variable in panel B is a dummy for actual open-ending. The means of the two dependent variables are 13.3% and 3.9%, respectively, out of all fund-year observations. Reported coefficients are the un-scaled probit estimates from (2) (and the associated *t*-statistics) and the average partial effects (or marginal probabilities) in percentage points for a unit change in the covariates according to (4), where the variation in $\hat{\varpi}_{i,t-1}$ is integrated out. Separately reported are $\hat{\theta}$ and its statistical analysis for testing $H_0 : \theta = 0$, and $\hat{\rho}$, the implied correlation between the two error disturbances in (1).

[Insert Table 4 Here]

[26] The derivation is standard. See, for example, Wooldridge (2003), chapter 15 "Discrete Response Models".

A simple regression of *ATTEMPT* on *DISCOUNT* shows that a one percentage point increase in the observed discount is associated with a 0.66 percentage point increase in the probability of an attempted open-ending (column 1 of Panel A) and 0.13 percentage point increase in the probability of an actual open-ending (column 1 of Panel B). When adding the feedback effect into the equation in column 2 (i.e., accounting for the effect of the probability of the event on the residual discount), the sensitivity of the probability to the discount increases substantially to 1.07 (Panel A) and 0.67 (Panel B) percentage points. Columns 3 and 4 add other covariates as controls. These do not change the effect of the discount on open-ending activities by much. Columns 5 and 6 conduct the analysis for the subsamples of before and after the legal reform of 1992. We can see that the sensitivity of open-ending activities to the discount was stronger before the legal reform. This is probably due to the fact that open-ending attacks were difficult to launch before the reform, so only deeply discounted funds were targeted.

The results of Table 4 also depict an interesting dual relation between *ATTEMPT* and *DISCOUNT*. The fact that *DISCOUNT* is significantly positive in the *ATTEMPT* equation indicates that arbitrageurs are indeed more attracted to funds with deeper discounts. The negative sign of $\hat{\theta}$ demonstrates the feedback effect, that is, the fact that the discount becomes lower in anticipation of higher propensity of open-ending activities. Note that the negative feedback effect is significant in columns 2 and 5 of Panel A and in all columns in Panel B. This suggests that for open-ending attempts, the feedback effect is strong enough to be statistically significant only before the legal reform of 1992 (column 5 of Panel A). For actual open ending, the feedback effect is always strong (Panel B).[28] This is quite intuitive. Ex-post successful attacks are probably ex-ante more powerful and thus have a stronger effect on market prices. Moreover, before the legal reform of 1992, a greater fraction of attempts was successful, and thus the feedback effect was overall stronger.

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[27] In some of the voluntary open-ending cases, one or two large shareholders are reported to have conveyed their desire to have the funds open-ended without immediate threat of contesting action.

[28] Lacking perfect instruments capable of extracting all variations in *DISCOUNT*, other than the component that reflects the fund's susceptibility to open-ending attacks, the test of the feedback effect tends to have low power because the residual discount also contains some exogenous components of *DISCOUNT* that are positively associated with *ATTEMPT*. Therefore, finding a significantly negative sign for $\hat{\theta}$ is a strong evidence for the

4.2.4 Communication, the1992 Reform, and Activism

The 1992 Reform lifted barriers on communication among shareholders before and during a proxy process. Since communication is particularly important for shareholder activism, we expect the reform would have led to an increase in the level of such activities. We provided preliminary evidence of this trend in Figure 2. Regression analysis provides further support. Columns 5 and 6 of Table 4 break the sample by the dependent variable into two sub-periods: 1989-1992 (pre reform) and 1993-2002 (post reform).[29] Other things equal, there is an 8.48 (*t*-statistic = 3.58) percentage point increase in the probability of open-ending attempts during the second period, calculated as the difference of attack probabilities between the two sub-periods by setting all regressors in Table 4 to be the all-sample mean. The results regarding the probability of actual open-ending are less striking: the probability in the second sub-period increases by 1.22 (*t*-statistic = 1.13) percentage points. These results are consistent with the evidence in Choi (2000), who examines the impact of the 1992 SEC reform on shareholder-sponsored corporate governance proposals. Choi (2000) finds that the reform led to the entry of new groups that sponsored more shareholder proposals, although these proposals were not more successful.

Other than the increase in activity, there are two other notable changes in the pattern of activism after the reform (shown in Columns 5 and 6 in Table 4). First, as we discussed before, the feedback effect from attempted open-endings have weakened substantially during the post-reform period. This result reflects the fact that the actual-to-attempted open-ending ratio is much lower in the second period (see Figure 2). While the proxy reform encouraged more attacks on CEFs, the outcomes have also become less certain. Consistent with this reasoning, the feedback effect from actual open-ending remains significant during the post-reform period (see Column 6 of Panel B).

Second, the effect of fund governance on the tendency of activism is noticeably different before and after the reforms were enacted. Here, the governance metric is an index (0-3) aggregated over the existence of a staggered board, a supermajority, and the ability to call a special meeting. The higher the index, the more power the managers have over outside

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feedback effect. If the result is not significant, it may mean that the feedback effect is not strong enough to be detected.

[29] These are the years where all the regressors are measured. The variable *ATTEMPT* leads by one year and falls into 1989-1993 and 1994-2003 sub-periods.

shareholders.[30] Pro-manager governance is considered "bad" governance in the recent literature (e.g., Gompers, Ishii, and Metrick (2003), Del Guercio, Dann, and Partch (2003)). After 1993, the addition of one of the three provisions is associated with an increase of 5.0 percentage points in the probability of an attempt (significant at the 5% level). Moreover, funds with higher insider ownership invite more attempts after 1993 (significant at the 5% level). Such relations were non-existent beforehand. This evidence echoes Choi's (2000) finding that after the proxy reforms firms with stronger management entrenchment (as measured by insider ownership) and more pro-manager governance became more frequent targets of shareholder proposals. In our view, the result provides additional support for the role of communication: since communication among shareholders is particularly important when managers have more power in fighting against dissidents, activism against firms with pro-manager governance became more prominent after the 1992 proxy reforms were enacted. Interestingly, although high fees may also point to bad governance, we find that high-fee funds are overall less susceptible to attacks in the post-reform era (significant at the 10% level). This may be because high fees dissipate the NAV quickly, and thus make activism more costly (less profitable). It may also reflect the fact that managers with high ability, who are less likely to be attacked, receive high fees (See Berk and Stanton (2004)).

Overall, we do not intend to overstate the time-series pattern because it does not uniquely identify the effect of the changes in the proxy rules: it could also represent a trend or a coincidental time variation of unmodeled factors that impact arbitrage activities. To further support the role of communication, however, we now present evidence using cross sectional measures for the ease of communication. We consider the following proxies for communication: CEF share turnover rate, size of trades by CEF shareholders, and institutional ownership. Table 5 reports the results.

[Insert Table 5 here]

[30] Another measure for the managerial power commonly used in the literature is the state anti-takeover laws. About 63% of the closed-end funds in our sample are incorporated in Maryland which has very strong anti-takeover laws. We include a dummy variable for Maryland funds and do not find any significant effect on the probability of open-ending attacks. There are two explanations: First, the regulation of stockholder communications falls under the jurisdiction of the SEC. Second, the open-ending attacks in our analysis are mostly proxy contests, rather than takeover bids.

First, consider share turnover. High turnover makes communication more difficult for two reasons (see also the motivation by Pound (1988)). First, given the time lag at which account names become available to activists, the latter may not get up-to-date shareholder contacts at high turnover funds. Second, there is a time gap, usually varying between 10 to 60 days, between the record date (which qualifies a shareholder to vote) and the actual vote date. High turnover causes a separation of voting rights and cash flow rights for a large number of shareholders. Investors with short holding periods (corresponding to high turnover) may cease to be shareholders by the voting date or expect to exit the fund soon. Either way, they do not have the incentive to cast a careful vote. Column 1 of Table 5 (repeated from Table 4) reveals this pattern regarding turnover (*TO*). After 1993, a 100 percentage point increase in the annual turnover rate is associated with a 6.0 percentage point lower probability of an attempted open-ending, significant at the 10% level. Such an effect was non-existent in the earlier period, probably because communication was severely restricted by the SEC rules, so that cross-sectional differences did not matter much for the probability of activist arbitrage. It is interesting to note that while we identify high turnover as an impediment to activism, it is commonly believed that this variable enhances the efficiency of security pricing. This is because high fund share turnover indicates high level of liquidity, and leads to lower fund discount as shown in Table 2. This ambivalent effect of liquidity is consistent with the analysis of Kahn and Winton (1998) and Bolton and von Thadden (1998) on corporations. As far as we know, we are the first to document the dual effects of liquidity empirically.

Another natural candidate as a proxy for the costs of communication is the average shareholder account size. CEFs in the U.S. are predominantly held by retail investors: the median institutional holding is about 10-15% for most years (the corresponding figure for a typical COMPUSTAT firm during the same period is about 35%). Holding the market value of a fund constant, the smaller the average holding per account, the more shareholders an arbitrageur needs to contact and persuade in order to obtain a critical mass of support. Accessing a large number of shareholders is logistically difficult; and motivating them is even more so, either because small shareholders have a stronger tendency to free ride, or because they are not able to make sensible votes due to lack of information or lack of financial sophistication.

Direct information about individual account size with reasonable accuracy is not readily available. We hand collected from CEF's semi-annual N-SAR reports to the SEC the total

number of shareholder accounts reported by the funds (item 74X). We were only able to locate this information for about a third of the funds in our sample. Even this smaller sample of collected data, however, is not an accurate proxy for the real number of accounts because it does not separate the true individual accounts (where the beneficial owner lists directly as a shareholder) and the omnibus accounts (also called the street accounts, where numerous individuals are lumped under one account with a financial intermediary). The identities of the shareholders in the latter accounts are not revealed to the fund, let alone to the activists.

However, it is reasonable to assume that the size of a typical trade by an investor in a fund is significantly positively correlated with his total holdings in the fund. In a recent paper, Battalio and Mendenhall (2005) use trade size to proxy for large/small investors. The TAQ and ISSM databases provide information on a tick-by-tick frequency, from which we aggregate into annual variables. In particular, we look at the average trade size (in 1,000 shares) of a fund-year, and the proportion of trades that are more than 2,000 and 5,000 shares. Trade size is a proxy for account size even if big and small shareholders do not trade at a comparable frequency,[31] as long as there is no systematic cross-sectional difference in the relative trading frequency of the two groups.

Columns 2 and 3 of Table 5 show the effect of trading size on the occurrence of open ending attempts. In the post-1993 period, every 1,000 share increase in the average trading size (the mean and standard deviation are 1.26 and 0.71 thousand shares, respectively) is associated with a 5.3 percentage point increase in the probability of attempted open-ending. Using the proportion of trades above 2,000 (5,000, not tabulated) shares yields similar results. All the coefficients described above are different from zero at less than the 5% significance level. Interestingly, none of these variables are significant in the earlier period.[32]

Finally, the share of institutional ownership in a fund is also a proxy for the ease of shareholder communication. Using a dummy variable for institutional shares being greater than

[31] For example, Barber, Lee, Liu, and Odean (2005) show that individual investors trade about 50% more frequently than institutions.

[32] It is possible that trade size could be a proxy for trading liquidity. A robustness check with additional direct liquidity measures (the Pastor and Stambaugh (2003) daily return reversal measure and the Brennan and Subrahmanyam's (1996) price impact measure) indicates that the effect of trading size remains intact while the coefficient on the liquidity measures is insignificant. This is not surprising given that activist arbitrageurs tend to take relatively small positions in target funds (typically 3-5% or below) and are able to establish their positions over an extended period of time.

15%,[33] the probability effect is 6.4 percentage points, significant at the 5% level. Using the level of institutional ownership (not reported), a one percentage point increase in institutional ownership is associated with a 0.20 percentage point increase in the probability of an open-ending attack, which is significant at the 5% level. All of this evidence points to the same message: investor communication is an important factor for activist arbitrageurs to launch their attacks.

4.2.5. Duration Analysis of Open-Endings

An interesting question is to what extent the success of open-ending attempts is predictable conditional on an attempt taking place. This is a complicated question, partly because successes of attempts vary in degrees and forms. First, while in some cases funds are open-ended within the same year of the attempt, in other cases, open ending takes longer. Such cases are not as successful because the arbitrageurs need to spend more of their capital and time and hence make lower profits. Second, though the actual open-ending of a discounted fund represents an unambiguous success, arbitrageurs could also profit from their open-ending attempts when the fund ends up remaining closed. This happens when the discount shrinks as a result of the attack (for example, if the fund management takes remedial actions to suppress the discount). A duration-to-success model seems suitable to capture these features.

Using the language of a duration analysis, we say that a "spell" starts when an open-ending attempt occurs. The initial conditions are the funds' characteristics right before the attempt. The spell could end in one of two ways: (1) the attempt has not succeeded by the end of our sample period (which is year 2003). The duration of such a spell is treated as being censored on the right end (i.e., it takes longer than our sample period for the arbitrageurs to succeed). (2) The attempt succeeds at a time within our sample period. In this case the attempt-to-success duration could be recorded without censoring (i.e., an interior spell). Pulling observations from both groups together, we have the following log-likelihood function for duration:

$$\ln(L) = \sum_{\text{uncensored spells}} h(t \mid x) + \sum_{\text{all spells}} \ln S(t \mid x) . \qquad (5)$$

[33] In an interview with the authors, Phil Goldstein indicated that he tended to target funds with 15% (or more) institutional ownership to avoid retail investor apathy.

In equation (5), h is the baseline hazard function, where we adopt the most commonly used Weibull distribution: $h = \exp(-x\beta)\theta\left[t \cdot \exp(-x\beta)\right]^{\theta-1}$; t is the time from the start of an attempt; S is the survival function: $S = \exp(-h \cdot t)$. All covariates x are measured at when an attempt starts (the discount is measured at the end of the previous period). Coefficients $\hat{\beta}$ (vector) and $\hat{\theta}$ (scalar) are estimable using the maximum likelihood estimation method. We are interested in the effect of the x variables on the duration of attempts. This tells us their effect on the degree of success: a shorter duration indicates a more successful attempt.

[Insert Table 6 here]

Table 6 provides the results from estimating (5). The reported coefficients are $\hat{\theta}\hat{\beta}$ (all coefficients on the x covariates are scaled by the Weibull distribution parameter) to be interpreted as a marginal effect. The t-statistics are associated with $\hat{\beta}$. There are four columns in the table. In columns (1) and (2), the measure of success is narrowly defined as actual open-ending. In columns (3) and (4), success is more broadly defined as either open-ending or near disappearance of the discount (i.e., the discount dropped to below 5%). None of the measures is perfect. While the first measure under-identifies true success, the success as classified by the second measure could be caused by factors not attributable to the arbitrageurs.

Column (1) shows that the discount is slightly positively related to the time to success. It might seem paradoxical that a higher discount does not make it easier for arbitrageurs to succeed. Given our earlier discussion on the feedback effect, however, the correct interpretation is that the discount already prices in the prospect of a successful attempt. Thus, we control for this feedback effect by including *REDISUALDISC* – the residual discount measure developed previously. Indeed, after adding this control, column (2) shows a negative effect of the discount on the time to success. Columns (3) and (4) offer similar results using a broader (but noisier) measure of success.

Table 6 also suggests that bigger and older funds are more difficult to tackle. Time to success increases in the level of fees and insider ownership. Presumably management resistance is higher and stronger when their own voting power is higher (ownership), and when they have more to lose and have more resources from the fund (fees). Finally, more entrenched management as measured by takeover defenses (*GOV*) increases the time to success.

5. Conclusion

We document strong and frequent attacks of activist arbitrageurs against closed-end funds in the wake of the SEC's proxy reform in 1992. We find that this activity is targeted mainly towards deeply discounted funds. Moreover, the funds' discounts reflect such activity in a forward-looking way. We show that the ability to communicate and coordinate among shareholders is a major determinant of the probability of activism. Thus, costs of communication – imposed by law, ownership structure, or the trading environment of funds – are identified as limits to arbitrage.

REFERENCES

Barber, Brad, Yi-Tsung Lee, Yu-Jane Liu, and Terrance Odean, "Who Loses from Trade? Evidence from Taiwan," working paper, University of California at Davis, 2005.

Barclay, Michael, Clifford Holderness, and Jeffrey Pontiff, "Private Benefits from Block Ownership and Discounts on Closed-End Funds," *Journal of Financial Economics*, 33 (1993), 263–291.

Bebchuk, Lucian, and Oliver Hart, "Takeover Bids vs. Proxy Fights in Contests for Corporate Control ," working paper, Harvard University, 2001.

Battalio, Robert, and Richard Mendenhall, "Earnings Expectations, Investor Trade Size, and Anomalous Returns around Earnings Announcements," *Journal of Financial Economics*, 77 (2005), 289-320.

Bekaert, Geert, Campbell Harvey, and Chris Lundblad, "Liquidity and Expected Returns: Lessons from Emerging Markets," working paper, Duke University, 2005.

Berk, Jonathan, and Richard Stanton, "Managerial Ability, Compensation, and the Closed-End Fund Discount," *Journal of Finance*, forthcoming.

Bolton, Patrick, and Ernst-Lugwig von Thadden, "Blocks, Liquidity, and Corporate Control," *Journal of Finance*, 53 (1998), 1-25.

Brauer, Greggory, "Open-Ending Closed-End Funds," *Journal of Financial Economics* 13 (1984), 491–507.

Brauer, Greggory, "Closed-End Fund Shares' Abnormal Returns and the Information Content of Discounts and Premiums, *Journal of Finance* 43 (1988), 113–127.

Brennan, Michael, and Avanidhar Subrahmanyam, "Market Microstructure and Asset Pricing: On the Compensation for Illiquidity in Stock Returns," *Journal of Financial Economics*, 41 (1996), 441-464.

Campbell, John and Albert Kyle, "Smart Money, Noise Trading and Stock Price Behavior," *Review of Economic Studies*, 60 (1993), 1-34.

Carleton, Willard, James Nelson, and Michael Weisbach, "The Influence of Institutions in Corporate Governance through Private Negotiations: Evidence from TIAA-CREF," *Journal of finance*, 53 (1998), 1335-1362.

Cherkes, Martin, Jacob Sagi, and Richard Stanton, "A Liquidity-Based Theory of Closed-End Funds," working paper, University of California at Berkeley, 2005.

Choi, Stephen, "Proxy Issue Proposals: Impact of the SEC 1992 Proxy Reform," *Journal of Law, Economics, and Organization*, 16 (2000), 233-268.

DeAngelo, Harry, and Linda DeAngelo, "Proxy Contests and the Governance of Publicly Held Corporations," *Journal of Financial Economics*, 23 (1989), 29-59

Del Guercio, Diane, Larry Dann, and M. Megan Partch, "Governance and Boards of Directors in Closed-end Investment Companies," *Journal of Financial Economics*, 69 (2003), 111-152.

Del Guercio, Diane, and Jennifer Hawkins, "The Motivation and Impact of Pension Fund Activism," *Journal of Financial Economics*, 52 (1999), 293-340.

DeLong, Bradford, Andrei Shleifer, Lawrence Summers, and Robert Waldmann, "Noise Trader Risk in Financial Markets," *Journal of Political Economy* 98 (1990), 703–738.

Dimson, Elroy, and Carolina Minio-Kozerski, "Close-End Funds: A Survey," *Financial Markets, Institutions & Instruments*, 9 (1999), 1-41.

Dodd, Peter, and Jerold Warner, "On Corporate Governance: A Study of Proxy Contests," *Journal of Financial Economics*, 11 (1983), 401-438.

Evans, William, Wallace Oates, and Robert Schwab, "Measuring Peer Group Effects: A Study of Teenage Behavior," *Journal of Political Economy*, 100 (1992), 966-991.

Geczy, Chris, David Musto, and Adam Reed, "Stocks Are Special Too: An Analysis of the Equity Lending Market," *Journal of Financial Economics* 66 (2002), 241-269.

Gemmill, Gorden, and Dylon Thomas, "Noise Trading, Costly Arbitrage, and Asset Prices: Evidence from Close-End Funds," *Journal of Finance*, 57 (2002), 2571-2494.

Gillan, Stuart, and Laura Starks, "Corporate Governance Proposals and Shareholder Activism: The Role of Institutional Investors," *Journal of Financial Economics* 57 (2000), 275-305.

Gompers, Paul, Joy Ishii, and Andrew Metrick, "Corporate Governance and Equity Prices," *The Quarterly Journal of Economics*, 118 (2003), 107-155.

Gordon, Lilli, and John Pound, "Information, Ownership Structure, and Shareholder Voting: Evidence from Shareholder-Sponsored Corporate Governance Proposals," *Journal of Finance*, 48 (1993), 697-718.

Grossman, Sanford, and Oliver Hart, "Take-Over Bids, the Free Rider Problem and the Theory of the Corporation," *Bell Journal of Economics*, 11 (1980), 42-69.

Heckman, James, "Dummy Endogenous Variables in a Simultaneous Equation System," *Econometrica*, 46 (1978), 931-959.

Ikenberry**,** David, and Josef Lakonishok, "Corporate Governance through the Proxy Contest: Evidence and Implications," *The Journal of Business*, 66 (1993), 405-435.

Kahn, Charles, and Andrew Winton, "Ownership Structure, Speculation, and Shareholder Intervention," *Journal of Finance*, 53 (1998), 99-129.

Lamont, Owen, and Richard Thaler, "Can the Market Add and Subtract?: Mispricing in Tech-Stock Carve-Outs" *Journal of Political Economy*, 111 (2003), 227-268.

Lee, Charles, Andrei Shleifer, and Richard Thaler, "Investor Sentiment and the Closed-End Fund Puzzle," *Journal of Finance* 46 (1991), 75–109.

Malkiel, Burton, "The Valuation of Closed-End Investment Company Shares," *Journal of Finance* 32 (1977), 847–859.

Maug, Ernst, "Large Shareholders as Monitors: Is There a Trade-Off between Liquidity and Control?" *Journal of Finance*, 53 (1998), 65-98.

Mitchell, Mark, and Todd Pulvino, "Characteristics of Risk and Return in Risk Arbitrage," *Journal of Finance*, 56 (2001), 2135-2176.

Pastor, Lubos and Robert Stambaugh, "Liquidity Risk and Expected Stock Returns." *Journal of Political Economy*, 111 (2003), 642-85.

Pontiff, Jeffrey, "Closed-End Fund Premia and Returns Implications for Financial Market Equilibrium," *Journal of Financial Economics*, 37 (1995), 341-370.

Pontiff, Jeffrey, "Costly Arbitrage: Evidence from Close-End Funds," *Quarterly Journal of Economics*, 111(1996), 1135-1151.

Pontiff, Jeffrey, "Costly Arbitrage and the Myth of Idiosyncratic Risk," working paper, Boston College, 2005.

Pound, John, "Proxy Contests and the Efficiency of Shareholder Oversight," *Journal of Financial Economics*, 20 (1988), 237-265.

Pound, John, "Proxy Voting and the SEC: Investor Protection versus Market Efficiency," *Journal of Financial Economics*, 29 (1991), 241-285.

Rauh, Joshua, "Own Company Stock in Defined Contribution Plans: A Takeover Defense?", *Journal of Financial Economics*, forthcoming, 2005.

Rivers, Douglas, and Quang Vuong, “Limited Information Estimators and Exogeneity Tests for Simultaneous Probit Models,” *Journal of Econometrics*, 39 (1988), 347-366.

Ross, Stephen, “Neoclassical Finance, Alternative Finance and the Closed-End Fund Puzzle,” *European Financial Management*, 8 (2002), 129-137.

Shleifer, Andrei, and Robert Vishny, "The Limits of Arbitrage," *Journal of Finance*, 52 (1997), 35-55.

Stein, Jeremy, “Why Are Most Funds Open-End? Competition and the Limits of Arbitrage,” *Quarterly Journal of Economics*, 120 (2005), 247-272.

Swaminathan, Bhaskaran, “Time-Varying Expected Small Firm Returns and Closed-End Fund Discounts,” *Review of Financial Studies*, 9 (1996), 845-887.

Thompson, Rex, “The Information Content of Discounts and Premiums of Closed-End Fund Shares,” *Journal of Financial Economics*, 6 (1978), 151-186.

Wooldridge, Jeffrey, *Econometric Analysis of Cross Section and Panel Data*, 2003, MA: MIT Press.

Table 1. Summary Statistics

Panel A: Fund Characteristics over 1988-2002

This panel reports summary statistics for 142 closed-end funds over the sample period 1988-2002. The first two rows provide the number of funds in operation in each year and the percentage of funds that trade at a discount. Each of the next three-row blocks provides the sample mean, median, and standard deviation, respectively, of the indicated fund characteristic variable. Fund discount is defined as (NAV-P)/NAV. Market capitalization is the product of fund share price and number of shares outstanding. Annual turnover is the ratio of fund shares traded to total shares outstanding. Dividend yield is the ratio of dividend payout to fund share price. Insider ownership is the proportion of fund shares owned by insiders. Institutional ownership is the proportion of fund shares owned by institutions. Fund age is number of years since the first listing date on CRSP. Average trade size is the number of shares traded in a single transaction averaged over all trades in a given year. Standard deviations of monthly returns in a given year are calculated for both the underlying assets (NAV) and the fund shares.

	1988	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**
Number of funds	53	62	82	84	92	99	123	122	123	121	113	111	102	95	89
% trading at a discount	81%	79%	83%	79%	68%	55%	71%	78%	86%	83%	82%	89%	92%	86%	88%
Fund discount (%)	14.0	9.7	10.2	8.0	5.6	1.8	6.0	11.2	13.0	13.5	13.6	16.3	23.0	15.4	13.3
	20.2	12.5	11.5	8.8	5.8	1.8	6.3	12.8	15.2	15.9	18.1	19.1	23.6	17.4	14.2
	17.7	17.7	11.6	12.3	10.4	11.7	11.0	12.2	11.3	12.2	16.1	15.9	16.1	14.4	15.4
Market capitalization ($Million)	159	177	155	170	177	194	220	212	229	255	239	248	267	247	222
	69	88	85	93	98	111	133	121	125	136	105	101	123	101	102
	228	234	210	245	270	276	271	277	303	349	401	448	453	435	376
Annual turnover (%)	60	116	95	76	80	110	102	87	87	102	96	84	78	54	50
	49	57	67	59	64	92	86	79	85	96	92	80	69	48	44
	50	171	73	77	57	108	65	47	38	56	49	45	44	28	31
Dividend yield (%)	3.1	4.0	3.5	4.0	3.1	2.1	2.0	1.8	2.3	2.4	3.4	2.9	3.4	3.4	2.9
	2.6	3.3	2.4	2.7	1.8	0.8	0.9	0.6	1.2	0.9	1.0	0.9	1.1	1.3	1.3
	3.3	3.6	3.7	3.8	3.5	3.0	2.8	2.9	3.0	3.8	5.3	4.1	5.1	4.8	4.5

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Insider ownership (%)	1.0	1.7	1.7	4.5	2.3	2.6	1.6	3.9	2.5	2.9	1.6	6.8	4.3	7.6	7.6
	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.0	0.7	0.4
	1.8	3.2	4.8	12.5	6.5	9.2	7.7	15.4	9.5	10.5	4.0	11.9	9.5	12.5	14.7
Institution ownership (%)	12.1	13.5	11.0	13.4	12.8	12.9	11.1	13.5	15.8	20.1	19.4	19.4	20.3	22.1	22.3
	6.6	8.0	6.7	8.6	9.1	9.9	8.7	11.9	15.7	18.4	18.5	18.0	16.9	19.5	19.5
	12.3	13.2	11.3	14.8	12.6	10.8	9.7	9.0	9.8	13.6	14.0	15.3	16.4	17.5	17.7
Fund age (year)	7	7	6	6	6	7	6	7	8	9	10	11	12	14	15
	2	2	3	3	3	4	4	5	6	7	8	9	10	11	12
	13	12	11	11	11	10	10	10	10	10	10	10	11	11	11
Average trade size (1,000 shares)	1.4	1.6	1.8	1.3	1.0	1.1	1.2	1.1	1.3	1.3	1.3	1.4	1.4	1.4	1.1
	1.1	1.4	1.3	1.1	0.9	1.0	0.9	1.0	1.2	1.2	1.2	1.3	1.3	1.2	1.0
	1.0	0.9	1.7	0.8	0.5	0.8	0.8	0.5	0.6	0.6	0.7	0.8	0.7	0.8	0.7
Standard deviation of monthly fund NAV (in %)	4.3	3.3	3.2	3.3	3.7	3.8	4.0	4.2	4.3	4.4	5.0	5.8	6.2	5.7	4.8
	3.1	2.4	2.4	2.6	2.8	3.1	3.1	3.2	3.8	3.6	4.4	5.2	5.7	5.3	4.3
	2.6	2.3	2.6	2.6	2.6	2.5	2.7	2.9	2.7	2.4	2.7	3.1	3.4	3.1	2.6
Standard deviation of monthly fund return (in %)	4.9	5.4	6.4	6.2	6.2	5.9	6.5	5.9	5.8	5.8	6.2	6.2	6.7	6.6	6.4
	4.2	4.5	4.7	4.8	5.0	5.4	5.9	5.2	5.4	5.3	5.9	6.0	6.3	6.1	6.0
	2.7	2.8	3.7	3.4	3.1	3.0	3.1	2.7	2.5	2.5	2.6	2.7	3.0	3.1	2.9

Panel B: Fund Policies

This panel reports the mean values of the policy variables over different sub-periods and separately for old and new funds. All of the variables except management fees are dummy variables equal to one if the provision exists. A staggered board is one in which directors are classified into difference classes and serve overlapping terms. Supermajority requires supermajority votes out of outstanding shares for open-ending. Special meeting means that the management has the right to call special meetings to discuss/vote on dissidents' proposals. Lifeboat is a provision for remedial actions (including converting to an open-end fund) when discount persists beyond certain threshold for certain length of period. Management fees are calculated as fees over total net asset values. Standard deviations are reported in parentheses. A fund is counted as an Old (New) fund if it has existed in our sample for more than (less than or equal to) three years in the year of calculation.

	1988-2002	1988-1992		1993-1998		1999-2002	
	All Funds	Old Funds	New Funds	Old Funds	New Funds	Old Funds	New Funds
Staggered board	0.38	0.09	0.03	0.42	0.30	0.67	0.47
Supermajority	0.11	0.07	0.16	0.13	0.06	0.10	0.00
Special meeting	0.60	0.70	0.56	0.63	0.52	0.58	0.67
Lifeboat	0.53	0.44	0.57	0.54	0.54	0.52	0.60
Management fees	1.79	1.45	2.01	1.62	2.03	1.90	2.22
	(0.90)	(0.58)	(0.61)	(0.86)	(0.71)	(1.06)	(0.49)

Table 2. Cross-Sectional Determinants of Close-End Fund Discounts

The dependent variable is fund discount (DISCOUNT) in percentage points by firm-year observations. The first column reports estimates from a pooled regression with year fixed effects; the second column reports the results from a Fama-MacBeth regression, and the third column reports the results of a pooled regression without year fixed effects. MV is log market capitalization. P is log market price. STDNAV is the residual standard deviation from a regression of monthly NAV returns on the Fama-French three factors, the momentum factor, and two international indices factors. AGE is fund age in years. TO is the annual turnover rate (in percentage points) of a fund's shares. DIV is the annualized dividend yield in percentage points. FEES is the management fees as percentage of net assets value. INSIDER is the ownership share of insiders in percentage points. LIFEBOAT is a dummy variable for the existence of a lifeboat provision (see definition in Table 1 Panel B). SMB is the Fama-French small-minus-big annual returns. Bold fonts represent statistical significance at less than the 5% level. In pooled regressions, standard errors adjust for autocorrelation using the Newey-West method with half-window width equal to 4 years. In Fama-MacBeth regressions, standard errors adjust for autocorrelation of all orders assuming an AR(1) process of the time-series coefficient estimates. The number of observations is 1,477.

	(1) Year Fixed Effects	(2) Fama-MacBeth	(3) Pooled
MV	0.828	0.404	0.814
	(1.08)	(0.49)	(1.06)
P	**-2.962**	**-3.561**	**-4.041**
	-(2.49)	**-(1.97)**	**-(3.37)**
STDNAV	**-0.760**	**-0.637**	0.494
	-(2.80)	**-(2.35)**	(0.39)
AGE	-0.094	-0.055	-0.011
	-(1.74)	-(0.45)	-(0.23)
TO	**-0.021**	-0.005	**-0.037**
	-(2.65)	-(0.54)	**-(4.96)**
DIV	**-0.499**	**-0.422**	**-0.323**
	-(3.53)	**-(2.64)**	**-(2.46)**
FEES	0.735	0.714	0.590
	(0.52)	(0.97)	(0.40)
INSIDER	0.101	**0.110**	0.092
	(1.71)	**(4.61)**	(1.56)
LIFEBOAT	-1.843	**-1.394**	-1.702
	-(1.59)	**-(2.96)**	-(1.36)
SMB	--	--	**-0.107**
	--	--	**-(2.85)**
CNST	17.515	20.281	14.749
	(1.81)	(1.88)	(1.50)
Rsqr	0.182	--	0.070

Table 3. Close-End Fund Discounts around Open-Ending Attacks: Event Study

Each of the eight columns in the body of this table reports the average discount of all funds subject to open-ending attempts in the seven event-time years from three years before attempts (t-3) to three years afterwards (t+3), standard errors for the average are also reported. In the left four columns (1, 2, 5, and 6, "All Sample"), funds are counted as zero discount funds if and after they are open-ended. In the right four columns (3, 4, 7, and 8, "Surviving Sample"), funds drop out of the sample after being open-ended. In "Unadjusted" columns (1 and 5), discounts are expressed in their raw levels. In "Adj. for Year Fixed Effect" columns (2 and 4), discounts are demeaned from average discount of all funds in our sample (including funds not under attack) in the same year. In "Adj. for Fund Historical" columns (5 and 7), discounts are reported in excess of their own historical level measured as the in sample average through event year t-3. In "Adj. for Both" columns (6 and 8), discounts are doubly subtracted of the year fixed effect and the same-fund historical discounts.

	All Sample				Surviving Sampe			
	(1) Unadjusted		(2) Adj. for Year Fixed Effect		(3) Unadjusted		(4) Adj. for Year Fixed Effect	
Year	**Avg**	**Std Err**	**Avg**	**Std Err**	**Avg**	**Std Err**	**Avg**	**Std Err**
t-3	18.34	1.12	6.20	1.01	18.34	1.12	6.20	1.01
t-2	21.43	1.22	7.09	1.07	21.43	1.22	7.09	1.07
t-1	19.92	1.08	6.13	1.06	19.92	1.08	6.13	1.06
Attack	14.53	1.16	0.35	1.14	14.53	1.16	0.35	1.14
t+1	11.33	1.91	-2.93	1.13	17.39	1.48	2.56	1.37
t+2	11.90	2.08	-2.31	1.15	18.67	1.43	4.03	1.25
t+3	10.34	2.18	-3.37	1.15	16.21	1.47	2.58	1.35

	(5) Adj. for Fund Historical		(6) Adj. for Both		(7) Adj. Fund Historical		(8) Adj. for Both	
Year	**Avg**	**Std Err**	**Avg**	**Std Err**	**Avg**	**Std Err**	**Avg**	**Std Err**
t-3	7.47	1.08	4.32	0.95	7.47	1.08	4.32	0.95
t-2	9.79	1.17	4.64	0.99	9.79	1.17	4.64	0.99
t-1	8.26	1.15	3.73	1.07	8.26	1.15	3.73	1.07
Attack	2.91	1.24	-2.03	1.16	2.91	1.24	-2.03	1.16
t+1	0.60	1.77	-4.68	1.17	6.84	1.60	0.91	1.35
t+2	1.00	1.96	-4.22	1.33	7.80	1.91	2.15	1.60
t+3	-1.87	1.95	-6.44	1.48	3.30	2.36	-1.11	2.06

Table 4. Determinants of Open-Ending Attacks

This table reports results from estimating the first equation of system (1). The dependent variable is the occurrence of open-endings at the fund-year level. Panel A examines all open-ending attempts, while Panel B analyzes actual open-endings. All regressors are lagged for one year. *MV, STDNAV, AGE, TO, FEES,* and *INSIDER* are defined in Table 2. *DISCOUNT* is the fund discount in percentage points. *GOV* is the sum of three indicator variables: staggered board, supermajority vote, and special meetings as defined in Table 1 Panel B. Columns (1) and (3) report one-stage probit estimates without adjusting for the feedback effect. Columns (2), (4), (5), and (6) apply the two-stage estimation, with the additional exogeneity test reported below the regressions. Reported for each covariate are the un-scaled probit coefficient (in bold fonts), the t-statistics (in parenthesis), and the sample average incremental probability for a unit change in the covariate (in percentage points). In columns (2), (4), (5), and (6), the incremental probabilities also integrate out the variation of *RESIDUALDISC* (the residual from the second equation of (1)). In the exogeneity tests, reported are the θ estimate (the loading of *RESIDUALDISC* in the *ATTEMPT* equation), its t-statistics, and the implied ρ value (the correlation coefficient of the two error disturbances in (1). * and ** indicate significance at the 10% and 5% levels.

Panel A: Open-Ending Attempts

	Full Sample				1989-1993	1994-2003
	1	2	3	4	5	6
DISCOUNT	**0.034****	**0.054****	**0.040****	**0.047****	**0.138****	**0.040****
	(9.53)	(7.03)	(9.14)	(5.15)	(2.80)	(4.24)
	0.66%	1.07%	0.75%	0.91%	1.86%	0.85%
LN(MV)	--	--	**-0.038**	**-0.035**	**0.611****	**-0.080**
	--	--	-(0.72)	-(0.67)	(2.69)	-(1.43)
	--	--	-0.71%	-0.67%	8.24%	-1.70%
STDNAV	--	--	**-0.001**	**0.000**	**-0.016**	**-0.002**
	--	--	-(0.03)	(0.01)	-(0.19)	-(0.11)
	--	--	-0.01%	0.00	-0.22%	-0.05%
AGE	--	--	**0.026**	**0.022**	**-0.227**	**-0.046**
	--	--	(0.39)	(0.32)	-(1.30)	-(0.54)
	--	--	0.50%	0.42%	-3.06%	-0.99%
TO	--	--	**-0.002**	**-0.002**	**0.000**	**-0.003***
	--	--	-(1.59)	-(1.38)	-(0.08)	-(1.80)
			-0.04%	-0.03%	-4.25E-05	-0.06%
FEES	--	--	**-0.065**	**-0.068**	**0.179**	**-0.134***
	--	--	-(0.99)	-(1.02)	(0.64)	-(1.71)
	--	--	-1.24%	-1.31%	2.42%	-2.84%
GOV	--	--	**0.216****	**0.202****	**-0.665**	**0.234****
	--	--	(3.85)	(3.51)	-(2.59)	(3.83)
			4.08%	3.89%	-8.97%	4.97%
INSIDER	--	--	**0.006**	**0.005**	**-0.027**	**0.010****
	--	--	(1.24)	(1.10)	-(1.24)	(1.97)
	--	--	0.11%	0.10%	-0.36%	0.20%
Exogeneity Test:						
$\hat{\theta}$	--	**-0.025****	--	**-0.013**	**-0.112****	**-0.001**
	--	-(2.97)	--	-(1.42)	-(2.16)	-(0.08)
Implied $\hat{\rho}$	--	**-0.312**	--	**-0.173**	**-0.606**	**-0.010**
NOB	1445	1445	1445	1445	367	1078
Goodness of Fit	0.096	0.104	0.131	0.121	0.173	0.139

Panel B: Actual Open-Endings

	Full Sample				1989-1993	1994-2003
	1	2	3	4	5	6
DISCOUNT	**0.015****	**0.060****	**0.015****	**0.073****	**0.189****	**0.062****
	(3.09)	(5.18)	(2.95)	(5.32)	(2.71)	(4.33)
	0.13%	0.67%	0.13%	0.84%	2.20%	0.70%
LN(MV)	--	--	**-0.121***	**-0.088**	**0.511***	**-0.155****
	--	--	-(1.77)	-(1.29)	(1.94)	-(2.03)
	--	--	-0.99%	-1.02%	5.94%	-1.73%
STDNAV	--	--	**-0.030**	**-0.028**	**-0.457****	**-0.007**
	--	--	-(1.05)	-(0.91)	-(2.14)	-(0.22)
	--	--	-0.25%	-0.32%	-5.31%	-0.08%
AGE	--	--	**-0.063**	**-0.124**	**0.265**	**-0.196***
	--	--	-(0.71)	-(1.33)	(1.09)	-(1.66)
	--	--	-0.52%	-1.44%	3.09%	-2.20%
TO	--	--	**-0.002**	**-0.001**	**0.004**	**-0.002**
	--	--	-(1.44)	-(0.81)	(0.77)	-(0.82)
	--	--	-0.02%	-0.02%	0.05%	-0.02%
FEES	--	--	**0.015**	**0.011**	**0.861****	**-0.060**
	--	--	(0.18)	(0.13)	(2.18)	-(0.59)
	--	--	0.12%	0.13%	10.01%	-0.68%
GOV	--	--	**0.009**	**-0.088**	**-0.596***	**-0.014**
	--	--	(0.12)	-(1.06)	-(1.83)	-(0.15)
	--	--	0.08%	-1.02%	-6.92%	-0.15%
INSIDER	--	--	**-0.005**	**-0.010**	**-0.053**	**-0.004**
	--	--	-(0.69)	-(1.30)	-(1.62)	-(0.48)
	--	--	-0.04%	-0.11%	-0.61%	-0.04%
Exogeneity Test:						
$\hat{\theta}$	--	**-0.054****	--	**-0.065****	**-0.096****	**-0.054****
	--	-(4.33)	--	-(4.56)	-(2.64)	-(3.48)
Implied $\hat{\rho}$	--	**-0.279**	--	**-0.162**	**-0.482**	**-0.130**
NOB	1478	1478	1478	1478	371	1107
Goodness of Fit	0.020	0.057	0.041	0.083	0.253	0.077

Table 5: Effects of Shareholder Communication

The dependent variable is the occurrence of an open-ending attempt at the fund-year level. All regressors are the same as in Table 4 columns (5) and (6) except that each column uses a different proxy for shareholder communication (*COMMUNICATION*). The default measure is turnover in Column 1 (repeated from Columns 5 and 6 in Table 4 Panel A). Columns 2 and 3 use the average trade size (in 1,000 shares) and the proportion of trades that are more than 2,000 shares (in percentage points). Column 4 uses the dummy variable equal to one if the institutional ownership exceeds 15% for the fund-year. All regressors in Table 4 enter as controls but only coefficients on *DISCOUNT* and *COMMUNICATION* are reported (other coefficients are repetitively similar from those in Table 4 and are thus omitted). Reported for each covariate are the un-scaled probit coefficient (in bold fonts), the t-statistics (in parenthesis), and the sample average incremental probability for a unit change in the covariate (in percentage points). * and ** indicate significance at the 10% and 5% levels.

	Turnover		Avg Trade Size (1,000)		%(Trade > 2,000)		(%Institution>15%)	
	1989-1993	1994-2003	1989-1993	1994-2003	1989-1993	1994-2003	1989-1993	1994-2003
	1		2		3		4	
DISCOUNT	**0.138****	**0.040****	**0.126****	**0.035****	**0.137****	**0.034****	**0.163****	**0.031****
	(2.80)	(4.24)	(2.98)	(3.57)	(3.10)	(3.44)	(3.95)	(2.88)
	1.86%	0.85%	1.73%	0.72%	1.83%	0.72%	2.33%	0.64%
COMMUNICATION	**0.000**	**-0.003***	**-0.023**	**0.251****	**-0.050**	**0.027****	**-0.117**	**0.305****
	-(0.08)	-(1.80)	-(1.08)	(3.24)	-(1.21)	(2.92)	-(1.29)	(1.96)
	0.00%	-0.06%	-0.82%	5.25%	-0.37%	0.57%	-1.68%	6.41%
NOB	367	1078	367	1078	367	1078	367	1078
Goodness of Fit	0.173	0.139	0.158	0.146	0.163	0.145	0.203	0.137

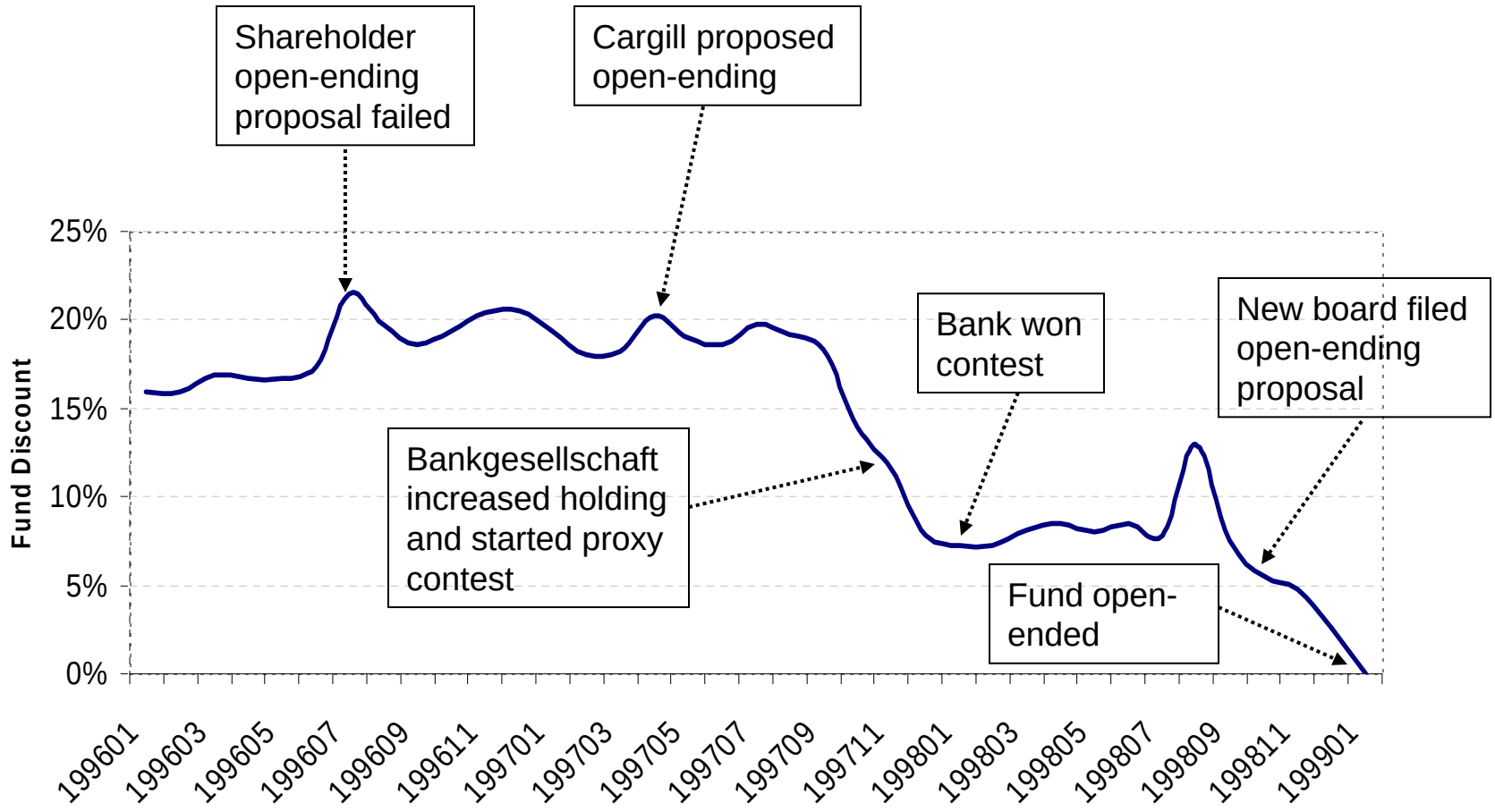
Table 6. Duration of Open-Ending Attempts

This table reports results from estimating the hazard model specified in (5) at the fund level using the maximum likelihood estimation method with a Weibull-distribution baseline hazard. The dependent variable is the length of time between the start of an open-ending attempt in a fund and its success (if no success avails the observation is treated as right-censored at the end of the sample period). In columns (1) and (2), success is narrowly defined as actual open-ending; in columns (3) and (4), it is broadly defined as either open-ending, or shrinkage of discount to below 5%. All covariates are the same as defined in Tables 2 and 4. Reported coefficients are the marginal effect of the covariates on the log expected duration. *T*-statistics are reported below in parentheses. * and ** indicate significance at the 10% and 5% levels.

	Open-Ending		Open-Ending & (Discount <5%)	
	1	2	3	4
DISCOUNT	**0.018**	**-0.070****	**0.003**	**-0.064****
	(1.48)	-(2.69)	(0.32)	-(3.33)
RESIDUALDISC	**--**	**0.101****	**--**	**0.080****
	--	(3.51)	--	(3.68)
LN(MV)	**0.033**	**0.171****	**0.005**	**0.095****
	(0.62)	(2.77)	(0.12)	(2.22)
STDNAV	**0.058**	**0.099***	**-0.053**	**-0.012**
	(0.97)	(1.73)	-(1.31)	-(0.31)
AGE	**0.273**	**0.037**	**0.437****	**0.273***
	(1.20)	(0.18)	(2.56)	(1.79)
TO	**-0.001**	**-0.003**	**0.000**	**0.000**
	-(0.36)	-(0.77)	(0.03)	-(0.21)
FEES	**0.013**	**0.170**	**0.209***	**0.368****
	(0.09)	(0.98)	(1.65)	(2.38)
GOV	**0.234**	**0.321****	**0.110**	**0.166***
	(1.43)	(2.32)	(0.98)	(1.79)
INSIDER	**0.094****	**0.085****	**0.058****	**0.054****
	(2.39)	(2.46)	(2.45)	(2.72)
NOB	106	106	106	106

Figure 1: Activist Examples

Panel A: : The Growth Fund of Spain (1996-1999)



Panel B: : The Emerging Germany Fund (1997-1999)

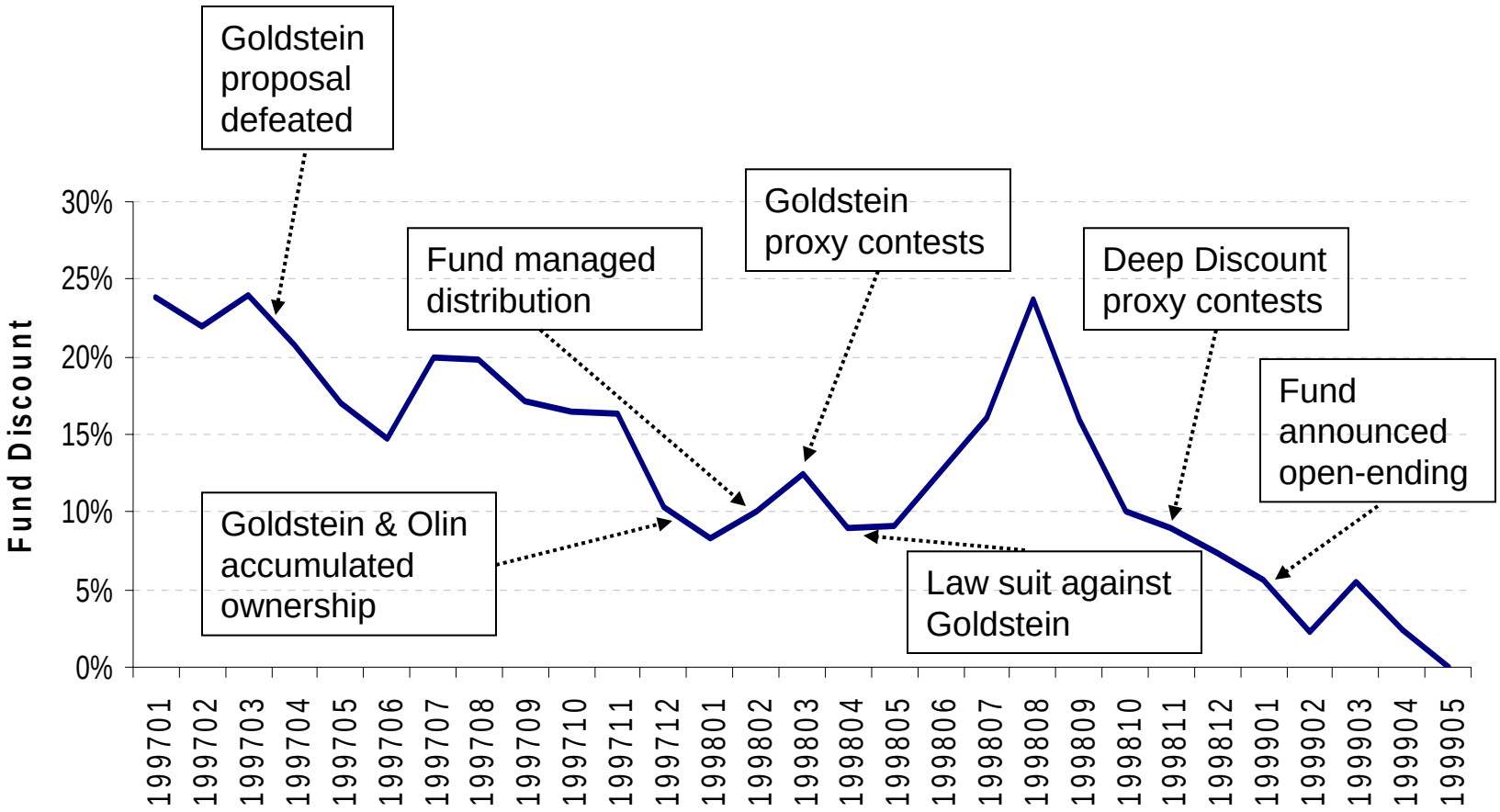
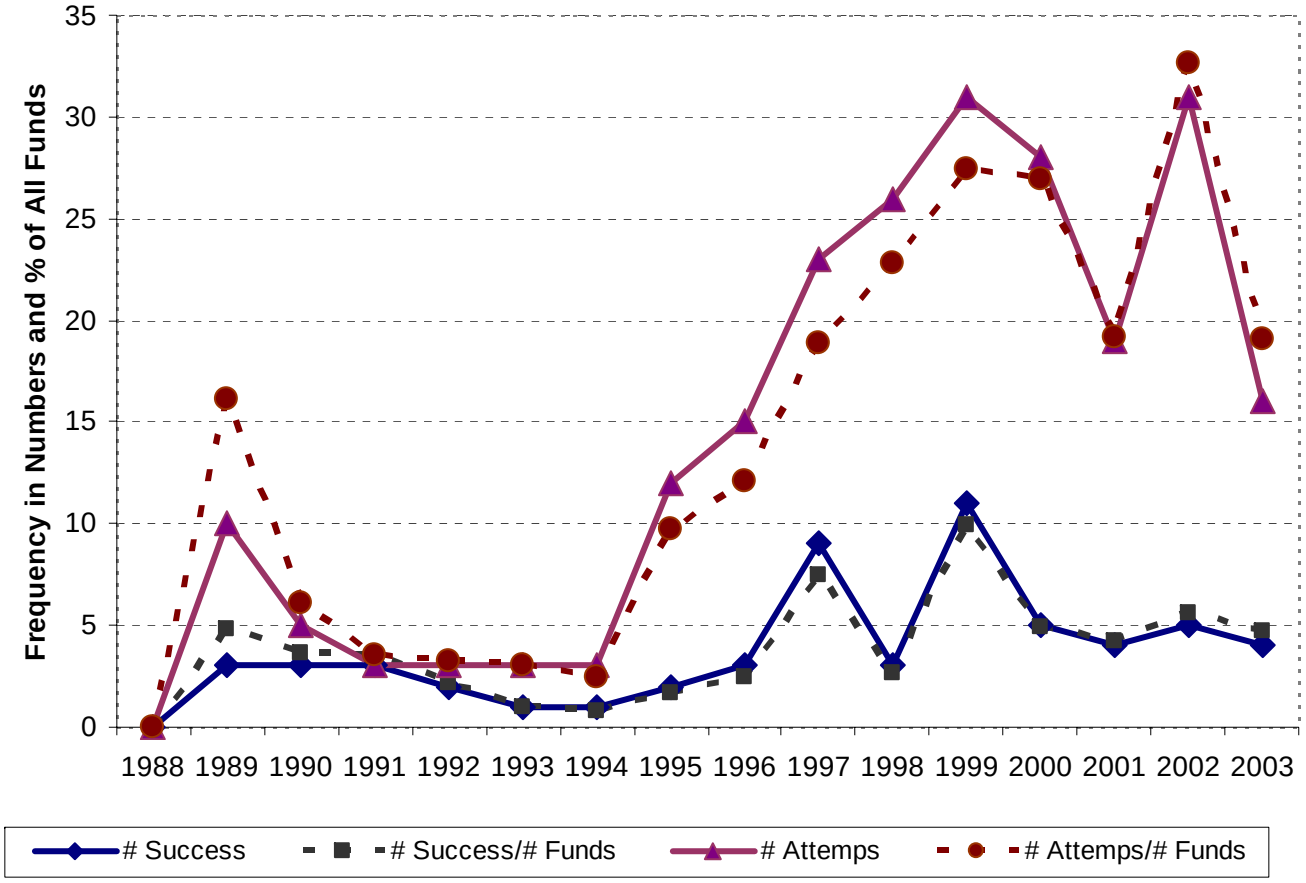


Figure 2. Attempted and Successful Open-Endings of Close-End Funds (1988-2003)

This chart plots the following time series for the period 1988-2003: (1) Successful open-ending cases in each year; (2) Successful open-ending cases as a proportion of the total number of funds in each year; (3) Attempted (including successful) open-ending cases in each year; (4) Attempted (including successful) open-ending cases as a proportion of the total number of funds in each year.



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