Three essays on mutual fund governance and sponsorship

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A Thesis

In

The John Molson School of Business

Presented in Partial Fulfillment of the Requirements

For the Degree of

Doctor of Philosophy (Business Administration) at

Concordia University

Montreal, Quebec, Canada

June, 2016

CONCORDIA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

This is to certify that the thesis prepared

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Entitled: Three Essays on Mutual Fund Governance and Sponsorship

and submitted in partial fulfillment of the requirements for the degree of:

Doctor of Philosophy (Business Administration)

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ABSTRACT

Three essays on mutual fund governance and sponsorship

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This thesis explores the role of governance and sponsorship on mutual fund characteristics like advisory contracts, fees and returns. My first and second essays are related to board governance for a special type of mutual funds called closed-end funds (CEFs herein). Unlike corporates and open-end funds, CEFs have unique characteristics like similarity in size and complexity along with compulsory public filings which make them an exemplary laboratory for an examination of questions dealing with corporate finance and investments.

In June 2004, the SEC required mutual fund boards to reveal additional information about the inputs and processes involved in advisory contract approvals to help investors make more informed decisions and to encourage independent directors to act more independently when negotiating advisory fees. Using a hand-collected governance panel database of all U.S. closed-end funds (CEFs) during 1994-2013, we examine the effect of this change on advisory fees. We find that the percentage of independent directors is significantly and negatively related with advisory fees only after this event. The maximum (minimum) numbers of advisory fee decreases (increases) occur in the year after the 2004 SEC amendments. We find that advisory-rate decreases are significantly more likely for a CEF with a higher percentage of independent directors after but not before the event even after controlling for post-event board structure changes. Overall, our results support the idea that the 2004 SEC amendments successfully encouraged independent fund directors to act more independently in negotiating advisory fees with fund advisors.

Using the same governance data, the second paper explores how CEF governance affects expense ratios, returns and premiums. Independent directors are more effective in monitoring and influencing fund performance measures that are less complex and more directly controllable. The results suggest that CEFs with higher board ownerships are better aligned with shareholders' interests. Ownerships of directors are positively and significantly associated with most variables that are expected to indicate greater value from the monitoring of directors. Using a dynamic

panel two-step system generalized method of moments estimator, the results are robust in the presence of endogeneity concerns (reverse causality, unobserved heterogeneity and simultaneity).

In the third essay, we focus on mutual fund governance at the sponsor level. Taking advantage of the wide variety of sponsors in the Canadian mutual fund market, we examine how different fund sponsorships affect measures of fund performance. We find that cost minimization and manager abilities are important drivers of performance differences among Canadian fixed-income funds differentiated by sponsor and fund types.

ACKNOWLEDGEMENTS

Firstly, I would like to express my sincere gratitude to my advisor Dr. Kryzanowski for the continuous support of my Ph.D. study and related research, for his patience, motivation, and immense knowledge. His guidance helped me in all the time of research and writing of this thesis.

Besides my advisor, I would like to thank the rest of my thesis committee, Dr. Sarkissian and Dr. Newton, for their insightful comments and encouragement. I would also like to thank Dr. Phillips (External Examiner) and Dr. Campbell (External to Program) for their helpful suggestions during the thesis defence. My special thanks go to Dr. Ayadi for his support and contribution to my thesis.

My Ph.D. would have been an impossible journey without support of my best friends. I would like to thank Ahmed Eissa, Cyrus Rahgoshay, Mehdi Dargahi, Mostafa Purmehdi, Behzad Lotfi and Shahab Zamani for being amazing friends.

I would like to dedicate my thesis to my parents, brothers and my lovely sister. I would not be able to complete this journey without their unconditional support and love.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

According to a recent report of the Investment Company Institute (ICI)[1], the combined assets of U.S. mutual funds has risen to $16.26 trillion of which about 90% is held by U.S. households in July 2015. Recent late trading and market-timing scandals along with rumors about fund governance which built on friendships between directors and executives raise serious doubts about whether the governance system in place for mutual funds are effective in protecting shareholders' interests. However, unlike corporate governance, mutual fund governance has received less attention by researchers mostly due to lack of governance data.

In my first essay (chapter 2), we investigate the effect of transparency of fund board activities on governance efficiency. In June 2004, the SEC adopted a new rule[2] requiring enhanced disclosure dealing with the approval of investment advisory contracts by the boards of directors of mutual funds to improve the board effectiveness and enhance its independence. Taking advantage of our hand-collected governance panel database of all U.S. closed-end funds (CEFs) during 1994-2013, we examine the effect of the 2004 SEC amendments on advisory fees. We address this question by conducting a natural experiment that contains a test of the effects of board characteristics on advisory contracts before and after the 2004 SEC amendments. To this end, we study the effect of board characteristics on advisory fees and on the probability of changes in advisory fees using estimation specifications that are robust to endogeneity.

We find that the relationship between advisory rates for CEFs with higher percentages of independent directors is not significant for the 1994-2004 period and is significant (and negative) for the 2005-2013 period. This is consistent with the notion that more transparency about board activities and approvals may lead to more effective governance and better align the interests of independent directors and shareholders. We also examine the effect of CEF board characteristics on the probability of changes in CEF advisory rates. For the 1994-2004 period, we find that CEFs with higher percentages of female directors and higher average ages are more likely to increase advisory rates. For the 2005-2013 period, we find that CEFs with lower percentages of

[1] www.ICI.org

[2] SEC Final Rule "Disclosure regarding approval of investment advisory contracts by directors of investment companies", Release Nos. 33-8433; 34-49909; IC-26486; File No. S7-08-04

independent directors, larger board sizes, higher excess compensations of their independent directors and higher percentages of female directors are more likely to increase their advisory rates. Our results regarding the relationship between the percentage of independent directors and advisory rate changes before and after the 2004 SEC amendments are consistent with the idea that more transparency about board activities and approvals may lead to more effective governance and monitoring aligned with the interests of shareholders.

In my second essay (chapter 3), we examine the relation between fund board characteristics (e.g., independence, ownership, gender diversity and compensation) and fund expenses, return performances and premiums. CEF boards are responsible for negotiating the fees charged shareholders annually by fund sponsors[3] and for monitoring the performance of the funds they oversee. To help us better understand the incentives of directors to monitor CEFs, we also study the determinants of director compensation in the CEF industry. Unlike most of the literature on board effectiveness, this study focuses on boards of directors of CEFs. Del Guercio et al. (2003) argue that mutual funds provide a better environment to measure whether boards act in the interests of shareholders. Unlike industrial corporations that represent a heterogeneous collection of industrial classifications, mutual funds are a somewhat more homogeneous industrial grouping.

Our results show that CEF boards with higher percentages of independent directors are associated with lower expense ratios and different CEF benchmark-adjusted returns but not with CEF premiums. Thus, independent directors are more effective in monitoring and influencing fund performance measures that are less complex (fees versus CEF returns). We also find that CEFs with higher board ownerships are better aligned with shareholders' interests. Ownerships of directors are positively and significantly associated with most variables that are expected to indicate greater value for investors. Our results show that larger funds and funds with higher board meeting frequencies and higher levels of ownership by directors pay more to their independent directors.

My third essay (chapter 4) focuses on mutual fund governance at the sponsor level. We examine whether different fund sponsors like Banks, Insurers, financial cooperatives and

[3] Sponsors are advisory firms such as Fidelity or Putnam which manage and offer a set of funds.

Independents have different investment or pricing behaviors that differentiate their fund performances (as measured, for example, by benchmark-adjusted returns and fees). Mutual funds are provided to investors by different entities. Mutual fund sponsors are different in their ownership structures (public/private, and mutual/stock) and access to information. For example, bank-sponsored funds may have more information about the securities of the firms in which they invest through their interactions with those firms in an investment banking context. We conduct our tests using the data from Canadian fund environment providing an interesting laboratory for such tests due to the differences in institutional characteristics, the richness in sponsor types (stock or mutual) and whether or not the sponsors are publicly traded.

We find that the funds sponsored by Banks outperform, on average, the funds sponsored by the other three sponsor types based on benchmark-adjusted net and quasi-gross returns for all fund categories based on investment objective (fund type) in the Canadian fixed-income fund market except for funds with short-term investment objectives which account for almost 15% of the market. Funds sponsored by Banks also have the lowest average fees for almost all investment objective categories (fund types).

CHAPTER TWO

TRANSPARENCY AND EFFICACY OF FUND GOVERNANCE:

THE EFFECT OF THE SEC'S DISCLOSURE RULE FOR ADVISORY CONTRACTS

2.1. INTRODUCTION

Fund advisors are investment companies which administer, monitor and market closed-end funds (CEFs). Advisory fees account for the majority of fund fees (54% in our sample) that investors pay for fund services. Advisors are generally paid a percentage, referred to as the advisory rate, of the net asset value (NAV) of a mutual fund to compensate for their services.

Fund directors have the fiduciary duty to evaluate and approve advisory contracts (including advisory rates) annually based on the extent and quality of the services provided by the advisors. Section 15(c) of the Investment Company Act of 1940 clearly describes the duties of boards of directors as follows: "It shall be the duty of the directors of a registered investment company to request and evaluate, and the duty of an investment advisor to such company to furnish, such information as may reasonably be necessary to evaluate the terms of any contract whereby a person undertakes regularly to serve or act as investment advisor of such company." Thus, the Investment Company Act relies on boards of directors to resolve any conflicts of interests (agency issues) including those related to advisory fees.

Critics of the mutual fund industry believe that the compensations of mutual fund advisors are excessive due at least in part to the lack of independence of fund directors.[4] Freeman and Brown (2001) argue that advisory charges are higher for mutual than pension funds due to the more independent bargaining associated with the latter. Haslem (2010) believes that "Traditionally, independent directors have been nominated, employed, and compensated at the pleasure of mutual fund advisers. This control, often with very generous pay and retirement benefits, may also influence directors to "go along" with adviser plans and actions." Proponents of more effective fund governance believe that fund agency issues will be reduced by the provision of

[4] See for example Barker (1999), Haslem (2004), Freeman and Brown (2001, 2008), Bogle (2005), Moyer and Light (2014), and Wall (2015).

more information about, for example, portfolio managers, portfolio holdings and board of director actions and approvals.[5]

Since 1994, the Security and Exchange Commission (SEC) as the primary regulator of investment companies requires funds seeking shareholder approval of advisory contracts to contain a discussion of the material factors on which the boards recommended such approval in a fund's proxy statements.[6] To increase the visibility of such disclosures, the SEC in 2002 required funds to provide the basis for a board's approval of an existing investment advisory contract in its Statement of Additional Information (SAI).[7] In June 2004, the SEC adopted a new rule[8] requiring enhanced disclosure dealing with the approval of investment advisory contracts by the boards of directors of mutual funds to "…improve the effectiveness of fund boards of directors and enhance their independence in dealing with matters such as the advisory fee." This followed growing discontent with the efficacy of advisory fee setting which involved over 500 class actions and derivative suits filed against mutual fund advisers starting in 2003, and cases involving mutual funds accounting for almost 10% of all federal securities class actions in 2003 and 2004 (Coats and Hubbard, 2007).[9] Following the adoption of this rule, the SEC's Enforcement Division has been actively pursuing failures to fulfil statutory duties, such as approving advisory contracts without having all the necessary information to evaluate them. In one such action,[10] the SEC's Enforcement Division similarly agreed to civil money sanctions in the respondents' offer on June 17, 2015. This Section 15(c) proceeding was against the SEC-registered mutual fund advisor Commonwealth Capital Management (CCM), its owner-president

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[5] See Haslem (2004) for his proposed complete disclosure template.
[6] Item 22(c)(11) of Schedule 14A. See Investment Company Act Release No. 20614 (Oct. 13, 1994) [59 FR 52689 (Oct. 19, 1994)] (adopting amendments to Schedule 14A).
[7] Item 12(b)(10) of Form N–1A (registration statement for open-end management investment companies); Item 18.13 of Form N–2 (registration statement for closed-end management investment companies); Item 20(l) of Form N–3 (registration statement for separate accounts organized as management investment companies that offer variable annuity contracts); Investment Company Act Release No. 24816 (Jan. 2, 2001) [66 FR 3734, 3744 (Jan. 16, 2001)] (adopting requirement for disclosure in SAI of basis for board's approval of advisory contract).
[8] SEC Final Rule "Disclosure regarding approval of investment advisory contracts by directors of investment companies", Release Nos. 33-8433; 34-49909; IC-26486; File No. S7-08-04
[9] About a quarter of the funds faced at least one lawsuit for excessive fees between 2000 and 2009 (Curtis and Morley, 2012).
[10] In the Matter of Commonwealth Capital Management, LLC, Commonwealth Shareholder Services, Inc. *et al.*, Respondents, Order instituting administrative and cease-and-desist proceedings pursuant to Sections 9(b) and 9(f) of the Investment Company Act of 1940, making findings, and imposing remedial sanctions and a cease-and-desist order, SEC Rel. No. IC-31678 (June 17, 2015). https://www.sec.gov/litigation/admin/2015/ic-31678.pdf.

and also interested director/trustee, and three independent trustees/directors of two funds where Commonwealth was the advisor.

Although fund boards are a major participant in the determination of advisory contracts, research on their effectiveness is limited. Coles, Suay and Woodbury (2000) examine the cross-sectional relationship between advisory rates and CEF characteristics and one board characteristic (aggregate ownership of CEF officers and directors). Deli (2002) examines the cross-sectional variation in advisory rates during 1997 using only fund and no governance characteristics. Warner and Wu (2011) examine the association of board characteristics (such as board independence, size and director compensation) with advisory rates using only the 442 funds with changes in advisory rates during the 1994-2001 period.[11] As a result, they could not examine the effect of board characteristics on the probabilities of decreases or increases in advisory rates (see Warner and Wu, 2011, Table IV).

Thus, this study fills an important gap in the literature by addressing an important question about fund governance: Does enhanced transparency on fund board activities and approval of advisory contracts make fund governance more effective? We address this question by conducting a natural experiment that involves an examination of the effects of board characteristics on advisory contracts before and after the 2004 SEC amendments to enhance disclosure of advisory contract renewal. To this end, we examine the effect of board characteristics on advisory fees and on the probability of changes in advisory fees using estimation specifications that are robust to endogeneity and a large database that includes hand-collected data on board characteristics. Furthermore, similarities in size, complexity, public reporting of advisory contracts, board information and share prices make CEFs an exemplary laboratory for an examination of questions dealing with corporate finance and asset pricing (Cherkes, 2012).

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[11] Their subsample results regarding the effect of the percentage of independent directors on the magnitude of advisory fee decreases for 1994-2001 period differ from our full sample results for 1994-2004 period reported in section 2.6 of this chapter. Furthermore, their time period does not capture most of the effects of various *other* changes designed to curb conflicts of interest, and improve the accuracy and reliability of corporate disclosures and governance. These include changes in March 2001 to the Investment Company Act of 1940 by the SEC requiring, amongst other things, that 50% of the directors of a CEF be "not interested" (i.e., independent), the passing of the Sarbanes–Oxley Act (SOX) in July 2002, and the adoption of rules in February 2004 where CEFs (and OEFs) must file their complete portfolio holdings schedules with the SEC.

Our survivorship-bias free sample includes all U.S. CEFs in existence at any point in time during 1994-2013. Following Coles *et al.* (2000), we define the advisory rate or marginal compensation rate as the compensation to an advisor for a small change in CEF assets based on CEF advisory rates and the current level of assets. We examine the cross-sectional relationship between CEF advisory rates and board characteristics (e.g., board independence, size, compensation and ownership). Many studies stress the need to address endogeneity issues when examining the relation between board governance and firm characteristics (e.g., Wintoki, Linck and Netter, 2012). As Adams, Hermalin and Weisbach (2010) explain "…many studies of boards can best be interpreted as joint statements about both the director-selection process and the effect of board composition on board actions and firm performance." Since the past performance of a fund can affect both its advisory rates (which represent the compensation of its managers) and its governance, endogeneity issues may be present when examining the relationship between advisory rates and board governance. Consistent with this conjecture, we show that that past advisory-rate values are related with current values and value changes of board characteristics (like board independence and size) for our sample of CEFs. Random and fixed-effect estimators are inconsistent in such situations (Nickell, 1981; Wintoki, Linck and Netter, 2012). Thus, our primary estimation specification is the two-step system generalised method of moments, "system-GMM", which for unbalanced panels and endogenous regressors accounts for endogeneity issues such as simultaneity, reverse causality and unobserved heterogeneity (Flannery and Hankins, 2013). Arellano and Bover (1995) and Blundell and Bond (1998) state that the system-GMM is suitable for estimating a dynamic model, particularly when it is difficult if not impossible to find exogenous instruments to reduce endogeneity concerns (e.g., in governance variables).

We find that the relationship between advisory rates for CEFs with higher percentages of independent directors is not significant for the 1994-2004 period and is significant (and negative) for the 2005-2013 period. This is consistent with the notion that more transparency about board activities and approvals may lead to more effective governance and better aligns the interests of independent directors and shareholders. One possible explanation for the significant relationship in the second period could be the 2001 SEC rule requiring that the board has a minimum of 50% of independent directors. To control for this possibility, we re-examine the relationship between advisory rates and board characteristics for those funds with no significant change in the percentage of independent directors around 2004. We identify significant changes by testing whether the average percentage of independent directors are equal using 3 and 5 years windows around 2004 at 5% and 10% significance levels. The results for these subsamples confirm our previous findings using the whole sample. Our results also show no significant relationship between advisory rates and other board characteristics for the 1994-2004 and 2005-2013 periods.

We also examine the effect of CEF board characteristics on the probability of changes in CEF advisory rates. We find that 2.8% (424 out of 14,972) of the CEF advisory rates changed during the 1994-2013 period after adjusting for asset growth. When we consider advisory rate changes for the 1994-2004 period, we find that CEFs with higher percentages of female directors and higher average ages are more likely to increase advisory rates. For the 2005-2013 period, we find that CEFs with lower percentages of independent directors, larger board sizes, higher excess compensations of their independent directors and higher percentages of female directors are more likely to increase their advisory rates. Our results regarding the relationship between the percentage of independent directors and advisory rate changes before and after the 2004 SEC amendment support the notion that more transparency about board activities and approvals may lead to more effective governance and monitoring aligned with the interests of shareholders. Using a sample of funds which may or may not change their advisory contracts for the 1994-2004 period,[12] we find that our results regarding the relationship between board characteristics and advisory rate changes do not support the results from Warner and Wu (2011) based solely on the funds who changed their advisory rates. To control for the effect of changes in board structure, we examine the effect of board characteristics on the probability of changes in CEF advisory rates for the sample of funds which do not significantly change their percentages of independent directors. Our results once again confirm our previous findings using the whole sample. As an additional robustness check, we also test whether a change in board characteristics during the past three years affects a board's decision to increase or decrease the advisory rate for its fund. Considering the results for the advisory rate changes using changes in independent variables over the past three years, our results once again are consistent with our previous findings.

[12] This period covers the Warner and Wu (2011) sample for the 1994-2001 period.

This paper contributes to the literature in various ways. First, to the extent of our knowledge, this is the first study which examines the transparency effects of board decision making on board effectiveness in the mutual fund industry. This study provides evidence on the effects of the 2004 SEC amendments requiring greater transparency in the decision-making process behind advisory contracts.

Second, this paper contributes to the literature on the value to investors of information disclosure.[13] The common view is that more information disclosure helps investors make more informed decisions and makes governance more effective by reducing information asymmetry (Leuz and Verrecchia, 2000; Verrecchia, 2001; Rezaee and Jain, 2005; Jain, Kim and Rezaee, 2006). Other studies argue that information disclosure can have adverse effects like direct accounting costs and benefits for product-market competitors (Feltham, Gigler, and Hughes, 1992; Hayes and Lundholm, 1996; Zhang, 2007; Sidhu, Smith, Whaley, and Willis, 2008). Our results from examining the relationship between the percentage of independent directors and advisory rates and the probability of advisory rate changes support the notion that the 2004 SEC amendments to transparency improved board effectiveness and reduced agency problems by reducing fund fees.

Third, this paper contributes to our understanding of the relationship between CEF boards and an important advisory contract term, advisory fees, for a fund group where the efficacy of the relationship is more important. Unlike OEF (open-end fund) investors, CEF investors do not have the ability to redeem their investments at NAV and reduce the fund assets under management (AUM) of fund advisors to discipline poor performing fund advisors. Although CEF investors can trade their shares in the market, the CEF fund advisors have no fear of reductions in fund assets or dollar fees due to shareholder redemptions. In turn, this places a greater responsibility on CEF boards of directors to better align the interests of fund advisors with those of the funds' shareholders. While CEF liquidation or conversion to an OEF theoretically can provide external discipline for a CEF, the extensive effort and cost and low probability of success associated with such actions ensure that these actions are seldom effective in practice.

[13] See Leuz and Wysocki (2006) for a survey of the literature on information disclosure.

Fourth, our study contributes to the more general literature on compensation and contracts by considering both cross-sectional variation and time-series dynamics in advisory rates. Fifth and finally, we use what we believe is the longest time-series of board information in the mutual fund literature, which allows us to study the effect of changes in board characteristics and past benchmark-adjusted share return performance on an important aspect of the advisory contract negotiation. This helps us to better understand the effect of recent board dynamics on the advisory contract oversight behaviors of CEF boards.

The remainder of the chapter is organized as follows. The next section provides a very brief review of the 2004 SEC amendments. The section 2.3 reviews the relevant literature that leads to various testable hypotheses. The section 2.4 describes the data used in our analysis. Sections 2.5 and 2.6 discuss the results of examining the relation between board characteristics and CEF advisory rates and their changes, respectively. Section 2.7 reports on some further robustness checks. Section 2.8 concludes the chapter.

2.2. DISCLOSURE OF INVESTMENT ADVISORY CONTRACT APPROVALS BY INVESTMENT COMPANY DIRECTORS[14]

The 2004 SEC amendments require that the material factors, processes and conclusions associated with board approval of investment (sub-)advisory contracts be reported in Form N-1A for OEFs, N-2 for CEFs, and N-3[15] for separate accounts managed by management investment and insurance companies. Fund prospectuses inform investors that this information is available in the shareholder report. Proxy statements are also required to discuss the factors considered and the process used to negotiate contracts with (sub-)advisors.

The 2004 amendments clarified that a board's decision about the selection of an investment advisor and the approval of advisory fees and any other fees paid under an advisory contract must be included in its discussion. They stipulated that the board discussion needs to discuss how at least the following factors were used to arrive at their final contract decision: the nature, extent, and quality of the services to be provided by the investment adviser; the investment performance of the fund and the investment adviser; the costs of the services to be provided and

[14] SEC Release Nos. 33–8433; 34–49909; IC–26486; File No. S7–08–04

[15] Item 21(d)(6) of Form N–1A; Instruction 6.e. to Item 23 of Form N–2; Instruction 6(v) to Item 27(a) of Form N–3. These factors are similar to those used by courts (called "Gartenberg factors") in "excessive fee" cases.

profits to be realized by the investment adviser and its affiliates from the fund relationship; the extent to which economies of scale would be realized as the fund grows; and whether fee levels would reflect these economies of scale for the benefit of fund investors.[16] A note must be included to explain why a factor not so discussed is not applicable. The 2004 amendments require a fund's discussion to specify whether the board relied upon comparisons of other investment advisory contracts in terms of services and compensation like those of the same investment advisor with pension funds and other institutional investors or those with different investment advisors, and whether such comparisons assisted the board in deciding to approve the advisory contract.

The SEC appears to have two goals in adopting the 2004 amendments. The first is to increase the visibility of this disclosure to help investors make more informed fund choices. The second is to encourage fund boards to engage in more independent monitoring of advisory contracts by providing considerably greater detail to investors about the material factors and their use by boards in concluding advisory contracts.

2.3. HYPOTHESES

Except for compliance oversight responsibilities, independent fund directors have two important responsibilities as Warren Buffet noted in an annual letter to shareowners of Omaha Insurance and Investments (McDonald, 2003); namely, hiring the best available investment manager and negotiating low fees on behalf of shareholders. As noted in the introduction, many critics blame the lack of independence of independent directors as the main reason behind high fees and the seldom turnover of fund advisors. Radin and Stevenson (2006) argue that independent directors face personal financial risk if they try to replace fund advisors due to the lack of empowering regulations. For example, independent directors were both unsuccessful and sued by the fund advisors when they attempted to replace the fund advisors of Navellier Series fund and Yacktman fund.[17] As aptly stated by Buffet (McDonald, 2003): "If you or I were empowered, I can assure you we could easily negotiate materially lower management fees with incumbent managers of most mutual funds." Thus, this major impediment to the replacement of

[16] Section 36(b) of the 1940 Act allows the SEC or a shareholder to file lawsuit against a fund's advisor for breach of fiduciary duty regarding excessive advisory fees.
[17] See Radin and Stevenson (2006) for board problems regarding fund advisor replacement.

advisors not only makes the negotiation of fees more difficult but the SEC in 2004 felt the need to adopt amendments to enhance the information disclosed about the factors and process used by a fund's board to approve an advisory contract. The passage of time since its adoption provides an excellent opportunity to assess whether or not it has lowered advisory fees. While interested directors assist the board to be better informed about firms, independent directors provide neutrality (and expertise) that is expected to reduce potential agency issues between fund advisors and investors. Fama and Jensen (1983a) contend that independent directors are better monitors since retaining their personal reputations in the directorship market is tremendously important. Consistent with the greater role of boards as monitors than advisors, studies report that lower fees are associated with higher percentages of independent directors; namely, Ferris and Yan (2007) and Adams, Mansi and Nishikawa (2012) for OEFs, and Tufano and Sevick (1997), Del Guercio, Dann and Partch (2003) and Kryzanowski and Mohebshahedin (2016) for CEFs. Adams, Mansi and Nishikawa (2012) report that higher expense ratios are associated with board size for a sample of U.S. index funds.

The net effect of any disclosure that is mandated by regulation depends on its costs and benefits. Potential benefits of the 2004 SEC amendments are reduced information asymmetry and agency issues between boards and investors, and the provision of greater transparency on how fund boards arrive at their advisory contracts which could improve the governance practices by facilitating improved investor oversight. Potential costs include the direct costs associated with the preparation, certification and dissemination of reports, and the indirect costs associated with the use of the disclosed information to the benefit of competitors and other parties in the market. The total external costs of additional disclosure are estimated by the SEC as being around 4.5 million dollar for all funds annually.[18] We expect that indirect costs would be a minor addition to total external costs, and that the benefits of the 2004 SEC amendments to the reduction in advisory fees would be substantially higher than its associated costs. Thus, our first set of two hypotheses in their alternative forms is

H_A^{1a}: After the 2004 SEC amendments, CEFs with higher percentages of independent board directors are associated with lower advisory rates.

[18] See SEC Release Nos. 33–8433; 34–49909; IC–26486; File No. S7–08–04

H_A^{1b}: After the 2004 SEC amendments, CEFs with higher percentages of independent board directors are more likely to decrease their advisory rates.

2.4. DATA, GOVERNANCE VARIABLES AND DESCRIPTIVE STATISTICS

2.4.1 Sample and Data

Information about the investment advisory contracts are collected from semi-annual reports (items 45-48) from the SEC EDGAR database, referred to as NSAR forms hereafter, for all CEFs with unique CIK numbers (Central Index Key) from 1994 (first filling date) through 2013. The NSAR forms contain information regarding fund advisor, administrator, affiliated broker-dealer, portfolio transactions, financial information, and condensed balance sheet data at the level of registrants with unique CIKs. This information is aggregated over all the classes of the same fund. Unlike OEFs, only two of the CEFs in our sample have more than one share class. We collect 23,152 N-SAR fillings on all the CEFs during the 1994-2013 period. Since almost all the NSAR forms are filled according to the strict reporting standards of the SEC, the data in these forms can be captured electronically before it is verified manually.

We carefully hand-collect the CEF board information from all the associated annual proxy statements, referred to as the DEF-14A form hereafter, with unique CIK numbers from 1994 (first filling date) through 2013. The DEF-14A forms cover information regarding each director on the board including the term of office and the length of time served, whether the director is independent, the dollar range of equity securities in the fund (beneficially) owned by the director, the aggregate dollar range of equity securities owned in all registered investment companies overseen by the director in the fund family, and the total dollar amount of cash compensation received by each independent director serving on the fund and for all other funds in the fund family. Since the board information is presented in different formats in the DEF-14A forms, this data need to be hand collected.

We use Morningstar Direct to get survivorship-free data regarding share and NAVPS (net-of-fees) returns, fund inceptions, and fund categories. Morningstar Direct contains information for 1,031 CEFs during the 1994-2013 period. We match our datasets from NSAR and DEF-14A forms based on unique CEF CIK numbers which are available on both forms. Our final database is built after all data from the Morningstar Direct and SEC Edgar databases are matched. After eliminating index funds and institutional funds and CEFs without advisory contract or board information from our initial sample, our final sample consists of 815 CEFs and 14,972 semi-annual fund observations.[19] The six investment objective categories used herein are equity, international equity, bond, municipal bond, allocation and specialty. Panel A of Table 2.1 reports the number of CEFs with each fund investment objective based on Morningstar Direct and their total numbers for every two-year period. The number of CEFs increases from 42 in 1994 to its highest level of 463 in 2008. CEFs with bond and municipal bond (allocation and specialty) investment objectives comprise the most (least) number of funds in the sample annually.

[Please place Table 2.1 about here.]

2.4.2 Marginal Compensation Rate (Advisory Rate)

Like OEFs, CEFs are managed either internally by employees of the fund sponsor or externally by investment advisory firms who provide various services like portfolio management in return for fees. The structure of advisory rates is flexible by regulation as long as investment advisors are compensated for gains and penalized for losses. In almost 85% of the contracts in our sample, the fee is determined based on a percentage of NAV. Some other fees are benchmark-based (Elton, Gruber, and Blake, 2003). The percentage fee can be either fixed or fixed up to a NAV breakpoint.[20] Most of the contracts with breakpoints are concave[21] meaning that advisory rate percentages decline above each NAV breakpoint (Golec, 1992; Deli, 2002). For example, the advisory fee for Cutwater Select Income Fund in 2013 was 0.50% for the first $100 million of NAV and 0.40% for any additional NAV.

We calculate the marginal compensation rate as a measure determining the sensitivity of CEFs advisory rates to changes in CEF NAVs as in Coles *et al.* (2000), Deli (2002) and Warner

[19] Voya Senior Income Fund and Franklin Mutual Recovery Fund are institutional Funds. Dow 30 Enhanced Premium and Income is the only index closed-end fund.
[20] Question 48 (A-K) of the semi-annual reports of investment companies includes all the breakpoints and corresponding percentage fees.
[21] In our sample only 7 out of 14,979 observations show convexity in that their advisory rates grow as their NAVs grow. These apparent data entry errors are deleted from our sample as no other source is available to correct them.

and Wu (2011). Coles *et al.* (2000) define the marginal compensation rate (advisory rate) as “the percentage of a relatively ‘small’ change in NAV that will be captured or lost by the investment advisor.” Panel B of Table 2.1 reports the descriptive statistics (mean, median, and standard deviation) of the advisory rates for each category of funds for every two year period. The average and median advisory rates are the highest for CEFs belonging to the international equity fund category and the lowest for bond and municipal bond CEFs. Also, the mean and median advisory rates of 0.76% and 0.71% respectively, grew gradually over our sample period to reach their highest level in 2012.

In Panel C of Table 2.1, we report whether advisory fees have changed around the 2004 SEC amendments. Using three years of data around 2004, our results show that the average yearly advisory fees decrease or do not change for CEFs with equity, international equity and municipal bond investment objectives that represent over 75 percent of CEF industry NAV and they increase for CEFs with bond, allocation and specialty objectives. Therefore, we can infer that the average annual advisory fees decreased after the 2004 SEC amendments. There is a possibility that the decrease in advisory fees is due to the 2001 SEC amendment that at least 50% of directors should be independent or the 2002 Sarbanes-Oxley Act regulatory changes dealing with corporate governance. To control for the effect of a change in board structure (especially board independence), we construct a sub-sample of CEFs with no change in the percentage of independent directors around the 2004 SEC amendments. Based on the results for the three years around 2004 that are presented in Panel C of Table 2.1, we observe that the average annual advisory fees decrease or do not change after the adoption of the SEC 2004 amendments for all categories of fund investment objectives.

2.4.3 Governance Variables[22]

We use $\%IndDirFnd$ as the percentage of independent directors on a CEF board. If a director is an employee of the investment advisor or a member of the family of an employee, employee of a registered broker-dealer or a 5-percent shareholder of it, or affiliated with any recent legal counsel to the fund, the director is considered as being “interested”.[23] Based on our

[22] The definitions of all variables and their data sources are described in the appendix.
[23] Section 2(a)(19) of the Investment Company 1940 Act.

data, the mean and median percentage of independent directors has risen gradually during our sample period.

$BdSize$ is the total number of CEF board directors. The average $BdSize$ in our sample has increased gradually. The mean and median numbers of board directors are 8.6 and 8, respectively, during our sample period (Panel D of Table 2.1). Larger boards might be considered to be less efficient than smaller boards because of higher free-riding and coordination costs (Jensen, 1993) and lower cohesion (Hermalin and Weisbach, 2003) or to be more valuable for firms requiring advice (Coles, Daniel and Naveen, 2008; Adams and Mehran, 2012). As noted earlier, Tufano and Sevick (1997), Del Guercio *et al.* (2003) and Adams, Mansi and Nishikawa (2009) find a significantly positive relation between mutual fund board size and expense ratios.

$AveIndDirCompFnd$ ($AveIndDirCompFam$) is the average dollar value of compensation received by the independent directors from a CEF (fund family). Panel D of Table 2.1 shows that the cross-sectional mean $AveIndDirCompFnd$ and $AveIndDirCompFam$ have their highest and lowest values in 2000 and 1994, respectively. Following Tufano and Sevick (1997), we calculate unexplained compensation, $UnexpCompIndDir$, as the average residual (in millions of dollars) from an annual regression of director compensation on the number of boards a director serves on and the total assets overseen by that director. Directors who receive relatively large compensations from a fund or fund family are less likely to disapprove of the fees proposed by fund sponsors (Sevick and Tufano, 1997; Ferris and Yan, 2007; Meschke, 2007). Thus, we expect director excess compensations to be positively related with CEF advisory rates.

$\%IndDirOwn > 50K$ measures the percentage of independent directors who hold more than $50,000 worth of a CEF's shares. We expect that the interests of directors who have greater equity dollar investments to be more aligned with the interests of investors which is supported by the findings that director ownership is positively related with fund performance (e.g., Chen, Glodstein and Jaing, 2008; Cremers *et al.*, 2009). Based on an order passed by the SEC, the dollar range of equity securities beneficially owned by the directors as part of a fund's compensation plan or from their personal investment in a fund became public after February 2002. Funds are required to disclose each director's holdings within the following investment ranges: no investment; \$1 to \$10,000; \$10,001 to \$50,000; \$50,001 to \$100,000; or more than \$100,000. Based on Panel D of Table 2.1, the average percentage of independent directors in the highest category was highest in 2012 at 11%, and averaged 8% over our total sample period.

$\%DirFemaleFnd$ is the percentage of female directors to test if gender diversity can improve board effectiveness. The average $\%DirFemaleFnd$ is about 15% over the full period and has its highest level of 21% in 2012. Robinson and Dechant (1997) and Adams and Ferreira (2009) argue that female directors are relatively more diligent with better communication skills which can lead to better problem solving by boards. Higher percentages of female directors are associated with increased board meeting attendances and not better firm performances (Adams and Ferreira, 2009) but more informative stock prices (Gul, Srinidhi and Ng, 2011). On balance, we expect that more gender diverse boards are more effective in protecting shareholder interests.

$AveTenIndDirFnd$ is the average number of years that the independent directors served on a CEF board. We form no expectation for this variable since directors may become more informed but be subject to greater capture by fund sponsors with longer board tenures (Del Guercio *et al.*, 2003). The mean and median average tenures of independent directors for our sample are 6.2 and 5.9 years, respectively (Panel D of Table 2.1).

$AveIndDirAgeFnd$ is the average age of the independent directors serving on the board. Based on Panel D of Table 2.1, the full-sample average of this variable is 63 years old.

2.4.4. Fund and Family Variables

Panel E of Table 2.1 reports the means and medians of the cross-sectional distributions of CEF characteristics for every two year period. The number of advisors and sub-advisors ($\#Advisors$) and the number of services ($\#Services$) they provide are obtained from the NSAR filings. Their average numbers have gradually increased from 1994 to 2012. They provide an average of six services to the CEFs. The mean annual CEF share returns ($ShareReturn$) have their lowest (highest) values in 2008 (2006). The highest and lowest cross-sectional average (and median) annual CEF premiums [(share price - NAVPS)/NAVPS] occur in 2008 and 2012, respectively. The average (median) fund size ($FndSize$) as measured by total net assets (TNA) has increased steadily from almost \$200 million (\$130 million) in 1994 to \$380 million (\$260 million) in 2012. The highest (lowest) value of the average annual CEF turnover ratio ($FndTurnover$), which is measured using the lesser of purchases or sales divided by average monthly net assets, is in 2012 (2000). The average fund age ($FndAge$) in years measured from a fund's inception is almost 11 years. Dividend yield ($DivYield$) and leverage ($Leverage$), which are respectively the ratios of dividends to share price and non-common equity to total assets, are 5.9 (6.0) percent and 23.5 (30.5) percent, respectively.

Spearman rank correlations between the advisory rates and CEF NAVPS returns (NAVPSReturn) with board characteristics are reported in Table 2.2. We observe that fund advisory rates and the cross-sectional mean percentages of independent directors ($\%IndDirFnd$), board sizes ($BdSize$), percentages of female directors ($\%DirFemaleFnd$) and CEF premiums ($Premium$) are negatively correlated at the 0.01 level. NAVPS returns ($NAVPSReturn$) are negatively correlated with the cross-sectional mean percentages of independent directors ($\%IndDirFnd$) and board sizes ($BdSize$) at the 0.01 level. NAVPS returns ($NAVPSReturn$) and CEF premiums are positively related to the percentages of independent directors who hold more than 50,000 dollars of fund shares ($\%IndDirOwn > 50K$). Since no correlation other than between the different advisory-rate measures exceeds 0.38, multicollinearity is not considered to be an issue of concern.

[Please place Table 2.2 about here.]

2.5. ADVISORY RATES AND BOARD CHARACTERISTICS

2.5.1. Methodology

To examine the relationship between CEF advisory marginal compensation rates ($Margrt$) and board characteristics, we estimate the following panel regression using semi-annual data:

$$Margrt_{it} = a + b_1\%IndDirFnd_{it-1} + b_2BdSize_{it-1} + b_3UnexpCompIndDir_{it-1} + b_4\%IndDirOwn > 50K_{it-1} + b_5\%DirFemaleFnd_{it-1} + b_6AveTenIndDirFnd_{it-1} + b_7LnAveIndDirAgeFnd_{it-1} + b_8Star_{it-1} + b_9StarFam_{it-1} + b_{10}ReturnAlpha_{it-1} + b_{11}FixedIncome_{it} + b_{12}Foreign_{it} + b_{13}LnFndSize_{it} + b_{14}LnFamSize_{it} + b_{15}TopFndMrktShr_{it} + b_{16}TopFamMrktShr_{it} + b_{17}\#Advisors_{it} + b_{18}\#Services_{it} +$$

$$b_{19}HighLeverage_{it} + b_{20}HighDivYield_{it} + b_{21}HighPremium_{it} + b_{22}LnFndTurnover_{it} + b_{23}Outsourced_{it} \quad (2.1)$$

where the variables are as previously defined (also see the appendix). Equation (2.1) is estimated for both the 1994-2004 and 2005-2013 periods to examine the effect of the 2004 SEC amendments. Due to data availability, the regression estimated for 1994-2004 does not include board ownership.

As briefly discussed in the introduction, many researchers highlight the importance of dealing with potential endogeneity problems when examining governance effects on firm or fund characteristics. One source of endogeneity herein is the effect of fund performance on both governance and advisory rates. Past advisory contracts approved by CEF boards might affect CEF governance due to, e.g., status and prestige, religious, political or ethnic ties.[24] Warner and Wu (2011) report that advisory-rate increases are associated with superior past (not extremely poor) market-adjusted performances. To investigate if this source of endogeneity is present, we follow Wintoki *et al.* (2012) and examine how strongly changes and the current values of various governance and control regressors, such as board independence ($\%IndDirFnd$), board size ($BdSize$) and fund size ($LnFndSize$), are related to past advisory rates. These regressions also include other control variables such as the lag of CEF governance variables and CEF characteristics like the logarithm of fund age ($LnFndAge$) and family size ($LnFamSize$).

Panel A of Table 2.3 reports the results from regressing the present values (levels) of some regressors in equation (2.1) on the CEF advisory rates and characteristics from the prior year. We find that board independence ($\%IndDirFnd$), board size ($BdSize$) and fund size ($FndSize$) in the current year are significantly and negatively related to CEF advisory rates ($Margrt$) in the prior year. Panel B of Table 2.3 reports the results from regressions of the one-year changes of some regressors in equation (2.1) on the CEF advisory rates and characteristics from two years prior to the year of interest. For the 2005-2013 period, the current year's changes in board size ($1Y\Delta BdSize$) and in fund size ($1Y\Delta FndSize$) are significantly positively and negatively associated with the previous year's changes in CEF advisory rates (Margrt).

[Please place Table 2.3 about here.]

[24] In their review article, Johnson, Schnatterly and Hill (2013) categorize these as being social capital.

Thus, the results reported in Table 2.3 show that some of our governance variables (e.g., board independence and size) and control variables (e.g., fund size) may be dynamically endogenous. As discussed earlier, we adopt the recommendation of Flannery and Hankins (2013) to use the system-GMM estimation specification as they find that it performs better than its competitors for unbalanced panels with endogenous regressors. We also use the OLS and fixed-effects estimation specifications to illustrate how the results change if the specification does not account for dynamic endogeneity. To deal with endogeneity in the OLS and fixed-effects regressions regarding equation (2.1), we use one-year lagged governance variables (Adams et al., 2009). Our fixed-effects model specification includes fund and year fixed effects.

Arellano and Bover (1995) and Blundell and Bond (1998) propose the use of a "system-GMM" to estimate a dynamic panel model, particularly when it is difficult if not impossible to find exogenous instruments to reduce the endogeneity concerns in the independent variables (e.g., governance). The "level" equation in the system-GMM includes the variables in their levels, and the "differenced equation" includes the differenced variables. The system-GMM uses some combinations of variables from a firm's history as "internal" instrumental variables to deal with endogeneity.[25] The finite sample correction proposed by Windmeijer (2005) is used to address the tendency of this estimation method to generate downward biased standard errors.

The key exogeneity assumption for the system-GMM estimator is that the instruments (lagged dependent and independent variables) are exogenous to current shocks in the dependent variable. Two tests are used to examine the exogeneity of the instruments. The first (second-order serial correlation) examines if enough lags of the dependent variable are included. If the model has enough lags of the dependent variable, then any subsequent lags of the dependent variable are potential valid instruments for current shocks in the dependent variable. Therefore, the residuals in first (second) differences should (not) be correlated if our model has enough lags of the dependent variable. The autocorrelation tests of the first and second differences are referred to as AR(1) and AR(2) in all of our tables. Since multiple lags are used in our system-GMM, we can test whether our model is over-identified. Thus, the second test is a Hansen test of over-

[25] We use "xtbond2" module in STATA to estimate coefficients based on the system-GMM specification. For further discussion on system-GMM, please see Roodman (2009).

identification which provides a *J*-statistic with a χ^2 distribution under the null hypothesis of the validity of the instruments.[26]

All our panel-regression inferences reflect the recommendation of Petersen (2009) that year dummies and clustered (Roger) standard errors be used to avoid rejecting the null hypothesis too often when both potential time-series and cross-sectional correlations exist in the panel data. To preserve valuable journal space, the coefficients for the time dummies are suppressed when the panel regression results are tabulated.

2.5.2. Results

Summary results for panel regression (2.1) for both time periods are reported in Table 2.4. The insignificant test statistics of second-order autocorrelation (AR(2)) and for the Hansen J-statistics of over-identifying restrictions indicate that the system-GMM specification is well fitted. Consistent with our first alternative hypothesis (H_A^{1a}), we find a significant and negative relationship between advisory rates and the percentage of independent directors ($\%IndDirFnd$) for the system-GMM model specifications only for the period after the 2004 SEC amendments. The results are consistent using the OLS and fixed-effect model specifications. This is consistent with the notion that independent directors were more independent in that they were better able to negotiate lower advisory fees after the 2004 SEC amendments. Using estimates from Panel C of Table 2.1, one standard deviation increase in the percentage of independent directors ($\%IndDirFnd$) implies a decrease of 0.72 [i.e., 0.03 times 0.24 (standard deviation)] percentage in advisory rates. Our results show no significant relationship between advisory fee rates and the other board characteristics for all three model specifications.

[Please place Table 2.4 about here.]

Our results could be due at least partly to a SEC 2001 requirement that 50% of fund directors be independent. To address this potentially confounding event, we construct a sub-sample of CEFs with no changes in their percentage of independent directors around the 2004 SEC

[26] The R-squared for the system-GMM regression is calculated herein as the squared correlation coefficient between actual and fitted values.

amendments.[27] The results reported in Table 2.5 continue to display a negative and significant relationship between the percentage of independent directors and advisory fees after but not before the 2004 SEC amendments.

[Please place Table 2.5 about here.]

Table 2.4 also includes the estimated coefficients for the control variables in equation (2.1). We find a positive and weakly significant relationship between advisory rates and benchmark-adjusted share returns ($ReturnAlpha$) for the 2005-2013 period. We find that fixed-income CEFs ($FixedIncome$) in the combined bond and municipal bond fund categories are associated with lower advisory rates compared to their equity counterparts for the 2005-2013 period. This is consistent with the finding of Deli (2002), which is based on the argument that equity fund advisors have higher marginal products and advisory rates than debt fund advisors, since equity funds have higher returns volatilities (Khorana, 1996). We find that the coefficient of the international fund dummy ($Foreign$) is positive and significant as in Deli (2002) for the 1994-2004 period. The system-GMM findings show a significant and positive relationship for the 2005-2013 period between advisory rates and the number of advisors or sub-advisors ($\#Advisors$) engaged by the CEFs and the number of different services ($\#Services$) they provide. We find a significant and positive relationship between CEF advisory rates and the logarithm of portfolio turnover for both periods. This is consistent with the finding of Deli (2002) who bases his explanation on the findings of Ippolito (1992) and Edelen (1999) that better informed advisors trade more intensely. We find no significant relationship between CEF advisory rates and the dummy variable, $Outsourced$. This is consistent with the descriptive statistics reported in Chen, Hong, Jiang and Kubik (2013, Table II) for a sample of OEFs for the 1994-2007 period that show no difference between the average expense ratios of in-house versus outsourced funds.

2.6. ADVISORY RATE CHANGES AND BOARD CHARACTERISTICS

[27] A CEF is selected if the mean difference test of its percentage of board independent directors using data from three years before and three after the adoption of the 2004 SEC amendments is rejected at a 10% significance level. As a robustness test, we also try a 5% significance level and our untabulated results are similar.

To further examine the effect of additional disclosure due to the 2004 SEC amendments, we now study the changes in advisory rates and the effect of board characteristics, especially independence, on such changes for both time periods.

2.6.1 Measurement of Advisory Rate Changes and Descriptive Statistics

We define the change in advisory rates ($\Delta Margrt$) as the difference between the advisory rate from item 48 on a current NSAR filing and the advisory rate from the previous NSAR filing as in Warner and Wu (2011). For linear contracts the change is simply the change between two consecutive NSAR filings for six-month periods. For concave contracts, the change is any change in the breakpoints between the current and previous NSAR filings that is obtained from NSAR filings items 48, A through K. To ensure that advisory rates changes are attributable to a contract change and not to asset growth we use the current period NAV for both current and previous contracts (NSAR filings) to obtain the marginal compensation rate for concave contracts, as in Warner and Wu (2011).

Figures 2.1 and 2.2 depict the number of advisory rate decreases and increases, respectively, for the 1994-2013 period. The maximum number of advisory rate decreases of 48 (Figure 2.1) and the minimum number of increases of 2 (Figure 2.2) are in 2005 (the year after the 2004 SEC amendments). The second highest number of advisory rate decreases in Figure 2.1 is in year 2001 when the SEC mandated that at least 50% of the directors be independent.

[Please place Figures 2.1 and 2.2 about here.]

Panel A of Table 2.6 reports the distribution of contract changes for the 1994-2013 period. Of the 424 advisory rates changes,[28] 300 (124) are decreases (increases). Panel B of Table 2.6 reports summary statistics on advisory rates ($Margrt$), advisory rate changes ($\Delta Margrt$), and board characteristics for advisory rate increases ($\Delta Margrt > 0$), decreases ($\Delta Margrt < 0$), changes ($\Delta Margrt < 0 \; or > 0$) and no changes ($\Delta Margrt = 0$). Based on these results, we observe that the mean and median of those CEFs which increase (decrease) their advisory rates have higher (lower) advisory rates after the change. The average absolute magnitude of the

[28] The initial number was 451. We manually double-check each of the advisory rate changes and change the ones to no change when the change is erroneously due to an obvious NSAR data entry. For example, we would record no change for the following series: 0.7, 0.7, 7.0, 0.7.

changes ($\Delta Margrt$) for CEFs with increased advisory rates is, on average, higher than that for CEFs with decreased advisory rates. CEFs that increase their advisory rates on average have a lower percentage of independent directors ($\%IndDirFnd$), a larger board size (*BdSize*), a lower average tenure of their independent directors ($AveTenIndDirFnd$), a higher average age of their independent directors ($AveIndDirAgeFnd$), a lower percentage of female directors ($\%DirFemaleFnd$), a higher average compensation of their independent directors ($AveIndDirCompFnd$) and a higher director ownership ($\%IndDirOwn > 50K$).

[Please place Table 2.6 about here.]

2.6.2 Methodology

We continue by examining the effect of board characteristics and other control variables on the likelihoods and magnitudes of various types of advisory rate changes for both 1994-2004 and 2005-2013 periods. We use separate probit regressions to disentangle any asymmetric effects of various potential determinants on CEFs with increases from those with decreases in advisory rates. We use an ordered logit model specification to test our hypothesis described in Section 2.3. We use an OLS model specification controlling for year fixed-effects to examine the magnitudes of the effects of our independent variables on the CEF advisory rate changes.

The following probit model specification is used to test our hypotheses on the factors that affect the likelihood of CEF advisory rate changes based on semi-annual data:

$$\begin{aligned}
Prob(ChgType_{it}) = \\
& Probit(a + b_1\%IndDirFnd_{it-1} + b_2BdSize_{it-1} + b_3UnexpCompIndDir_{it-1} + \\
& b_4\%IndDirOwn > 50K_{it-1} + b_5\%DirFemaleFnd_{it-1} + b_6AveTenIndDirFnd_{it-1} + \\
& b_7AveIndDirAgeFnd_{it-1} + b_8Star_{it-1} + b_9StarFam_{it-1} + b_{10}ReturnAlpha_{it-1} + \\
& b_{11}HighAdvRt_{it-1} + b_{12}LnFndSize_{it-2} + b_{13}LnFamSize_{it-2} + \\
& b_{14}TopFndMrktShr_{it-2} + b_{15}TopFamMrktShr_{it-2} + b_{16}HighGrwthFnd_{it-1} + \\
& b_{17}HighGrwthFam_{it-1} + b_{18}\Delta\#Advisors_{it} + b_{19}\Delta\#Services_{it} + \\
& b_{20}\Delta FndTurnover_{it} + b_{21}HighLeverage_{it-1} + b_{22}HighDivYield_{it-1} + \\
& b_{23}HighPremium_{it-1} + b_{24}Acquirer_{it} + b_{25}Target_{it}) \qquad (2.2)
\end{aligned}$$

The dependent variable *ChgType* is either advisory rate increases, decreases or unsigned changes. For advisory rate increases ($\Delta Margrt > 0$), the dependent variable is equal to one for an increase in advisory rates and zero for a negative or no change in advisory rates. For advisory rate decreases ($\Delta Margrt < 0$), the dependent variable is equal to one for a decrease in advisory rates and zero for a positive or no change in advisory rates. For unsigned advisory rate changes ($\Delta Margrt < 0\ or > 0$), the dependent variable is equal to one if advisory rates decrease or increase and is equal to zero otherwise. For each of these specifications, we include time dummies and cluster the standard errors following Petersen (2009).

2.6.3 Results

2.6.3.1 Advisory-rate changes

Table 2.7 presents the results of our tests of equation (2.2). For each variable, we begin with a discussion of the logit regression results reported in columns (5) and (6) for advisory rate changes ($\Delta Margrt < 0\ or > 0$) and then we compare the results with the ones from the likelihoods of advisory rate increases ($\Delta Margrt > 0$) in columns (1) and (2) and decreases ($\Delta Margrt < 0$) in columns (3) and (4).[29] Consistent with our first hypothesis (H_A^{1b}), our ordered logit regression results show that that advisory-rate decreases are significantly more likely for a CEF with a higher percentage of independent directors ($\%IndDirFnd$) for only the period after but not before the 2004 SEC amendments (columns (5) and (6) in Table 2.7). This is consistent with the notion that independent directors negotiate and question advisory fees with greater independence after the 2004 SEC amendments. The results from the probit regression of the likelihoods of advisory rate decreases ($\Delta Margrt < 0$) support this finding (columns (3) and (4) in Table 2.7). Since this variable is not significantly related with advisory-rate increases, this suggests that a larger percentage of independents on CEF boards is effective in decreasing advisory rates but not in preventing increases in advisory rates. Our ordered logit regression results show that a CEF with a larger board size ($BdSize$) is significantly more likely to increase its advisory rates for the 2005-2013 period (columns (5) and (6) in Table 2.7). This is consistent with the notion that larger boards are less diligent in their monitoring responsibilities due to higher free-riding and coordination costs and lack of cohesion compared to smaller boards (Jensen, 1993; Hermalin and Weisbach, 2003). The results from the probit regression of the likelihoods of advisory rate increases ($\Delta Margrt > 0$) support this finding (columns (1) and (2)

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[29] Our untabulated results using the dynamic probit and ordered logit regressions as a robustness check produce results that are consistent with those reported using probit and ordered logit regressions.

in Table 2.7). This suggests that a larger CEF board is more likely to approve an increase in advisory rates probably due to free-riding and coordination problems.

[Please place Table 2.7 about here.]

The ordered logit regression results show that a CEF with a higher unexplained compensation of its independent directors ($UnexpCompIndDir$) is less likely to decrease its advisory rates based on the findings for the period after but not before the 2004 SEC amendments (columns (5) and (6) in Table 2.7). The results from the probit regression of the likelihood of advisory rate decreases ($\Delta Margrt < 0$) support this finding (columns (3) and (4) in Table 2.7). Our ordered logit regression results show that a CEF with a higher percentage of female directors ($\%DirFemaleFnd$) is significantly less (more) likely to increase its advisory rates for the 1994-2004 (2005-2013) period (columns (5) and (6) in Table 2.7).

We not only control for the effects of fund growth, economies of scale, good performance, market share and mergers and acquisitions as in Warner and Wu (2011) but also for the effects of special CEF characteristics like premiums and leverages. As in Warner and Wu (2011), we remove the mechanical effect of CEF size on advisory rates by using fund family size and market share lagged two periods. We find evidence for economies of scale based on the logarithm of family size ($LnFamSize$) for both periods. The likelihood of advisory rate decreases is lower for a CEF that belongs to a larger family for both periods or to a family with a higher market share ($TopFamMrktShr$). We find that advisory-rate increases are significantly less likely for a CEF with an already high advisory rate ($HighAdvRt$) for both periods. This finding is consistent with that of Warner and Wu (2011) and Khorana and Servaes (2005), and the conjecture that it is potentially easier for funds to raise currently low versus currently high rates. The likelihood to increase advisory rates is higher for a CEF with a larger change in portfolio turnover ($\Delta FndTurnover$) and in the number of its advisors and sub-advisors ($\Delta\#Advisors$) for the 2005-2013 period. The effect of a change in portfolio turnover on advisory rates may indicate that higher advisory rates are required to compensate better-informed advisors who are more likely to trade based on their information (Ippolito, 1992; Edelen, 1999; Deli, 2002). We find that advisory-rate increases are not related significantly with past benchmark-adjusted share returns ($ReturnAlpha$), high leverage ($HighLeverage$) and high dividend yield

($HighDivYield$) for both periods. Our results show that advisory-rate increases are significantly and positively related for a high premium CEF ($HighPremium$).

To control for the effect of a change in board structure, we examine equation (2.2) using the sub-sample of CEFs which did not change their percentages of board independence before and after the 2004 SEC amendments as explained in Section 5.2. The results from Table 2.8 show that advisory-rate decreases are significantly more likely for a CEF with a higher percentage of independent directors ($\%IndDirFnd$) for only the period after but not before the 2004 SEC amendments (columns (3), (4), (5) and (6) in Table 2.8). Therefore, this relationship exists even after controlling for the change in the percentage of independent board members.

[Please place Table 2.8 about here.]

2.6.3.2 Magnitude of advisory-rate changes

The results for an examination of the factors that affect the magnitudes of the actual rate change ($\Delta Margrt^{*}$) as the dependent variable using OLS regressions are reported in Table 2.7 (columns 7 and 8). Consistent with our results on the direction of the advisory rate changes, we find that smaller advisory rate changes (smaller increases or larger decreases in magnitude) are associated with a CEF with a higher percentage of independent directors ($\%IndDirFnd$) after but not before the 2004 SEC amendments. Advisory-rate changes are significantly higher for a CEF with a higher unexplained compensation of its independent directors ($UnexpCompIndDir$) for the 2005-2013 period. We continue to find that advisory-rate changes are significantly higher for a CEF with a high premium ($HighPremium$) and a not high pre-change advisory rate ($HighAdvRt$) for both periods.

2.7. ROBUSTNESS CHECKS

In section 2.6, we examined the effect of lags of board characteristics on the direction and magnitude of advisory-rate changes. Taking advantage of our long time-series of board characteristics, we now test whether changes in board characteristics during the previous X years affect the likelihood of advisory rate changes (increases or decreases). Since board members renew their contracts every three years,[30] we set X to three years in order to capture the recent dynamics in CEF governance variables. Also, the choice of three-year changes in the governance variables are an additional way of dealing with potential endogeneity concerns between CEF board characteristics and advisory-rate changes.

Based on the ordered logit regression results reported in Table 2.9, we observe that the change in the percentage of independent directors ($3Y\Delta\%IndDirFnd$) is significantly and negatively related to advisory-rate increases for after but not before the 2004 SEC amendments (columns (5) and (6) in Table 2.9). The results from the probit regressions of the likelihood of advisory rate decreases ($\Delta Margrt < 0$) support this finding (columns (3) and (4) in Table 2.9). Our results suggest that funds with boards with more independent directors are more likely to decrease than increase advisory rates. Our results based on ordered-logit regressions show that a change in board size ($3Y\Delta BdSize$) is positively and significantly related with the likelihood of an advisory-rate change (columns (5) and (6) in Table 2.9). These results suggest that a larger board size may make a board less efficient in its monitoring of the compensation of advisors.

[Please place Table 2.9 about here.]

Consistent with our results in section 2.6, the ordered logit regression results show that a CEF with a higher unexplained compensation of its independent directors ($UnexpCompIndDir$) is less likely to decrease its advisory rates based on the findings for the period after but not before the 2004 SEC amendments (columns (5) and (6) in Table 2.9). Unlike our earlier results reported in section 2.6, we find no significant relationship between larger changes in the percentage of female directors ($3Y\Delta\%DirFemaleFnd$) and advisory rate changes. Consistent with our findings reported earlier in section 2.6, we find no significant relationship between a change in the ownership of directors ($3Y\Delta\%IndDirOwn > 50K$) and an advisory rate change.

2.8. CONCLUSION

We use a large database of equity and fixed-income U.S. closed-end funds (CEFs) during 1994-2013 that includes hand-collected governance data. We find that the highest number of

[30] Three years is also long enough to completely change all board members in staggered boards if the fund decides to do so.

decreases and lowest number of increases in advisory rates occur in the year after the 2004 SEC amendments. We find that CEFs with higher percentages of independent directors are associated with lower advisory rates and a significantly greater likelihood of advisory-rate decreases for the period after but not before the 2004 SEC amendments even when we confine our sample to those CEFs with no change in their percentage of independent directors around the 2004 SEC amendments. In summary, we can infer that the 2004 SEC amendments have been successful in encouraging independent directors to act more independently in questioning and negotiating advisory fees with fund advisors after their adoption.

CHAPTER THREE

BOARD GOVERNANCE, MONETARY INTEREST AND CLOSED-END FUND PERFORMANCE

3.1. INTRODUCTION

Several monitoring mechanisms exist to alleviate agency problems between mutual fund managers and investors. Since the redemption right does not exist for closed-end funds (henceforth CEFs), their shareholders need to rely on other mechanisms, particularly the Board of Directors, to mitigate any agency problems. This appears to be the reason that regulators and legislators pay attention to board oversight, and especially to the role of board structure in dealing with agency issues. Under the Investment Company Act of 1940, the Security and Exchange Commission (SEC) initially required that 40% of directors must be "not interested" (i.e., independent). New rules added to this Act on March, 2001 required 50% of the directors to be independent. On January 15, 2004, the SEC proposed and adopted a new rule requiring every mutual fund board to have an independent chairman and raising the proportion of independent directors from the previous 50% to at least 75%.[31] However, the rule was twice vacated by the D.C. Circuit in 2004 and 2005. In its second ruling, the court found fatal procedural irregularities in the adoption of the new rule, which included the SEC's failure to have a public comment period after a decision of an appellate court and the SEC's reliance on data outside the public rulemaking record (Roiter, 2015). Accordingly, these additional requirements are largely followed in practice but remain unimplemented in law.

Although it has been widely studied, the effect of boards of directors in controlling agency conflicts is still under debate. Some studies find boards are efficient in controlling agency issues which leads to higher firm performances (Baysinger and Butler, 1985; Dahya *et al.,* 2007; Paul, 2007; Balsam *et al.,* 2011). These studies find that higher percentages of independent directors are associated with higher firm performances. Other studies find no relation or even a negative relation between a board's characteristics and its firm's performance (Hermalin and Weisbach, 1991; Cheng, 2008).

[31] http://www.sec.gov/rules/proposed/2006/ic-27395.pdf

Board effectiveness is also debated in the popular financial press. To illustrate, we now summarize the positions attributed to two knowledgeable commentators included in a Wall Street Journal Article by Sterngold (2014). John Morley, a Yale Law School Professor, believes that, unlike their mutual fund counterparts, industrial boards fire CEOs or change the directions of their companies. He argues that even independent mutual-fund directors are often chosen by the fund advisors. However, Laura Lutton, a research director at Morningstar Inc., believes that, given their responsibilities, fund boards properly exercise their roles in representing investors. She argues that fund directors usually are retired senior corporate executives who devote sufficient time to fulfill their duties. She blames the lack of transparency in mutual fund boards as the main reason preventing a proper measurement of their performance. In an article in Forbes (Maiello, 2009), Daniel P. Wiener, editor of Independent Adviser for Vanguard Investors and CEO of Adviser Investments, argues that mutual-fund boards can be more effective with equity based compensation and with the greater disclosure of compensation details.

Unlike most of the literature on board effectiveness, this study focuses on boards of directors of CEFs. Del Guercio *et al.* (2003) argue that mutual funds provide a better environment to measure whether boards act in the interests of shareholders. Unlike industrial corporations that represent a heterogeneous collection of industrial classifications, mutual funds are a somewhat more homogeneous industrial grouping. CEF boards are responsible for negotiating the fees charged shareholders annually by fund sponsors[32] and for monitoring the performance of the funds they oversee. The results of negotiating the fees and monitoring the performance of CEFs can be measured by examining fund expense ratios, fund returns and fund premiums (i.e., the market price of a fund share minus its net asset value per share or NAVPS).

Using a large and unique database of U.S. CEFs, this study examines the relation between their board characteristics (e.g., independence, ownership, gender diversity and compensation) and fund expenses, return performances and premiums. We also study the determinants of director compensation in the CEF industry which helps us better understand the incentives of directors to monitor CEFs. Since our sample includes all CEFs in existence at any point in time during the period 1994-2013, it is free of survivorship bias. To the extent of our knowledge, our

[32] Sponsors are advisory firms such as Fidelity or Putnam which manage and offer a set of funds.

database has the longest time-series of board information among the studies which examine the effect of board characteristics on both open-ended fund (OEF) and CEF performances.

Our study contributes to the literature in different ways. First, our sample includes board information for virtually all stock and bond CEFs. Most of the studies on mutual fund governance focus on random samples or samples of equity mutual funds or the funds associated with large fund families (e.g., Tufano and Sevick, 1997; Meschke, 2007; Cremers *et al.*, 2009; Ding and Wermers, 2012). If their sample sizes are relatively large, these studies examine one or only a few years of observations. As such, they suffer to varying degrees from various biases (e.g., sampling error, over- or under-representation of various types of funds or time periods) which could meaningfully affect their generalizability.

Second, taking advantage of the large number of time periods captured in our unique panel data, this study overcomes issues related to cross-sectional data like lack of power and endogeneity.[33] To examine the relation between board governance and firm characteristics, researchers should deal with endogeneity concerns as emphasized by many studies in the literature (e.g., Hermalin and Weisbach, 1991; Tufano and Sevick, 1997; Del Guercio *et al.,* 2003; Wintoki, Linck and Netter, 2012). Unobserved heterogeneity and simultaneity are two potential sources of endogeneity that most empirical researchers recognize. However, there is another neglected source of endogeneity in which current governance variables are related to past fund characteristics like performance. Wintoki *et al.* (2012) show that ignoring this source of endogeneity can seriously affect inferences by changing the magnitudes or signs of the estimated coefficients. We show that in our sample past values of the dependent variables, like CEF benchmark-adjusted returns and expense ratios, are related with current values and changes in the values of board characteristics (such as board independence and size). Thus, in addition to the use of common statistical methods to study panel data (like OLS, fixed-effects models, and Fama-MacBeth), we use a two-step system generalised method of moments estimation, "system-GMM", which accounts for endogeneity issues (simultaneity, reverse causality and unobserved heterogeneity). Flannery and Hankins (2013) evaluate the performance of different dynamic panel estimators (e.g., Arellano and Bond's (1991) difference GMM, Blundell and Bond's

[33] To the extent of our knowledge, only Meschk (2007) and Adams *et al.* (2009) use a panel dataset of board characteristics. Meschke (2007) uses 400 investment companies which are chosen randomly in each year for the 1995-2004 period. Adams *et al.* (2009) use data for U.S. equity index OEM funds from 1998 to 2007.

(1998) system-GMM, Huan and Ritter's (2009) Four Period Long Differencing, and Hahn, Hausman and Kuersteiner's (2007) Longest Differencing) using corporate finance data and recommend that system-GMM should be used in the presence of endogenous regressors and unbalanced panels. Arellano and Bover (1995) and Blundell and Bond (1998) argue that this methodology is suitable for estimating a dynamic model, particularly when it is difficult if not impossible to find exogenous instruments to reduce endogeneity concerns (e.g., in governance variables). To the extent of our knowledge, this study is the first to apply the dynamic panel system-GMM estimator in the mutual fund governance literature.

Third, while many studies examine the relationships between some board characteristics and CEF premiums (Del Guercio *et al.,* 2003; Gemmill & Thomas, 2006; Bradley *et al.,* 2010), most use a more limited choice of board characteristics. Fourth, our long time-series data allows us to study better the effects of boards of directors on some funds characteristics like benchmark-adjusted returns which require at least two or three years to facilitate robust estimation. Finally, we study the relationship between CEF board compensations and board characteristics to shed more light on the pecuniary motivations of directors to be aligned with shareholders' interests.

We find that boards with higher percentages of independent directors have lower fees (expense ratios), which is consistent with the literature (e.g., Gemmill & Thomas, 2006; Meschke 2007). Using various measures of CEF returns (benchmark-adjusted returns based on CEF share prices and returns based on CEF NAV) and accounting for any possible endogeneity issues between fund governance and performance, we find significant and negative relationships between the percentages of independent directors and CEF performances.[34] We find no significant relationship between CEF premiums and the percentage of independent directors. Our results regarding CEF returns and performances are consistent with the notion that firms with high information asymmetry, especially for those which have greater need for specialised knowledge and operate in more uncertain environments, may benefit from more inside directors as they are more knowledgeable about firm-specific information (Fama and Jensen, 1983).[35] Therefore, independent directors in CEFs with high information asymmetry may not be effective monitors and advisors as suggested by the theoretical models of Raheja (2005) and Adam and

[34] Pathan and Faff (2013) document a negative relation between performance and governance in the banking industry.

[35] Duchin, Matsusaka and Ozbas (2010) empirically test this using the information cost of firms. They find that firms cannot protect the interests of shareholders when independent directors face severe information disadvantages.

Ferreira (2007). Also, our results suggest that the effect of board independence depends on the measure boards monitor and can directly influence. Monitoring and influencing fees (MER) needs more knowledge about the benchmarks in the market (readily available publicly) and less specialised and complex knowledge in the investment field (not publicly available) compared to monitoring and affecting returns and premiums where this knowledge ordering is reversed. Therefore, our results suggest that independent directors are more effective in monitoring and influencing simpler measures like CEF fees and less effective in monitoring and influencing more complex measures like CEF returns and premiums. This is consistent with Kuhnen (2004) who finds that mutual fund boards seldom change the fund's management company or its in-house advisers, and seldom renegotiate the advisory contracts even when it is beneficial for funds to do so.

Theoretically, board size can have positive or negative effects on firm value. Lipton and Lorsch (1992) and Jensen (1993) contend that larger boards cause less effective monitoring due to more complicated coordination and process issues. However, more independent directors can add more knowledge to the board and increase board power in negotiations with managers. Consistent with Meschke (2007), we find board size is negatively related to benchmark-adjusted returns and fund fees. The negative relationship between board size and fund fees can be due to the fact that mutual fund directors play the monitoring role more than the advisory role. Therefore, larger boards might be negatively associated with benchmark-adjusted returns. However, increases in board size may increase the negotiation power of boards with managers and lead to lower fees. We find no significant relationship between board size and CEF premiums.

Meschke (2007) finds that funds with independent directors that have higher ownerships are associated with lower fund fees. Cremers *et al.* (2009) find a positive relation between the ownerships of directors and fund performances for equity funds which belong to the top 25 U.S. fund families. Following Meschke (2007), we measure the ownership of directors as the percentage of independent directors who hold more than $50,000 of CEF equity. Our results suggest that director ownership has a positive and significant association with most variables that are expected to indicate greater value from the monitoring and influence of directors. We find that greater director ownership is associated with lower fund fees (expense ratios) and higher returns. This is consistent with the notion that directors with more ownership ("more skin in the game") are more effective in solving agency conflicts and are more aligned with the interests of shareholders due to greater self-interest. Our findings are generally consistent with Meschke (2007) and Cremers *et al.* (2009). Both studies find that the funds with higher board ownership create more value for investors through either reducing fund fees or increasing fund returns.

The idea of gender diversity has received increased attention in recent years (e.g., Gul *et al.*, 2011; Adams and Ferreira, 2009). Increasing the presence of female directors is consistent with the notion that they can increase the problem solving abilities of boards because of their nature to work hard and their better communication skills (Adams and Ferreira, 2009; Robinson and Dechant, 1997). The literature reports mixed results on the effects of female presence on boards. Adams and Ferreira (2009) document that having more female directors leads to increased board meeting attendance, but has no significant direct effect on firm performance. Gul *et al.* (2011) find that the stock prices of firms with boards which have higher levels of gender-diversity are more informative. Endogeneity can be a concern in determining the relationship between firm characteristics and board gender diversity. For example, larger firms with better performances are more likely to hire female directors (Adams and Ferreira, 2009). We find no significant relationship between CEFs with more gender diversity and fees, but a positive and significant relationship with benchmark-adjusted returns. Our results show that CEFs with more independent female directors have lower premiums.

We also examine the effect of board characteristics on directors' total compensation. Consistent with Hempel and Fay (1994), Linn and Park (2005) and Brick, Palmon and Wald (2006), our results show that compensation is higher for larger funds and funds with higher average numbers of meetings and higher levels of directors' ownership. As we explain more fully later, the data on directors' ownership does not separate the ownership based on a CEF's compensation plan from personal investment decisions by its directors and it is highly possible that most of the ownerships of directors is due to the compensation plans of funds. Therefore, the positive relationship between the ownerships of directors and their compensations is expected. We also find that funds with independent directors who sit on more funds within the same family are paid less from each fund. We conjecture that independent directors might be satisfied with less compensation per fund when they expect to increase their total compensation from the fund family by sitting on more boards. Our results show no relationship between past fund returns and the compensations of independent directors.

The remainder of the chapter is organized as follows. The next section provides a very brief review of the relevant literature and hypotheses. The section 3.3 discusses the institutional setting of the CEF industry. The section 3.4 describes the sample used in our analysis. Sections 3.5, 3.6, 3.7 and 3.8 report the methodology and discuss the results of examining the relation between board characteristics and CEF expense ratios, returns, premiums and compensations, respectively. Section 3.9 reports on some further robustness checks. Section 3.10 concludes the chapter.

3.2. DEVELOPMENT OF THE HYPOTHESES

CEFs (like OEFs) are regulated under the Investment Company Act of 1940 which makes little delineation between CEFs and OEFs with respect to board structure and monitoring. Presently, the board chair and a minimum of 75% of the board directors for both types of funds are generally independent in practice. However, they must be nominated and selected only by other independent directors to promote more independent directors on the boards. In addition, the advisor and any legal counsel for independent directors for both types of funds must be independent.

Directors of CEFs (like OEFs) have the fiduciary duty to evaluate and approve the advisory contract between the fund and its sponsors. The fund fees (expense ratios) are one of the key parts of the advisory contracts that boards negotiate with fund sponsors based on the nature, extent, and quality of services provided by them. Directors are also responsible for overseeing a fund's performance, voting the proxies for the securities held in a fund's portfolio, and fair valuations of certain securities held by the fund.[36]

Theoretically, Fama and Jensen (1983a) contend that boards of directors in open-ended funds (OEFs) are less important in controlling the agency conflicts between shareholders and managers (fund sponsors) compared to boards of industrial corporations due to stronger internal discipline. Unlike OEF investors, CEF investors cannot redeem their investments at net asset value (NAV)

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[36] www.ici.org

if they want to discipline poor performing fund advisors. Since CEF investors can only show their displeasure with management by transacting in the market, the responsibilities of CEF boards of directors to protect their shareholders are similar to those of industrial boards. Although the possibility of liquidation or conversion to OEFs can theoretically provide external discipline for CEFs, these actions require extensive effort, are expensive and are seldom undertaken.

In this study, we examine the effects of various board characteristics (namely, board independence, board size, board ownership, board compensation and gender diversity) on the following four CEF characteristics: fees, returns, premiums and board compensations. To prepare for this examination, we now formulate testable hypotheses and our expectations for the relation between each of the board and CEF characteristics after briefly reviewing the relevant literature.

Board independence is one of the main characteristics of the board structure which has been examined by researchers and legislators who believe that increased board independence helps to reduce agency conflicts which, in turn, lead to higher fund returns, reduced fees, and higher premiums. However, John Bogle (the founder of Vanguard) believes that "The watchdog, a word almost universally used to describe the role of the independent director, simply doesn't bark (Barker, 2001)." He argues that independent directors do not jeopardize their well-paid salaries by disagreeing with fund sponsors. Raheja (2005) and Adams and Ferreira (2007) argue that the optimal composition of a board depends on their role in the activities of their firms. More independent directors do not necessarily improve board effectiveness when the boards are expected to be mainly advisors to the managers rather than monitors. Managers may be less willing to give information to independent directors who solely want to act as monitors. Therefore, a more "management-friendly board" (i.e. with more interested directors) may have a greater impact on firm performance if there is high degree of information asymmetry between managers and directors especially when firm operations require specialised knowledge.

However, the empirical results for the effect of board composition on entity performance are mixed. Hermalin and Weisbach (1991) and Cheng (2008) find no relation, and Baysinger and Butler (1985), Dahya *et al.* (2007) and Paul (2007) find a positive relation between the percentage of independent directors and firm performance. Using Portuguese stock market data, Fernandes (2008) finds that boards with higher percentages of independent directors pay higher wages to their executives and have lower alignments of the interests of their managers with those of their shareholders. Tufano and Sevick (1997) find that funds have lower fees with larger percentages of independent directors and directors who are present on a larger fraction of the other boards of the fund sponsor. Del Guercio *et al.* (2003) examine the effect of board characteristics on U.S. CEF premiums during 1995. They find that governance variables, such as the percentage of independent directors, are not significantly related to premiums. Ferris and Yan (2007) find that board independence is not related to the probability of a fund scandal nor overall fund performance for an OEF sample in 2002. Khorana *et al.* (2007) study board effectiveness through fund decisions to merge with another fund during the 1999-2001 period.[37] They find no significant relation between board structure and merger decisions. However, they find that boards with more independent directors are less tolerant of underperformance and are more likely to approve within family mergers.

Although the effect of board independence depends on the firm environment like the degree of information asymmetry, uncertainty and required specialised knowledge of firm operations, we believe that the effects of board independence is contingent on the complexity of the measure over which directors are expected to monitor and influence. For example, negotiating fees with investment advisors does not require specialised knowledge in the investment field and requires more comprehensive knowledge about market benchmarks that is publicly available. While one can argue that monitoring and influencing fund returns can be done through replacement of fund advisers after poor performance, changing advisers results in a known material cost for the fund and its shareholders and very uncertain expected future benefits. If such is the case, then having more independent directors can lead to lower return performances. Thus, our first three hypotheses stated in their alternative forms are:

H_A^{1a}: CEF expense ratios are lower for CEFs with higher percentages of independent board directors.

H_A^{1b}: CEF returns are lower for CEFs with higher percentages of independent board directors.

[37] The authors are currently pursuing this effect in a separate study.

H_A^{1c}: CEF premiums are lower for CEFs with higher percentages of independent board directors.

If outside directors create value for a CEF, then we expect a CEF with more independent directors to have higher average compensations. Furthermore, since most CEFs exceed the SEC requirement that at least 50% of the directors should be independent, we argue that the demand for qualified and knowledgeable independent directors is larger and more costly. Thus,

H_A^{1d}: The total compensation of an average independent director is higher for CEFs with higher percentages of independent board directors.

With respect to board size, Lipton and Lorsch (1992) and Jensen (1993) conjecture that larger boards cause less effective monitoring due to more complex coordination and process issues. On the other hand, more independent directors could add value to the firm by bringing more knowledge to the board and also increasing their power in negotiations with managers. The empirical evidence for mutual funds and industrial firms on the effect of larger boards are mixed. Many studies find that board size is negatively associated with firm performance (Yermack, 1996; Eisenberg, Sundgren, and Wells, 1998). Del Guercio *et al.* (2003) find a significant negative (positive) relation between board size (expense ratios) and premiums. However, Cheng (2008) finds that larger boards are associated with less variability of corporate performance measured as monthly stock returns, annual accounting returns on assets, Tobin's *Q*, accounting accruals, extraordinary items, analyst forecast inaccuracy, the level of R&D expenditures, and the frequency of acquisition and restructuring activities. Raheja (2005), Coles, Daniel and Naveen, (2008), Linck *et al.* (2008) and Adams and Mehran (2012) find that smaller boards are not necessarily more desirable for all firms and firms may benefit from larger boards. For a sample of CEFs in 1996, Del Guercio *et al.* (2003) find that larger boards have higher expense ratios, and are less vigilant monitors (less effective) in that they are more likely to approve rights offerings and are less likely to suggest fund restructurings to increase fund premiums. Using a large panel of U.S. index OEFs, Adams, Mansi and Nishikawa (2010) find an inverse relation between board size and fund performance.

The results for the effect of board size on director compensation also are mixed. Hempel and Fay (1994) find a positive but not significant relation between board size and a director's total compensation. Ryan and Wiggins (2004) find a negative and significant relationship between board size and a director's total compensation. Adam and Ferreira (2009) find that board size has a negative but not significant effect on a director's total compensation. Thus, we believe that the effect of board size on CEF performance can be determined only through empirical examination.

Brick *et al.* (2006) examine the relation between the compensations of CEOs and directors and industrial firm performance. They find that the excess compensations of directors are associated with firm underperformance. Sevick and Tufano (1997) find a positive relation between fees and unexplained compensation for a sample of U.S. OEFs in 1992. They find that the directors who receive this relatively large compensation are less likely to disapprove of the fees proposed by fund sponsors so as to not jeopardize their positions in fund families. Similar findings are reported by Ferris and Yan (2007) and Meschke (2007). Similar to these studies, we expect the excess compensation of a director to have a negative effect on CEF performance measures. Thus, our second set of three hypotheses in their alternative form is:

H_A^{2a}: CEF expense ratios are higher for CEFs where the average independent director has higher excess compensation.

H_A^{2b}: CEF returns are lower for CEFs where the average independent director has higher excess compensation.

H_A^{2c}: CEF premiums are lower for CEFs where the average independent director has higher excess compensation.

Fich *et al.* (2005) find that the firms in a sample of Fortune 1000 firms from 1997 to 1999 that adopted stock-option plans for independent directors had higher book-to-market ratios and profitability metrics. Morck *et al.* (1988), McConnell and Servaes (1990), and Hermalin and Weisbach (1991) find a positive relationship between the stock ownership of directors and firm performance measured as Tobin's Q. Chen, Gloldstein and Jiang (2008) find that a significant portion of directors hold shares of funds they monitor during the 2002-2003 period. Ownership trends confirm optimal contracting equilibrium in a way that the ownerships of directors are positively correlated with the variables shown to have higher values of director monitoring. Gemmill and Thomas (2006) find that fund premiums are associated negatively with only the ownerships of managers and outside directors for a sample of U.K. CEFs during the 1995-1998 period. However, Meschke (2007) finds that funds with independent directors that have higher ownerships are associated with lower fund fees. Chen *et al.* (2008) find that director ownership in mutual fund boards is positively and significantly related with variables that create greater values for shareholders. Cremers *et al.* (2009) find a positive relation between the ownerships of directors and fund performances for equity funds which belong to the top 25 U.S. fund families. Their findings imply that higher ownerships could indicate a higher alignment of the interests of fund directors and shareholders. Thus, we expect that director ownership has a positive relationship with CEF performance measures. The data of directors' ownerships in CEF proxy statements does not separate the ownership based on CEF compensation plans or personal investment decisions. Therefore, we expect to observe a positive relationship between the ownerships and compensations of directors. Our third set of four hypotheses stated in their alternative forms is:

H_A^{3a}: CEF expense ratios are lower for CEFs with higher ownerships of their independent directors.

H_A^{3b}: CEF returns are higher for CEFs with higher ownerships of their independent directors.

H_A^{3c}: CEF premiums are higher for CEFs with higher ownerships of their independent directors.

H_A^{3d}: Total compensations of directors are higher for CEFs with higher ownerships of their independent directors.

Female directors are considered to be hard working with better communication skills that can increase the problem solving abilities of the boards on which they sit (Adams and Ferreira, 2009; Robinson and Dechant, 1997). Like most of the other board characteristics, the literature has mixed results on the effect of female presence on the boards. Although they could not find any direct effect on firm performance, Adams and Ferreira (2009) find that more female directors lead to increased board meeting attendance. Gul *et al.* (2011) find that the firms with boards which have higher levels of gender-diversity have more informative stock prices. Thus, we expect that boards with more female independent directors have higher CEF performance measures. Since there is no theoretical study predicting the effect of female presence on the compensations of board directors, the sign and magnitude of this relationship can only be determined empirically. Our fourth set of three hypotheses stated in their alternative forms is:

H_A^{4a}: CEF expense ratios are lower for CEFs with higher percentages of female directors on the boards.

H_A^{4b}: CEF returns are higher for CEFs with higher percentages of female directors on the boards.

H_A^{4c}: CEF premiums are higher for CEFs with higher percentages of female directors on the boards.

3.3. DATA, VARIABLES AND DESCRIPTIVE STATISTICS

3.3.1 Sample Selection

Our main sources of data are Morningstar Direct and the SEC EDGAR database. We carefully collect the information in all annual proxy statements, referred to as the DEF-14A forms hereafter, and semi-annual reports filed with the SEC, referred to as NSAR forms hereafter, for all CEFs with unique CIK numbers (Central Index Key) from 1994 (first filling date) through 2013. The DEF-14A forms contain information regarding each director on the board including the term of office and the length of time served, whether the director is independent, the number of portfolios in the fund complex overseen by the director, the dollar range of equity securities in the fund (beneficially) owned by the director, the aggregate dollar range of equity securities in all registered investment companies overseen by the director in the fund family, and the total dollar amount of cash compensation received by each independent director serving on the fund and for all other funds in the fund family. Since the DEF-14A forms contain information about the boards of directors in different formats, their data must be hand collected.

The NSAR forms contain information regarding fund advisor, administrator, affiliated broker-dealer, portfolio transaction, financial information, and condensed balance sheet data at the registrant level with unique CIK. This information is aggregated over all the share classes of the same fund. Unlike OEFs, only two of the CEFs in our sample have more than one share class. We collect 23,152 N-SAR fillings and select 10,897 NSAR-B forms (annual data) on all

CEFs during the 1994-2013 period. Since almost all NSAR forms are filled according to the strict reporting standards of the SEC, the data in these forms can be captured electronically. For example, we use NSAR forms to collect the CEF size (item 74T of form NSAR or "Net assets of common shareholders") and turnover (item 71D of form NSAR).[38]

We use Morningstar Direct to get survivorship-free data regarding share and NAVPS (net-of-fees) returns, annual fees, fund inceptions, fund advisors, and fund categories. Morningstar Direct has information for 1031 CEFs during the 1994-2013 period. We match our datasets from NSAR and DEF-14A forms based on unique CEF CIK numbers which are available on both forms. To build our final dataset, we match the fund standard name from the Morningstar Direct database with that from the SEC Edgar database. This results in a sample of 9,914 fund-year observations for 906 CEFs with unique CIK numbers after eliminating index funds and institutional funds from our database.[39]

3.3.2 Governance and Ownership Variables[40]

In this section, we discuss the governance variables used in our subsequent analyses of fund fees, performances, premiums and director compensations.

$\%IndDirFnd$ is the percentage of independent (non-interested) directors for the CEF boards. A director is considered as "interested" if she is an employee of the investment adviser or a member of the family of an employee, employee of a registered broker-dealer or a 5-percent shareholder of it, or affiliated with any recent legal counsel to the fund.[41]

$\#IndDirFnd$ is the total number of independent directors on a CEF board. Information related to independent directors is filed in the proxy statements of funds called DEF-14A.

$\%IndDirOwn > 50K$ is the percentage of independent directors who hold more than \$50,000 worth of the shares of a fund. We expect that directors who hold more fund shares are more aligned with the interests of investors. In 2001, the Security Exchange Committee (SEC)

[38] While Morningstar also has fund size and turnover data, the NSAR forms provide this data for a longer time-series.
[39] Voya Senior Income Fund and Franklin Mutual Recovery Fund are examples of institutional Funds. Dow 30 Enhanced Premium and Income is the only index closed-end fund.
[40] The definitions of all variables used in this study and their data sources are described in the appendix.
[41] Section 2(a)(19) of the Investment Company 1940 Act.

passed an order stipulating that all fund directors must disclose their ownerships in the funds that they serve on by the end of January 2002. This information became public after February 2002 in the form of a dollar range of equity securities that are beneficially owned by a director in the fund and the aggregate dollar ranges of equity securities owned in all the registered investment companies overseen by the director in the family of investment companies. The beneficial ownerships of directors in the fund and fund family are collected from the filed DEF-14A forms beginning with their first availability in 2002. This value could represent both the ownership of a director as part of a compensation plan from the fund or from their personal investment in the fund. Funds are required to disclose the holdings of each director within the following ranges: either no investment, or an investment of $1 to $10,000, $10,001 to $50,000, $50,001 to $100,000, or more than $100,000. We calculate the percentage of independent directors in each board, whose beneficial ownership is zero ($\%IndDirOwn_1$), from $1 to $10000 ($\%IndDirOwn_2$), from $10,001 to $50,000 ($\%IndDirOwn_3$), from $50,001 to $100,000 ($\%IndDirOwn_4$), and more than $100,000 ($\%IndDirOwn_5$).

$\%DirFemaleFnd$ is the percentage of female directors on a board to test if gender diversity better aligns the interests of the board with shareholders.

$AveIndDirCompFnd$ is the average dollar value of compensation received by a board from a CEF. Following Tufano and Sevick (1997), we calculate unexplained compensation, $UnexpCompIndDir$, as the average residual (in millions of dollars) obtained from annually regressing director compensation on the number of boards a director serves on and the total assets overseen by that director.

We also consider $\#BoardMtngFnd$, which is the number of meetings that a CEF holds within a year. Like other types of corporate boards, state law requires mutual fund boards to hold meetings on a regular basis. These meetings help board members to be better informed about the matters of importance to the fund, and to discuss and vote on important fund issues.

$AveTenIndDirFnd$ is the average number of years that independent directors have been on a CEF board. Experienced directors can be more effective in their monitoring responsibilities. However, the longer they serve on a board, the more likely it is that they will lose independence due to the influences of the fund sponsors (Del Guercio *et al.*, 2003). Therefore, only an empirical examination can determine the effect of long-serving directors on CEF performances.

3.3.3 Descriptive Statistics

Table 3.1 reports the descriptive statistics for our sample. Panel A of Table 3.1 shows that the number of CEFs with each fund investment objective based on Morningstar Direct and their total number for every five year period. The six investment objective categories used are equity, international equity, bond, municipal bond, allocation and specialty.[42] The number of CEFs increases from 191 in 1995 to its highest level of 606 in 2008, and then decreases to 559 in 2013. CEFs with bond and municipal bond (allocation and specialty) investment objectives comprise the most (least) number of funds in the sample annually.

[Please place Table 3.1 about here.]

We have three variables to proxy for CEF return performance; namely, yearly share returns ($ShareReturn$), NAVPS returns ($NAVPSReturn$) and benchmark-adjusted share returns ($ReturnAlpha$). To examine the relationship between CEF board characteristics and return performances (see Section 3.5), we rely mainly on benchmark-adjusted share returns ($ReturnAlpha$), and use share returns ($ShareReturn$) and NAVPS returns ($NAVPSReturn$) in tests of robustness (see Section 3.8). Each fund's yearly share returns ($ShareReturn$) and NAVPS returns ($NAVPSReturn$) are given by the change in its share price and net asset value per share (NAVPS) adjusted for all distributions. We obtain the benchmark-adjusted share returns following Chen *et al.* (2013), Ferreira *et al.* (2013) and Meschke (2007). Specifically:

$$ReturnAlpha_{it} = ShareReturn_{it} - (\textstyle\sum_{k=1}^{K} \hat{\beta}_{ikt} I_{kt}) \qquad (3.1)$$

Where $ReturnAlpha_{it}$ is the benchmark-adjusted share return of fund *i* at time *t*, $ShareReturn_{it}$ is the realized share return of fund *i* at time *t*, *K* is the number of factors in the benchmark model, I_{kt} is the realized return for benchmark factor *k* at time *t*, and $\hat{\beta}_{ikt}$ are the

[42] Following Khorana and Servaes (2005), we aggregate Morningstar investment objectives into the six broader investment objective categories.

estimated factor betas of fund i at time t obtained by regressing the previous 36 months of realized share returns against the corresponding realized benchmark factor returns.

The benchmark-adjusted share return performances for funds with an investment objective of equity, international equity and specialty are calculated using a 5-factor model. The factors are the monthly excess returns on the CRSP value-weighted index, the differences in returns between small and large stock portfolios, the differences in returns between high and low book-to-market stock portfolios, the Carhart (1997) momentum factor, and the Pastor and Stambaugh (2003) liquidity factor.[43] For the bond and municipal bond CEFs, we use a 7-factor model that includes the Barclays Aggregate Bond Index, Barclays U.S. Treasury Long, Barclays U.S. Treasury Intermediate, Barclays U.S. Mortgage Backed Securities, Barclays U.S. Corp Investment Grade, Barclays Municipal Bond and Barclays U.S. Corp High Yield Bond, which is consistent with the models used in Blake, Elton, and Gruber (1993) and Chen *et al.* (2013). For the allocation CEFs, we use a 12-factor model that includes the 5 factors used for the equity CEFs and the 7 factors used for the bond CEFs. CEFs are included in the samples for the tests of benchmark-adjusted return performances only if they have at least 36 non-missing monthly return observations. The monthly benchmark-adjusted returns are compounded to annualize them.

Panel B of Table 3.1 reports statistics on the cross-sectional distributions of CEF characteristics for every five year period. The yearly share returns ($ShareReturn$) and benchmark-adjusted returns ($ReturnAlpha$) of CEFs have their lowest (highest) values based on both their means and medians in 2008 (2003). Fund size is proxied by total net assets (TNA).[44] The average (median) fund size ($FndSize$) has grown steadily from \$257 million (\$163 million) in 1995 to \$404 million (\$263 million) in 2013. CEF premium ($Premium$) is defined as [(share price - NAVPS)/NAVPS]. The cross-sectional average (and median) yearly CEF premium is lowest in 2008 and is highest in 2003. The annual CEF turnover ratio ($FndTurnover$) is calculated using the lesser of purchases (NSAR item 71A) or sales (NSAR item 71B divided by

[43] The factor data are collected from Wharton Research Data Services (WRDS).
[44] The top and bottom 1% of the fund size values are winsorized to control for outliers.

average monthly net assets (NSAR item 71C). The average turnover ratio has its highest (lowest) value in 2013 (1998).

Panel C of Table 3.1 reports descriptive statistics on CEF board characteristics. The cross-sectional median number of board members ($\#IndDirFnd$) has increased from 8 in 1995 to 9 in 2013. The cross-sectional median of the percentages of independent directors[45] ($\%IndDirFnd$) has also increased from 73% in 1995 to 84% in 2013. The cross-sectional mean compensation of directors from a CEF ($AveIndDirCompFnd$) or fund family ($AveIndDirCompFam$) has its highest and lowest values in 1998 and 1995, respectively. Most of the boards are comprised of directors who own no securities of the fund ($\%IndDirOwn\_1$ category) for all of the cross-sections.

Spearman rank correlations between the expense ratios and board characteristics are reported in Table 3.2. The results show that fund expense ratios and the cross-sectional mean percentages of independent directors ($\%IndDirFnd$), board sizes ($\#IndDirFnd$) and percentages of female directors ($\%DirFemaleFnd$) are negatively correlated at the 0.01 level. We also find that the unexplained compensations of board members ($UnexpCompIndDir$) are positively correlated with fund expense ratios at the 0.01 level.

[Please place Table 3.2 about here.]

Table 3.2 reports the Spearman rank correlations between the CEF share returns ($ShareReturn$) with the various board characteristics. We observe that the fund expense ratios ($ExpenseRatio$) are positively correlated with share returns ($ShareReturn$) at the 0.01 level. Share returns ($ShareReturn$) are also negatively related to the cross-sectional mean percentages of independent directors ($\%IndDirFnd$), board sizes ($\#IndDirFnd$), average director tenures ($AveTenIndDirFnd$), and percentages of female directors ($\%DirFemaleFnd$) at the 0.01 level.

CEF expense ratios and average director tenures ($AveTenIndDirFnd$) are negatively correlated with premiums. We also find that CEF premiums are positively correlated with the levels of board independence ($\#IndDirFnd$) and the percentages of female directors ($\%DirFemaleFnd$). All of these relationships are significant at the 1% level.

3.3.4 Methodology

To examine the relationship between CEF characteristics (e.g., expense ratios, returns, premiums and independent directors' compensations) and board characteristics, we estimate the following generic panel regression where $DependentVar_{it}$ is one of the four performance measures (see sections 3.4, 3.5, 3.6 and 7) for CEF *i* for year *t* discussed earlier:

$$\begin{aligned} DependentVar_{it} = \\ & a + b_1 \%IndDirFnd_{it} + b_2 \#IndDirFnd_{it} + b_3 UnexpCompIndDir_{it} + \\ & b_4 \%IndDirOwn > 50K_{it} + b_5 \%DirFemaleFnd_{it} + b_6 \#BoardMtngFnd_{it} + \\ & b_7 AveTenureIndDirFnd_{it} + b_8 AveIndDirAgeFnd_{it} + \lambda_{\bullet} ControlVariables_{it} + e_{it} \end{aligned} \tag{3.2}$$

The board characteristic variables are discussed in section 4.2 and further defined in the appendix. For each dependent variable, we replicate equation (3.2) with different control variables. All of the relationships between the CEF performance measures and various board characteristics and control variables are estimated for the period of 2002-2013, which corresponds to the availability of the ownership data, and the period of 1994-2013. Since the 2002-2013 period contains the most recent data, all the governance variables (including the ownership of directors) and the effects of the corporate governance mandates of the Sarbanes-Oxley Act (SOX) of 2002, we present our results primarily based using this period and use the findings of the 1994-2013 period as a robustness check.

Following Wintoki *et al.* (2012) and in order to determine the most appropriate model specification for testing our hypotheses, we examine how strongly the present values and changes in the values of various governance and control regressors, such as board independence ($\%IndDirFnd$), board size ($\#IndDirFnd$) and fund size ($FndSize$), are related to the past dependent variables such as the CEF benchmark-adjusted returns ($ReturnAlpha$), expense ratios ($ExpenseRatio$), premiums ($Premium$) and median compensations of independent directors from a fund ($MedIndDirCompFnd$). These regressions also include other control variables such as the lag of CEF governance variables and CEF characteristics like the logarithm of fund age ($LnFndAge$), family size ($FamSize$), logarithm of fund turnover ($LnFndTurnover$), dividend yield ($DivYield$) and leverage ($Leverage$).

The results are presented in Table 3.3. Panel A of Table 3.3 shows the results from regressing the present values (levels) of some regressors in equation (3.2) on the CEF performance measures and characteristics from the prior year. We find that past CEF benchmark-adjusted returns ($ReturnAlpha$) are significantly and positively related to both board sizes ($\#IndDirFnd$), as suggested by Fama and Jensen (1983) and empirically shown by Coles *et al.* (2008) and Linck *et al.* (2008), and with CEF fund sizes ($FndSize$). We also find that past CEF expense ratios ($ExpenseRatio$) are significantly and negatively related to board independence ($\%IndDirFnd$), board sizes ($\#IndDirFnd$) and fund sizes ($FndSize$). Our results show that past CEF premiums ($Premium$) are significantly and positively related to fund sizes ($FndSize$). We also find that the past median compensations of the independent directors from a CEF ($MedIndDirCompFnd$) are significantly and negatively related to the levels of board independence ($\%IndDirFnd$) and board sizes ($\#IndDirFnd$), and are significantly and positively related to fund sizes ($FndSize$).

[Please place Table 3.3 about here.]

Panel B of Table 3.3 shows the results from regressions of the one-year changes of some regressors in equation (3.2) on the CEF performance measures and characteristics from two years prior to the year of interest. We find similar results to those reported in panel A. Changes in board independence ($\Delta\%IndDirFnd$) are significantly and negatively related to past CEF benchmark-adjusted returns ($ReturnAlpha$), as shown by Hermalin and Weisbach (1998). Our results show that changes in board sizes ($\Delta\#IndDirFnd$) are significantly and positively related to past CEF benchmark-adjusted returns ($ReturnAlpha$). We also find that past CEF expense ratios ($ExpensRatio$) are negatively (positively) related to changes in board sizes (CEF sizes).

Overall, our results reported in Table 3.3 show that potentially some of our governance variables (e.g., board independence and size) and control variables (e.g., fund size) are dynamically endogenous. There are different dynamic panel estimators that can deal with endogenous regressors. Using Monte Carlo simulations, Flannery and Hankins (2013) examine the performances of the following estimators using corporate finance data: the difference GMM of Arellano and Bond (1991), the system-GMM of Blundell and Bond (1998), the Four Period Long Differencing of Huan and Ritter (2009), and the Longest Differencing of Hahn et al. (2007). Based on it superior performance, Flannery and Hankins (2013) conclude that the system-GMM should be used in the presence of endogenous regressors and unbalanced panels. Since some of our governance variables are dynamically endogenous and our panels are unbalanced, we use two-step system generalised methods of moments (GMM) estimation specifications to estimate all of the panel regressions,[46] and the OLS, fixed-effects, and Fama-MacBeth estimation specifications to examine robustness.

Arellano and Bover (1995) and Blundell and Bond (1998) propose that the GMM is suitable for estimating a dynamic panel model, particularly when it is difficult if not impossible to find exogenous instruments to reduce the endogeneity concerns in the independent variables (e.g., governance). Their approach involves two equations, together called "system-GMM". The first equation includes the original equation of variables in their levels, which is called the "level equation". The second equation involves differenced variables, which is called the "differenced equation". In this method, some combinations of variables from a firm's history are used as "internal" instrument variables to address endogeneity. Therefore, the method uses the lags of independent and dependent variables to eliminate the use of external instruments.[47] Since the two-step estimates of the standard errors have a tendency to be downward biased, we use a finite sample correction proposed by Windmeijer (2005).

The key exogeneity assumption for the system-GMM estimator is that the instruments (lagged dependent and independent variables) should be exogenous with respect to current shocks in the dependent variable. There are two tests to examine the exogeneity of instruments. The first test responds to the question of whether enough lags of the dependent variables are included (the second-order serial correlation test). If we believe that our model has enough lags of the dependent variable, any lagged dependent variable beyond those lags could be a potential valid instrument for current shocks in the dependent variables. Therefore, the residuals in first

[46] The use of system-GMM has recently been used in the finance literature to deal with different sorts of endogeneity in panel data (Pathan and Faff, 2013; Wintoki *et al,* 2012).
[47] For further discussion of the system-GMM, please see Roodman (2009).

differences should be correlated and in second differences should not be correlated if our model has enough lags of the dependent variable. The autocorrelation tests of the first and second differences are referred to as AR(1) and AR(2) in all of our tables. The second test is a Hansen test of over-identification. Since we use multiple lags in our system-GMM, we can test whether our model is over-identified. The Hansen test provides a *J*-statistic with a χ^2 distribution under the null hypothesis of the validity of the instruments.[48]

To deal with endogeneity in OLS, fixed-effects and Fama-MacBeth regressions, we use one-year lagged governance variables (Adams *et al.*, 2010). We also use fund and year fixed effects in our fixed-effects model specification. As explained above, we do not use lags of the governance variables in the two-step GMM model since this model uses the lags of variables as instruments.

Petersen (2009) recommends that year dummies and clustered (Roger) standard errors be used to avoid rejecting the null hypothesis too often when both potential time-series and cross-sectional correlations exist in the panel data. Thus, all our panel-regression inferences are based on clustered standard errors as in Petersen (2009), and any subsequent references to weakly significant, significant and strongly significant are for statistical significance at the 0.10, 0.05 and 0.01 levels, respectively. To preserve valuable journal space, the coefficients for the year dummies are suppressed in subsequent tables that present results based on the panel regression estimations.

3.4. RELATION BETWEEN FUND EXPENSE RATIOS, BOARD CHARACTERISTICS AND CONTROL VARIABLES

To study the relationships with board characteristics, we estimate the following generic panel regression where Y_{it} is either the fees or returns (see section 3.5) for CEF *i* for year *t* discussed earlier:

$$Y_{it} = a + b_1\%IndDirFnd_{it} + b_2\#IndDirFnd_{it} + b_3UnexpCompIndDir_{it} +$$
$$b_4\%IndDirOwn > 50K_{it} + b_5\%DirFemaleFnd_{it} + b_6\#BoardMtngFnd_{it} +$$

[48] The R-squared for system-GMM regression is calculated herein as the squared correlation coefficient between actual and fitted values.

$$b_7 AveTenureIndDirFnd_{it} + b_8 AveIndDirAgeFnd_{it} + b_9 FndSize_{it} + b_{10} FamSize_{it} + b_{11} LnFndAge_{it} + b_{12} LnFndTurnover_{it} + b_{13} ExpenseRatio_{it} + b_{14} FixedIncome_{it} + b_{15} Foreign_{it} + e_{it} \quad (3.3)$$

Beside the board characteristic variables discussed above in section 3.2 and further defined in the appendix, the panel regressions include various control variables. $FndSize$ is the fund's total NAV, and $FamSize$ is the family's total NAV where both are in billions of dollars. These two variables are included to control for the effect of economies of scale from fund and family size on fund fees, respectively. $LnFndAge$ and $LnFndTurnover$ are measured as the natural logarithms of the age of a CEF in years and annual turnover, respectively. $ExpenseRatio$ is the annual expense ratio of the CEF. $FixedIncome$ is a dummy variable which take the value of one if the fund belongs to the bond or municipal bond fund types and zero otherwise. $Foreign$ is a dummy variable which takes the value of one if the fund is registered outside the U.S. and zero otherwise.

One of the responsibilities of CEF boards is to negotiate and approve the fund fees proposed by fund sponsors and paid directly from fund assets. Since higher fees reduce the NAVPS (net-of-fees) returns to shareholders and may enrich management companies, the magnitude of fees (such as the expense ratios) provides further evidence on the existence of agency conflicts and reflect the degree of alignment of the interests of CEF boards with both their shareholders and the fund management companies. In this section, we examine the association of CEF expense ratios with board characteristics, such as the percentages of independent directors on the boards, board sizes, director ownerships, and director compensations, percentages of female directors, numbers of board meetings and director tenures.

To examine the relationship between fund expense ratios and board characteristics, we estimate panel regressions (3) without the expense ratio ($ExpenseRatio$) variable using annual data. Summary results for the panel regressions for the 2002-2013 and 1994-2013 periods are reported in Table 3.4. Overall, our results show that some board characteristics are associated with CEF expense ratios for both time periods. Consistent with our first alternative hypothesis (H_A^{1a}), the percentages of independent directors ($\%IndDirFnd$) have a weakly significant and negative relationship with the CEF expense ratios for both time periods. This is consistent with the findings of Sevick and Tufano (1997) and Del Guercio *et al.* (2003) for OEFs. Our results show that a one standard deviation increase in the percentage of independent directors ($\%IndDirFnd$) implies a 0.16 [i.e., 0.02 times 0.08 (standard deviation)] percentage decrease in the expense ratio for the 2002-2013 period.

[Please place Table 3.4 about here.]

We find a negative and strongly significant relation between board sizes ($\#IndDirFnd$) and CEF expense ratios for both time periods based on the system-GMM regressions (Table 3.4, columns 7 and 8). This is consistent with the notion that restrictions on board size do not necessarily enhance entity value (Coles *et al.,* 2008). Our results show that a one standard deviation increase in board size ($\#IndDirFnd$) implies a 25.5 percentage [i.e., 0.1 times 2.55 (standard deviation)] decrease in the expense ratio for the 2002-2013 period. We find no significant relationship between unexplained compensations ($UnexpCompIndDir$) and CEF expense ratios based on our system-GMM regressions.

Consistent with Meschke (2007) for OEFs and our third alternative hypothesis (H_A^{3a}), we find that boards with a larger fraction of independent directors who hold more than $50,000 in fund assets, $\%IndDirOwn > 50K$, have lower expense ratios based on OLS, fixed effects and system-GMM regressions. This supports the notion that boards with higher levels of ownership by directors are more effective in negotiating in favor of shareholders' interests (Chen *et al.*, 2008; Ding and Wermers, 2012). Our results show that a one standard deviation increase in board ownership ($\%IndDirOwn > 50K$) implies a 1.9 [i.e., 0.1 times 0.19 (standard deviation)] percentage decrease in the expense ratio for the 2002-2013 period (i.e., the full sample period with ownership data). We find no significant relation between CEF expense ratios and the percentages of female directors ($\%DirFemaleFnd$) and board meeting frequencies ($\#BoardMtngFnd$) for the 2002-2013 period.

Table 3.4 also reports the estimates for a number of control variables. We find that the relation between CEF expense ratios is negative and significant with CEF sizes ($FndSize$) and positive but not significant with family sizes ($FamSize$). Deli (2002) finds that the relation between advisory rates is negative and significant with both of these measures of scale economies for a sample of 92% OEMs and 8% CEFs during 1997. Consistent with Deli (2002) and Mescke (2007), we also find that fixed-income CEFs have significantly lower fees compared to their equity counterparts.[49] The insignificant test statistics of second-order auto correlation (AR(2)) and Hansen *J*-statistics of over-identifying restrictions reported in Table 3.4 indicate that the system-GMM specification is well fitted.

To summarize, our panel regression results confirm that CEF expense ratios are related with some board characteristics. Funds with greater board independence and director ownerships charge significantly lower fees.

3.5. RELATION BETWEEN CEF BENCHMARK-ADJUSTED RETURNS AND BOARD CHARACTERISTICS

Another duty of a CEF board is to oversee fund performance and to hire talented portfolio managers (indirect effect). Before explaining the results of regressions between a fund's performance and its governance, we need to discuss the endogeneity concerns noted in this literature. Many empirical studies document the (positive/negative) effect of board structure on firm performance (Baysinger and Butler, 1985; Tufano and Sevick, 1997; Dahya *et al.,* 2007; Ferris and Yan, 2007; and Paul, 2007). Hermalin and Weisbach (1998) argue that board structure also can be affected by the bargaining process between managers and boards of directors. Wintoki *et al.* (2012) find empirical support for a simultaneous relation between board structure and firm performance. Thus, we once again rely on the system-GMM method to deal with potential endogeneity concerns (reverse causality, unobserved heterogeneity and simultaneity) in this section of the paper.

To examine the effects of board characteristics on fund performances, we estimate system-GMM panels using regression (3.3) with benchmark-adjusted share excess returns ($ReturnAlpha$) as the dependent variable, and the addition of its one- and two-year lags (i.e.,

[49] We also interact the fixed-income dummy with four governance variables (board size, independence, gender diversity and ownership of directors) to check further the effect of fund type on the relationship between CEF fees and fund governance. Based on untabulated results, we find that all of the coefficients for these interaction variables are not significant at conventional levels.

$ReturnAlpha_{t-1}$ and $ReturnAlpha_{t-2}$, respectively) to absorb any information in the past returns of CEFs. The results when we use share returns ($ShareReturn$) or NAVPS returns (NAVPS$Return$) as the dependent variable is reported later in section 3.8.

Consistent with our first hypothesis (H_A^{1a}) and based on the system-GMM specification, we find a negative and significant relation between the percentages of independent directors ($\%IndDirFnd$) and benchmark-adjusted share returns ($ReturnAlpha$) in Table 3.5. This might be related (at least partly) to the belief that interested directors cannot add more value in firm functions such as asset management that are subject to a high degree of information asymmetry, uncertainty, and actions which require specialised knowledge (Duchin *et al*., 2010). A one standard deviation increase in the percentage of independent directors ($\%IndDirFnd$) implies a 0.96 [i.e., 0.12 times 0.08 (standard deviation)] percentage decrease in the CEF benchmark-adjusted share return. Using a system-GMM specification (Table 3.5, columns 7 and 8) and consistent with Meschke (2007), we find a negative and significant relationship between board sizes ($\#IndDirFnd$) and benchmark-adjusted share returns. A one standard deviation increase in the CEF board size ($\#IndDirFnd$) implies a 5.1 [i.e., 0.02 times 2.55 (standard deviation)] percentage decrease in the CEF benchmark-adjusted share return.

[Please place Table 3.5 about here.]

Our results in Table 3.5 also show that there is a significant and positive relationship between director ownerships ($\%IndDirOwn > 50K$) and the CEF benchmark-adjusted share returns. This relationship is robust using all other model specifications except the fixed-effects specification. These results are consistent with our third alternative hypothesis (H_A^{3b}). This supports the notion that more director ownership, either based on personal investment or CEF compensation plans, appears to reduce the agency issues between shareholders and advisers. Cremers *et al.* (2009) find that funds significantly underperform when the ownership levels of directors are low. A one standard deviation increase in the percentage of director ownership ($\%IndDirOwn > 50K$) implies a 2.85 [i.e., 0.15 times 0.19 (standard deviation)] percentage increase in the CEF benchmark-adjusted share return.

Based on the system-GMM specification, we find a positive and significant relation between the CEF benchmark-adjusted share returns and the percentages of female directors on the boards ($\%DirFemaleFnd$) and the logarithms of the average ages of the independent directors ($LnAveIndDirAgeFnd$). We find no relationship between CEF benchmark-adjusted share returns and the numbers of board meetings ($\#BoardMtngFnd$) and the tenures of the directors ($AveTenIndDirFnd$).

Table 3.5 also reports the coefficient estimates for a number of control variables. The first control variable is for the effect, if any, of mutual fund fees on fund returns. The literature on the nature of the relation between mutual fund fees and benchmark-adjusted returns is mixed. For samples of OEFs, Chen *et al.* (2004) find no relation while Carhart (1997) and Gil-Bazo and Ruiz-Verdu (2009) find a negative relation based on benchmark-adjusted returns using net and gross returns, respectively. For our sample of CEFs, we find no robust relation between expense ratios and CEF share returns for the various model specifications. The signs and significances of the estimated coefficients depend on the model specification and time period examined. Consistent with Ferreira *et al.* (2013) and Chen *et al*. (2004), we observe a negative and significant relationship between CEF sizes ($FndSize$) and benchmark-adjusted share returns.[50] Once again, the insignificant test statistics of second-order autocorrelation (AR(2)) and for Hansen *J*-statistics of over-identifying restrictions reported in Table 3.5 indicate that the system-GMM specification is well fitted.

Overall, our results imply that board independence, size, gender diversity and ownership of directors have significant effects on CEF benchmark-adjusted share returns. CEFs with higher board ownerships are associated with higher benchmark-adjusted share returns, which we believe is most likely due to a better alignment of the interests of their boards with their investors.

[50] We also use the interaction of the fixed-effect dummy with the four governance variables (board size, independence, gender diversity and ownership of the directors) to examine the effect of fund type on the relationship between CEF benchmark-adjusted returns and the governance variables. Based on untabulated results, we find that all of the coefficients for the interaction variables are not significant at conventional levels.

3.6. RELATION BETWEEN CEF PREMIUMS AND GOVERNANCE CHARACTERISTICS

CEF premiums (discounts) have been studied over a long time period. [51] The first study appears to be by Pratt (1966) who attributes the existence of discounts to a lack of sales effort and lack of public understanding. Different theories exist to explain negative premiums.[52] Some studies attribute such pricing differences to time-varying investor sentiment due to CEF traders being predominantly small investors who exhibit irrational optimistic or pessimistic behaviors (e.g., Lee, Shleifer and Thaler, 1991; Pontiff, 1997; Kumar and Lee, 2006; Hwang, 2011). In turn, this leads to an additional risk premium to compensate investors for bearing undiversifiable sentiment risk. Other studies attribute CEF premiums to managerial fees and abilities (e.g., Boudreaux, 1973; Ingersoll, 1976; Cherkes, 2001; Gemmill & Thomas, 2006). Boudreaux, (1973) argues that if managers provide no value or not enough added value, then the CEF should trade at a negative premium. Gemmill and Thomas (2002) find support that CEF premiums depend on expense ratios in the long run. Our system-GMM regression specification deals with endogeneity since expense ratios may be lowered in response to high negative CEF premiums (Cherkes, 2012). We estimate the following regression using various estimation specifications to examine the relation between CEF premiums and board governance using annual data:

$$Premium_{it} = a + b_1\%IndDirFnd_{it} + b_2\#IndDirFnd_{it} + b_3UnexpCompIndDir_{it} + b_4\%IndDirOwn > 50K_{it} + b_5\%DirFemaleFnd_{it} + b_6\#BoardMtngFnd_{it} + b_7AveTenureIndDirFnd_{it} + b_8AveIndDirAgeFnd_{it} + b_9LnMarketCap_{it} + b_{10}LnSharePrice_{it} + b_{11}LnFndTurnover_{it} + b_{12}StdNAV_{it} + b_{13}DivYield_{it} + b_{14}Leverage_{it} + b_{15}ExpenseRatio_{it} + b_{16}LnFndAge_{it} + b_{17}FixedIncome_{it} + b_{18}Foreign_{it} + e_{it} \quad (3.4)$$

Following Pontiff (1996), Gemmill and Thomas (2006) and Bradley *et al.* (2010), we use various control variables in equation (3.4). The logarithms of CEF market capitalizations ($LnMarketCap$), share prices ($LnSharePrice$) and the logarithms of share turnovers ($LnFndTurnover$) are used to proxy for transaction costs, which make arbitrage more costly.

[51] The term discount refers to a negative premium value.
[52] See Cherkes (2012) and Aboulamer and Kryzanowski (2015) for more on the CEF discount literature.

We use the residual standard deviation of the CEF's NAV return ($StdNAV$) to proxy for the difficulty of replicating the CEF portfolio (Bradley *et al.*, 2010).[53] If the CEF's underlying portfolio is hard to replicate, it is harder to execute arbitrage activities. Dividend yield ($DivYield$) is added to equation (3.4) based on the argument by Pontiff (1996, 2006) that higher payouts make it easier to execute the arbitrages and therefore increase the premiums. Elton *et al.* (2013) find that CEF investors benefit when their fixed-income investments are leveraged at low borrowing rates, and that this benefit is reflected in CEFs' premiums. Thus, we also control for the effect of leverage in equation (3.4).

To examine the relationship between board characteristics and CEF premiums, we estimate panel regression (3.3) using OLS, fixed effects, Fama-MacBeth, and system-GMM specifications and annual data. Based on the system-GMM specification, our results reported in Table 3.6 show that the percentages of independent directors ($\%IndDirFnd$) and CEF premiums are negatively but not significantly related for the 2002-2013 period. Based on the system-GMM specification, we observe negative and weakly significant relationships between CEF premiums and unexplained compensations ($UnexpCompIndDir$) and the percentages of female directors ($\%DirFemaleFnd$), and no relationship between CEF premiums and CEF board sizes ($\#IndDirFnd$). We also find a significant negative relation between the frequency of board meetings ($\#BoardMtngFnd$) and CEF premiums for both periods using the system-GMM specification (Table 3.6, columns 7 and 8). Our results show no significant relationships between CEF premiums and either director ownerships ($\%IndDirOwn > 50K$) or director tenures ($AveTenIndDirFnd$) for the 2002-2013 period.

[Please place Table 3.6 about here.]

Table 3.6 also reports the estimates for a number of control variables. As expected the logarithms of CEF share prices ($LnSharePrice$), which measure transaction costs, are positively and significantly related to CEF premiums for both periods using the system-GMM and fixed-effects specifications. Consistent with Pontiff (1996) and Bradley *et al.* (2010), we find a

[53] Following Bradley *et al.* (2010), the residuals are calculated from regressing the excess NAVPS returns for a CEF against the relevant factors discussed in section 3.3.3 (i.e., five factors for equity CEF, seven factors for bond CEFs, and 12 factors for allocation CEFs).

significant and positive relationship between CEF premiums and dividend yields ($DivYield$) for all model specifications. We find a positive and significant relation between CEF leverages and premiums for only the 2002-2013 period when we use the system-GMM specification and for both periods when we use the fixed-effects specification. We find no significant relation between CEF premiums and expense ratios ($ExpenseRatio$). Our results show that older funds ($LnFndAge$) have significant and positive relations with CEF premiums for both periods based on the system-GMM, OLS and fixed-effects specifications. As expected, we find that fixed-income and foreign CEFs have lower premiums on average compared to equity and domestic CEFs, respectively.[54] Once again, the insignificant test statistics for second-order autocorrelation (AR(2)) and the Hansen *J*-statistics of over-identifying restrictions reported in Table 3.6 indicate that the system-GMM specification is well fitted.

3.7. BOARD COMPENSATION AND GOVERNANCE CHARACTERISTICS

Board compensation has been one of the important aspects of corporate governance. In this section, we examine whether board characteristics like board independence, board size, and ownership have an effect on CEF board compensations. Our dependent variable is the median dollar compensation of the independent directors ($MedIndDirCompFnd$) on a CEF board for a given year. Again, we rely on a system-GMM specification to estimate equation (3.4), and OLS, fixed-effects and Fama-MacBeth specifications as tests of robustness. Since the compensations paid to directors can affect the board structure (Hermalin and Weisbach, 1998; Villalonga and Amit, 2006), we once again use the system-GMM specification to deal with endogeneity concerns. The specific model estimated is given by:

$$MedIndDirCompFnd_{it} =$$
$$a + b_1\%IndDirFnd_{it} + b_2\#IndDirFnd_{it} + b_3\%IndDirOwn > 50K_{it} +$$
$$b_4\%DirFemaleFnd_{it} + b_5\#BoardMtngFnd_{it} + b_6AveTenureIndDirFnd_{it} +$$
$$b_7AveIndDirAgeFnd_{it} + b_8Ln\#OtherBoardsIndDirFam_{it} + b_9FndSize_{it} +$$

[54] We also use the interaction of the fixed-effect dummy with the four governance variables (board size, independence, gender diversity and ownership of the directors) to examine the effect of fund type on the relationship between CEF premiums and the governance variables. Based on untabulated results, we find that all of the coefficients for the interaction variables are not significant at conventional levels.

$$b_{10}FamSize_{it} + b_{11}LnFndAge_{it} + b_{12}ShareReturn_{t-1} + b_{13}FixedIncome_{it} + b_{14}Foreign_{it} + e_{it} \quad (3.5)$$

Table 3.7 reports the estimated relationships between the median compensations of directors and board characteristics. Based on the system-GMM specification, we find no significant relationships between the median compensations of independent directors with the percentages of independent directors ($\%IndDirFnd$), which is consistent with Ryan and Wiggins (2004) and Adam and Ferreira (2009).[55] Consistent with our third alternative hypothesis (H_A^{3d}), we find that the ownerships of directors ($\%IndDirOwn > 50K$) is positively and significantly associated with the median compensation of the independent directors. This positive relationship reflects the strong possibility that director ownership could be part of a CEF's compensation plan for board members. Using a system-GMM specification, we find no significant relationship between the median compensations of independent directors and the percentages of female directors. Consistent with Hempel and Fay (1994) and Brick *et al.* (2006), we find that the numbers of board meetings ($\#BoardMtngFnd$) and director compensations are positively and significantly related for both periods, and that this finding is robust to the use of the various statistical specifications. Consistent with their argument that independent directors make their decisions at board meetings, Linn and Park (2005) find a positive relationship between board meetings and the compensations of independent directors.

[Please place Table 3.7 about here.]

Our results reported in Table 3.7 suggest that independent directors are willing to accept less compensation from a CEF if they sit on many other boards for the same fund family. Specifically, using a system-GMM specification, we find a significant negative relationship between the logarithms of the numbers of other boards an independent director serves on as a director ($Ln\#OtherBoardsIndDirFam$) and the median compensations of the independent directors ($MedIndDirCompFnd$). Linn and Park (2005) argue that, ceteris paribus, larger firms pay more to independent directors since those firms have more total resources, and that the total value created by independent directors is greater for larger firms. Consistent with Ryan and

[55] The relationship is positive and significant for only the fixed-effects specification and only for the 1994-2013 period.

Wiggins (2004), Brick *et al.* (2006) and Adam and Ferreira (2009), we find a positive and significant relationship between fund sizes ($FndSize$) and the median compensations of independent directors (Table 3.7, column 7). We also find a negative but not significant relationship between family sizes ($FamSize$) and the median compensations of independent directors. Using a system-GMM specification, we find no significant relation between past share returns ($ShareReturn_{t-1}$) and the median compensations of independent directors. Once again, the insignificant test statistics for second-order autocorrelation (AR(2)) and for Hansen *J*-statistics of over-identifying restrictions reported in Table 3.7 indicate that the system-GMM specification is well fitted.

Overall, we find that the numbers of boards a director serves on in the CEF family, board meeting frequencies, director ownerships and fund sizes have a significant relationship with the median compensations of independent directors.

3.8. ROBUSTNESS TESTS

In this section, we examine if our previously reported results for benchmark-adjusted returns differ when they are replaced by CEF NAVPS (net-of-fees) returns ($NAVPSReturn$) in equation (3.3). Based on the system-GMM specification, we find a negative and significant relationship between the percentages of independent directors ($\%IndDirFnd$) and CEF NAVPS returns.[56] Our untabulated results show that the ownerships of directors have a highly significant and positive relationship with the CEF NAVPS returns which is robust for the different model specifications.

We also check the robustness of our previous results using CEF share returns ($ShareReturn$) as the CEF performance measure in equation (3.3). Consistent with our results in section 3.5 and based on the system-GMM specification, we find that CEF share returns are significantly and negatively associated with the percentages of independent directors in CEF boards ($\%IndDirFnd$). Based on the system-GMM specification and untabulated results,[57] we

[56] These untabulated results are available from the authors upon request.
[57] These untabulated results are available from the authors upon request.

find that director ownerships ($\%IndDirOwn > 50K$) and share returns are significantly and positively related.

We also use the sum of the compensations of independent directors on a CEF board ($TotCompAllIndDirFnd$) as a robustness check using equation (3.5). Based on untabulated results[58] and consistent with our findings reported in Table 3.7, the number of boards a director serves on in the CEF family ($Ln\#OtherBoardsIndDirFam$), the numbers of board meetings ($\#BoardMtngFnd$) and fund sizes ($FndSize$) have significant relationships with the sum of the board compensations of the independent directors ($TotCompAllIndDirFnd$).

3.9. CONCLUSION

Using a novel dataset that combines data on closed-end funds (CEFs) from SEC disclosure documents (semi-annual reports and annual proxy statements) and the Morningstar Direct database, this study examines the relationship between board characteristics (i.e. board independence, director ownership and director compensation) and various fund performance measures (expense ratios, share and NAVPS returns, and market premiums) and the median compensations of independent directors from a CEF board. Our dataset covers the data from all CEFs that submitted their annual proxy statements to the SEC over the period from 1994 through 2013.

We find that boards with higher percentages of independent directors are associated with lower fees (expense ratios). Since these results suggest that the independent directors of U.S. CEFs have some success in minimizing expenses, this is probably one of the reasons that U.S. mutual funds have the lowest fees around the globe (Khorana, Servaes, and Tufano, 2009). We also find negative and significant relations between CEF benchmark-adjusted returns and the numbers of independent directors. Consistent with the theoretical and empirical literature, we argue that board effectiveness in monitoring measures of CEF performance depend on the complexity of the measures, associated degrees of information asymmetry and uncertainty, and the specialised knowledge required for that entity activity (Duchin *et al*., 2010). The yearly negotiations with fund advisers that essentially determine fund fees require only publicly-

[58] These untabulated results are available from the authors upon request.

available information about what the competition is charging and paying for services and the funds relative performance to its competitors. In contrast, monitoring and influencing CEF returns and premiums requires specialised abilities to process public and private (but legal) information about asset management. While independent directors can replace poorly-performing managers or management companies, the cost and uncertainty of finding better replacements makes such events relatively rare (Kuhnen, 2004). We find no significant relationship between the percentages of independent directors and CEF premiums.

We also find that CEF board sizes are negatively related to CEF fees and benchmark-adjusted returns. The negative relationship between board sizes and benchmark-adjusted returns is consistent with the notion that larger boards are less effective in monitoring due to more complex coordination and free riding issues (Lipton and Lorsch, 1992; Jensen, 1993).

Consistent with previous studies (Chen *et al.* 2008), we find that more ownership by directors is associated with lower fund fees (expense ratios) and higher CEF returns. The positive relationships between the ownerships of directors and CEF returns are robust to the use of different measures of CEF returns (e.g. benchmark-adjusted share returns, share returns, NAVPS returns). This is consistent with the notion that directors with more ownership of fund assets are more aligned with the interests of shareholders. Therefore, our results have implications for the design of compensation schemes for directors. Increasing the percentage of compensation received as ownership in the CEF's shares may result in reducing any agency issues between fund managers and shareholders.

We find that larger funds and funds with higher board meeting frequencies and higher levels of ownership by directors pay more to their independent directors. Independent directors who expect to sit on more funds within the fund family accept lower compensations from each fund but receive more in the aggregate. We conjecture that independent directors accept lower compensation on a per-fund basis when they expect to increase their total compensation from the fund family by sitting on more boards.

There are several extensions to the previous essays that create the possibilities for future research papers. CEFs are an ideal laboratory to answer the following questions in corporate finance. Does board governance affect the conversion of CEFs to OEFs? How does board governance affect CEF decisions to engage in mergers and acquisitions? What is the optimal structure of a board in the mutual fund industry? How does board governance affect CEF payout policies?

CHAPTER FOUR

IMPACT OF SPONSORSHIP ON FIXED-INCOME FUND PERFORMANCE

4.1. INTRODUCTION

Individual investors face a multitude of possibilities when deciding on which mutual funds to invest in to maximize their individual utilities. According to Massa (2003), a typical investor first selects a mutual fund sponsor (family) that may provide low cost or free-switching options among their funds and then chooses a within-family mutual fund that best fits the investor's investment goals. Since fund sponsors belong to different parent industry affiliations, such as banks, insurers, financial cooperatives, and independents, they represent different transparencies (public or private), ownership structures (stock or mutual), agency issues, advisory-contract strategies, prudence concerns, affiliations (stand-alone or conglomerate with potential cost- or risk-sharing possibilities), access to information (e.g., through lending or security-issuance activities by a fund-family affiliate), brand reputational values, distribution or servicing channels (internal, external or some proportion of each), prospective investor bases, investor vigilance levels and governance oversights (fund boards or no boards and their effects on delegated monitoring).

The literature dealing with these sponsor characteristics, which is reviewed in section three, deals primarily with U.S. equity funds and sponsors. Exceptions include Ferris and Yan (2009) for both U.S. equity and debt fund families, Golez and Marin (2015) for the equity investments of bank-affiliated Spanish mutual funds, and Sialm and Tham (2015) for the reputational brand values of sponsors of U.S. equity and bond mutual funds. With few exceptions (e.g., Chugh and Meador, 2006), this literature deals essentially with sponsors or funds with undifferentiated or stock ownership structures. Furthermore, this literature has not examined the performance of funds whose sponsors are member-based financial entities (such as credit unions) or associations of professionals (such as dentists). Thus, the primary objectives of this paper are:

- First, to examine the effect on the fees and benchmark-adjusted gross, quasi-gross and net returns of Canadian fixed-income mutual funds of some sponsor characteristics for a richer set of sponsor types that includes member-based financial entities and associations of professionals.

- Second, to be the first to introduce and use quasi-gross returns (i.e., net returns plus fund expenses other than management fees), to test if fund managers earn sufficient benchmark-adjusted returns to cover their management fees.
- Third, to use a rigorous estimation model (correlated random effects model) that simultaneously captures the correlation effects from both observable and unobservable variables, and includes variables that are common to all funds, variables that account for time-invariant variables, variables that change both across funds or fund sponsors and over time, and a term to capture unobserved heterogeneity.

The Canadian fund environment provides an especially conducive and sufficiently different laboratory to address these primary objectives since it exhibits many institutional similarities and differences from the U.S. The existence of boards at the sponsor but not fund levels in Canada is one of the many differences which are discussed more fully in section 4.2.[59] Given that other studies only examine funds with boards (e.g., Chou, Ng and Wang, 2011), the absence of fund boards in Canada allows for a type of placebo test of the effects of fund governance through their boards on fund performance. The Canadian fund environment also has richness in sponsor types. This includes not only the Banks (all with public stock ownership), Insurers (primarily public stock ownership) and Independents (mixed public/private stock/mutual ownership) but also two major types of member-owned or directed or owner-operated sponsors (all with private mutual ownership) whose relative performance remains untested; namely, Member-Fins or member-based providers of financial services such as the Desjardins Group and Provincial Credit Union Centrals, and Member-Prof or associations of professionals such as the Canadian Dental Association, Independent Order of Foresters, and Fonds Des Professionnels Inc.

The Canadian fund environment also provides for an indirect test of market power given the increasing dominance of its increasingly concentrated banking involvement in the mutual fund industry.[60] The six major Canadian banks also lead nationally in the lending and credit-creation and underwriting markets, have mutual fund and investment dealer subsidiaries, and have 85% of the total financial assets owned by banks in Canada (Brean *et al.*, 2011). This dominance is driven to a large extent by their large (nation-wide) networks of branches that are able to market

[59] Directors on the board of sponsors who are associations of professionals generally include representatives of the association.
[60] Due to the breadth of their internal distribution networks through their nation-wide network of branches, Canadian banks have at least 28% of total assets under management in the Canadian fund market in 2011 (CSA, 2012).

mutual funds with reduced trailer fees due to a lower reliance on external distributors, their high brand reputational values, their abilities to invest heavily in their asset management and financial advice operations due to their stellar financial performances,[61] their greater informedness about the (especially debt) securities of the firms in which they invest through their lending and underwriting activities, and the diversification provided when wealth management is combined with other bank activities such as credit granting and trading (Kiladze, 2013). To further illustration one of these advantages, then commissioner Stromberg (1995, p. 25) in her report for the Ontario Securities Commission on the lack of mutual fund regulation in Canada stated that "… all aspects of the investment fund industry are being driven by distribution and competition for distribution." The fees paid to external fund distributors are referred to as trailer fees in Canada and 12b-1 fees in U.S., and they are banned in Australia and United Kingdom (Gage, 2014). While 12b-1 fees used to pay marketing and distribution expenses (not shareholder service expenses) are capped at an annual 0.75 percent of a fund's average net assets in the U.S. under FINRA rules, no such cap exists for trailer fees in Canada.[62] Since trailer commissions paid to external fund distributors account for about half of total mutual fund management fees in Canada (CSA, 2012), the internal distribution networks of the Canadian banks result in their relatively low trailer fees as a percentage of net asset value (NAV) compared to independent sponsors with their greater reliance on external distributors.

To perform our tests, we build a dataset over the 2000-2011 period using information from two data vendors (Fundata and Morningstar) augmented by a substantial amount of hand-collected data on fund characteristics (such as fund size, fund fees and fund terminations and mergers) from the financial media, and from the annual reports and other filings deposited by the funds at SEDAR. We estimate the benchmark-adjusted returns of Canadian bond mutual funds using the five-factor model used by Ayadi and Kryzanowski (2011). Our choice of instruments for the conditional version of this model is based on bond manager behavior.[63] If the risk exposure of a managed portfolio varies predictably with, e.g., the business cycle and the manager

[61] Moody identified the Canadian banks as being top performers using standard debt rating criteria (with the exception of government support) among 94 countries (Greenwood, 2009; Brean, Kryzanowski and Roberts, 2011).
[62] SEC, Mutual Fund Fees and Expenses, at: http://www.sec.gov/answers/mffees.htm#distribution
[63] Since the return performance of funds should be conditioned on ex-ante economic states, Ferson, Henry and Kisgen (2006) provide an alternative rationale for the use of instruments such as TERM and DEF as conditioning variables. Specifically, they note that the term structure models specify the variables on which to condition, which of course vary for default-free and defaultable bonds.

has no superior investment ability, Ferson and Schadt (1996) show that an unconditional assessment of benchmark-adjusted returns will confuse common variation in a fund's factor risk exposures and expected factor returns with abnormal investment ability.[64] Thus, the choice of the slope of the term structure (TERM) and the default premium (DEF) as conditioning variables for our purposes is consistent with the strategies that active bond managers undertake to generate excess returns and manage risks by taking advantage of expectations of interest rate movements, or hedging against the potential adverse effects of rate moves, or capitalizing on changes in yield-spread relationships. Thus, the conditional models used herein accommodate the unique features of fixed-income funds, which include non-stationary returns, use of derivatives for hedging and speculation, and the time-variation in their expected returns and risks. As is the case for other studies, the frameworks used herein are suitable to perform evaluations of fixed-weight and dynamic strategies if no fund trading occurs within the return measurement interval (e.g., Ferson and Khang, 2002).

Unlike other studies, our primary estimates for the relations between fund fees (or benchmark-adjusted returns) with fund and sponsor types and various control variables allow for a combination of fixed and random effects while simultaneously capturing the correlation effects from both observable and unobservable variables. For this purpose, we believe that we are the first to use the correlated random effects model proposed by Wooldridge (2009) that treats variables that are common to all funds, variables that account for time-invariant variables, variables that change both across funds or fund sponsors and over time, and a term to capture unobserved heterogeneity.

Our paper makes a number of contributions to the literature. First, we provide evidence that the industry affiliation of mutual fund sponsors affects the relative fees and benchmark-adjusted returns of mutual funds due to the different characteristics of their fund sponsors. The greater number of combinations of ownership features in the Canadian mutual fund market allows us to study not only the funds sponsored by insurers (mostly public with share ownership) and banks (all public with share ownership), financial cooperatives (all private with mutual ownership), professional associations (all private with mutual ownership) and independents (various ownership mixes).

[64] Also, see Kryzanowski, Lalancette and To (1994) for the sensitive of performance inferences to conditioning.

Second, we contribute to the sparse amount of academic research on bond fund performance when compared against the economic importance of bonds (Ferson, Henry and Kisgen, 2006). Also, examining the effect of sponsorship on the bond fund market is more informative in this context since it is cheaper and easier for individual equity investors to diversity their portfolio risk through Exchange Traded Funds (ETFs). Unlike equity ETFs, bond ETFs are recently introduced to the market and are relatively more expensive.[65]

Third, we introduce a new level of fund returns that we argue provides for a more precise evaluation of whether fund managers generate sufficient returns to cover their costs. We refer to this return level as being **Quasi-gross**. We obtain this return as a fund's net return plus its management expense ratio (*MER*) minus its management fee (*MgmtFee*), and we subsequently refer to (*MER – MgmtFee*) as a *TrailerFe*e due to the relatively high importance of trailer fees in the Canadian context. We argue that tests using quasi-gross returns better conform to a basic tenet of performance evaluation that only the benefits and costs directly attributable to the activities of the portfolio managers should be considered when assessing their performance.

Fourth, we show the important role that fees play in mutual fund benchmark-adjusted net return performance. This contributes to the ongoing public policy debate in Canada that the trailing commissions embedded in ongoing fund fees may create actual and perceived conflicts of interest both for mutual fund sponsors and advisors that are likely to differ by sponsor type due to differences in their reliance on external or affiliated parties to distribute their funds. Specifically, the Canadian Securities Administrators in a discussion paper (CSA, 2012) note that increased trailing commissions may be used to increase fund sales and fund assets and the management fees earned by fund sponsors and commissions earned by investment advisors, and that this may not be necessarily to the benefit of fund investors.[66]

Fifth, we provide a test of the generalizability of previous studies that concentrate on the U.S. and equity fund markets. Instead, we focus on Canadian fixed-income mutual funds given the findings of Ayadi and Kryzanowski (2011) that the benchmark-adjusted returns for Canadian bond funds before (after) the reflection of MER are positive (negative) which differs from the

[65] For example, the inception date for Claymore 1-5 Year Laddered Corporate Bond Index ETF is February 25, 2009. Its MER was 0.27% for common units in both 2009 and 2010 and 0.90% and 0.77% for advisor units in 2009 and 2010, respectively. This ETF was rebranded as I-Share after BlackRock Investments Canada Inc. acquisition of exchange-traded fund provider Claymore Investments Inc. in 2012.
[66] Unlike in the United States, there are no limits on the proportion of fund assets that can be used to pay trailing commissions in Canada.

common neutral (negative) findings for U.S. bond funds (e.g., Ferson *et al*., 2006). We also focus on Canadian fixed-income mutual funds given the many differences between such funds in Canada versus the U.S. and other countries that are developed further in the next section of this paper. For example, Canada is the only country out of 22 countries to get a failing grade, F, for its mutual fund fees in a report by Morningstar in 2011.[67]

We find that mutual funds under different sponsorship charge their investors different fees when providing their package of investment services to their investors. After controlling for various fund and two sponsor characteristics (subsequently referred to as 'after-controls'), we find that fixed-income funds sponsored by Banks (all with public stock ownership) have the lowest after-controls MER and trailer fees. This is consistent with the notion that the nation-wide branch networks of Canadian banks give them an advantage over other sponsor types by reducing their distribution and servicing costs by minimizing their use of external distributors and client servicers.

We find that Canadian fixed-income funds sponsored by Banks, Insurers, Independents, and Member-Fins (member owned or controlled private financial entities) exhibit different after-controls benchmark-adjusted quasi-gross and net returns. Consistent with the findings of Ferris and Yan (2009), we find that after-controls benchmark-adjusted returns for the funds of public sponsors are, on average, significantly lower than those for private ones. Our results also show that Canadian fixed-income mutual funds sponsored by Banks (all with public stock ownership) outperform funds sponsored by Independents, Insurers, and Member-Fins except for funds with a short-term investment objective. This outperformance for funds with a Canadian Bond and Canadian high-yield investment objective is consistent with such sponsored funds having better managerial effectiveness where superior information or skill matters the most. We also find that the funds with a Canadian Bond objective that have sponsors that are professional member-owned or controlled entities have significantly better quasi-return and net return benchmark-adjusted performances compared to their counterparts with other private sponsor types. This is consistent with lower agency issues with funds with professional member-owned or controlled sponsors.

[67] http://www.cbc.ca/news/canada/banks-misleading-clients-on-mutual-funds-1.1415027

The remainder of the chapter is organized as follows. The next section presents some institutional details on Canadian mutual funds. The section 4.3 reviews the literature on the relationships between various fund and sponsor characteristics with fund fees and fund benchmark-adjusted returns. In the section 4.4, we introduce the sample used in our analysis. Sections 4.5 and 4.6 present the hypotheses, methodology and results for the relations of fund fees and benchmark-adjusted returns, respectively, with sponsor-specific characteristics. Section 4.7 contains some further robustness checks. Section 4.8 concludes the paper.

4.2. INSTITUTIONAL SETTING FOR MUTUAL FUNDS IN CANADA

Fund sponsors are organized under stock- or mutual-ownership structures with the former being predominant in Canada, and are also either publicly or privately owned with the former being predominant in Canada. Canadian mutual funds are often registered as investment trusts. Unlike in most countries but like the U.S., competition is restricted by not permitting foreign-domiciled funds to register for sale domestically. Like most countries but unlike the U.S., fund management services are subject to domestic consumption taxes in Canada and the Canadian distribution model uses financial advisors selling and servicing no-load funds (Alpert and Rekenthaler, 2011, p. 22).[68] Canadian funds supposedly realize lower benefits from economies of scale compared to their U.S. counterparts due to both their sponsors and AUM being much smaller. As a result, Canadian funds are ranked as not only continuing to have the highest fees and expenses internationally but as having considerably higher fees compared to the U.S. and much of Europe (Alpert, Rekenthaler and Suh, 2013, p. 13). In the U.S., caps are imposed through a prohibition on FINRA-member advisors from offering or selling shares of any investment company if the sales charges (including trailing fees) described in the prospectus are excessive. Due to concerns about mutual fund fees in Canada, the Canadian Securities Administrators (2012) issued a discussion paper and a call for comments in December 2012 "to see whether there are investor protection or fairness issues, and to determine whether any

[68] These taxes are also known as a Value Added Tax (VAT) or Goods and Services Tax (GST). Other countries without such taxes include China, Hong Kong, Italy, Norway, Spain and the United Kingdom (Alpert and Rekenthaler, 2011, p. 6).

regulatory responses are needed to address any issues we find". Unlike in the U.S., no caps are imposed in Canada on commissions paid by mutual fund investors.

Unlike in the U.S. and most other countries,[69] a mutual fund in Canada is not required to have a Board of Directors to represent the rights of shareholders in fund operating decisions. While fund companies in Canada are required since May 1, 2007 to establish an Independent Review Committee (IRC) composed entirely of independent members, an IRC only considers and provides recommendations to the fund manager on conflicts of interest to which the manager may be subject. While the shares or units of a mutual fund are owned by its investors, a trustee holds the title to the property of each fund (e.g. its cash and securities) on behalf of its unitholders. The property of a fund is managed by a fund sponsor (also known as the fund management company or fund family) in accordance with the fund's investment objectives (fund type). Hiring and firing of the fund managers and other service providers to the fund are important means by which a fund sponsor discharges its responsibility to manage the fund in the best interests of the fund investors. However, this is likely to more favorably consider the interests of the sponsor over that of the fund investors when the fund itself does not have a board of directors.

Fund sponsors (but not their individual funds) typically have a Board of Directors in Canada, particularly if they are traded publicly or if the fund sponsor has a mutual-ownership structure.[70] Sponsor control is generally concentrated in one or two or a small group of owners when the entity is private (i.e., not publicly traded) and non-mutual. Managers and (sub)advisors are hired for each fund on fee-based contracts to manage or advise on the management of fund assets, operations, marketing and distribution. Since the revenue of each manager(s) and any (sub)advisor is generally a percentage of the net asset value (NAV) of a fund, the revenues partially depend on fund investment performance. A fund family or complex is a group of funds with the same brand name that are managed by the same fund sponsor who is often also the

[69] Countries that require funds to have a Board of Directors with a minimum level of independence representing shareholders include India, Norway, Singapore and the United States (Alpert and Rekenthaler, 2011). In contrast, while mutual funds in the U.K. are required to have Boards, such Boards have no requirements for independent members and can consist of a single member including the corporate parent (Alpert and Rekenthaler, 2011, p. 135).

[70] This pre-empts a test using Canadian funds of the generalizability of findings that the structure of a fund's Board of Directors (particularly, its size and independence) affects fund returns and investments in poorly governed firms (e.g., Tufano and Sevick, 1997; Khorana, Servaes and Wedge, 2007; Meschke, 2007; Chou, Ng and Wang, 2011).

trustee, distributor and promoter of the funds within the family.[71] Although the registration of mutual funds and individuals selling any type of securities are the responsibility of provincial security commissions in Canada,[72] no regulatory rules that are sponsor-specific are identified that could systematically and materially affect the findings reported herein. However, since the financial crisis wealth managers are required to implement better compliance systems that track the risk profiles of their client accounts. Banks as a sponsor may have additional scale economies since they can share the estimated costs of 15 to 20 million dollars for implementing better compliance systems with their large retail client banking arms (Kiladze, 2013).

4.3. RELATED LITERATURE

Ferris and Yan (2009) find that fees are higher and returns are lower during the period 1992-2004 for various undifferentiated fund types sponsored by public versus private fund families, which they attribute to the short-termism of public fund families. Agency theories predict that mutual ownership should have an agency advantage over stock ownership only when the underlying assets are easily valued and the threat of asset withdrawal by mutual unitholders is a credible disciplinary mechanism with low transaction costs and all other factors are held constant (Fama and Jensen, 1983a, 1983b). This appears to be the case for investor holdings in most open end mutual funds since such shares are generally easily redeemable. However, the threat of investor withdrawals from an open end mutual fund is lower when the sponsor is mutually and not stock-owned because the fund investor typically is also a member of the mutually owned sponsor. When the two conditions are not meet, higher levels of market monitoring should render stock-owned sponsors more efficient than their mutually owned counterparts. The impact on fund fees and benchmark-adjusted returns of any differential agency problems for fund sponsors due to the stock/mutual ownership delineation may be altered further by the risk-sharing advantages of stock versus mutual ownership (Fama and Jensen, 1983b) or by greater access to

[71] For example, Beutel Goodman Managed Funds Inc. is the trustee, manager, distributor and promoter of the funds in the family "Beutel Goodman Managed Funds" (Beutel Goodman Managed Funds, *Simplified Prospectuses*, August 17, 2004, p. 1 and July 6, 2011, p. 1).

[72] http://www.csa-acvm.ca/

information obtained through lending or underwriting activities by fund-family affiliates or by the use of lower cost distributional or servicing channels or the vigilance of their fund investors.

Lamm-Tennant and Starks (1993) find that stock insurers take more risk than mutual insurers. Mester (1993) provides evidence that mutual savings and loans (S&Ls) are more efficient compared to stock S&Ls. Boose (1990) cannot refute the possibility that the differences in general insurance expenses between mutual and stock life insurers in the U.S. are due to sales force expenses rather than to differences in their managements. Chugh and Meador (2006) show that the managements of U.S. insurers increased the risk in their investment portfolios after demutualization. For a sample of 181 large banks from 15 European countries over the 1999-2004 period and after controlling for bank characteristics, country and time effects, Iannotta, Nocera and Sironi (2007) find that mutual and government-owned banks exhibit a lower profitability (and cost) than privately owned banks, and that higher ownership concentration is associated with better loan quality, lower asset risk and lower insolvency risk but not different profitability. Based on the lower risk-adjusted returns and lower sensitivity of fund flows to poor performance of equity mutual funds actively managed by insurance companies during the 1990-2002 period, Chen, Yao and Yu (2007) conjecture that the lower risk-adjusted returns are due to prudence concerns when the asset management subsidiaries of insurance firms simultaneously manage mutual funds and fiduciary assets for their parents and lower investor monitoring of performance for insurance mutual funds that are often cross-sold through their parents' extensive broker/agent networks.

Many studies examine the relation between manager compensation and fund performance. For example, Ma, Tang and Gomez (2015) find that mutual fund managers with performance-linked bonuses exhibit superior subsequent fund performance, while those with alternative compensation arrangements are not associated with superior performance. Furthermore, if the compensations of fund managers under mutual ownership structures are likely to be lower as Mayers and Smith (1992) report for life insurers, this provides their fund managers with lower performance incentives.

Unlike independent sponsors, funds sponsored by banks, insurers and financial cooperatives may have access to a larger pool of potential individual investors through their primary lines of business like retail banking and the sale of insurance policies. Search costs are likely to be lower for potential fund investors who are already clients of the bank, insurer or financial cooperative.

The findings of Qian (2011) imply that fund clients are heterogeneous in the vigilances of their monitoring because funds attract and retain different clienteles. James and Karceski (2006) conclude that agency costs associated with the efficacy of delegated monitoring may lead to less monitoring and worse overall fund benchmark-adjusted return performance. Chou, Ng and Wang (2011) interpret their findings as suggesting a greater alignment of the interests of a fund with its investors with more quality fund governance, and that fund return performance is not adversely affected by the associated costs of monitoring their portfolio holdings.

Due to informational economies of scope and better access to firm-specific information associated with their lending activities,[73] Massa and Rehman (2008) find that bank-sponsored equity funds and families during the 1993-2004 period increased their equity investments in within-family borrowers after such borrowings by far greater amounts than other unaffiliated funds and fund families. Hao and Yan (2011) offer strong evidence that investment bank-affiliated U.S. mutual funds underperform their unaffiliated counterparts over the 1992-2004 period, which they conclude is consistent with the idea that investment banks use affiliated funds to support underwriting business at the expense of fund shareholders. Ivashina and Sun (2011) find that institutions that participate in syndicated loan renegotiations (material amendments) subsequently trade the stock of these companies, and that these trades materially outperform those by other managers in the same stocks or trades in other stocks. While Berzins, Liu and Trzcinka (2013) report no performance differences by fund type, they find substantially lower risk-adjusted returns for funds operated by investment banks versus non-bank conglomerates, which is consistent with pervasive conflicts of interest in the asset management business owned by investment banks. Golez and Marin (2015) find that bank-affiliated Spanish mutual funds systematically increase their holdings in the controlling bank stock around seasoned equity issues, at the time of bad news about the controlling bank, before anticipated price drops, and after non-anticipated price drops. Based on a large sample of recommendations issued from 1995

[73] Schenone (2004) finds substantially lower IPO underpricing for firms with than without pre-IPO banking relationships with the underwriters managing the firm's IPO. Drucker and Puri (2005) identify efficiencies that benefit issuers and underwriters when a financial intermediary concurrently lends to and underwrites an issuer's public securities offering.

through 2006, Mola and Guidolin (2009) find that sell-side analysts are likely to assign frequent and favorable ratings to a stock after stock investments by the analysts' affiliated mutual funds.

Sialm and Tham (2015) show that reputational brand values of sponsors are important as the investment decisions of U.S. equity and bond mutual fund shareholders depend on the prior performances of both the mutual funds and their publicly traded management companies. Marketing, distribution and shareholder servicing costs, comprising loads and 12b-1 fees, are the largest observable component of non-management fees in the U.S. (Wahal and Wang, 2011). Khorana and Servaes (2012) find that loads and 12b-1 fees are positively associated with market share (consistent with their use for marketing and distribution), and that fund families with above-average initial fees gain market share by passing along economies of scale to investors or by lowering fees. However, Walsh (2004) shows that the primary benefits of fund growth accrue to fund sponsors and not in lower fees although fund shareholders incur the costs of such growth. Christoffersen, Evans and Musto (2013) report significant effects of the brokers' shares of sales loads and other revenues on funds' inflows, particularly for unaffiliated brokers, and that load but not revenue sharing helps to predict poor fund performance. Previous research reports mixed evidence as to whether independent directors help to mitigate the principal–agency problem inherent in mutual funds (e.g., Tufano and Sevick, 1997; Ferris and Yan, 2007; Qian, 2011).

Various authors (e.g., Davis, 2001; Chan, Chen and Lakonishok, 2002) find that different investment abilities and styles result in different mutual fund benchmark-adjusted returns. Frye (2001) provides evidence of little difference between the benchmark-adjusted performances of bank- and nonbank-managed mutual funds over the period from January 1991 through September 1999. However, she does not conduct any statistical tests of the performance differences that favor the bank- versus nonbank-managed bond funds in her samples. Various papers examine the effect of scale capacity effects, organizational complexity and conflicts of interest on fund performance (e.g., Wahal and Wang, 2011; Bessler, Kryzanowski, Kurmann and Lückoff, 2016).

4.4. DATA, SAMPLE AND DESCRIPTIVE STATISTICS

The sample of Canadian fixed-income funds is constructed by adjusting for mergers and name changes over the period 2000-2011 using information from Fundata and Morningstar Canada augmented by hand-collected information from industry and individual fund reports, and specific fund news in the financial press, SEDAR and various websites.[74] We use individual fund data (TNA-weighted averages of the share classes of each fund) in our tests since sponsor information and portfolio holdings are common across all fund classes and using share class data as independent observations can lead to errors in the interpretation of the results. The sample excludes institutional funds and consists of all 573 fixed-income funds (345 Canadian Bond or T1, 106 Short-term Canadian Bond or T2, and 122 High-yield Bond or T3 mutually exclusive funds) regardless of when they began and whether or not they are still active at period end to ensure no survivorship bias.[75] Money market funds are excluded from our sample since the focus of our study is on the funds with longer-term investment objectives. Greater details on the numbers of funds and observations categorized by fund type, sponsor type and sponsor transparencies (public or private) are found in Panel C of Table 4.1.[76] Fund sponsor types (S) are divided into S_1 ("Independents") or sponsors that are not categorized into one of the remaining groups; S_2 ("Banks") or sponsors that are chartered banks or their wholly owned securities firms; S_3 ("Insurers") or sponsors that are insurance companies; and S_4 ("Member-Fins") or sponsors that are member owned or controlled (either specific professional or fraternal groups or open to all) that are organized as financial institutions such as a caisse, credit union or other type of financial cooperative.[77]

[Please place table 4.1 about here.]

[74] We choose our beginning year due to the availability of data. For most of the funds, we have difficulty finding data related to fund characteristics like fund fees, and in some cases fund size, for the period before 2000.

[75] There are 28 funds that changed their sponsor transparency from private to publicly traded. Those funds are considered twice in our calculations in Table 4.1 Panel C. Therefore, the total number of funds without considering the effect of the changes in transparency structure is 545.

[76] The number of funds and the number of observations for private (mutualized) Insurers (S_3) is lower than in previous periods because the period that we examine just follows a period of demutualization by Canadian life insurers such as Manulife, Mutual Life (CLARICA), Sun Life and Canada Life. Furthermore, Industrial Alliance completed its demutualization in February 2000.

[77] "Member" refers to fund sponsors that are owned or controlled by members (either specific professional or fraternal groups or open to all) and organized as an association (Member-Prof) or financial entity (Member-Fins). "Member-Prof" refers to Member fund sponsors that consist of members from specific professions such as engineers, lawyers, dentists, medical specialists, physicians, airline pilots, foresters, artists and public sector employees. Whether Member-sponsors are included in S_1 (independents) or S_4 (Member-Fins) depends on whether they are organized as an association or part of a financial entity.

The total market value of the fixed-income funds in our sample is around \$56 billion, and Canadian Bond, Short-term Canadian Bond, and High-yield Bond funds have 67% (\$37.44 billion), 21% (\$11.88 billion), and 12% (\$6.6 billion) of this aggregate value as of December 2011, respectively. Thus, the largest and smallest market segments are Canadian Bond and High-yield Bond funds, respectively (Panel B of Table 4.1). Each fund's monthly return is given by the change in its net asset value per share (NAVPS) adjusted for all distributions. Fund size is proxied by total net assets (TNA). Panel A of Table 4.1 reports statistics on the cross-sectional distributions for the three major investment objectives (fund type) and for all 545 bond funds in our sample based on the time-series means of the individual funds. The time-series mean monthly returns not benchmark-adjusted for the individual funds over the 144 month period range from -1.035% to 1.235%, and have a cross-sectional mean of 0.315%. The time-series standard deviations of returns for the individual funds range from 0.012% to 5.160%.

Summary statistics for size-weighted (henceforth SW) portfolios of funds grouped by fund type (i.e., investment objective) and sponsor types are reported in Panel B of Table 4.1. For fund-type groupings, the SW portfolio of Canadian Bond funds has the highest historical average monthly net return of 0.387%, and the portfolio of Short-term Canadian Bond funds has the lowest monthly net return volatility of 0.419%. The SW portfolios of funds sponsored by Banks and Independents exhibit the highest and lowest monthly mean net returns of 0.402% and 0.322%, respectively. The SW portfolios sponsored by Insurers and Banks have the highest and lowest monthly volatilities of respectively 0.908% and 0.746%. Almost 50% of the funds (262) belong to Independents, 20% to Banks (98), 25% to Insurers (145) and 5% to Member-Fins (40). A comparison of two measures of mutual fund fees (i.e., their management expense ratios or MER and their management fees) shows that mutual funds with member-based financial sponsors (Member-Fins) charge more, on average, relative to other mutual funds during our study period, and have the highest average fees in the Canadian Bond category.

Based on untabulated results, the mean cross-sectional annual numbers of funds within *each* fund family based on the means of the time series of annual values for the individual funds is 6 for Canadian Bond funds, 9 for Short-term Canadian Bond funds and 2 for High-yield Bond funds, respectively. Thus, each fund family, on average, controls more than one fund in each fund type.

4.5. ARE FUND FEES ASSOCIATED WITH FUND SPONSORSHIP?

In this section, we test the alternative hypothesis, H_A^1: Fund fees (MER, *MgmtFee* and *TrailerFee*) differ by sponsor and fund types. We expect funds with different sponsor types to have different fees due to their different charges for providing their different packages of fund services to investors (e.g. distribution fees) and agency-related differences. Specifically, we expect bank sponsors to have lower fees due to the reasons provided earlier. Since higher fees reduce the net returns to shareholders and may enrich management companies, the magnitude of fees provides initial evidence on a potential source of any differential benchmark-adjusted net return performance for funds differentiated by sponsor and fund types.

4.5.1 Methodology

To examine whether funds differentiated by sponsor type charge their investors significantly different fees and given that fees exhibit some variability annually but little monthly, we estimate the following panel regression using a correlated random effects specification and annual data:[78]

$$FundFees_{it} = a + b_1S_{1it} + b_2S_{3it} + b_3S_{4it} + b_4FundSize_{it} + b_5LnNumFund_{it} + b_6LnAge_{it} + b_7Flow_{it} + b_8Public_{it} + b_9Mutual_{it} + b_{10}PerfRank_{it} + e_{it}, \quad (4.1)$$

In (1), a represents the average fund fee *after* controlling for various fund and sponsor characteristics when the fund sponsor is a bank (captured using the dummy variable S_2 in (1) when one of the other sponsor dummy variables is removed so that it is captured by the intercept), and S_1, S_3 and S_4 are sponsor dummy variables which take a value of 1 if the fund sponsor belongs to respectively the Independent, Insurer, and Member-Fins category and 0 otherwise.

$FundSize_{it}$ is the demeaned value of fund size to better examine if any scale (dis)economies are associated with fund size (Chen, Hong, Huang and Kubik, 2004; Pollet and Wilson, 2008; Grinblatt and Titman, 1994).[79]

$LnNumFund$ is the natural logarithm of the number of funds managed by the fund sponsor.

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[78] We calculate the Variance Inflation Factor (VIF) of all variables in regression (1). All VIFs are below ten.

[79] Based on untabulated results, we also use a piece-wise approach to examine the effect of fund size which does not have any effect on the inferences based on the estimated coefficients of our variables of interest.

$LnAge$ is the natural logarithm of the age in months of a fund based on its launch date (e.g., Falkenstein, 1996; Chen *et al*., 2004; Barber, Odean and Zheng, 2005; Yan, 2008; Aggarwal and Jorion, 2010).

$Flow$ is fund flow given by $FLOW_t = [TNA_t - TNA_{t-12}(1 + R_t)]/TNA_{t-12}$, where R_t and TNA_t are the yearly return and total net asset value of the fund at time t (Sirri and Tufano, 1998).[80] Thus, fund flow is the net growth in fund assets beyond reinvested investment returns.

$Public$ is a dummy variable which takes the value of one for a public sponsor and zero for a private sponsor.

$Mutual$ is a dummy variable which takes the value of one for a mutually-owned sponsor and zero for a stock-owned sponsor.

$PerfRank$ is the percentile ranking of each fund's benchmark-adjusted return in each year for the funds with the same investment objective, and is included because higher fees may be justifiable for funds with superior realized performance (Ferris and Yan, 2009).

Based on the summary results reported in Panels D and E of Table 4.1, the cross-sectional means and medians of the time-series means and medians of the individual fund MER and trailer fees for the same fund type are quite similar but differ somewhat across fund types and decrease somewhat as one moves from a more risky to a less risky fund type. To illustrate, the cross-sectional means and standard deviations of the time-series means of the MER (expressed annually) of the individual funds are respectively 1.950% and 0.086% for High-yield Bonds, 1.766% and 0.071% for Canadian Bonds and 1.568% and 0.062% for Short-term Canadian Bonds, respectively.[81] The cross-sectional means and standard deviations of the time-series means of the *TrailerFee* of the individual funds are 0.455% and 0.063% for High-yield Bonds, 0.340% and 0.059% for Canadian Bonds and 0.330% and 0.067% for Short-term Canadian Bonds, respectively. Based on untabulated results, the typical fund in each fund type category is seasoned given that the mean and median ages are 13.2 and 10.3 years for Canadian Bond funds, 14.3 and 11.3 years for Short-term Canadian Bond funds and 9.1 and 7.3 years for High-yield Bond funds, respectively. Based on untabulated results, the mean and median cross-sectional

[80] According to Sirri and Tufano (1998), the flow measure is not sensitive to whether the TNA is measured at the end, beginning or over the period.
[81] The results are calculated for the Canadian Bond fund category after deleting the four years of MER data (2000-2003) for the Trans-Canada Bond fund that was anomalous.

monthly fund flows based on the means of the time series of monthly flows for the individual funds are positive for each fund type. Specifically, the cross-sectional means and medians are 5.362 and 0.409 million for Canadian Bond funds, 13.834 and 0.213 million for Short-term Canadian Bond funds and 1.45 and 0.434 million for High-yield Bond funds.

We examine the average after-controls fees and their differences for the individual funds by sponsor type and fund type (investment objective). We estimate all regressions first using a correlated random-effects (CRE) specification (Blundell and Powell, 2003; Altonji and Matzkin, 2005; Wooldridge, 2009). This specification allows for a combination of fixed and random effects while simultaneously capturing the correlation effects from both observable and unobservable variables. Specifically, the correlated random effects characterization treats variables that are common to all funds, variables that account for time-invariant variables, variables that change both across funds or fund sponsors and over time, and a term to capture unobserved heterogeneity.

Our rationale for the choice of CRE estimation method follows. Based on the Breusch and Pagan (1979) multiplier test of a random-effects specification versus a pooled OLS specification, we reject the null that the pooled OLS specification should be used for all our samples. Thus, this test supports the use of a random-effects specification. Based on the Hausman (1978) specification test that compares the random- and fixed-effect estimators, we reject the null hypothesis, which is interpreted as supporting the adoption of the fixed- over the random-effects model. Although we control for different fund-specific characteristics in our regressions, a fixed-effects specification is not appropriate for our testing purposes since it does not allow for the estimation of the effect of time-invariant variables (Baltagi, 2001; Wooldridge, 2002; Hsiao, 2003; Baltagi, Bresson and Pirotte, 2003) and generates inefficient estimates of the effects of regressors that have very little within variance (Plümper and Troeger, 2007). The main variables (e.g., sponsor type) that we are testing are time-invariant or have very little time-series variation. For example, only a few funds sponsored by Independents migrate to other sponsor types over the time period examined herein. Other approaches that have been proposed to adjust the fixed-effects specification for this severe limitation, such as the fixed-effects vector decomposition approach of Plümper and Troeger (2007), remain controversial (e.g., Greene, 2011).

With regard to the choice of clustering, we conclude that our data have a fund effect based on the guidance proposed by Petersen (2009) for checking whether the data examined has fund and/or time effects. A fund (time) effect is present when the standard errors clustered by fund (time) are much (a number of times) larger than the White standard errors. The presence of both effects is indicated when standard errors clustered by fund and time are much larger than the standard errors clustered by only fund or time. As a test of robustness whose results are reported in section seven, we estimate equation (4.1) using the Fama and MacBeth (1973) approach.

Since we have four dummy variables in regression (4.1) and we need to compare all possible pairs of sponsor types, we run the panel regression (4.1) four times. One of the sponsor dummy variables is omitted each time to prevent the dummy variable multicollinearity trap and to facilitate interpretation by ensuring that the intercept represents the average fees related to that dummy variable after controlling for the fund and sponsor characteristics included in regression (4.1). We continue to refer to these fees as "after-controls fees". The coefficients of the other dummies represent the average after-controls differences in fees compared to that for the dummy variable which is not included in the regression. To avoid complexity in our tables, we present the results when the dummy variable related to funds sponsored by Banks (S_2) is dropped so that the after-controls fees for bank-sponsored funds are captured by the intercept term in equation (4.1). The reason for this choice will become obvious as we progress in presenting the regression findings.

4.5.2 Fund Fee Determinants Based on Panel Regressions

The coefficient estimates for regression (4.1) for three different dependent fee variables, Management Expense Ratio (MER), Management fee ($MgmtFee$) and Trailer Fee ($TrailerFee$), are reported in Table 4.2 when the bank-sponsored funds are used as the comparison benchmark. These results allow us to examine if there are substantial differences in these fund fees after controlling for various fund and two sponsor characteristics that are captured by the Public and Mutual dummy variables. We expect to find differences in fund fees based on these two characteristics but also due to the differences in other sponsor characteristics discussed in section three.

[Please place table 4.2 about here.]

We first examine differences in these three fee metrics differentiated by sponsor but not fund type as reported in the three columns headed by “Undifferentiated” in Table 4.2. We observe that the average fund sponsored by the Banks (S_2) has the lowest after-controls MER and $TrailerFee$. The after-controls MER differences are all significantly lower for the funds sponsored by the Banks (S_2) compared to those sponsored by Independents (S_1), Insurers (S_3) and Member-Fins (S_4). Similarly, the after-controls $TrailerFee$ differences are significantly lower for the funds sponsored by the Banks (S_2) compared to those sponsored by the Independents (S_1) and Member-Fins (S_4) but not the Insurers (S_3) who like the Banks have sizeable in-house sales forces for their products. We observe no significant differences in the after-controls $MgmtFee$ for funds differentiated by sponsor type.

We then examine the after-controls fee results differentiated by both sponsor and fund type. Based on the three columns headed by “Cdn” in Table 4.2, we observe that funds sponsored by Banks (S_2) have the lowest average after-controls MER and $TrailerFee$ that are significantly different except for the MER comparison with Member-Fins (S_4). Based on the three columns headed by “Short-term” in Table 4.2, we find that funds sponsored by Banks (S_2) have lower average after-controls MER and $TrailerFee$ than the funds sponsored by Independents (S_1), Insurers (S_3) and Member-Fins (S_4), and that the differences are only significant (at 0.10 level) for the comparisons with Independents (S_1). Based on the three columns headed by “High-yield” in Table 4.2, we find that the average after-controls $TrailerFee$ for the funds sponsored by the Banks (S_2) is significantly higher than that charged by the Insurer-sponsored funds (S_3), and that the average $MgmtFee$ for the funds sponsored by the Banks (S_2) is significantly lower than that charged by the funds sponsored by the Independents (S_1) and the Insurers (S_3). While we find that funds with public sponsors have higher after-controls MER and $TrailerFee$, only the average after-controls MER differentials are significant for funds not differentiated by their investment objectives (“Undifferentiated” in Table 4.2) and for funds with a short-term investment objective. These results are consistent with those reported in Ferris and Yan (2009).

In summary, we have clear evidence that funds sponsored by the Banks (S_2) almost always have the lowest average after-controls MER and $TrailerFee$ for funds not differentiated by fund type and for funds with a Canadian Bond investment objective. This is consistent with the notion that Canadian banks with nation-wide networks of branches potentially have the ability to reduce trailer fees which account for almost half of fund fees in the Canadian fund market (CSA, 2012).

We now turn to a discussion of the estimated coefficients for the fund-specific control variables that are reported in Table 4.2. We find that MER is negatively related to fund size ($FundSize$) for all fund types based on investment objectives. The relation is significant for funds not differentiated by their investment objectives ("Undifferentiated" in Table 4.2) and significant at the 0.10 level for funds with a Canadian bond investment objective ("Cdn" in Table 4.2). This result weakly supports an economies-of-scale argument in mutual fund MER. The negative relation between $TrailerFee$ and $FundSize$ is only significant for funds not differentiated by fund type ("Undifferentiated" in Table 4.2). *MgmtFee* is not significantly related with $FundSize$ for any of the fund type categories.

We find a significantly positive relation between $LnNumFund$ (the natural logarithm of the number of funds managed by the sponsor) and both MER and $TrailerFee$ for the funds not differentiated by their investment objectives ("Undifferentiated" in Table 4.2) and for funds with a Canadian Bond investment objective ("Cdn" in Table 4.2). We also find a significant and positive relation between $LnNumFund$ and $TrailerFee$ for the other two fund types.

We observe a negative relation between MER and $TrailerFee$ and the natural logarithm of fund age that is only significant for $TrailerFee$ for all but the funds with a Canadian Bond investment objective. We find no significant relation between fund flows ($Flow$) and the fund performance ranking ($PerfRank$) with either MER or *MgmtFee* or $TrailerFee$ for our various samples of individual funds.

4.6. ARE BENCHMARK-ADJUSTED GROSS, QUASI-GROSS AND NET RETURNS ASSOCIATED WITH FUND SPONSORSHIP?

In this section, we test alternative hypothesis, H_A^2: Fund benchmark-adjusted gross, quasi-gross and net returns differ by fund and sponsor types. We expect that funds with different sponsorships exhibit different benchmark-adjusted gross, quasi-gross and net returns due to differences in fees (see section 4.5), other sponsor characteristics (see sections 4.2 and 4.3) and the abilities of their managers.

4.6.1 Methodology

The performances of individual funds are examined using a benchmark model with a multi-factor structure. The use of gross and quasi-gross (in addition to net) returns allows for tests of whether bond fund managers possess skills to generate benchmark-adjusted returns that cover their costs, since all passive benchmark returns exclude investment-related expenses (such as brokerage costs) and taxes. We argue that quasi-gross returns, which are calculated by adding 1/12th of a fund's annual trailer fees ($TrailerFee$) to its net returns, are more suitable for measuring the managerial abilities of fund managers since this assigns only the costs incurred by managers to generate benchmark-adjusted returns from the managers' skills and efforts. Trailer fees used to service, for example, commissions paid by the sponsor to its in-house sales representatives or its external fund distributors, are not under the control of the manager. Similarly, various advertisements decisions (when, where and for which funds) are taken at the family and not individual fund level. However, since advertisements can affect the fund flow-performance sensitivity (Gallaher, Kaniel and Starks, 2015), it is important to control for fund flows as we subsequently do when evaluating fund performance.

Our empirical investigations use the five-factor model used by Ayadi and Kryzanowski (2011) which is similar to the Reg-6 model of Blake, Elton and Gruber (1993) but without a high-yield bond index due to this index's absence or market thinness in Canada for much of the period evaluated herein.[82] DEX fixed-income indices, which are obtained from Datastream, CANSIM, and CFMRC, are used as factors in the proposed benchmark model. Four bond indices are related to government and corporate bond issues with long- and medium-term maturity structures. The mortgage-backed securities overall bond index accounts for the performance of closed and open pools. The default premium (DEF) and the slope of the term structure (TERM) are used as conditioning variables. Table 4.3 shows that most of the bond indices exhibit symmetric patterns with fatter tails than are suggested by the normal distribution.

[Please place table 4.3 about here.]

[82] Ayadi and Kryzanowski (2011) find that this model performs best for the categories of Canadian fixed-income funds examined herein.

This model captures differences in maturities by including the intermediate and long-term DEX government bond indices, and differences in default risks by including the DEX intermediate and long-term corporate bond indices and the DEX mortgage-backed securities overall index. The full conditional version of this model is:[83]

$$r_{i,t} = \alpha_{i0} + \alpha_i' z_{t-1} + \sum_{k=1}^{5} \beta_{ik}(z_{t-1}) I_{kt} + u_{i,t},\ t = 1, \dots, T_i,\ i = 1, \dots, N \tag{4.2}$$

where $r_{i,t}$ and I_{kt} denote the returns in excess of those of one-month Treasury bills on fund *i* based on either gross or quasi-gross or net returns[84] and on index *k* between *t*-1 and *t*, respectively. α_{i0} is the average in-sample benchmark-adjusted return on fund *i* based on one of the three return types, β_{ik} is the sensitivity of the excess return on fund *i* to the excess return on index *k*, and $u_{i,t}$ is the error term or deviation in the average benchmark-adjusted return specific to fund *i* in month *t*. The least squares method is used to estimate benchmark-adjusted returns since all the benchmark models are linear and exactly identified.[85] The time-varying component of the coefficients is captured using the conditional variables which are stochastically detrended by subtracting a moving average over a period of two months. Default premium (DEF) is used to condition the DEX Long-term Corporate Bond Index (DEXLTCORP), the DEX Medium-term Corporate Bond Index (DEXMTCORP) and the DEX Mortgage-backed Securities Overall Bond Index (DEXMBS). The slope of the term structure (TERM) is used to condition the DEX Long Term Government Bond Index (DEXLTGOV) and the DEX Medium-term Government Bond Index (DEXMTGOV).

We first compute the benchmark-adjusted monthly excess returns using the $\hat{\beta}_{ikt}$ for month *t* for each fund that are estimated using equation (4.2) and the returns for the previous 60 months:[86]

$$FundRTN_{it} = (r_{it}) - \left(\sum_{k=1}^{5} \hat{\beta}_{ikt} I_{kt}\right) \tag{4.3}$$

[83] The unconditional version of this model is obtained when all coefficients are time-invariant.

[84] Many papers use gross returns to assess the managerial skills of mutual fund managers. Examples include Grinblatt and Titman (1989, 1993), Grinblatt, Titman and Wermers (1995), Daniel, Grinblatt, Titman and Wermers (1997), Kacperczyk, Sialm and Zheng (2005), Cremers and Petajisto (2009) and Ayadi and Kryzanowski (2011).

[85] We consider that 60 observations are required for a fund-by-fund or portfolio of funds analysis so that the saturation ratio is high enough so that dependable results are obtained when two instrumental variables are used to condition this model. Bekaert and Urias (1996) discuss the impact of saturation ratios on their results for closed-end funds. For greater details on saturation ratios, see Gallant and Tauchen (1991).

[86] Brennan, Chordia and Subrahmanyam (1998) argue that calculating benchmark-adjusted returns based on equation (4.3) eliminates any bias caused by errors in the estimation of factors loadings.

where all the terms are as previously defined. This method for calculating the benchmark-adjusted returns is consistent with those used by Gil-Bazo and Ruiz-Verdu (2009) and Ferreira, Keswani, Miguel and Ramos (2013).

Some summary statistics for the various benchmark-adjusted monthly excess returns for the individual funds (not) differentiated by fund type and not controlling for sponsor type or other fund characteristics (such as size) are presented in Table 4.4. The estimates reported in the column labeled "Mean" in Panels A, B and C of Table 4.4 using gross, quasi-gross and net returns, respectively, are consistent with our expectation that managerial effectiveness is higher where superior information or skill can have a greater impact. At a summary level, we observe significant managerial ability before but not after costs for the sample undifferentiated by fund type and for the Canadian Bond sample; significant managerial ability before and after costs for the High-yield Bond sample; and neutral ability before and negative ability after costs for the Short-term Canadian Bond sample. At a more detailed level, the cross-sectional means and medians of the benchmark-adjusted returns are significantly positive using gross returns (Panel A of Table 4.4) and significantly negative using quasi-gross and net returns (Panels B and C of Table 4.4) for the individual funds in the total sample (All). The cross-sectional means and medians of the benchmark-adjusted returns are positive using gross, quasi-gross and net returns for the individual funds in the High-yield Bond sample, and only the median using net returns is not statistical significant at conventional levels. The cross-sectional median of the benchmark-adjusted returns is significantly positive using gross returns (Panel A of Table 4.4) and both the cross-sectional means and medians of the benchmark-adjusted returns are significantly negative using quasi-gross and net returns (Panels B and C of Table 4.4)_for the individual funds in the Canadian Bond sample. The cross-sectional means and medians of the benchmark-adjusted returns are insignificantly positive using gross returns (Panel A of Table 4.4) and significantly negative using quasi-gross and net returns (Panels B and C of Table 4.4)_for the individual funds in the Short-term Canadian Bond sample.

[Please place table 4.4 about here.]

To examine the effect of sponsor type on the benchmark-adjusted returns $FundRTN_{it}$ of a fund, we estimate the following panel regression:

$$FundRTN_{it} = a + b_1 S_{1it} + b_2 S_{3it} + b_3 S_{4it} + b_4 MER_{it} + b_5 FundSize_{it} + b_6 LnFundNum_{it} + b_7 LnAge_{it} + b_8 Flow_{it} + b_9 Public_{it} + b_{10} Mutual_{it} + \varepsilon_{it} \quad (4.4)$$

In (4), a represents the average benchmark-adjusted after-controls return (i.e., after controlling for various fund and sponsor characteristics included therein) when the fund sponsor is a Bank (captured using the dummy variable S_2 in (4) when one of the other sponsor dummy variables is removed so that it is captured by the intercept), and S_1, S_3 and S_4 are sponsor dummy variables which take a value of 1 if the fund sponsor belongs to respectively the Independent, Insurer, and Member-Fins categories and 0 otherwise. All the other variables are as previously defined.

We again use the correlated random-effects panel regression specification based on the rationale and tests discussed in section 4.5.2, and the Fama and MacBeth (1973) approach (the latter as a robustness check) to estimate equation (4.4). Consistent with our fees data, our benchmark-adjusted return data exhibit a fund effect based on the methodology proposed by Petersen (2009) that was discussed in section 4.5.2.

4.6.2 Fund Benchmark-adjusted Gross, Quasi-gross and Net Return Determinants Based on Panel Regressions

Table 4.5 reports the coefficient estimates for panel regression (4.4) using the unconditional 5-factor model over the whole period 2000-2011. When we consider all the funds irrespective of their investment objectives (three columns headed by “Undifferentiated” in Table 4.5), we find relative after-controls outperformance of funds sponsored by the Banks (S_2) compared to that for funds sponsored by Independents (S_1), Insurers (S_3), and Member-Fin (S_4) based on quasi-gross and net returns. These differences are weakly significant for S_2 with either S_1 or S_4, and strongly significant for S_2 with S_3. Also, funds sponsored by Banks (S_2) significantly outperform those sponsored by Insurers (S_3) based on relative after-controls benchmark-adjusted gross returns.

[Please place table 4.5 about here.]

To control for the effect of investment objectives (fund types), we run the same panel regressions separately for funds with the same investment objective. Considering the three columns headed by “Cdn” in Table 4.5, we find that funds sponsored by the Banks (S_2) have higher after-controls benchmark-adjusted performance compared to that for funds sponsored by Independents (S_1), Insurers (S_3), and Member-Fin (S_4) based on both quasi-gross and net returns. The favorable difference in this metric for S_2 over S_1 is insignificant using quasi-gross returns and only weakly insignificant using net returns, and all of the favorable differences of S_2 over S_3 and S_4 are significant or strongly significant based on quasi-gross and net returns. All of the differences in after-controls benchmark-adjusted performance between S_2 and S_1, and between S_3 and S_4 are not statistically significant. To determine if the average after-controls performance of the Independents (S_1) is affected by the inclusion of the professional-member-based sponsored (Member-Prof) funds, we split S_1 into Member-Prof and the remainder. We then run the same set of panel regressions for the Canadian Bond investment objective (T1) where the intercept captures the effect on all funds that are not sponsored by a Member-Prof. Based on untabulated results, we find no outperformance based on after-controls benchmark-adjusted gross, quasi-gross and net returns for funds sponsored by Member-Prof when compared to all of the others funds in fund type T1.[87] However, when we re-estimate equation (4.4) without the Public dummy variable, we find that the funds with Member-Prof (all private) sponsors now have significantly higher after-controls benchmark-adjusted quasi-gross returns when compared to all of the others funds in fund type T1.

The results reported in the three columns headed by “Short-term” or fund type T2 in Table 4.5 only show that funds sponsored by Banks (S_2) significantly (weakly) outperform the funds sponsored by Independents (S_1), and only based on the average after-controls benchmark-adjusted net returns. The results reported in the three columns headed by “High-yield” (T3) in Table 4.5 show that funds sponsored by Banks (S_2) outperform the funds sponsored by Insurers (S_3) and Member-Fin (S_4) based on the average after-controls benchmark-adjusted quasi-gross and net returns. These differences are weakly significant except for the S_2: S_3 comparison for gross returns.

Table 4.6 reports the coefficient estimates over the whole period 2000-2011 for panel regression (4.4) using the conditional 5-factor model with the default premium and the term structure slope as the two information variables. When we consider all funds irrespective of their

[87] The tabulated results are available from the authors (Table I.9 of our Internet Appendix). This is along with subsequent references to untabulated results that are available in our Internet Appendix are for the convenience of journal referees and will be later removed.

investment objectives ("Undifferentiated" in Table 4.6), we find relative after-controls outperformance of funds sponsored by Banks (S_2) compared to that for funds sponsored by Independents (S_1), Insurers (S_3) and Member-Fins (S_4). Only the outperformance of S_2 over S_1 is not significant at conventional levels based on average after-controls benchmark-adjusted gross returns. For funds with a Canadian Bond investment objective (based on the three columns headed by "Cdn" in Table 4.6), the underperformance of funds sponsored by Independents (S_1), Insurers (S_3) and Member-Fins (S_4) compared to those sponsored by Banks (S_2) remains significant based on average after-controls benchmark-adjusted quasi-gross and net returns. For funds with a Short-term Bond investment objective (based on the three columns headed by "Short-term" in Table 4.6), we find no significant performance differences for funds among the different sponsor types. For funds with a High-yield investment objective (based on the three columns headed by "High-yield" in Table 4.6), there is evidence that funds sponsored by Banks (S_2) significantly outperform funds sponsored by Insurers (S_3) and Member-Fins (S_4) based on average after-controls benchmark-adjusted net, gross and quasi-gross returns.

[Please place table 4.6 about here.]

Thus, the funds sponsored by Banks (S_2) generally have, on average, higher after-controls benchmark-adjusted performances based on quasi-gross and net (and to a lesser extent gross) returns than the funds sponsored by Independents (S_1), Insurers (S_3) and Member-Fins (S_4), for the undifferentiated, Canadian Bond and High-yield Bond fund types where superior information or skill matters the most compared to the short-term fund type. The outperformance of funds sponsored by Banks (S_2) based on quasi-gross returns for all but the Short-term Bond fund type suggests that their managers have more skills in generating returns to cover manager-related fees. Their potential information advantage obtained through their lending and investment dealer affiliates might explain part of the manager superiority of bank-sponsored funds compared to their rivals in the Canadian fixed-income fund industry.

If we examine absolute and not relative after-controls benchmark-adjusted performances, we observe an insignificant shortfall of fund returns compared to management fees for all sponsor-type categories with a Canadian Short-term investment objective. In contrast, we observe a significant shortfall of fund returns compared to management fees for all sponsor-type categories for the other fund types.

We now examine the, on average, impact of having a publicly-traded or a mutually-owned sponsor on benchmark-adjusted fund performance. Based on Table 4.5, having a publicly-traded sponsor significantly lowers, on average, the unconditional benchmark-adjusted quasi-gross and net returns for funds with a Canadian Bond investment objective, which accounts for 80 percent of the Canadian fixed-income market, and for funds undifferentiated by fund type. Based on Table 4.6, having a publicly-traded sponsor significantly lowers, on average, the conditional benchmark-adjusted gross, quasi-gross and net returns for funds in three of the four fund types (exception is High-yield). Similarly, we find that the average impact of having a mutually-owned sponsor becomes significant more often when the benchmark model becomes conditional. Based on Table 4.5, having a mutually-owned sponsor significantly lowers, on average, the unconditional benchmark-adjusted quasi-gross and net returns for funds with a Canadian Short-term investment objective, and significantly increases, on average, the unconditional benchmark-adjusted gross, quasi-gross and net returns for funds with a High-yield investment objective. Based on Table 4.6, having a mutually-owned sponsor significantly increases (decreases), on average, the conditional benchmark-adjusted gross, quasi-gross and net returns for funds with a High-yield (Canadian Short-term) investment objective, and increases, on average, the conditional benchmark-adjusted gross returns for funds undifferentiated by investment objective and those with a Canadian Bond investment objective.

Regression (4.4) includes a number of control variables whose estimates are reported in Tables 5 and 6. In general, the empirical evidence on the relation between MER and benchmark-adjusted returns is mixed. Chen *et al*. (2004) find no relation between the two for a sample of U.S. funds. Other researchers find a negative relation using benchmark-adjusted net returns (e.g., Carhart, 1997) and benchmark-adjusted gross returns (e.g., Gil-Bazo and Ruiz-Verdu, 2009). Based on Tables 5 and 6, we find, with one exception, an insignificant relation between MER and benchmark-adjusted returns.

Earlier studies (e.g., Grinblatt and Titman, 1989, 1994) find mixed empirical results for the relation between fund size ($FundSize$) and benchmark-adjusted returns. More recent studies report a negative relation, particularly for U.S. equity funds, which they attribute to diseconomies of scale due to illiquidity, trade costs and/or organizational issues (e.g., Chen *et al*., 2004; Yan, 2008). Consistent with Chen *et al*. (2004) and Yan (2008), we find a negative relation between fund size ($FundSize$) and unconditional benchmark-adjusted returns with the exception of those funds with a High-yield investment objective (see Table 4.5). For the conditional benchmark-adjusted returns (Table 4.6), this relation is significant only for funds with a Short-term investment objective for all three types of returns and for funds with a Canadian Bond investment objective for only gross returns.

Fund age ($LnAge$) is included to capture the effect of a fund's longevity and experience. If older funds are more experienced and face lower costs, we would expect them to have better benchmark-adjusted returns. In contrast, if young funds devote more effort to outperform and grow in size and face less organizational problems, then we would expect them to have better benchmark-adjusted returns. Thus, the effect of age on fund benchmark-adjusted returns can only be determined empirically. Based on Tables 5 and 6, we find a significantly positive relation between the natural logarithm of fund age and fund benchmark-adjusted returns for all three return types except for the funds with a Short-term investment objective.

Fund flows ($Flow$) are included to capture the finding by Goetzmann, Massa and Rouwenhorst (2000) that suggests that asset class flow factors (as proxies for behavioral factors often referred to as the smart or dumb money effect) are instruments to help explain the cross-sectional variation in realized returns not captured by benchmark models.[88] Furthermore, since open-ended mutual funds are extremely reliant on outside and immediately demandable capital to fund their investment opportunities, their fund flows based on past performance (especially if it is poor) are likely to affect their performance (Coval and Stafford, 2007). Based on Tables 5 and 6, we find a positive relation between flows and benchmark-adjusted returns whose significance at conventional levels occurs more often using the conditional benchmark model. Thus, a significantly positive relation between flows and conditional benchmark-adjusted gross, quasi-gross and net returns is found for funds undifferentiated by fund type and for fund types Canadian Bond and High-yield.

[88] Frazzini and Lamont (2008) find only weak evidence of a smart money effect of short-term fund flows positively predicting short-term returns and that individuals as a whole are hurt by their reallocations to funds when the aggregate holdings of mutual funds by all individuals are examined.

4.7. SOME FURTHER TESTS

In this section, we conduct additional tests to check the robustness of our results.

4.7.1 Tests of Fees and Benchmark-adjusted Performance of Member-Profs

We begin with a test using a sample of funds confined to those with private sponsors. Since we are interested in the relative performance of Member-Prof whose fund sponsors are professional member-owned or controlled non-financial entities (all mutual), we split the funds with private sponsors in the Independent (S_1) category into two groups; namely, Member-Prof and Private_S_1. Since the Banks are all public and given our interest at this point in the funds in the Member-Prof category, we set up the dummy variables in regression (4.1) for fees and (4.4) for benchmark-adjusted returns so that the after-controls effects for the funds in the Member-Prof category are captured by their intercepts.

Panel A of Table 4.7 reports the results for the determinants of the management expense ratios (MER), management fees (*MgmtFee*) and trailer fees (*TrailerFee*) for funds with a Canadian bond investment objective that are sponsored by Member-Prof (all private and mutual) versus private (mixed share/mutual) Independent (Private_S_1) excluding Member-Prof, private (all mutual) Insurers (Private_S_3) and Member-Fins (all private and mutual) (S_4). We observe that the after-controls *MER* and *TrailerFee* are significantly higher only for the funds with Independent sponsors excluding the Member-Prof (Private_S_1). However, based on untabulated results when we do not include the Mutual dummy variable, we find that the after-controls *MER* and *TrailerFee* are also significantly higher for funds with private Insurer (Private_S_3) sponsors and for *MER* for funds with Member-Fins (S_4) sponsors.

[Please place table 4.7 about here.]

Panel B of Table 4.7 reports the results for the determinants of the dependent variable *FundRTN*, which is the conditional benchmark-adjusted gross, quasi-gross or net return for month t using the conditional five-factor model of Ayadi and Kryzanowski (2011), for the same sponsor type groupings. We observe that funds with Member-Prof sponsors have significantly negative after-controls conditional benchmark-adjusted quasi-gross and net returns. Nevertheless, these values are significantly better than those for the funds with private sponsors in the other three private sponsor type groupings. Furthermore, the after-controls conditional benchmark-adjusted gross returns for the funds with Member-Prof sponsors are significantly better than those for funds with private Insurer (Private_S_3) and Member-Fins (S_4) sponsors. Based on untabulated results, these inferences remain unchanged with one exception if the Mutual dummy variable is not included in regression (4.4).[89] Thus, the funds with private and mutually owned sponsors that are professional member-owned or controlled entities have significantly better quasi-return and net return benchmark-adjusted performances compared to their counterparts with private sponsors. This is consistent with lower agency issues associated with funds with professional member-owned or controlled sponsors.

4.7.2 Sensitivity to Calculation of Benchmark-adjusted Returns and Clustering of Standard Errors

We calculate our benchmark-adjusted returns using the prior 36 and the prior 48 months instead of the prior 60 months using the unconditional and the conditional models with(out) a conditional intercept. Our untabulated results show similar results to those reported in Tables 5 and 6. Since the sponsor ownership structure is identical within mutual fund families, we now run regressions (4.3) and (4.4) when the standard errors are clustered at the fund family (sponsor) level. Generally, these untabulated results are consistent with those reported earlier in Tables 5 and 6.

4.7.3 Tests of Active Risk Differences

Amihud and Goyenko (2013) use one minus a fund's R-square value calculated by regressing a fund's returns on the returns of a single or multifactor benchmark model to predict future fund performance. Since R-square by definition reflects the proportion of a fund's return variance that is explained by the variation in the benchmark factors (i.e., passive systematic risk factor exposures), a lower R-square implies that the fund follows the benchmark less closely and has been exposed to greater active risk from active security selection and/or active systematic risk-factor timing. Since the sponsor-differentiated differences in benchmark-adjusted returns may be

[89] The after-controls conditional benchmark-adjusted gross returns for the funds with Member-Prof sponsors are no longer significantly better than those for funds with private Insurer (Private_S_3) sponsors.

due to differences in active risk taking, we examine if the R-square values of the funds differentiated by fund sponsor type differ.

To do so, we use the R-square estimate for each fund for each month based on the previously conducted regressions of a fund's past 60-month returns on the returns of the benchmark. Our untabulated results show that funds sponsored by Banks (S_2) have significantly higher R-square values compared to funds sponsored by Independents (S_1) for all fund types based on investment objectives.[90] Except for short-term bond funds, funds sponsored by the Banks (S_2) have insignificantly higher R-square values compared to funds sponsored by Insurers (S_3). Thus, the superior benchmark-adjusted returns of the bank- versus independent-sponsored bond funds occur even though the former bear less active risk.

4.7.4 Robustness Based on Fama-MacBeth Regressions

We examine robustness further using Fama-MacBeth regressions. We first estimate regression (4.1) using the Fama-MacBeth (1973) approach using yearly values of the three types of fees. We adjust the Fama-MacBeth estimates using standard errors that are robust to serial correlation and conditional heteroskedasticity as proposed by Newey and West (1987).[91] Generally, the untabulated results using the Fama-MacBeth regressions confirm the earlier panel regression results.[92] Funds sponsored by Banks (S_2) have the lowest average after-controls MER. These differences are strongly significant even after we control for fund type.

We then estimate regression (4.4) using the Fama-MacBeth (1973) approach for the benchmark-adjusted gross, quasi-gross and net returns. We obtain the adjusted versions of the coefficient estimates and their standard errors by regressing the time-series of the parameter estimates on an intercept term where the residuals are modeled as a sixth-order autoregressive process. This method was first used by Pontiff (1996) and subsequently used by Cornett, Marcus and Tehranian (2008), Irvine and Pontiff (2009), amongst others. According to Pontiff (1996), the standard error of the intercept yields a standard error for that coefficient that is not biased by serial or cross-sectional correlation provided that the sixth-order autoregressive process captures all of the serial dependence in the residuals.

[90] The untabulated results are available from the authors (Table I.10 of our Internet Appendix).
[91] We use this approach due to the number of years of data available and the lower level of autocorrelation in the yearly fees.
[92] The untabulated results are available from the authors (Table I.2 in our Internet Appendix).

The untabulated results from the Fama-MacBeth regressions based on the conditional benchmark-adjusted returns generally are consistent with the previously reported panel regression results.[93] When our sample includes all funds not differentiated by their investment objectives, funds sponsored by Banks (S_2) significantly outperform the funds with other sponsor types, on average, based on benchmark-adjusted net returns. For Canadian Bond funds, funds sponsored by the Banks (S_2), on average, outperform the funds with different sponsor types. This outperformance is strongly significant for benchmark-adjusted net returns compared to funds with all other sponsor types.[94] For funds with a Canadian Short-term investment objective, the funds sponsored by Banks (S_2) strongly (weakly) and significantly outperform the funds sponsored by Insurers (Member-Fins). For funds with a Canadian High-yield investment objective, the funds sponsored by the Banks (S_2) strongly and significantly outperform the funds sponsored by Insurers (S_3). The benchmark-adjusted return differences with the other two sponsor types are not significant at conventional levels.

4.7.5 Effect of the Global Financial Crisis (GFC)

Since our sample time period covers the global financial crisis (GFC), we check whether it has an effect on our results. Ait-Sahalia, Andritzky, Jobst, Nowak and Tamirisa (2012) use a Markov-Switching vector autoregression analysis on bond market data to identify the onset and end of the GFC period as June 2007 and April 2009, respectively. We use two different approaches to deal with this issue. First, we consider the pre-GFC period (January 2000 to June 2007) to check whether our results are robust within the period before the onset of the GFC. We also estimate regressions (4.1) and (4.4) when they include a dummy variable which takes a value of 1 if our data are in the GFC period and 0 otherwise.

The untabulated results from the pre-GFC period for the benchmark-adjusted returns are qualitatively similar to the results over the entire period examined previously for both the panel and Fama-MacBeth regressions.[95] The untabulated results of the panel and Fama-MacBeth

[93] The untabulated results are available from the authors (Table I.1 of our Internet Appendix).
[94] The untabulated results are available from the authors (Table I.1 of our Internet Appendix).
[95] The untabulated results are available from the authors (Tables I.3 and I.4, respectively, in our Internet Appendix).

regressions for all types of fees over the pre-GFC period are almost the same as those over the entire period examined previously.[96]

We then examine the untabulated results when we use dummy variables in our panel regressions to control for the potential differential effects of the GFC on fund benchmark-adjusted returns and fees for different fund and sponsor types.[97] As expected, the sponsor type results are similar to those obtained earlier without a GFC dummy variable (see the earlier Tables 5 and 6). Since the coefficient of the GFC dummy variable is negative and significant when MER is the dependent variable,[98] this supports the conjecture that Canadian fixed-income funds reduced their fees during the GFC period to bolster the competitive position of their mutual funds during the crisis. This suggests that funds adjust their MER somewhat to reflect the level of competition given current economic and market conditions.

4.8. CONCLUSION

We find that the funds sponsored by Banks outperform, on average, the funds sponsored by the other three sponsor types based on after-controls benchmark-adjusted net and quasi-gross returns for all fund categories based on investment objective (fund type) in the Canadian fixed-income fund market except for funds with Short-term investment objectives which account for almost 15% of the market. Funds sponsored by Banks also have the lowest average after-controls MER and $TrailerFee$ for almost all investment objective categories (fund types). These results are consistent with Gruber (1996) who finds that funds with high fees are associated with inferior performance and that the return differences between the best and worst performing funds exceed the differences in fees. The gross after-controls benchmark-adjusted returns finding is consistent with the notion that mutual fund performances based on after-controls benchmark-adjusted gross returns will be superior for funds with managers with higher investment abilities. These results support the conjecture that banks have higher performances (after-controls returns and fees) due to their large nation-wide networks of branches that reduce trailer fees, higher information advantages through their lending and underwriting businesses with issuers of publicly issued

[96] The untabulated results are available from the authors (Tables I.5 and I.6, respectively, in our Internet Appendix).
[97] The untabulated results are available from the authors (Tables I.7 and I.8, respectively, in our Internet Appendix).
[98] The untabulated results are available from the authors (Tables I.7 and I.8, respectively, in our Internet Appendix).

bonds, greater risk-sharing alternatives and/or market power, and that funds with mutually-owned sponsors have higher operation costs because of their lack of market monitoring by their investors and/or the higher cost of capital for their fund sponsors. We also find that the funds with private and mutually owned sponsors that are professional member-owned or controlled entities have significantly better quasi-return and net return benchmark-adjusted performances compared to their counterparts with other private sponsor types.

Why do investors continue to invest in the funds sponsored by Independents, Insurers and Member-Fins given that they generally have lower average after-controls benchmark-adjusted returns and higher average after-controls costs compared to funds sponsored by Banks? Given the small differences in the average monthly net returns across the funds by sponsor type, we argue that unsophisticated investors most likely cannot distinguish between these funds based on simple return measures, and that the higher average fees most likely are used to compensate advisors and others for marketing the funds. These conjectures are supported by studies that find that investors do not use the most appropriate measures for assessing fund performance and that they ignore the costs that they are charged for investment advisory and marketing services (Choi, Laibson and Madrian, 2010; Capon, Fitzsimons and Prince, 1996). Another possibility that is consistent with our findings is that the funds categorized by sponsor type are catering to client markets that differ by, for example, the size of their average fund investments. These are not issues that we can address precisely using the data that are publicly available for our sample of funds.

CHAPTER FIVE

CONCLUSION

In my first essay, using a large database of equity and fixed-income U.S. CEFs during 1994-2013, we examine the effect of the 2004 SEC information disclosure requirements on advisory rates and their changes. Our results show that CEFs with higher percentages of independent directors are associated with lower advisory rates for the period after the 2004 SEC amendments. When we consider the changes in advisory rates, our results show that advisory-rate decreases are significantly more likely for a CEF with a higher percentage of independent directors for the period after but not before the 2004 SEC amendments. Our results are robust to the effect of changes in board independence. Using a sub-sample of CEFs with no change in their percentage of independent directors, we find that CEFs with higher percentages of independent directors are associated with lower advisory rates and a higher probability of advisory rate decreases for the period after but not before the 2004 SEC amendments. Overall, our results support the idea that the 2004 SEC amendments have been successful in encouraging independent directors to act more independently in questioning and negotiating advisory fees with fund advisors after their adoption.

This study, to the extent of our knowledge, is the first study which examines the transparency effects of board decision making on board effectiveness in the mutual fund industry and provides evidence on the effects of the 2004 SEC amendments requiring greater transparency in the decision-making process behind advisory contracts. Also, it contributes to the literature on the value to investors of information disclosure.

In my second essay, using the same governance data, we examined the relationship between board characteristics (i.e. board independence, director ownership and director compensation) and various fund performance measures (expense ratios, share and NAVPS returns, and market premiums) and the median compensations of independent directors from a CEF board. Using a dynamic panel two-step system generalized method of moments estimator, our results are robust in the presence of endogeneity concerns (reverse causality, unobserved heterogeneity and simultaneity). We find that boards with higher percentages of independent directors are associated with lower fees (expense ratios). These results are consistent with the notion that the independent directors of U.S. CEFs have some success in minimizing expenses and this is probably one of the reasons that U.S. mutual funds have the lowest fees around the globe (Khorana, Servaes, and Tufano, 2009). Our results also show negative and significant relations between CEF benchmark-adjusted returns and the percentage of independent directors. Consistent with the theoretical and empirical literature, we argue that board effectiveness in monitoring measures of CEF performance depend on the complexity of the measures, associated degrees of information asymmetry and uncertainty, and the specialised knowledge required for that entity activity (Duchin *et al.,* 2010). Unlike monitoring and influencing CEF returns and premiums which requires specialised abilities to process public and private (but legal) information about asset management, the yearly fund fees negotiations with fund advisers require only publicly-available information about what the market is charging and paying for services and the funds relative performance to its competitors. Our results show no significant relationship between the percentages of independent directors and CEF premiums.

We find that more ownership by directors is associated with lower fund fees (expense ratios) and higher CEF returns which support previous studies (Chen *et al.* 2008). The positive relationships between the ownerships of directors and CEF returns are robust to the use of different measures of CEF returns (e.g. benchmark-adjusted share returns, share returns, NAVPS returns). This supports the idea that directors with more ownership of fund assets are more aligned with the interests of shareholders. Thus, our results have implications for the design of compensation schemes for directors. Increasing the percentage of compensation received as ownership in the CEF's shares may result in reducing any agency issues between fund managers and shareholders.

Our results show that independent directors receive more compensation with higher levels of ownership and in larger funds and funds with higher board meeting frequencies. Independent directors who expect to sit on more funds within the fund family accept lower compensations from each fund but receive more in the aggregate. We conjecture that to increase their total compensation from the fund families by sitting on more boards, independent directors accept lower compensation on a per-fund basis when they expect to increase their total compensation from the fund family by sitting on more boards.

In my third essay, we find that the funds sponsored by Banks outperform, on average, the funds sponsored by Insurers, Member-Fins and Independents based on after-controls benchmark-adjusted net and quasi-gross returns for all fund categories based on investment objective (fund type) in the Canadian fixed-income fund market except for funds with Short-term investment objectives which account for almost 15% of the market. Funds sponsored by Banks also have the lowest average after-controls MER and TrailerFee for almost all investment objective categories (fund types). These findings support those of Gruber (1996) who finds a negative relationship between high fund fees and performance and that the return differences between the best and worst performing funds exceed the differences in fees. Our finding regarding gross after-controls benchmark-adjusted returns is consistent with the idea that funds with managers with higher investment abilities show superior performance based on after-controls benchmark-adjusted gross returns. These results support the conjecture that banks have higher performances (after-controls returns and fees) due to their large nation-wide networks of branches that reduce trailer fees, higher information advantages through their lending and underwriting businesses with issuers of publicly issued bonds, greater risk-sharing alternatives and/or market power, and that funds with mutually-owned sponsors have higher operation costs because of their lack of market monitoring by their investors and/or the higher cost of capital for their fund sponsors.

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FIGURES

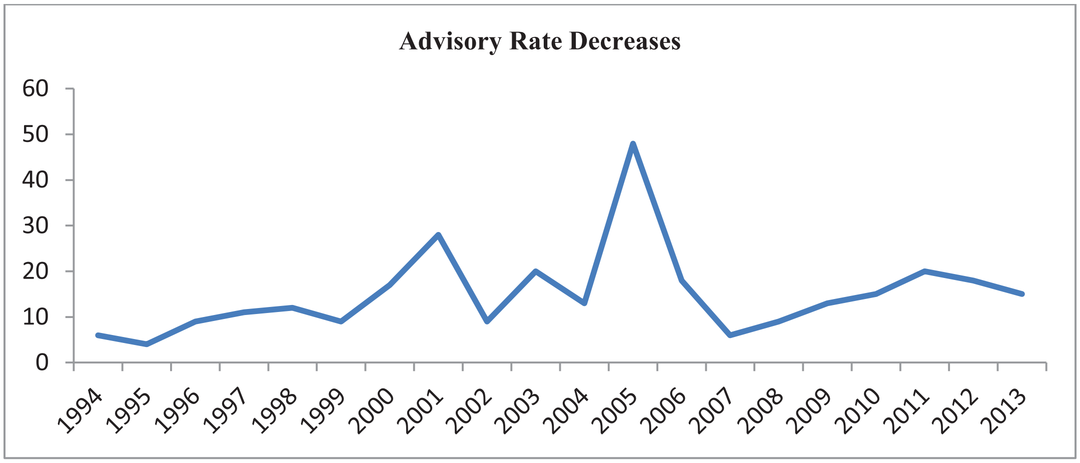

Figure 2.1. Number of advisory fee decreases
Above graph shows the number of advisory fee decreases for 1994-2013 period. The change in advisory rates for concave contracts is any change in the breakpoints between current and previous NSAR filings. To ensure that the changes in advisory rates are attributable to a contract change and not to the effect of fund asset growth we use the current period NAV for both current and previous contracts.

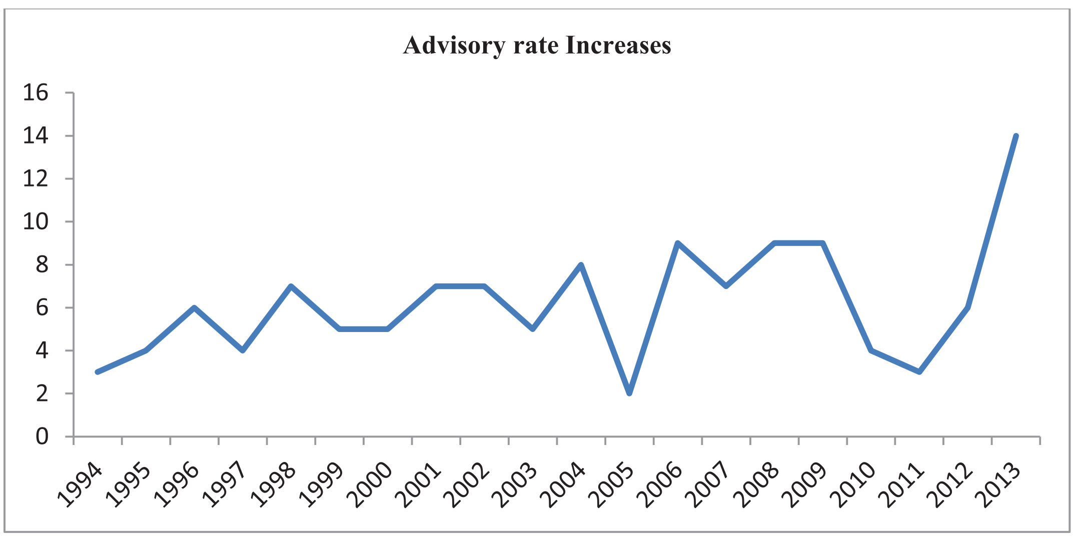

Figure 2.2. Number of advisory fee increases
Above graph shows the number of advisory fee increases for 1994-2013 period. The change in advisory rates for concave contracts is any change in the breakpoints between current and previous NSAR filings. To ensure that the changes in advisory rates are attributable to a contract change and not to the effect of fund asset growth we use the current period NAV for both current and previous contracts.

TABLES

Table 2.1. Summary statistics for the sample of closed-end funds and the characteristics of their boards

This table reports summary statistics for fund and board characteristics for the 20 year period from January 1994 through 2013. Panel A provides the number of funds having each investment objective for a cross-section every two years. Panel B reports the means and medians of the individual fund characteristics that are defined in the appendix. Panel C provides the means and medians of the board characteristics that are defined in the appendix. Panel D reports the means, medians and standard deviation (SD) of advisory rates (marginal compensation rates) for each investment objective for cross-sections where each covers two years.

Panel A: Number of CEFs

Fund Objective	Year									
	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012
Equity	0	9	13	14	14	16	35	43	36	29
International Equity	0	54	62	53	49	40	48	60	62	62
Bond	7	85	89	87	91	101	115	120	115	121
Municipal Bond	33	172	174	195	195	262	173	157	149	141
Allocation	1	12	12	14	14	20	27	37	38	37
Specialty	1	10	8	10	11	21	40	46	40	49
Total	42	342	358	373	374	460	438	463	440	439

Panel B: Advisory Rate (Marginal Compensation Rate) Characteristics

Fund type	Statistics	Year										Total
		1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	
Equity	**Mean**	0.82	0.81	0.79	0.83	0.85	0.87	0.89	0.89	0.85	0.88	0.86
	Median	0.80	0.82	0.85	0.93	0.85	0.85	0.90	0.94	0.99	0.98	0.90
	SD	0.11	0.24	0.28	0.25	0.24	0.19	0.17	0.17	0.24	0.20	0.21
International Equity	**Mean**	0.96	0.98	1.00	0.98	0.99	0.95	0.91	0.97	0.94	0.93	0.96
	Median	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.00	0.95	0.95	1.00
	SD	0.34	0.32	0.30	0.33	0.27	0.30	0.29	0.24	0.26	0.25	0.29
Bond	**Mean**	0.65	0.62	0.63	0.66	0.68	0.70	0.70	0.72	0.74	0.75	0.69
	Median	0.65	0.60	0.63	0.65	0.65	0.70	0.70	0.74	0.75	0.75	0.70
	SD	0.21	0.21	0.21	0.22	0.22	0.20	0.18	0.19	0.21	0.21	0.21
Municipal Bond	**Mean**	0.55	0.57	0.57	0.57	0.58	0.55	0.53	0.53	0.53	0.53	0.55
	Median	0.50	0.61	0.60	0.61	0.61	0.55	0.55	0.55	0.55	0.55	0.55
	SD	0.20	0.18	0.17	0.16	0.15	0.12	0.13	0.13	0.13	0.13	0.15
Allocation	**Mean**	0.72	0.79	0.76	0.71	0.79	0.77	0.80	0.83	0.84	0.83	0.80
	Median	0.6	0.75	0.75	0.65	0.75	0.75	0.75	0.80	0.85	0.85	0.75
	SD	0.25	0.27	0.23	0.26	0.24	0.23	0.22	0.20	0.21	0.22	0.23
Specialty	**Mean**	0.91	0.83	0.80	0.83	0.78	0.78	0.87	0.94	0.98	1.00	0.91
	Median	0.93	0.80	0.80	0.80	0.80	0.80	0.86	1.00	1.00	1.00	0.95
	SD	0.18	0.22	0.21	0.20	0.22	0.17	0.19	0.19	0.22	0.22	0.22
Total	**Mean**	0.67	0.67	0.67	0.67	0.67	0.68	0.70	0.74	0.74	0.76	0.70
	Median	0.65	0.65	0.64	0.65	0.65	0.65	0.65	0.70	0.70	0.71	0.65
	SD	0.27	0.27	0.26	0.26	0.23	0.23	0.23	0.24	0.26	0.26	0.25

Panel C: Average Advisory Rates Around 2004

	Full Sample			Sub-sample (no change in board independence)		
	Mean		Mean Difference	Mean		Mean Difference
Fund type	2002-2004	2005-2007		2002-2004	2005-2007	
Equity	0.86	0.88	-0.01	0.90	0.90	0.00
International Equity	0.98	0.92	0.06***	1.00	0.92	0.07***
Bond	0.69	0.70	-0.01**	0.77	0.73	0.04***
Municipal Bond	0.57	0.53	0.04***	0.56	0.53	0.03***
Allocation	0.77	0.79	-0.02***	0.74	0.70	0.04**
Specialty	0.78	0.86	-0.08***	0.79	0.84	-0.05

Panel D: Board Characteristics

		Year										
Variables	**Statistics**	**1994**	**1996**	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**	**2010**	**2012**	**Total**
%IndDirFnd	**Mean**	0.72	0.72	0.74	0.76	0.78	0.82	0.83	0.85	0.85	0.85	0.81
	Median	0.72	0.71	0.75	0.75	0.78	0.82	0.86	0.86	0.85	0.86	0.82
BdSize	**Mean**	7.90	7.80	8.10	8.00	8.20	8.90	8.30	9.10	9.00	9.10	8.60
	Median	6.00	8.00	8.00	7.00	8.00	8.00	8.00	9.00	9.00	10.00	8.00
AveIndDirCompFnd	**Mean**	4091	11164	11959	12528	7707	10224	7718	8106	8291	9689	9445
	Median	4500	4450	4500	3089	3161	3465	3414	2751	3574	4206	3678
AveIndDirCompFam (000s)	**Mean**	27.3	118.6	123.2	142.0	70.9	149.6	64.2	95.5	108.6	105.4	106.2
	Median	12.7	31.5	23.2	23.7	27.7	28.5	55.2	68.9	101.5	91.1	38.0
%IndDirOwn >50K	**Mean**	NA	NA	NA	0.09	0.07	0.07	0.09	0.06	0.09	0.11	0.08
	Median	NA	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
%DirFemaleFnd	**Mean**	0.06	0.13	0.10	0.11	0.13	0.14	0.13	0.17	0.19	0.21	0.15
	Median	0.00	0.00	0.00	0.00	0.13	0.17	0.13	0.18	0.22	0.22	0.14
AveTenIndDirFnd (Years)	**Mean**	2.40	4.20	5.20	6.10	6.80	6.70	5.90	5.80	6.90	7.70	6.20
	Median	2.00	3.70	4.80	5.80	6.80	6.50	5.60	6.00	7.00	7.80	5.90
AveIndDirAgeFnd (Years)	**Mean**	60.00	61.00	62.00	63.00	63.00	64.00	63.00	63.00	64.00	65.00	63.00
	Median	60.00	62.00	61.00	62.00	64.00	65.00	62.00	62.00	63.00	65.00	63.00

Panel E: Fund Characteristics

Variables	Statistics	Year										Total
		1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	
#Advisors	**Mean**	1.00	1.10	1.20	1.10	1.10	1.30	1.40	1.60	2.00	2.10	1.50
	Median	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00
#Services	**Mean**	6.20	6.00	5.80	6.30	6.40	6.50	6.80	6.60	6.90	6.90	6.50
	Median	5.00	6.00	6.00	6.00	6.00	6.00	7.00	7.00	7.00	7.00	7.00
ShareReturn	**Mean**	-0.15	0.11	0.04	0.13	0.04	0.08	0.17	-0.32	0.12	0.15	0.09
	Median	-0.15	0.09	0.08	0.15	0.07	0.06	0.13	-0.30	0.09	0.14	0.09
ReturnAlpha	**Mean**	-0.06	0.01	-0.01	0.14	0.03	-0.02	0.00	-0.03	-0.00	-0.00	0.00
	Median	-0.05	0.03	0.01	0.05	-0.01	-0.03	-0.00	-0.02	-0.01	-0.01	-0.01
Premium	**Mean**	-0.11	-0.07	-0.03	-0.10	-0.04	-0.03	-0.01	-0.09	-0.02	-0.01	-0.04
	Median	-0.10	-0.07	-0.03	-0.09	-0.04	-0.04	-0.03	-0.11	-0.02	-0.01	-0.05
ExpenseRatio	**Mean**	0.85	1.20	1.20	1.30	1.40	1.20	1.20	1.30	1.30	1.30	1.28
	Median	0.82	1.10	1.10	1.20	1.30	1.20	1.20	1.20	1.20	1.20	1.18
FndSize($Bi)	**Mean**	0.20	0.26	0.26	0.25	0.23	0.28	0.36	0.26	0.34	0.38	0.30
	Median	0.13	0.15	0.15	0.15	0.14	0.17	0.22	0.16	0.21	0.26	0.18
FamSize($Bi)	**Mean**	2.70	4.60	5.30	6.10	6.40	9.70	12.10	13.40	14.10	15.30	10.33
	Median	4.10	3.30	2.90	3.50	3.30	6.90	7.60	7.30	10.00	11.00	4.82
FndTurnover	**Mean**	41.00	40.00	38.00	35.00	38.00	38.00	38.00	42.00	42.00	45.00	40.63
	Median	22.00	17.00	19.00	18.00	18.00	20.00	21.00	24.00	24.00	24.00	21.00
AveIndDirAgeFnd	**Mean**	3.20	6.60	8.70	10.00	12.00	11.00	11.00	11.00	13.00	14.00	11.33
	Median	2.00	4.00	6.00	8.00	10.00	11.00	12.00	9.00	11.00	11.00	9.00
DivYield	**Mean**	5.90	6.00	5.50	6.60	5.80	5.90	5.30	7.30	5.60	5.50	5.90
	Median	6.90	6.40	5.70	6.70	6.00	6.40	5.40	6.00	5.90	5.70	6.00
Leverage	**Mean**	22.60	19.30	17.80	19.10	22.50	26.10	26.50	27.50	24.30	23.10	23.50
	Median	33.40	23.30	19.20	19.80	30.70	33.00	33.40	35.10	30.20	29.30	30.50

Table 2.2. Spearman Rank Correlations

This table reports Spearman Rank Correlations for *Margrt, EffAdvRt, EffAdvRt_Other, Premium, NAVPSReturn*, *%IndDirFnd*, *BdSize*, *UnexpCompIndDir*, *%IndDirOwn>50K*, *%DirFemaleFnd, AveIndDirAgeFnd* and *AveTenIndDirFnd* that are defined in the appendix.

Variable	*Margrt*	*EffAdvRt*	*EffAdvRt_ Other*	*Premium*	*NAVPS Return*	*%IndDir Fnd*	*#IndDir Fnd*	*UnexpComp IndDir*	*%IndDir Own>50K*	*%Dir FemaleFnd*	*AveTen IndDirFnd*	*AveIndDir AgeFnd*
Margrt	1.00											
EffAdvRt	0.41***	1.00										
EffAdvRt_Other	0.28***	0.46***	1.00									
Premium	-0.08***	-0.15***	-0.04***	1.00								
NAVPSReturn	0.14***	0.12***	0.07***	0.21***	1.00							
%IndDirFnd	-0.04***	-0.15***	-0.04***	0.04***	-0.05***	1.00						
BdSize	-0.20***	-0.35***	-0.27***	0.00	-0.03***	0.14***	1.00					
UnexpCompIndDir	0.00	-0.11***	-0.08***	0.07***	-0.01	-0.02	-0.06***	1.00				
%IndDirOwn>50K	0.15***	0.35***	0.23***	-0.08***	0.08***	-0.08***	-0.28***	0.06***	1.00			
%DirFemaleFnd	-0.21***	-0.27***	-0.20***	0.10***	-0.02	0.29***	0.38***	-0.15***	-0.17***	1.00		
AveTenIndDirFnd	-0.08***	0.10***	0.07***	-0.04***	0.01	0.06***	-0.01	-0.19***	0.17***	-0.00	1.00	
AveIndDirAgeFnd	-0.02*	0.01	0.00***	0.07***	0.04***	0.11***	0.08***	0.17***	0.03**	-0.18***	0.23***	1.00

Table 2.3. Summary results for panel regressions for the relationship between current board characteristics and past CEF advisory rates

This table reports the coefficient estimates of OLS panel regressions to examine the relationship between the values and changes in values of some regressors from equation (1) like board dependence, size and CEF size and past CEF advisory rates with their t-values in parentheses for the 2002-2013 and 1994-2013 periods for all available individual U.S. closed-end funds (CEFs). In Panel A, the dependent variables are the current values of board independence (*%IndDirFnd)*, board size (*BdSize*) and CEF size (*FndSize*). In panel B, the dependent variables are the one-year changes in board independence (Δ*%IndDirFnd)*, board size (Δ*BdSize*) and CEF size (Δ*FndSize*). The independent variables are defined in the appendix. ***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Panel A: Level dependent variable at time t

Column	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Dependent variables	***%IndDirFnd***		***BdSize***		***FndSize***	
Sample Period	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**
Margrt $_{t-2}$	-0.0258** (-2.41)	-0.0438*** (-4.97)	0.3529 (1.49)	-0.9102*** (-3.79)	-0.2767*** (-5.63)	-0.2836*** (-4.52)
%IndDirFnd $_{t-2}$			2.0864*** (7.03)	-3.4339*** (-11.72)	-0.2465*** (-4.73)	-0.5063*** (-8.58)
BdSize $_{t-2}$	-0.0022*** (-2.97)	-0.0013*** (-2.75)			0.0107*** (3.93)	-0.0039 (-1.62)
UnexpCompIndDir $_{t-2}$	0.0493*** (10.59)	-0.0217*** (-3.90)	0.4126*** (4.31)	-1.1709*** (-8.22)	-0.0152 (-0.85)	-0.0611** (-2.12)
%IndDirOwn>50K $_{t-2}$		-0.0017 (-0.28)		-0.3618** (-2.29)		0.2914*** (9.10)
%DirFemaleFnd $_{t-2}$	0.0811*** (6.33)	-0.0006 (-0.05)	3.1874*** (12.19)	1.5258*** (5.21)	0.0977** (2.03)	0.1533** (2.42)
AveTenIndDirFnd $_{t-2}$	0.0009 (1.15)	-0.0003 (-0.84)	-0.0896*** (-6.05)	-0.1538*** (-16.74)	0.0018 (0.62)	0.0009 (0.46)
AveIndDirAgeFnd $_{t-2}$	0.0257 (0.95)	0.0912*** (4.34)	2.1972*** (3.97)	3.3062*** (6.06)	0.0269 (0.27)	0.6987*** (5.91)
FndSize $_{t-2}$	-0.0028 (-0.98)	-0.0092*** (-4.83)	0.1222* (1.89)	-0.0313 (-0.62)		
FamSize $_{t-2}$	0.0100*** (5.75)	0.0106*** (8.44)	0.1512*** (3.87)	0.5400*** (16.05)	0.0886*** (10.29)	0.0674*** (8.49)
LnFndAge $_{t-2}$	0.0436*** (11.98)	0.0074*** (3.49)	1.0561*** (14.17)	0.9163*** (16.95)	-0.1142*** (-7.61)	-0.1760*** (-14.24)
Constant	0.4354*** (3.58)	0.4219*** (4.50)	-10.2997*** (-4.02)	-14.2267*** (-5.79)	17.1695*** (39.21)	15.6254*** (30.14)
Observations	5,767	7,153	5,767	7,153	5,980	7,165
R-squared	0.060	0.046	0.047	0.282	0.050	0.036

Panel B: Change of dependent variable from t-2 to t where t-2 is one year or two six-month periods earlier

Column	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables	$1Y\Delta\%IndDirFnd$		$1Y\Delta\#BdSize$		$1Y\Delta FndSize$	
Sample Period	1994-2004	2005-2013	1994-2004	2005-2013	1994-2004	2005-2013
Margrt $_{t-4}$	0.0123** (2.35)	-0.0017 (-0.51)	0.0182 (0.18)	-0.3423** (-2.44)	-0.0126 (-0.66)	0.0810*** (5.20)
%IndDirFnd $_{t-4}$			-0.1647 (-0.64)	1.1451*** (3.84)	0.0403 (1.00)	-0.0906** (-2.22)
BdSize $_{t-4}$	0.0001 (0.16)	0.0005* (1.80)			-0.0054*** (-2.84)	0.0032** (2.24)
UnexpCompIndDir $_{t-4}$	-0.0070** (-2.26)	-0.0078* (-1.73)	-0.1752*** (-2.82)	0.2512* (1.68)	0.0279** (2.51)	0.0245 (1.15)
%IndDirOwn>50K $_{t-4}$		-0.0054 (-1.25)		-0.1266 (-0.80)		-0.0641*** (-3.22)
%DirFemaleFnd $_{t-4}$	0.0354*** (3.99)	-0.0225*** (-3.51)	0.6945*** (3.92)	-0.6741*** (-2.77)	0.0792** (2.51)	0.1149*** (3.70)
AveTenIndDirFnd $_{t-4}$	0.0004 (0.67)	0.0001 (0.49)	0.0897*** (7.12)	0.0249*** (2.71)	-0.0042** (-2.03)	-0.0038*** (-3.17)
AveIndDirAgeFnd $_{t-4}$	-0.0301 (-1.61)	-0.0204* (-1.80)	0.2224 (0.58)	0.5292 (1.20)	0.0596 (0.92)	0.1841*** (3.39)
FndSize $_{t-4}$	0.0009 (0.68)	-0.0012* (-1.65)	-0.0659** (-2.41)	0.0751** (2.41)		
FamSize $_{t-4}$	0.0009 (1.10)	-0.0019*** (-3.52)	0.1261*** (7.41)	-0.0711*** (-3.28)	0.0032 (1.07)	-0.0065** (-2.54)
LnFndAge $_{t-4}$	0.0000 (0.01)	-0.0031*** (-2.63)	-0.2024*** (-3.41)	-0.2072*** (-4.75)	0.0300*** (3.11)	0.0453*** (8.10)
Constant	0.0849 (1.09)	0.1609*** (3.36)	-2.2878 (-1.44)	-2.3405 (-1.25)	-0.3602 (-1.36)	-0.7298*** (-3.26)
Observations	4,630	6,826	4,630	6,826	4,948	6,934
R-square	0.012	0.007	0.031	0.004	0.008	0.019

Table 2.4. Summary results for panel regressions for the relationship between CEF advisory rates with board characteristics

This table reports the coefficient estimates of panel regressions to examine the relationship between CEF board characteristics and CEF advisory rates using OLS, fixed-effects and system-GMM estimators and their t-values in parentheses for the period of 2002-2013 and extended period of 1994-2013 for all available individual U.S. closed-end funds (CEFs). The dependent variable is *Margrt* or the advisory rates. The independent variables are defined in the appendix. Each *t* is a 6-month period. The year dummies are supressed for brevity. AR(1) and AR(2) are first-order and second-order, respectively, tests for no serial correlation in the first differenced standard errors. Hansen J-stat is the test of over-identification under the null that all instruments are valid. The R-square values are also reported. The standard errors are clustered. ***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS		Fixed-effect		System-GMM	
Variables	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**
%IndDirFnd$_{t-1}$	-0.0372 (-1.06)	-0.0528** (-2.08)	-0.0410 (-1.12)	-0.0583** (-2.07)	0.0081 (0.34)	-0.0334** (-1.98)
BdSize$_{t-1}$	0.0002 (0.09)	0.0002 (0.27)	0.0004 (0.14)	0.0004 (0.40)	0.0005 (0.65)	-0.0010 (-0.92)
UnexpCompIndDir$_{t-1}$	-0.0056 (-0.90)	-0.0002 (-0.02)	0.0022 (0.35)	-0.0011 (-0.10)	-0.0109 (-1.54)	-0.0038 (-0.55)
%IndDirOwn>50K$_{t-1}$		-0.0211 (-1.28)		-0.0224 (-1.31)		-0.0063 (-0.57)
%DirFemaleFnd$_{t-1}$	-0.0503** (-2.19)	0.0058 (0.25)	-0.0479* (-1.73)	-0.0014 (-0.05)	-0.0094 (-0.64)	-0.0144 (-0.59)
AveTenIndDirFnd$_{t-1}$	0.0001 (0.06)	0.0004 (0.35)	0.0011 (0.46)	0.0004 (0.36)	-0.0001 (-0.08)	-0.0006 (-0.98)
AveIndDirAgeFnd$_{t-1}$	-0.0411 (-0.47)	-0.0156 (-0.15)	-0.0852 (-0.94)	-0.0358 (-0.32)	0.0255 (1.04)	0.0179 (0.52)
Star$_{t-1}$	0.0018 (0.39)	-0.0006 (-0.25)	0.0014 (0.29)	-0.0006 (-0.23)	0.0060 (0.67)	0.0024 (0.37)
StarFam$_{t-1}$	0.0057** (2.19)	-0.0006 (-0.32)	0.0062** (2.23)	-0.0004 (-0.22)	0.0013 (0.73)	-0.0023 (-0.81)
ReturnAlpha$_{t-1}$	0.0013 (0.32)	0.0023 (0.30)	0.0030 (0.01)	0.0057 (0.71)	0.0029 (0.36)	0.0234** (1.99)
FixedIncome	-0.2711*** (-3.76)	-0.2757*** (-12.05)	-0.3032* (-1.84)	-0.3275* (-1.92)	0.0109 (0.59)	-0.0417* (-1.95)
Foreign	0.0629** (2.28)	0.0161* (1.82)	0.0183 (0.71)	-0.0043 (-0.72)	0.0433** (2.15)	0.0009 (0.09)

Table 2.4. Cont'd

Variables	(1)	(2)	(3)	(4)	(5)	(6)
LnFndSize	-0.0666*** (-3.85)	-0.0264*** (-3.03)	-0.0766*** (-3.60)	-0.0326*** (-3.38)	0.0018 (0.40)	0.0011 (0.36)
LnFamSize	0.0159** (2.22)	-0.0019 (-0.35)	0.0191** (2.33)	-0.0020 (-0.30)	-0.0013 (-0.53)	0.0030 (1.49)
TopFndMrktShr	-0.0231 (-1.32)	-0.0185 (-1.37)	-0.0215 (-1.26)	-0.0176 (-1.29)	-0.0134 (-0.81)	-0.0013 (-0.08)
TopFamMrktShr	0.0457 (1.10)	0.0372*** (3.89)	0.0438 (1.04)	0.0372*** (3.58)	-0.0188 (-0.91)	-0.0037 (-0.50)
LnFndAge	-0.0187 (-1.03)	-0.0187*** (-2.90)	-0.0592 (-1.59)	-0.0217 (-1.43)	-0.0039 (-0.62)	0.0043 (0.96)
#Advisors	0.0212 (1.49)	0.0037** (2.43)	0.0205 (1.48)	0.0036** (2.32)	0.0059 (1.16)	0.0030** (2.53)
#Services	-0.0038* (-1.89)	0.0017 (1.04)	-0.0041* (-1.85)	0.0015 (0.92)	-0.0010 (-0.75)	0.0022* (1.71)
OutSourced	-0.0284** (-2.04)	0.0038 (0.49)	0.0162 (1.21)	0.0059 (0.66)	-0.0086 (-1.16)	0.0082 (1.14)
HighLeverage	-0.0024 (-0.71)	-0.0007 (-0.27)	-0.0042 (-1.21)	-0.0005 (-0.21)	0.0084* (1.81)	-0.0014 (-0.36)
HighDivYield	0.0010 (0.56)	-0.0017 (-0.80)	-0.0005 (-0.25)	-0.0020 (-0.95)	0.0050 (0.89)	-0.0050 (-1.02)
HighPremium	-0.0002 (-0.07)	-0.0014 (-0.55)	0.0003 (0.11)	-0.0018 (-0.70)	0.0067 (1.60)	-0.0015 (-0.58)
LnFndTurnover	0.0035** (2.07)	0.0036*** (3.29)	0.0026 (1.43)	0.0032*** (2.90)	0.0018** (2.10)	0.0013* (1.86)
$Margrt_{t-1}$					0.6222*** (8.74)	0.9004*** (9.59)
$Margrt_{t-2}$					0.3172*** (4.56)	0.0188 (0.17)
Constant	2.0052*** (4.55)	1.5570*** (3.56)	2.3940*** (4.39)	1.5876*** (3.18)	-0.1006 (-0.84)	-0.0634 (-0.42)
AR(1) test (p-value)					0.00	0.00
AR(2) test (p-value)					0.16	0.61
Hansen J-stat (p-value)					0.74	0.51
Observations	4,549	5,347	4,549	5,347	4,613	5,185
R-squared	0.096	0.129	0.127	0.061	0.931	0.912

Table 2.5. Summary results for panel regressions for the relationship between CEF advisory rates with board characteristics of a sub-sample with no change in board independence around 2004 SEC amendments

This table reports the coefficient estimates of panel regressions to examine the relationship between CEF board characteristics and CEF advisory rates using OLS, fixed-effects and system-GMM estimators and their t-values in parentheses for the period of 2002-2013 and extended period of 1994-2013 for a sub-sample of U.S. closed-end funds (CEFs) with no change in board independence around 2004 SEC amendments. The dependent variable is *Margrt* or the advisory rates. The independent variables are defined in the appendix. Each *t* is a 6-month period. The year dummies are supressed for brevity. AR(1) and AR(2) are first-order and second-order, respectively, tests for no serial correlation in the first differenced standard errors. Hansen J-stat is the test of over-identification under the null that all instruments are valid. The R-square values are also reported. The standard errors are clustered. ***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS		Fixed-effect		System-GMM	
Variables	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**
%IndDirFnd$_{t-1}$	-0.0564 (-1.52)	-0.0789* (-1.87)	-0.0552 (-1.34)	-0.0934** (-2.14)	0.0045 (0.17)	-0.1299* (-1.81)
BdSize$_{t-1}$	-0.0033 (-1.31)	0.0018 (1.19)	-0.0036 (-1.37)	0.0016 (0.92)	0.0023* (1.84)	0.0035 (0.99)
UnexpCompIndDir$_{t-1}$	0.0024 (0.32)	0.0192 (1.07)	0.0101 (1.26)	0.0176 (1.08)	-0.0195 (-1.59)	-0.0075 (-0.36)
%IndDirOwn>50K$_{t-1}$		-0.0246 (-1.01)		-0.0270 (-1.11)		0.0179 (0.56)
%DirFemaleFnd$_{t-1}$	-0.0901** (-1.97)	0.0289 (0.80)	-0.0787 (-1.51)	0.0132 (0.30)	-0.0280 (-1.11)	-0.1789** (-2.60)
AveTenIndDirFnd$_{t-1}$	0.0003 (0.13)	0.0007 (0.55)	0.0009 (0.37)	0.0007 (0.55)	0.0000 (0.01)	-0.0034* (-1.95)
AveIndDirAgeFnd$_{t-1}$	-0.0550 (-0.62)	0.1341 (1.22)	-0.0770 (-0.84)	0.0950 (0.84)	0.0380 (0.94)	0.0495 (0.54)
Star$_{t-1}$	-0.0038 (-0.89)	0.0066** (2.03)	-0.0032 (-0.69)	0.0065** (2.12)	-0.0036 (-0.38)	0.0228 (0.91)
StarFam$_{t-1}$	0.0058 (1.64)	-0.0020 (-0.82)	0.0070* (1.86)	-0.0026 (-0.97)	-0.0011 (-0.19)	0.0132 (1.15)
ReturnAlpha$_{t-1}$	0.0141 (0.95)	0.0071 (0.51)	0.0131 (0.81)	0.0090 (0.66)	-0.0080 (-0.65)	-0.0589 (-1.21)
FixedIncome	-0.2922** (-2.32)	-0.2606*** (-5.43)	-0.3120 (-1.57)	-0.2312 (-1.28)	-0.0039 (-0.18)	0.0469 (1.50)
Foreign	0.0413 (1.22)	-0.0012 (-0.07)	-0.0070 (-0.44)	-0.0226* (-1.86)	0.0195 (0.88)	0.0264 (1.17)

Table 2.5. Cont'd

Variables	(1)	(2)	(3)	(4)	(5)	(6)
LnFndSize	-0.0576** (-2.31)	-0.0507*** (-3.71)	-0.0641** (-2.20)	-0.0529*** (-3.40)	0.0050 (0.74)	-0.0068 (-1.02)
LnFamSize	0.0260* (1.70)	0.0007 (0.11)	0.0303* (1.77)	0.0015 (0.20)	-0.0038 (-0.87)	-0.0079 (-1.02)
TopFndMrktShr	-0.0231 (-1.29)	-0.0109 (-0.84)	-0.0186 (-1.08)	-0.0081 (-0.64)	-0.0269 (-0.89)	0.0674** (2.17)
TopFamMrktShr	0.0353 (1.63)	0.0287* (1.74)	0.0284 (1.42)	0.0271* (1.66)	-0.0162 (-0.89)	-0.0231 (-1.60)
LnFndAge	0.0006 (0.03)	-0.0521*** (-2.71)	-0.0272 (-0.64)	-0.1285** (-2.33)	-0.0088 (-0.90)	0.0156 (0.71)
#Advisors	0.0032 (1.33)	0.0037* (1.79)	0.0157 (0.93)	0.0136* (1.72)	0.0009 (0.50)	-0.0008 (-0.25)
#Services	0.0168 (0.96)	0.0130 (1.64)	0.0027 (0.90)	0.0034 (1.58)	-0.0066 (-0.96)	-0.0001 (-0.01)
OutSourced	-0.0374* (-1.87)	0.0200 (1.40)	0.0084 (0.47)	0.0240 (1.63)	-0.0110 (-0.98)	0.0244 (1.19)
HighLeverage	-0.0061* (-1.96)	0.0028 (0.62)	-0.0069* (-1.96)	0.0022 (0.49)	0.0048 (0.97)	0.0098 (0.82)
HighDivYield	0.0011 (0.34)	-0.0010 (-0.34)	-0.0013 (-0.39)	-0.0018 (-0.61)	0.0002 (0.06)	0.0096 (0.94)
HighPremium	-0.0008 (-0.24)	-0.0057 (-1.49)	-0.0009 (-0.27)	-0.0062 (-1.63)	0.0112* (1.70)	0.0241** (2.01)
LnFndTurnover	0.0024 (1.04)	0.0046** (1.99)	0.0022 (0.91)	0.0045* (1.96)	0.0011 (0.73)	0.0018 (0.65)
$Margrt_{t-1}$					0.6172*** (8.22)	0.7039*** (5.14)
$Margrt_{t-2}$					0.3241*** (3.43)	0.3257*** (2.83)
Constant	1.7006*** (3.22)	1.4092*** (2.71)	1.8655*** (2.86)	1.6543*** (2.65)	-0.1425 (-0.80)	0.1018 (0.29)
AR(1) test (p-value)					0.00	0.00
AR(2) test (p-value)					0.12	0.14
Hansen J-stat (p-value)					0.32	0.89
Observations	2,238	2,131	2,238	2,131	2,218	2,080
R-squared	0.270	0.265	0.174	0.094	0.82	0.91

Table 2.6. Summary statistics for the sample of closed-end funds and the characteristics of their boards

This table reports summary statistics for fund advisory rate change ($\Delta Margrt$) and board characteristics for the 20 year period from 1994 through 2013. Panel A provides the number of positive (>0), negative (<0) and negative or positive (<0 or >0) advisory rate change within our sample period for all the years in our sample. Panel B reports the means and medians of the fund board characteristics that have positive, negative, positive or negative and no change in advisory rates. All variables are defined in appendix.

Panel A: Number of advisory-rate changes

$\Delta Margrt$	Year																				Total
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	
<0	6	4	9	11	12	9	17	28	9	20	13	48	18	6	9	13	15	20	18	15	300
>0	3	4	6	4	7	5	5	7	7	5	8	2	9	7	9	9	4	3	6	14	124
<0 or >0	9	8	15	15	19	14	22	35	16	25	21	50	27	13	18	22	19	23	24	29	424

Panel B: Board characteristics for different categories of advisory rate change

Variables	Advisory rate increase ($\Delta Margrt$ >0) (N=124)		Advisory rate decrease ($\Delta Margrt$ <0) (N=300)		Advisory rate change ($\Delta Margrt$ <0 or >0) (N=424)		No Change in Advisory rate ($\Delta Margrt$ =0) (N=14,548)	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
Margrt	0.90	0.90	0.66	0.63	0.73	0.69	0.70	0.65
ΔMargrt	0.24	0.20	-0.13	-0.10	-0.02	-0.05	0.00	0.00
%IndDirFnd	0.79	0.80	0.81	0.83	0.80	0.83	0.80	0.80
BdSize	8.60	8.00	8.50	8.00	8.50	8.00	8.50	8.00
AveTenIndDirFnd	6.10	5.00	6.40	6.70	6.30	6.20	5.80	5.30
AveIndDirAgeFnd	64	64	63	63	64	64	63	63
%DirFemaleFnd	0.10	0.00	0.14	0.10	0.13	0.09	0.14	0.14
AveIndDirCompFnd	10211	7000	8352	4127	8865	5258	9771	4182
AveIndDirCompFam	41425	17900	62776	32845	56716	27500	112967	35298
%IndDirOwn>50K	0.12	0.00	0.07	0.00	0.08	0.00	0.08	0.00

Table 2.7. Summary results for regression analysis of advisory rate changes and board characteristics

This table reports the coefficient estimates of probit regressions for examining the effect of CEF board characteristics on the likelihood of advisory rate increase ($\Delta Margrt$>0) and decrease ($\Delta Margrt$ <0). The dependent variables for advisory rate increase (decrease) is a dummy variable which equals one when the change in advisory rate is positive (negative) and zero otherwise. We use ordered logit regression to examine the effect of board characteristics on the likelihood of advisory rate changes ($\Delta Margrt$ <0 or >0). The dependent variable for ordered logit regression equals one (minus one) when the change in advisory rate is positive (negative) and zero when there is no change in advisory rate. We also use a time fixed-effects specification to examine the magnitude of advisory-rate changes. The dependent variable is the advisory-rate change ($\Delta Margrt$). The independent variables are defined in the appendix. Each t is a 6-month period. The year dummies are supressed for brevity. The R-square values are also reported. The standard errors are clustered. ***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Probit		Probit		Ordered Logit		OLS	
	$\Delta Margrt$ >0		$\Delta Margrt$ <0		$\Delta Margrt$ <0 or >0		$\Delta Margrt$	
Variables	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**
%IndDirFnd$_{t-1}$	-0.2484 (-0.38)	-0.0116 (-0.01)	-0.1941 (-0.42)	3.5392*** (4.37)	0.6999 (0.69)	-4.4602*** (-3.86)	-0.0084 (-1.19)	-0.0141*** (-2.93)
BdSize$_{t-1}$	-0.0115 (-0.45)	0.0741*** (2.91)	-0.0192 (-0.89)	0.0188 (0.85)	0.0399 (1.08)	0.0825** (2.56)	0.0004** (2.06)	0.0002 (1.08)
UnexpCompIndDir$_{t-1}$	0.0015 (0.01)	-5.3766*** (-3.09)	-0.1860 (-1.02)	-6.0105*** (-7.01)	0.2231 (1.33)	5.9755*** (6.27)	-0.0000 (-0.03)	0.0103*** (2.79)
%IndDirOwn>50K$_{t-1}$		0.6214** (1.98)		0.2398 (0.85)		0.1983 (0.36)		0.0016 (0.75)
%DirFemaleFnd$_{t-1}$	-0.7327 (-1.30)	-0.9081 (-1.46)	-1.8903*** (-3.68)	0.3994 (0.95)	2.8130*** (4.27)	-1.7293* (-1.91)	0.0063* (1.77)	-0.0017 (-0.53)
AveTenIndDirFnd$_{t-1}$	-0.0178 (-0.61)	-0.0871*** (-3.95)	0.0120 (0.65)	-0.0513*** (-2.84)	-0.0412 (-1.11)	-0.0177 (-0.59)	0.0002 (0.70)	-0.0001 (-0.52)
AveIndDirAgeFnd$_{t-1}$	0.7137 (0.80)	1.5307 (1.32)	-1.3199* (-1.73)	-0.0227 (-0.02)	2.8696* (1.93)	1.6428 (0.92)	0.0124 (1.47)	0.0017 (0.22)
Star$_{t-1}$	0.3008 (1.16)	-0.2961 (-0.78)	-0.0418 (-0.21)	-0.0807 (-0.36)	1.1837*** (3.63)	0.0073 (0.02)	0.0050* (1.83)	-0.0011 (-0.61)
StarFam$_{t-1}$	-0.1068 (-0.61)	0.0504 (0.33)	-0.3569*** (-2.82)	0.0059 (0.05)	0.6635*** (2.93)	-0.1579 (-0.62)	0.0013 (1.12)	-0.0016 (-1.64)
ReturnAlpha$_{t-1}$	-0.0403 (-0.31)	-0.6416 (-1.27)	0.0035 (0.05)	-0.1019 (-0.29)	-0.0685 (-0.64)	-0.0920 (-0.13)	-0.0012 (-0.60)	-0.0007 (-0.27)
HighAdvRt$_{t-1}$	-0.3777*** (-3.04)	-0.1806 (-1.24)	0.3649*** (3.39)	0.5639*** (5.22)	-0.9199*** (-4.89)	-1.0455*** (-4.49)	-0.0050*** (-3.52)	-0.0030*** (-3.33)

Table 2.7. Cont'd

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LnFndSize$_{t-2}$	0.0064 (0.07)	0.1541 (1.19)	-0.0641 (-1.17)	-0.0953 (-1.45)	0.1140 (1.20)	0.2545** (2.52)	0.0001 (0.20)	0.0004 (0.82)
LnFamSize$_{t-2}$	-0.0335 (-0.64)	-0.1304* (-1.83)	0.0725* (1.77)	0.1106* (1.84)	-0.1735** (-2.41)	-0.3178*** (-3.78)	-0.0000 (-0.02)	-0.0006 (-0.92)
TopFndMrktShr$_{t-2}$	0.0765 (0.28)	0.2541 (0.75)	0.2113 (1.08)	-0.1077 (-0.53)	-0.2003 (-0.50)	0.4793 (0.82)	-0.0010 (-0.32)	0.0020 (1.22)
TopFamMrktShr$_{t-2}$	-0.0867 (-0.34)	-0.5904 (-1.39)	-0.6300** (-2.47)	-0.9869*** (-3.16)	0.7671* (1.71)	1.0162* (1.65)	0.0038 (0.80)	0.0034** (2.17)
HighGrwthFnd$_{t-1}$	-0.2002 (-0.81)	-0.0686 (-0.27)	0.0200 (0.12)	0.1951 (1.23)	-0.0785 (-0.21)	-0.3625 (-1.07)	0.0023 (0.88)	-0.0021* (-1.71)
HighGrwthFam$_{t-1}$	-0.0488 (-0.13)		-0.0236 (-0.11)	0.0589 (0.22)	0.0022 (0.00)	-0.3938 (-0.99)	0.0004 (0.12)	-0.0024 (-1.13)
Δ#Advisors	0.1264 (0.37)	0.0277 (0.39)	-0.5373*** (-2.95)	-0.2268 (-1.26)	0.8005 (1.30)	0.2938*** (2.64)	0.0111 (0.99)	-0.0003 (-0.51)
Δ#Service	0.1946** (2.28)	-0.0045 (-0.08)	0.0059 (0.07)	-0.0874 (-1.53)	0.1093 (0.61)	0.1411 (1.39)	-0.0001 (-0.16)	-0.0004 (-0.47)
ΔFndTurnover	-0.0002 (-0.20)	0.0021 (1.41)	-0.0010 (-1.42)	-0.0013 (-1.60)	0.0021 (1.27)	0.0028* (1.79)	0.0000 (1.22)	0.0000 (1.37)
HighLeverage$_{t-1}$	-0.2875** (-2.13)	-0.1686 (-1.33)	0.0581 (0.60)	-0.0137 (-0.13)	-0.2470 (-1.46)	-0.0895 (-0.47)	-0.0003 (-0.21)	-0.0001 (-0.21)
HighDivYield$_{t-1}$	0.2573 (1.59)	0.1146 (0.74)	0.0016 (0.02)	0.0166 (0.17)	0.0904 (0.58)	0.1731 (0.94)	0.0006 (0.81)	0.0008 (1.11)
HighPremium$_{t-1}$	0.0701 (0.51)	0.2143 (1.25)	-0.1347 (-1.46)	-0.1469 (-1.38)	0.3049* (1.86)	0.3281* (1.66)	0.0023* (1.68)	0.0022** (2.29)
Acquirer	0.4097 (1.15)	-0.1210 (-0.40)	0.4505*** (2.58)	0.2201 (0.92)	-0.8568* (-1.71)	-0.0095 (-0.02)	-0.0070* (-1.80)	0.0031 (1.12)
Target			0.4950 (1.03)		-0.9238 (-0.91)	0.2849 (0.75)	-0.0095 (-0.93)	0.0003 (0.25)
FixedIncome	-0.4937** (-2.04)	-0.1302 (-0.66)	-0.2195 (-1.40)	-0.4817*** (-2.91)	-0.0318 (-0.10)	0.5572 (1.44)	0.0017 (0.60)	0.0036** (2.51)
Constant	-3.8848 (-1.04)	-8.4497* (-1.66)	3.8777 (1.33)	-5.6315 (-1.10)	-7.4685 (-1.29)	3.9904 (0.52)	0.0372 (0.72)	0.0101 (0.36)
Unconditional probability	1.4% (61/4,218)	1.5% (63/4,019)	2.9% (138/4,651)	3.0% (162/5,327)	4.0% (199/4,861)	4.2% (225/5,342)		
Observations	4,218	4,019	4,651	5,327	4,861	5,342	4,861	5,342
R-square	0.147	0.173	0.161	0.218	0.109	0.141	0.012	0.021

Table 2.8. **Summary results for regression analysis of advisory rate changes and board characteristics for a sub-sample with no change in board independence around 2004 SEC amendments**

This table reports the coefficient estimates of probit regressions for examining the effect of CEF board characteristics on the likelihood of advisory rate increase ($\Delta Margrt$>0) and decrease ($\Delta Margrt$ <0) for a sub-sample with no change in board independence around 2004 SEC amendments. The dependent variables for advisory rate increase (decrease) is a dummy variable which equals one when the change in advisory rate is positive (negative) and zero otherwise. We use ordered logit regression to examine the effect of board characteristics on the likelihood of advisory rate changes ($\Delta Margrt$ <0 or >0). The dependent variable for ordered logit regression equals one (minus one) when the change in advisory rate is positive (negative) and zero when there is no change in advisory rate. We also use a time fixed-effects specification to examine the magnitude of advisory-rate changes. The dependent variable is the advisory-rate change ($\Delta Margrt$). The independent variables are defined in the appendix. Each t is a 6-month period. The year dummies are supressed for brevity. The R-square values are also reported. The standard errors are clustered. ***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Probit		**Probit**		**Ordered Logit**		**OLS**	
	$\Delta Margrt$ >0		**$\Delta Margrt$ <0**		**$\Delta Margrt$ <0 or >0**		**$\Delta Margrt$**	
Variables	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**
%IndDirFnd$_{t-1}$	-3.4062** (-2.44)	0.2529 (0.19)	-0.0622 (-0.06)	2.8896** (2.36)	-2.1470 (-0.82)	-3.2064* (-1.68)	-0.0166 (-1.63)	-0.0117 (-1.56)
BdSize$_{t-1}$	-0.0410 (-1.04)	0.1546*** (3.06)	-0.1080** (-2.03)	0.0993** (2.32)	0.1499** (2.20)	0.0334 (0.63)	0.0008*** (3.06)	0.0005 (0.97)
UnexpCompIndDir$_{t-1}$	0.0190 (0.10)	-11.9974*** (-3.89)	-0.3766 (-1.02)	-1.4828 (-0.91)	0.1865 (0.67)	0.1437 (0.10)	-0.0002 (-0.19)	-0.0036 (-0.69)
%IndDirOwn>50K$_{t-1}$		1.7779*** (3.97)		-0.1718 (-0.45)		0.9099 (1.30)		0.0024 (0.86)
%DirFemaleFnd$_{t-1}$	-1.0339 (-1.06)	-1.2254 (-1.53)	-3.4562*** (-4.03)	-1.7419 (-1.55)	3.6020*** (3.20)	0.7119 (0.53)	0.0091 (1.60)	0.0032 (0.46)
AveTenIndDirFnd$_{t-1}$	0.0269 (0.85)	-0.1968*** (-4.53)	0.0245 (0.93)	-0.0671** (-2.53)	0.0115 (0.16)	-0.0302 (-0.71)	0.0006* (1.74)	-0.0004 (-1.18)
AveIndDirAgeFnd$_{t-1}$	0.6026 (0.49)	5.1194** (2.16)	-1.9027** (-2.00)	-0.1729 (-0.10)	4.2472* (1.89)	4.0394 (1.06)	0.0070 (0.74)	0.0217 (1.22)
star$_{t-1}$	0.3299 (0.78)			-0.0541 (-0.14)	1.1097 (1.48)	-0.1502 (-0.33)	0.0020 (1.35)	0.0100 (0.97)
StarFam$_{t-1}$	-0.0150 (-0.05)	-0.1482 (-0.51)	0.3127 (1.13)	-0.1268 (-0.68)	-0.3201 (-0.58)	0.0556 (0.12)	0.0010 (0.52)	-0.0020 (-1.01)
ReturnAlpha$_{t-1}$	0.3196 (1.03)	-0.8044 (-0.86)	0.3638* (1.84)	-0.3834 (-0.73)	-0.5346 (-1.45)	0.1912 (0.18)	-0.0109 (-1.12)	0.0004 (0.06)
HighAdvRt$_{t-1}$	-0.7190*** (-3.03)	-0.7073*** (-3.09)	0.0350 (0.16)	0.1493 (0.69)	-0.8221* (-1.92)	-0.5795 (-1.54)	-0.0044*** (-2.74)	-0.0043* (-1.80)

Table 2.8. Cont'd

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$LnFndSize_{t-2}$	0.0953 (0.77)	-0.2377** (-2.21)	0.2071* (1.84)	0.0382 (0.33)	-0.1277 (-0.72)	-0.1563 (-1.22)	-0.0003 (-0.36)	-0.0006 (-1.37)
$LnFamSize_{t-2}$	-0.0004 (-0.01)	0.0819 (0.99)	-0.0556 (-0.72)	-0.0402 (-0.46)	0.0826 (0.64)	-0.0847 (-0.84)	0.0007 (1.07)	-0.0008 (-0.64)
$TopFndMrktShr_{t-2}$	0.2596 (0.57)	-0.0136 (-0.04)	0.2040 (0.68)	0.0631 (0.24)	-0.3151 (-0.41)	0.2685 (0.55)	-0.0053 (-1.46)	0.0025 (1.14)
$TopFamMrktShr_{t-2}$	-0.3059 (-0.84)	-0.3958 (-0.99)	-0.6943* (-1.81)	-0.7567 (-1.62)	0.5262 (0.56)	0.7935* (1.75)	-0.0004 (-0.08)	0.0028 (1.44)
$HighGrwthFnd_{t-1}$	-0.5206 (-1.30)	0.0218 (0.07)	-0.1308 (-0.47)	0.4355** (2.18)	-0.1501 (-0.25)	-0.7525 (-1.51)	0.0012 (0.36)	-0.0034* (-1.66)
$HighGrwthFam_{t-1}$			0.3786 (0.76)	0.9077** (2.77)	-0.6265 (-0.81)	-1.8790*** (-2.82)	-0.0007 (-0.21)	-0.0092 (-1.58)
Δ#Advisors	0.0670 (0.15)	-0.0802 (-0.39)	-0.2385** (-2.13)	-0.3024** (-2.13)	0.8904 (0.79)	0.3771 (0.74)	0.0116 (0.70)	0.0013 (0.64)
Δ#Service	0.1055 (1.26)	0.2109 (1.47)	0.1660 (1.37)	-0.0970 (-0.81)	-0.2164 (-0.90)	0.1504 (0.57)	-0.0008 (-0.68)	-0.0017 (-0.63)
ΔFndTurnover	-0.0010 (-0.97)	0.0084*** (3.29)	-0.0006 (-0.49)	-0.0028* (-1.77)	0.0008 (0.20)	0.0046* (1.90)	0.0000 (0.66)	0.0000 (0.78)
$HighLeverage_{t-1}$	0.1364 (0.65)	-0.3217 (-1.47)	0.0628 (0.39)	-0.0939 (-0.57)	0.0354 (0.13)	-0.0075 (-0.03)	0.0007 (0.51)	-0.0001 (-0.05)
$HighDivYield_{t-1}$	0.2829 (1.32)	0.2725 (1.06)	-0.2013 (-1.16)	0.0209 (0.11)	0.4787 (1.30)	0.0770 (0.26)	0.0023* (1.73)	0.0008 (0.65)
$HighPremium_{t-1}$	0.1353 (0.67)	0.1136 (0.54)	-0.0490 (-0.24)	-0.0710 (-0.47)	0.1357 (0.38)	0.2155 (0.80)	0.0023 (0.90)	0.0020 (1.33)
Acquirer	0.5228 (1.46)		0.3878 (1.14)		-0.4396 (-0.28)	0.4917 (1.46)	-0.0083 (-1.13)	0.0020 (1.36)
Target						0.2636 (0.37)		0.0038 (0.96)
FixedIncome	-0.2522 (-0.75)	-0.4689 (-1.59)	-0.2836 (-1.06)	-0.7259** (-2.14)	0.2161 (0.33)	0.8861** (2.04)	-0.0025 (-0.68)	0.0034 (1.37)
Constant	-3.7471 (-0.73)	-20.6369** (-1.99)	3.9300 (1.08)	-3.0283 (-0.37)	-12.1437 (-1.42)	-4.0241 (-0.24)	-0.0389 (-0.93)	-0.0542 (-0.79)
Unconditional probability	1.5% (22/1, 461)	1.8% (22/1, 168)	2.3% (38/1, 642)	2.4% (35/1, 418)	4.3% (100/2, 321)	4.5% (97/2, 133)		
Observations	1,461	1,168	1,642	1,418	2,321	2,133	2,321	2,133
R-square	0.212	0.312	0.222	0.185	0.077	0.132	0.020	0.025

Table 2.9. Summary results for regression analysis of the change in board characteristics and advisory rate changes

This table reports the coefficient estimates of probit regressions for examining the effect of the change in CEF board characteristics on the likelihood of advisory-rate increase ($\Delta Margrt$ >0) and decrease ($\Delta Margrt$ <0). The dependent variables for advisory rate increase (decrease) is a dummy variable which equals one when the change in advisory rate is positive (negative) and zero otherwise. We use an ordered logit regression to examine the effect of the change in board characteristics on the likelihood of advisory rate changes ($\Delta Margrt$ <0 or >0). The dependent variable for ordered logit regression is equals one (minus one) when the change in advisory rate is positive (negative) and zero when there is no change in the advisory rate. We also use an OLS specification to examine the magnitude of the effect of the change in board characteristics on advisory-rate changes. The dependent variable is the advisory-rate change ($\Delta Margrt$). The independent variables are defined in the appendix. Each t is a 6-month period. The year dummies are supressed for brevity. The R-square values are also reported. The standard errors are clustered. ***, ** and * indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Probit		**Probit**		**Ordered-Logit**		**OLS**	
	$\Delta Margrt$ >0		$\Delta Margrt$ <0		$\Delta Margrt$ <0 or >0		$\Delta Margrt$	
Variables	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**	**1994-2004**	**2005-2013**
$3Y\Delta\%IndDirFnd$	-0.9422** (-2.16)	2.1240*** (3.51)	-0.6550 (-1.16)	2.3289*** (4.16)	0.9319 (0.93)	-2.7355*** (-2.63)	-0.0047 (-0.49)	-0.0045 (-0.65)
$3Y\Delta BdSize$	0.0057 (0.11)	0.0720 (1.59)	-0.0750** (-2.45)	-0.0502** (-2.03)	0.1491** (2.40)	0.1174*** (3.10)	0.0006* (1.76)	0.0004 (1.47)
$3Y\Delta UnexpCompIndDir$	-0.2594 (-0.77)	0.1767 (0.27)	-0.2182 (-0.94)	-0.2654 (-0.90)	0.1337 (0.54)	0.6124* (1.67)	0.0035 (1.63)	0.0015 (1.10)
$3Y\Delta\%IndDirOwn{>}50K$		-0.0575 (-0.18)		-0.5034 (-1.58)		0.4554 (0.56)		-0.0064 (-0.62)
$3Y\Delta\%DirFemaleFnd$	0.6258 (0.84)	0.3635 (0.40)	0.7254 (1.47)	0.6203 (1.17)	-0.8412 (-0.71)	-1.4933 (-1.56)	-0.0038 (-0.82)	0.0071 (1.07)
$3Y\Delta AveTenIndDirFnd$	-0.0058 (-0.11)	-0.0413* (-1.75)	-0.0631** (-1.97)	-0.0679*** (-2.80)	0.1007 (1.57)	0.0755* (1.66)	0.0007* (1.80)	-0.0004 (-0.92)
$3Y\Delta AveIndDirAgeFnd$	-0.1893 (-0.15)	3.2354** (2.18)	0.0357 (0.03)	2.1515 (1.37)	0.2182 (0.09)	-1.2674 (-0.38)	-0.0083 (-0.51)	0.0213 (1.08)
$star_{t-1}$	0.1125 (0.35)	-0.1832 (-0.53)	-0.1735 (-1.31)	-0.2461 (-1.09)	1.0782*** (2.97)	0.3035 (0.86)	0.0027*** (3.43)	0.0010 (1.54)
$StarFam_{t-1}$	-0.0186 (-0.11)	0.0163 (0.11)	-0.3640** (-2.45)	-0.0519 (-0.39)	0.6470** (2.41)	0.0048 (0.02)	0.0018 (1.60)	-0.0008 (-0.90)
$ReturnAlpha_{t-1}$	0.0428 (0.91)	-0.7800 (-1.46)	0.0205 (0.33)	-0.0658 (-0.18)	-0.0132 (-0.07)	-0.1753 (-0.26)	-0.0011 (-0.59)	-0.0009 (-0.30)
$HighAdvRt_{t-1}$	-0.4271*** (-2.74)	-0.1132 (-0.74)	0.4486*** (3.28)	0.5162*** (4.96)	-1.1348*** (-4.27)	-0.9290*** (-4.19)	-0.0053*** (-4.08)	-0.0020*** (-3.23)

Table 2.9. Cont'd

LnFndSize$_{t-2}$	0.0746 (0.74)	0.1905 (1.44)	-0.1040* (-1.79)	-0.0881 (-1.30)	0.2106** (2.01)	0.2385** (2.19)	0.0006 (1.03)	0.0001 (0.40)
LnFamSize$_{t-2}$	-0.1141** (-2.13)	-0.1505* (-1.83)	0.0429 (1.03)	0.1252** (2.27)	-0.1204 (-1.47)	-0.2707** (-2.78)	0.0001 (0.26)	-0.0007 (-1.00)
TopFndMrktShr$_{t-2}$	-0.1372 (-0.47)	0.2588 (0.75)	-0.3468 (-1.18)	0.0156 (0.08)	0.5119 (1.13)	0.3975 (0.65)	0.0045 (1.39)	0.0022 (1.37)
TopFamMrktShr$_{t-2}$	0.1352 (0.50)	-0.3581 (-0.85)	-0.5544* (-1.87)	-0.4676 (-1.61)	0.7505 (1.52)	0.5441 (1.01)	-0.0003 (-0.07)	0.0029 (1.46)
HighGrwthFnd$_{t-1}$	-0.1652 (-0.58)	-0.0306 (-0.12)	0.0589 (0.27)	0.1607 (1.06)	-0.0790 (-0.19)	-0.3416 (-1.01)	0.0009 (0.35)	-0.0017 (-1.37)
HighGrwthFam$_{t-1}$	0.1035 (0.26)			0.1696 (0.60)	1.0771** (2.23)	-0.5247 (-1.13)	0.0065* (1.77)	-0.0030 (-1.26)
Δ#Advisors	0.0911 (0.25)	0.0607 (0.93)	-0.5248*** (-2.70)	-0.3343* (-1.95)	0.5672 (0.76)	0.2509** (2.36)	0.0101 (0.76)	-0.0004 (-0.59)
Δ#Service	0.1540 (1.56)	-0.0089 (-0.15)	-0.1547* (-1.66)	-0.0537 (-0.94)	0.3499** (2.30)	0.1004 (1.01)	0.0012* (1.87)	-0.0003 (-0.40)
ΔFndTurnover	-0.0000 (-0.01)	0.0018 (1.44)	-0.0009 (-0.98)	-0.0011 (-1.62)	0.0019 (0.91)	0.0029** (2.10)	0.0000 (0.94)	0.0000 (1.56)
HighLeverage$_{t-1}$	-0.2641* (-1.78)	-0.1064 (-0.82)	0.1569 (1.52)	-0.0585 (-0.60)	-0.4427** (-2.24)	-0.0180 (-0.10)	-0.0002 (-0.17)	0.0006 (0.93)
HighDivYield$_{t-1}$	0.2893* (1.84)	0.2103 (1.18)	-0.0666 (-0.57)	0.0354 (0.39)	0.2414 (1.31)	0.1232 (0.61)	0.0005 (0.76)	0.0004 (0.53)
HighPremium$_{t-1}$	0.0652 (0.43)	0.1629 (0.82)	-0.2095* (-1.85)	-0.1256 (-1.21)	0.4975** (2.22)	0.3304 (1.60)	0.0018 (1.07)	0.0020** (2.03)
Acquirer	0.4560 (1.33)		0.5530** (2.50)	0.2460 (1.14)	-1.0909* (-1.71)	-0.6376 (-1.64)	-0.0095** (-2.07)	-0.0005 (-0.37)
Target			0.6922 (1.29)		-1.4380 (-1.36)	0.1608 (0.45)	-0.0113 (-0.92)	0.0004 (0.32)
FixedIncome	-0.3984 (-1.61)	-0.0312 (-0.15)	-0.3277** (-2.02)	-0.1750 (-0.89)	0.1353 (0.34)	0.2212 (0.64)	0.0006 (0.16)	0.0024* (1.67)
Constant	-1.0491 (-0.60)	-2.6474 (-1.24)	-0.5877 (-0.51)	-3.4652** (-2.28)	2.3400 (1.11)	6.7000*** (2.82)	0.0371 (1.31)	0.0144 (1.03)
Unconditional probability	0.9% (31/3, 237)	1.3% (49/3, 698)	2.5% (81/3, 170)	2.8% (141/5, 028)	6.1% (220/3, 581)	4.8% (245/5, 043)		
Observations	3,237	3,698	3,170	5,028	3,581	5,043	3,581	5,043
R-square	0.143	0.109	0.166	0.158	0.118	0.117	0.016	0.014

Table 3.1. Summary statistics for the sample of closed-end funds and the characteristics of their boards

This table reports summary statistics for fund and board characteristics for the 20 year period from 1994 through 2013. Panel A provides the number of funds having each investment objective for a cross-section every 5 years. Panel B reports the means and medians of the individual fund characteristics that are defined in the appendix. Panel C provides the means and medians of the board characteristics that are defined in the appendix.

Panel A: Number of CEFs

Fund Objective	**year 1995**	**year 1998**	**year 2003**	**year 2008**	**year 2013**
Equity	5	24	24	57	45
International Equity	20	65	46	62	64
Bond	43	113	103	137	148
Municipal Bond	117	183	249	255	201
Allocation	5	15	18	43	44
Specialty	1	10	19	52	57
Total	191	410	459	606	559

Panel B: Fund Characteristics

Variables	year 1995		year 1998		year 2003		year 2008		year 2013		Total	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ShareReturn	0.195	0.215	0.044	0.084	0.244	0.132	-0.325	-0.301	0.015	-0.036	0.093	0.092
ReturnAlpha	-0.026	-0.008	-0.009	0.018	0.010	-0.034	-0.036	-0.029	-0.062	-0.064	0.000	-0.017
NAVPSReturn	0.184	0.194	0.029	0.056	0.189	0.090	-0.300	-0.272	0.054	0.008	0.079	0.070
Premium	-0.072	-0.080	-0.030	-0.034	-0.021	-0.034	-0.077	-0.093	-0.046	-0.058	-0.043	-0.053
FndSize ($bi)	0.257	0.163	0.261	0.155	0.245	0.151	0.255	0.159	0.404	0.263	0.304	0.180
FamSize ($bi)	4.447	3.941	5.294	2.916	8.126	4.266	11.986	7.325	14.872	11.955	10.336	4.826
ExpenseRatio	1.165	0.970	1.235	1.050	1.322	1.210	1.344	1.200	1.278	1.190	1.282	1.180
FndAge	5.105	4.000	8.710	6.000	11.205	11.000	11.195	9.000	14.750	11.000	11.330	9.000
FndTurnover	40.914	18.000	37.607	19.000	40.430	19.000	41.701	24.000	46.203	23.500	40.635	21.000

Panel C: Boards Characteristics

Variables	year 1995		year 1998		year 2003		year 2008		year 2013		Total	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
#IndDirFnd	8.08	8.00	8.07	8.00	8.63	8.00	9.08	9.00	9.00	10.00	8.70	8.00
%IndDirFnd	0.73	0.73	0.74	0.75	0.79	0.80	0.85	0.86	0.84	0.86	0.80	0.82
AveTenIndDirFnd	3.37	2.80	5.23	4.75	6.81	7.33	5.79	6.00	8.22	8.11	6.30	6.00
AveIndDirAgeFnd	60.96	62.17	61.90	61.43	63.63	63.67	62.70	62.18	65.76	66.22	63.37	63.50
DirFemaleFnd	0.10	0.00	0.10	0.00	0.15	0.14	0.17	0.18	0.21	0.22	0.16	0.18
AveIndDirCompFnd	4,459	3,765	11,958	4,500	7,447	2,673	8,105	2,750	9,798	3,937	8,735	3,600
AveIndDirCompFam	31,607	21,600	123,226	23,233	102,582	21,933	95,513	68,933	94,447	85,509	96,312	39,600
%IndDirOwn>50K	NA	NA	NA	NA	0.080	0.000	0.063	0.000	0.109	0.000	0.087	0.000
%IndDirOwn_1	NA	NA	NA	NA	0.671	0.833	0.696	0.889	0.637	0.750	0.673	0.833
%IndDirOwn_2	NA	NA	NA	NA	0.163	0.000	0.108	0.000	0.113	0.000	0.126	0.000
%IndDirOwn_3	NA	NA	NA	NA	0.083	0.000	0.101	0.000	0.133	0.000	0.105	0.000
%IndDirOwn_4	NA	NA	NA	NA	0.028	0.000	0.032	0.000	0.045	0.000	0.034	0.000
%IndDirOwn_5	NA	NA	NA	NA	0.055	0.000	0.063	0.000	0.073	0.000	0.062	0.000

Table 3.2. Spearman Rank Correlations

This table reports Spearman Rank Correlations for *ExpenseRatio*, *ShareReturn, ReturnAlpha*, *Premium*, *%IndDirFnd*, *#IndDirFnd*, *UnexpCompIndDir*, *AveTenIndDirFnd,* and *%DirFemaleFnd* that are defined in the appendix. For equity, international equity, and specialty funds, *ReturnAlpha* is the annualized intercept from regressing monthly share excess returns of each fund over the Carhart four-factors and a liquidity factor. For bond and municipal bond funds, it is the annualized intercept from regressing monthly excess returns of each fund over 7 Barclays bond indices (Barclays Aggregate Bond Index, Barclays U.S. Treasury Long, Barclays U.S. Treasury Intermediate, Barclays U.S. Mortgage Backed Securities, Barclays U.S. Corp Investment Grade, Barclays Municipal Bond and Barclays U.S. Corp High Yield Bond). [a], [b] and [c] indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Variables	***ExpenseRatio***	***ShareReturn***	***ReturnAlpha***	***Premium***	***%IndDirFnd***	***#IndDirFnd***	***UnexpComp IndDir***	***AveTen IndDirFnd***	***%DirFemaleFnd***
ExpenseRatio	1.00								
ShareReturn	0.06 [a]	1.00							
ReturnAlpha	-0.04 [a]	0.45 [a]	1.00						
Premium	-0.05 [a]	0.00	-0.01	1.00					
%IndDirFnd	-0.15 [a]	-0.07 [a]	-0.13 [a]	0.06 [a]	1.00				
#IndDirFnd	-0.13 [a]	-0.03 [a]	-0.08 [a]	-0.01	0.19 [a]	1.00			
UnexpComp IndDir	0.08 [a]	0.01	-0.04 [a]	-0.03 [a]	0.07 [a]	0.05	1.00		
AveTen IndDirFnd	-0.01	0.00	-0.04 [a]	-0.03 [a]	0.21 [a]	-0.00 [a]	-0.06 [a]	1.00	
%DirFemaleFnd	-0.19 [a]	-0.03 [a]	-0.08 [a]	0.15 [a]	0.34 [a]	0.33 [a]	-0.14 [a]	0.06 [a]	1.00

Table 3.3. Summary results for panel regressions for the relationship between current board characteristics and past CEF characteristics

This table reports the coefficient estimates of OLS panel regressions to examine the relationship between the values and changes in values of some regressors from equation (2) like board independence, size and CEF size and past CEF characteristics with their t-values in parentheses for the 2002-2013 and 1994-2013 periods for all available individual U.S. closed-end funds (CEFs). In Panel A, the dependent variables are the current values of board independence (*%IndDirFnd)*, board size (*#IndDirFnd*) and CEF size (*FndSize*). In panel B, the dependent variables are the one-year changes in board independence (Δ*%IndDirFnd)*, board size (Δ*#IndDirFnd*) and CEF size (Δ*FndSize*). The independent variables are defined in the appendix. [a], [b] and [c] indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Panel A: Level dependent variable at time t

Column	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables	*%IndDirFnd*		*#IndDirFnd*		*FndSize*	
Sample Period	2002-2013	1994-2013	2002-2013	1994-2013	2002-2013	1994-2013
ReturnAlpha$_{t-1}$	-0.0053 (-0.64)	-0.0024 (-0.32)	0.3197 [c] (1.68)	0.2910 [c] (1.74)	0.0399 [b] (2.46)	0.0277 [c] (1.84)
ExpenseRatio$_{t-1}$	-0.0183 [a] (-5.64)	-0.0116 [a] (-3.60)	-0.2582 [a] (-3.14)	-0.0763 (-1.03)	-0.0215 [a] (-3.07)	-0.0348 [a] (-4.91)
Premium$_{t-1}$	-0.0207 (-1.61)	-0.0126 (-1.03)	-0.0493 (-0.16)	-0.4198 (-1.56)	0.1082 [a] (4.29)	0.0964 [a] (4.00)
MedIndDirCompFnd$_{t-1}$	-0.3914 [a] (-3.06)	0.0429 (0.56)	-28.2142 [a] (-8.98)	-9.0533 [a] (-5.41)	1.1765 [a] (4.61)	0.6071 [a] (4.02)
%IndDirFnd$_{t-1}$			-2.3694 [a] (-5.92)	-1.1324 [a] (-3.37)	-0.0911 [a] (-2.80)	-0.0971 [a] (-3.15)
#IndDirFnd$_{t-1}$	-0.0020 [a] (-3.20)	-0.0000 (-0.07)			0.0010 (0.71)	0.0007 (0.53)
%DirFemaleFnd$_{t-1}$	0.0638 [a] (4.81)	0.0218 [c] (1.89)	2.0894 [a] (6.24)	1.5066 [a] (5.76)	0.0007 (0.03)	-0.0311 (-1.27)
AveTenIndDirFnd$_{t-1}$	0.0004 (0.83)	0.0015 [a] (3.01)	-0.1420 [a] (-12.08)	-0.1547 [a] (-14.51)	0.0023 [b] (2.22)	0.0034 [a] (3.22)
#BoardMtngFnd$_{t-1}$	0.0023 [a] (6.89)	0.0026 [a] (7.59)	0.0221 [a] (2.73)	0.0341 [a] (4.51)	-0.0017 [a] (-2.70)	-0.0025 [a] (-3.69)
%IndDirOwn>50K$_{t-1}$	-0.0080 (-0.87)		-0.2249 (-0.97)		0.0487 [b] (2.51)	
LnFndAge$_{t-1}$	0.0204 [a] (5.85)	0.0461 [a] (14.26)	1.0785 [a] (12.14)	1.2767 [a] (16.48)	0.0335 [a] (3.65)	0.0295 [a] (3.49)
FndSize$_{t-1}$	-0.0015 (-0.25)	-0.0055 (-1.00)	0.2547 (1.63)	0.2251 (1.61)		
FamSize$_{t-1}$	0.0004 [b] (2.13)	0.0009 [a] (5.07)	0.0658 [a] (13.95)	0.0850 [a] (19.69)	-0.0001 (-0.25)	0.0005 (1.10)
LnFndTurnover$_{t-1}$	-0.0003 (-0.31)	0.0007 (0.73)	0.0106 (0.48)	-0.0017 (-0.09)	0.0007 (0.38)	0.0030 [c] (1.70)
DivYield$_{t-1}$	-0.0009 [c] (-1.74)	-0.0008 (-1.58)	-0.0146 (-1.16)	-0.0030 (-0.27)	0.0034 [a] (3.21)	0.0024 [b] (2.35)
Leverage$_{t-1}$	0.0002 [c] (1.66)	0.0005 [a] (3.81)	0.0078 [b] (2.13)	0.0063 [b] (2.08)	-0.0017 [a] (-4.66)	-0.0010 [a] (-3.18)
Constant	0.8034 [a] (74.48)	0.6917 [a] (72.53)	8.2921 [a] (21.24)	6.2064 [a] (20.74)	0.3414 [a] (10.02)	0.3602 [a] (12.11)
Observations	3,939	4,643	3,939	4,643	3,879	4,571
R-squared	0.038	0.166	0.210	0.296	0.050	0.036

Panel B: Change of dependent variable from t-1 to t

Column	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables	$\Delta IndepDir$		$\Delta BoardSize$		$\Delta FundSize$	
Sample Period	**2002-2013**	**1994-2013**	**2002-2013**	**1994-2013**	**2002-2013**	**1994-2013**
ReturnAlpha$_{t-2}$	-0.0148 [c] (-1.90)	-0.0171 [b] (-2.50)	0.4469 [c] (1.92)	0.3061 [c] (1.66)	-0.0102 (-0.68)	-0.0250 [b] (-2.03)
ExpenseRatio$_{t-2}$	-0.0019 (-0.93)	-0.0032 [c] (-1.72)	-0.1302 [b] (-2.15)	-0.1154 [b] (-2.29)	0.0075 [c] (1.91)	0.0062 [c] (1.83)
Premium$_{t-2}$	-0.0055 (-0.56)	0.0102 (1.10)	0.1825 (0.62)	-0.1020 (-0.41)	-0.0180 (-0.95)	0.0089 (0.53)
MedIndDirCompFnd$_{t-2}$	-0.1002 (-1.04)	-0.0914 [c] (-1.74)	0.3669 (0.13)	-1.7761 (-1.25)	0.0918 (0.49)	0.0833 (0.89)
%IndDirFnd$_{t-2}$	-0.1258 [a] (-10.65)	-0.1473 [a] (-13.96)	0.5147 (1.46)	0.4610 (1.62)	-0.0036 (-0.16)	0.0154 (0.81)
#IndDirFnd$_{t-2}$	-0.0002 (-0.51)	-0.0001 (-0.25)	-0.0792 [a] (-6.33)	-0.0784 [a] (-7.38)	0.0012 (1.48)	0.0006 (0.77)
%DirFemaleFnd$_{t-2}$	0.0083 (0.95)	0.0209 [a] (2.82)	0.4769 [c] (1.83)	0.3980 [b] (1.99)	0.0101 (0.60)	0.0076 (0.57)
AveTenIndDirFnd$_{t-2}$	0.0007 [b] (2.18)	0.0006 [c] (1.67)	0.0171 [c] (1.69)	0.0178 [b] (1.98)	0.0004 (0.54)	0.0006 (1.05)
#BoardMtngFnd$_{t-2}$	-0.0000 (-0.09)	0.0001 (0.45)	0.0006 (0.07)	0.0039 (0.53)	0.0009 [c] (1.74)	0.0008 (1.63)
%IndDirOwn>50K$_{t-2}$	-0.0022 (-0.38)		-0.2701 (-1.54)		0.0178 (1.58)	
LnFndAge$_{t-2}$	-0.0030 (-1.56)	-0.0023 (-1.22)	-0.0571 (-1.00)	-0.0779 (-1.53)	-0.0060 (-1.64)	-0.0052 (-1.52)
FndSize$_{t-2}$	0.0006 (0.23)	0.0026 (1.09)	0.0174 (0.22)	0.0431 (0.67)	0.0015 (0.29)	-0.0167 [a] (-3.92)
FamSize$_{t-2}$	0.0000 (0.44)	0.0001 (0.83)	0.0022 (0.77)	0.0018 (0.68)	0.0000 (0.13)	0.0000 (0.11)
LnFndTurnover$_{t-2}$	-0.0007 (-0.93)	-0.0011 (-1.58)	0.0044 (0.21)	0.0061 (0.33)	0.0006 (0.42)	-0.0001 (-0.11)
DivYield$_{t-2}$	0.0003 (0.99)	0.0001 (0.32)	-0.0069 (-0.72)	0.0025 (0.30)	-0.0005 (-0.88)	-0.0007 (-1.24)
Leverage$_{t-2}$	-0.0000 (-0.45)	-0.0000 (-0.76)	0.0039 [c] (1.82)	0.0028 (1.60)	-0.0000 (-0.24)	0.0000 (0.16)
Constant	0.1149 [a] (10.11)	0.1319 [a] (13.98)	0.3777 (1.11)	0.3712 (1.46)	-0.0087 (-0.40)	-0.0120 (-0.71)
Observations	3,412	4,102	3,412	4,102	3,319	3,993
R-squared	0.055	0.067	0.018	0.021	0.001	0.020

Table 3.4. Summary results for panel regressions for the relationships between CEF expense ratios with various board characteristics

This table reports the coefficient estimates of panel regressions to examine the relationship between CEF board characteristics and CEF expense ratios using OLS, fixed-effects, Fama-MacBeth and system-GMM specifications and their t-values in parentheses for the 2002-2013 and 1994-2013 periods for all available individual U.S. closed-end funds (CEFs). The dependent variable is *ExpenseRatio* or the annual CEF expense ratio. The independent variables are defined in the appendix. The CEF governance variables are lagged one-year in all models except for the system-GMM. The year dummies are supressed for brevity. AR(1) and AR(2) are first-order and second-order, respectively, tests for no serial correlation in the first differenced standard errors. Hansen J-stat is the test of over-identification under the null that all instruments are valid. The R-square values are also reported. The fixed-effect and system-GMM models control for the fixed-effects. The standard errors are clustered. [a], [b] and [c] indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Independent Variables / Statistics	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS		Fixed Effect		Fama-MacBeth		Dynamic Panel	
	2002-2013	1994-2013	2002-2013	1994-2013	2002-2013	1994-2013	2002-2013	1994-2013
%IndDirFnd	-0.3882 [a] (-4.75)	-0.2249 [a] (-3.21)	-0.2583 [b] (-2.57)	-0.1730 [b] (-2.31)	-0.6782 [a] (-10.21)	-0.7800 [a] (-10.85)	-0.5244 [b] (-2.53)	-0.4219 [b] (-2.15)
#IndDirFnd	-0.0019 (-0.61)	0.0010 (0.35)	-0.0007 (-0.20)	-0.0008 (-0.23)	-0.0319 [a] (-6.98)	-0.0176 [b] (-2.48)	-0.0293 [a] (-4.04)	-0.0181 [b] (-2.44)
UnexpCompIndDir	-0.0832 (-1.39)	0.0047 (0.28)	0.0138 (0.35)	0.0427 [b] (2.50)	-0.0618 (-0.68)	0.5241 (0.97)	-0.1114 (-1.60)	0.0268 (0.99)
%IndDirOwn>50K	-0.1969 [a] (-3.47)		-0.2082 [a] (-3.29)		0.0667 (1.59)		-0.4778 [a] (-3.23)	
%DirFemaleFnd	0.0252 (0.38)	-0.2042 [a] (-3.68)	0.1033 (1.47)	-0.1251 [b] (-1.98)	-0.0185 (-0.21)	-0.0811 (-1.34)	0.0155 (0.11)	0.0115 (0.10)
#BoardMtngFnd	0.0027 [b] (2.18)	0.0027 [b] (2.06)	0.0041 [a] (3.31)	0.0018 (1.31)	0.0073 (1.31)	0.0141 [b] (2.36)	-0.0031 (-0.80)	0.0044 (1.14)
AveTenIndDirFnd	-0.0060 (-1.62)	-0.0039 (-1.23)	-0.0009 (-0.23)	-0.0016 (-0.47)	-0.0100 [a] (-4.00)	-0.0132 [a] (-2.93)	0.0043 (0.75)	0.0023 (0.43)
AveIndDirAgeFnd	-0.7603 [a] (-3.94)	-0.5510 [a] (-3.65)	-0.6932 [a] (-2.88)	-0.5536 [a] (-3.19)	-0.0404 (-0.36)	-0.1183 (-1.20)	0.0571 (0.30)	0.0221 (0.14)
FndSize	-0.2773 [a] (-6.79)	-0.3261 [a] (-6.80)	-0.2212 [a] (-4.41)	-0.2942 [a] (-4.85)	-0.2067 [a] (-10.95)	-0.2350 [a] (-11.70)	-0.2889 [b] (-2.24)	-0.1775 (-1.48)

Table 3.4. Cont'd

Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FamSize	-0.0044 [a] (-5.73)	0.0019 [b] (2.31)	0.0013 (0.96)	0.0072 [a] (6.24)	-0.0077 [a] (-9.53)	-0.0100 [a] (-4.88)	0.0024 (1.17)	0.0024 (1.23)
LnFndAge	0.0794 [a] (3.98)	0.0792 [a] (4.41)	0.1818 [a] (4.83)	0.0836 [a] (2.61)	-0.0633 [c] (-1.82)	-0.0772 [b] (-2.54)	0.0329 (1.18)	-0.0094 (-0.40)
LnFndTurnover	0.0014 (0.35)	0.0003 (0.07)	-0.0012 (-0.29)	-0.0007 (-0.19)	0.0125 [a] (3.48)	0.0027 (0.51)	-0.0308 (-1.53)	-0.0425 [b] (-2.32)
FixedIncome	-0.3421 [a] (-8.61)	-0.3779 [a] (-10.51)	-0.7472 [a] (-9.06)	-0.4071 [a] (-3.51)	-0.1859 [a] (-5.38)	-0.2071 [a] (-4.76)	-0.3638 [a] (-2.85)	-0.2638 [b] (-2.53)
Foreign	0.1183 [b] (2.29)	0.1599 [a] (3.73)	0.1356 (1.57)	0.1369 [b] (1.99)	0.1349 [a] (3.23)	0.1589 [a] (3.47)	-0.0516 (-0.51)	0.0757 (0.90)
ExpenseRatio$_{t-1}$							0.5865 [a] (15.02)	0.6013 [a] (15.03)
ExpenseRatio$_{t-2}$							0.0682 [b] (2.17)	0.0839 [a] (3.08)
Constant	5.0271 [a] (6.21)	3.9410 [a] (6.24)	4.6103 [a] (4.42)	3.7976 [a] (5.12)	2.7138 [a] (5.73)	2.9566 [a] (8.10)	1.2169 (1.62)	1.0679 [c] (1.76)
AR(1) test (p-value)							0.00	0.00
AR(2) test (p-value)							0.76	0.58
Hansen J-stat (p-value)							0.26	0.11
Observations	5,693	7,689	5,693	7,689	5,721	7,747	5,049	6,431
R-squared	0.066	0.059	0.109	0.101	0.279	0.354	0.629	0.710

Table 3.5. Summary results for panel regressions for the relationships between benchmark-adjusted share excess returns and board characteristics

This table reports the coefficient estimates of panel regressions to examine the relationships between CEF board characteristics and CEF benchmark-adjusted share returns using OLS, fixed-effects, Fama-MacBeth and system-GMM specifications and their t-values in parentheses for the 2001-2013 and 1994-2013 periods for all available individual U.S. closed-end funds (CEFs). The dependent variable is the CEF benchmark-adjusted share excess returns (*ReturnAlpha*) which are calculated as explained in section 3.3 of the paper. The independent variables are defined in the appendix. The CEF governance variables are lagged one-year in all models except for the system-GMM. AR(1) and AR(2) are first-order and second-order, respectively, tests for no serial correlation in the first differenced standard errors. Hansen J-stat is the test of over-identification under the null that all instruments are valid. The R-square values are also reported. The fixed-effects and system-GMM models control for the fixed-effects. The standard errors are clustered. The year dummies are supressed for brevity. [a], [b] and [c] indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Independent Variables / Statistics	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS		Fixed Effect		Fama-MacBeth		Dynamic Panel	
	2002-2013	1994-2013	2002-2013	1994-2013	2002-2013	1994-2013	2002-2013	1994-2013
%IndDirFnd	-0.1056 [a] (-2.97)	-0.0851 [b] (-2.52)	-0.0126 (-0.22)	0.0472 (0.99)	-0.0379 (-1.62)	1.1893 (1.01)	-0.3470 [a] (-2.63)	-0.3168 [a] (-2.80)
#IndDirFnd	0.0013 (1.06)	0.0002 (0.12)	0.0037 [c] (1.72)	-0.0003 (-0.11)	0.0015 (0.84)	0.0062 (1.51)	-0.0104 [b] (-2.07)	-0.0106 [b] (-2.07)
UnexpCompIndDir	-0.0017 (-0.13)	-0.0142 [b] (-2.22)	0.0081 (0.29)	-0.0083 (-0.93)	0.0600 [b] (2.32)	0.0998 [c] (1.81)	0.0176 (0.56)	0.0056 (0.26)
%IndDirOwn>50K	0.0341 [b] (2.43)		0.0310 (0.84)		0.0355 [b] (2.48)		0.1863 [b] (2.01)	
%DirFemaleFnd	0.0062 (0.23)	-0.0404 [c] (-1.65)	0.0743 [c] (1.79)	0.0570 (1.59)	-0.0093 (-0.43)	-0.2088 (-0.98)	0.1588 [c] (1.83)	0.1266 (1.39)
#BoardMtngFnd	0.0013 [b] (2.23)	0.0003 (0.59)	0.0028 [a] (3.47)	0.0020 [a] (2.86)	0.0009 [b] (2.38)	0.0649 (0.98)	0.0021 (0.94)	0.0044 [c] (1.81)
AveTenIndDirFnd	-0.0020 [b] (-2.49)	-0.0032 [a] (-3.46)	-0.0021 (-1.41)	-0.0035 [b] (-2.44)	-0.0005 (-0.42)	-0.0776 (-1.02)	-0.0036 (-1.19)	-0.0039 (-1.23)
AveIndDirAgeFnd	-0.0139 (-0.27)	0.1068 [c] (1.70)	0.2008 [c] (1.76)	0.2269 [b] (2.47)	-0.0581 (-0.84)	0.2934 (1.20)	0.2098 [b] (1.99)	0.2138 [c] (1.75)
FndSize	0.0031 (0.73)	0.0089 (0.81)	-0.0679 (-0.94)	-0.0288 (-0.45)	0.0028 (0.53)	-0.4202 (-0.97)	-0.1542 [b] (-2.12)	-0.0312 (-0.41)

Table 3.5. Cont'd

Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FamSize	-0.0005 [a] (-2.72)	-0.0007 [a] (-3.40)	0.0021 [b] (2.30)	0.0023 [a] (2.61)	-0.0003 (-0.74)	-0.0083 (-1.05)	0.0021 [c] (1.96)	0.0018 [c] (1.71)
LnFndAge	-0.0028 (-0.33)	-0.0105 (-0.94)	-0.1011 [c] (-1.68)	-0.0145 (-0.26)	0.0032 (0.83)	0.5134 (0.99)	0.0155 (0.83)	0.0389 [b] (2.18)
LnFndTurnover	-0.0031 (-1.43)	-0.0039 (-1.53)	-0.0027 (-0.76)	-0.0016 (-0.56)	-0.0025 [c] (-1.64)	-0.0110 (-1.01)	0.0055 (0.41)	0.0137 (1.06)
ExpenseRatio	0.0045 (0.68)	0.0080 (1.04)	0.0532 [a] (3.45)	0.0141 (1.26)	-0.0021 (-0.48)	-0.3411 (-1.00)	0.0455 (1.02)	0.0403 (1.02)
FixedIncome	-0.0113 [c] (-1.89)	-0.0072 (-0.69)	0.6114 [b] (2.25)	0.2562 (1.00)	-0.0120 (-0.98)	0.4394 (0.95)	-0.1006 (-1.41)	-0.0921 (-1.62)
Foreign	0.0533 [a] (5.32)	0.0381 [a] (3.02)	0.0652 [c] (1.83)	0.0655b (2.20)	0.0453 (1.16)	-0.1362 (-0.75)	-0.0042 (-0.06)	0.1257 [c] (1.80)
$ReturnAlpha_{t-1}$							0.1044 [a] (2.61)	0.0978 [b] (2.04)
$ReturnAlpha_{t-2}$							0.0423 (1.48)	0.0192 (0.53)
Constant	0.1360 (0.66)	-0.3258 (-1.32)	-1.1175b (-2.23)	-1.1282 [a] (-2.80)	0.2461 (0.90)	-3.2832 (-1.10)	-0.5090 (-1.20)	-0.7779 (-1.55)
AR(1) test (p-value)							0.00	0.00
AR(2) test (p-value)							0.15	0.33
Hansen J-stat (p-value)							0.30	0.11
Observations	3,979	5,471	3,979	5,471	4,298	6,035	3,688	4,516
R-squared	0.016	0.014	0.078	0.076	0.177	0.226	0.057	0.069

Table 3.6. Summary results for panel regressions for the relationships between the CEF premiums with various board characteristics

This table reports the coefficient estimates of panel regressions to examine the relationship between CEF board characteristics and CEF premiums using OLS, fixed-effects, Fama-MacBeth and system-GMM specifications and their t-values in parentheses over the 2002-2013 and 1994-2013 periods for all available individual U.S. closed-end funds (CEFs). The dependent variable is *Premium* that is calculated annually as [(share price-net asset value)/net asset value]. The independent variables are defined in the appendix. The CEF governance variables are lagged one-year in all models except for the system-GMM. AR(1) and AR(2) are first-order and second-order, respectively, tests for no serial correlation in the first differenced standard errors. Hansen J-stat is the test of over-identification under the null that all instruments are valid. The R-square values are also reported. The fixed-effects and system-GMM models control for the fixed-effects. The standard errors are clustered. The year dummies are supressed for brevity. [a], [b] and [c] indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Independent Variables / Statistics	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS		Fixed Effect		Fama-MacBeth		Dynamic Panel	
	2002-2013	1994-2013	2002-2013	1994-2013	2002-2013	1994-2013	2002-2013	1994-2013
%IndDirFnd	-0.0664 [a] (-3.15)	-0.0420 [b] (-2.16)	-0.0410 [c] (-1.78)	-0.0498 [b] (-2.32)	0.0047 (0.22)	-0.0181 (-0.59)	-0.0701 (-1.26)	-0.0298 (-0.55)
#IndDirFnd	-0.0001 (-0.07)	-0.0012 (-1.54)	0.0023 [a] (2.63)	0.0004 (0.40)	-0.0022 [b] (-2.98)	-0.0031 [c] (-1.95)	-0.0004 (-0.20)	-0.0005 (-0.27)
UnexpCompIndDir	-0.0139 (-1.51)	-0.0072 (-1.36)	-0.0079 (-0.77)	-0.0085 (-1.47)	0.0353 (0.68)	-0.0682 (-0.68)	-0.0458 [c] (-1.81)	-0.0204 (-1.55)
%IndDirOwn>50K	-0.0190 [c] (-1.66)		-0.0059 (-0.44)		-0.0051 (-0.47)		-0.0035 (-0.11)	
%DirFemaleFnd	0.0003 (0.02)	0.0445 [a] (3.20)	0.0346 [c] (1.84)	0.0632 [a] (3.45)	-0.0056 (-0.28)	0.0427 (1.58)	-0.1024 [b] (-2.09)	-0.0910 [c] (-1.96)
#BoardMtngFnd	-0.0013 [a] (-4.90)	-0.0012 [a] (-4.30)	-0.0004 (-1.33)	-0.0013 [a] (-4.48)	-0.0016 [b] (-2.76)	-0.0022 [b] (-2.24)	-0.0022 [b] (-2.32)	-0.0031 [a] (-2.96)
AveTenIndDirFnd	-0.0002 (-0.23)	-0.0003 (-0.29)	0.0009 (0.72)	0.0006 (0.49)	-0.0002 (-0.31)	-0.0001 (-0.13)	-0.0028 (-1.20)	-0.0047 [c] (-1.96)
AveIndDirAgeFnd	0.0483 (1.22)	0.0738 [b] (1.98)	-0.0472 (-1.00)	-0.0057 (-0.13)	0.1152 [c] (2.06)	0.0188 (0.34)	0.1001 (1.32)	0.0534 (0.80)
LnMarketCap	0.0039 (1.50)	0.0050 [c] (1.81)	0.0253 [b] (2.52)	0.0327 [a] (3.03)	-0.0060 [b] (-2.25)	-0.0069 [c] (-1.92)	-0.0096 (-1.05)	-0.0074 (-0.98)
LnSharePrice	0.1061 [a] (13.51)	0.0979 [a] (14.28)	0.1319 [a] (7.73)	0.1102 [a] (7.45)	0.0507 [a] (7.05)	0.0569 [a] (7.61)	0.1439 [a] (5.90)	0.1237 [a] (4.80)

Table 3.6. Cont'd

Independent Variables / Statistics	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LnFndTurnover	-0.0006 (-0.60)	0.0004 (0.41)	-0.0014 (-1.48)	-0.0006 (-0.64)	0.0014 (1.01)	-0.0004 (-0.29)	0.0030 (0.77)	0.0050 (1.09)
StdNAV	0.0151 (0.07)	-0.2334 (-1.35)	0.7324 [a] (3.48)	0.1778 (0.94)	0.5159 [c] (1.70)	0.3997 [c] (1.71)	0.5755 (1.31)	0.5460 (1.27)
DivYield	0.0099 [a] (11.71)	0.0095 [a] (9.15)	0.0050 [a] (5.36)	0.0058 [a] (5.16)	0.0134 [a] (7.63)	0.0143 [a] (6.57)	0.0118 [a] (4.97)	0.0099 [a] (4.43)
Leverage	-0.0002 (-1.37)	-0.0002 (-1.08)	0.0007 [a] (2.67)	0.0006 [b] (2.49)	-0.0003 [c] (-2.20)	-0.0005 [a] (-3.25)	0.0013 [b] (2.24)	0.0006 (1.22)
ExpenseRatio	0.0107 [b] (2.07)	0.0130 [b] (2.44)	-0.0003 (-0.06)	0.0013 (0.21)	0.0106 [c] (1.66)	0.0034 (0.57)	0.0099 (0.60)	0.0141 (0.80)
LnFndAge	0.0102 [b] (2.30)	0.0154 [a] (3.55)	0.0327 [a] (3.43)	0.0332 [a] (3.29)	0.0017 (0.43)	0.0098 (0.98)	0.0354 [a] (2.66)	0.0377 [a] (2.78)
FixedIncome	0.0135 (1.55)	0.0079 (0.86)	-0.0813 [a] (-2.86)	-0.0438 (-0.64)	-0.0153 (-0.88)	-0.0131 (-0.74)	-0.1022 [a] (-3.42)	-0.0769 [b] (-2.46)
Foreign	-0.0186 [b] (-2.08)	-0.0194 [b] (-2.12)	-0.0021 (-0.13)	-0.0194 (-0.98)	-0.0283 [a] (-5.25)	-0.0314 [a] (-4.86)	-0.0572 [c] (-1.88)	-0.0732 [b] (-2.08)
$Premium_{t-1}$							0.2601 [a] (7.96)	0.3038 [a] (7.99)
$Premium_{t-2}$							0.0369 [c] (1.73)	0.0359 [c] (1.73)
Constant	-0.5827 [a] (-3.56)	-0.7129 [a] (-4.66)	-0.5137 [b] (-2.30)	-0.7925 [a] (-3.44)	-0.6230 [b] (-2.40)	-0.2177 (-0.94)	-0.6857 [b] (-2.05)	-0.5634 [b] (-1.97)
AR(1) test (p-value)							0.00	0.00
AR(2) test (p-value)							0.98	0.78
Hansen J-stat (p-value)							0.78	0.80
Observations	4,724	5,562	4,724	5,562	4,750	5,599	3,963	4,541
R-squared	0.280	0.225	0.359	0.308	0.320	0.407	0.255	0.299

Table 3.7. Summary results for panel regressions for the relationships between CEF board compensation with various board characteristics

This table reports the coefficient estimates of the panel regressions to examine the relationships between CEF board characteristics and CEF board compensations using OLS, fixed-effects, Fama-MacBeth and system-GMM specifications and their t-values in parentheses over the 2002-2013 and 1994-2013 periods for all available individual U.S. closed-end funds (CEFs). The dependent variable is the median compensation (in millions of dollars) of the independent directors from a CEF board (*MedIndDirCompFnd*) for a given year. AR(1) and AR(2) are first-order and second-order, respectively, tests for no serial correlation in the first differenced standard errors. Hansen J-stat is the test of over-identification under the null that all instruments are valid. The R-square values are also reported. The independent variables are defined in the appendix. The CEF governance variables are lagged one-year in all models except for the system-GMM. The fixed-effects and system-GMM models control for the fixed-effects. The standard errors are clustered. The year dummies are supressed for brevity. [a], [b] and [c] indicate statistical significance at the 0.01, 0.05 and 0.10 levels, respectively.

Independent Variables / Statistics	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS		Fixed Effect		Fama-MacBeth		Dynamic Panel	
	2002-2013	1994-2013	2002-2013	1994-2013	2002-2013	1994-2013	2002-2013	1994-2013
%IndDirFnd	0.0011 (0.50)	0.0101 [a] (3.44)	-0.0021 (-0.81)	0.0089 [b] (2.40)	-0.0021 (-0.40)	-0.0037 (-1.10)	-0.0005 (-0.17)	-0.0013 (-0.45)
#IndDirFnd	-0.0004 [a] (-5.28)	-0.0002 [c] (-1.74)	-0.0003 [a] (-3.47)	-0.0002 (-1.45)	-0.0009 [a] (-11.68)	-0.0003 (-0.46)	-0.0001 (-0.69)	-0.0001 (-1.02)
%IndDirOwn>50K	0.0089 [a] (5.64)		0.0040 [b] (2.41)		0.0178 [a] (5.68)		0.0088 [b] (2.54)	
#otherboardsIndDirFam	-0.0023 [a] (-6.76)	-0.0021 [a] (-5.02)	-0.0006 (-1.21)	-0.0011 [b] (-1.99)	-0.0000 (-0.04)	-0.0003 (-1.12)	-0.0022 [a] (-3.86)	-0.0013 [a] (-2.97)
%DirFemaleFnd	-0.0059 [a] (-2.87)	-0.0186 [a] (-4.69)	-0.0103 [a] (-3.38)	-0.0247 [a] (-4.74)	-0.0170 [a] (-7.23)	-0.0259 [a] (-3.40)	0.0002 (0.09)	-0.0015 (-0.83)
#BoardMtngFnd	0.0000 (1.28)	-0.0000 (-1.10)	0.0000 (1.59)	-0.0000 (-0.27)	-0.0002 (-1.24)	-0.0011 (-1.58)	0.0002 [a] (2.90)	0.0001 [c] (1.86)
AveTenIndDirFnd	-0.0000 (-0.18)	0.0000 (0.35)	-0.0001 (-0.65)	-0.0003 [c] (-1.78)	0.0001 (0.87)	0.0004 (1.43)	-0.0003 [b] (-2.44)	-0.0003 [a] (-2.95)
AveIndDirAgeFnd	-0.0005 (-0.10)	-0.0247 [a] (-3.07)	-0.0032 (-0.36)	-0.0257 [a] (-2.59)	-0.0032 (-0.87)	-0.0094 (-1.52)	-0.0007 (-0.19)	0.0009 (0.31)

Table 3.7. Cont'd

FndSize	0.0062 [a] (5.22)	0.0084 [a] (5.49)	0.0049 [b] (2.08)	0.0041 (1.57)	0.0066 [a] (10.81)	0.0078 [a] (6.67)	0.0046 [c] (1.72)	0.0016 (1.06)
FamSize	-0.0001 [a] (-5.58)	-0.0005 [a] (-4.90)	-0.0002 [a] (-3.73)	-0.0009 [a] (-4.14)	-0.0002 [a] (-6.23)	-0.0003 [a] (-3.20)	-0.0000 (-1.02)	-0.0000 (-0.27)
LnFndAge	0.0013 [a] (3.04)	0.0009 (1.21)	-0.0017 (-1.31)	0.0006 (0.27)	0.0006 (1.55)	-0.0014 (-0.66)	0.0002 (0.35)	0.0006 [c] (1.66)
$ShareReturn_{t-1}$	-0.0005 [c] (-1.67)	0.0003 (0.82)	-0.0022 [a] (-3.43)	-0.0017 [a] (-2.69)	0.0016 (1.35)	0.0012 (1.12)	0.0008 (0.66)	-0.0005 (-0.36)
FixedIncome	-0.0011 (-1.55)	0.0038 [b] (2.04)	-0.0076 [a] (-7.70)	-0.0176 [a] (-2.90)	-0.0005 (-0.82)	0.0005 (0.22)	0.0019 (0.66)	0.0017 (1.01)
Foreign	-0.0008 (-1.20)	-0.0026 [c] (-1.74)	-0.0001 (-0.25)	0.0016 (0.81)	0.0005 (0.67)	-0.0014 [c] (-1.66)	0.0024 (1.22)	0.0020 (1.46)
$MedIndDirCompFnd_{t-1}$							0.3991 [a] (4.59)	0.7318 [a] (8.36)
$MedIndDirCompFnd_{t-2}$							0.0860 [a] (3.51)	0.1101 [c] (1.91)
Constant	0.0190 (0.96)	0.1161 [a] (3.42)	0.0355 (0.97)	0.1256 [a] (3.09)	0.0330 [c] (2.00)	0.0658 [b] (2.40)	0.0102 (0.69)	0.0004 (0.04)
AR(1) test (p-value)							0.00	0.00
AR(2) test (p-value)							0.42	0.22
Hansen J-stat (p-value)							0.13	0.11
Observations	4,445	5,023	4,445	5,023	4,562	5,150	4,361	4,789
R-squared	0.033	0.081	0.070	0.173	0.498	0.419	0.693	0.838

Table 4.1. Summary statistics for the returns and MERs of fixed-income funds

This table reports summary statistics for the monthly returns and annual MERs (both in %) for Canadian fixed-income funds for the 144 month period from January 2000 through December 2011. Panel A provides statistics on the distribution of various return parameter estimates for three cross-sections based on investment objectives for all individual funds. Panel B reports some summary statistics on the returns for seven total asset value or TNA-weighted portfolios of funds grouped by fund type (T) and fund sponsor type (S) respectively; namely: "T1" (Canadian Bond funds); "T2" (Short-term Canadian Bond funds); and "T3" (High-yield Bond funds); S_1 ("Independents") for those not categorized into one of the remaining groups; S_2 ("Banks") for those sponsored by chartered banks or their wholly owned securities firms; S_3 ("Insurers") for those sponsored by insurance companies; S_4 ("Member-Fins") for those with member owned or controlled (either specific professional or fraternal groups or open to all) sponsors organized as financial entities (caisse, credit union or financial cooperative). The summary statistics are each portfolio's average monthly TNA in billions of dollars for each sponsor type; the average monthly net and gross (net returns plus 1/12th of a fund's annual expense ratio) returns in % and standard deviations; average yearly management fees in % (*Mgmt*) and their standard deviations, and average yearly *MER* in % and their standard deviations for size-weighted portfolios of funds in each sponsor group. Panel C provides fund observations and fund numbers, based on individual funds aggregated over their share classes, for different fund types, fund sponsor types and fund sponsor ownerships, where private for S_3 refers to mutual ownership. Panels D and E report summary cross-sectional statistics (mean, std. dev. and median) in the rows for the annual management expense ratios (*MER*) and trailer fees (*TrailerFee*) based on the time-series statistics for each individual Canadian fixed-income fund (not) differentiated by fund type over the 144-month period 2000-2011.

Panel A: Monthly return distributional statistics based on individual mutual funds								
Fund group	**Statistics**	**Mean**	**Median**	**Std. dev.**	**Minimum**	**Maximum**	**Skewness**	**Kurtosis**
Canadian Bond	**Mean**	0.372	0.392	0.161	-0.537	0.959	-1.061	7.292
	Std. Dev.	1.032	1.017	0.332	0.043	3.172	2.332	15.693
	Median	0.409	0.428	0.179	-0.630	0.909	-0.944	7.031
Short-term Canadian Bond	**Mean**	0.239	0.257	0.191	-0.536	0.777	-0.884	6.991
	Std. Dev.	0.580	0.528	0.501	0.043	3.387	3.820	21.233
	Median	0.246	0.261	0.180	-0.333	0.655	-0.292	3.515
High-yield Bond	**Mean**	0.160	0.277	0.552	-3.447	0.928	-3.285	18.959
	Std. Dev.	2.104	1.829	1.083	0.524	7.616	2.012	9.668
	Median	0.333	0.430	0.604	-2.737	1.334	-1.912	9.402
All	**Mean**	0.301	0.357	0.310	-3.447	0.959	-5.000	10.75
	Std. Dev.	1.079	1.018	0.792	0.043	7.616	2.814	9.441
	Median	0.363	0.403	0.328	-2.737	1.334	-2.861	9.404

Panel B: Distributional statistics for size-weighted fund portfolios based on fund type and fund sponsor type									
		Monthly Return (%)				**Annual Mgmt (%)**		**Annual MER (%)**	
		Net		**Gross**					
Portfolios	**TNA**	**Average**	**SD**	**Average**	**SD**	**Average**	**SD**	**Average**	**SD**
Canadian Bond (T1)	37.44	0.387	0.940	0.508	0.939	1.134	0.072	1.420	0.074
Short-term Canadian Bond (T2)	11.88	0.279	0.419	0.412	0.419	1.260	0.066	1.572	0.111
High-yield Bond (T3)	6.60	0.335	1.453	0.468	1.482	1.212	0.114	1.576	0.148
Independent sponsors (S_1)	21.75	0.322	0.764	0.461	0.770	1.368	0.055	1.695	0.054
Banks (S_2)	21.89	0.402	0.746	0.499	0.746	0.859	0.089	1.160	0.108
Insurance companies (S_3)	8.93	0.370	0.908	0.512	0.906	1.471	0.164	1.743	0.154
Member-based financial entities (S_4)	3.34	0.367	0.836	0.507	0.836	1.380	0.054	1.779	0.115

Panel C: Fund observations (obs.) and numbers (#) based on fund type and fund sponsor type												
Fund Obs.	**T1**			**T2**			**T3**			**Total**		
	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total
S_1	6826	4223	11049	2244	1118	3362	2104	626	2730	11174	5967	17141
S_2	5086	0	5086	2705	0	2705	1790	0	1790	9581	0	9581
S_3	5919	1438	7357	878	225	1103	1399	163	1562	8196	1826	10022
S_4	0	1838	1838	0	337	337	0	260	260	0	2435	2435
Total	17831	7499	25330	5827	1680	7507	5293	1049	6342	28951	10228	39179
Fund #	**T1**			**T2**			**T3**			**Total**		
	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total
S_1	94	66	160	29	17	46	42	19	61	165	102	267
S_2	60	0	60	34	0	34	29	0	29	123	0	123
S_3	85	19	104	19	2	21	27	2	29	131	23	154
S_4	0	21	21	0	5	5	0	3	3	0	29	29
Total	239	106	345	82	24	106	98	24	122	419	154	573

Panel D: Annual *MER*						
Fund group	**Statistics**	**Mean**	**Median**	**Std. dev.**	**Minimum**	**Maximum**
Canadian Bond	**Mean**	1.766	1.840	0.648	0.227	6.393
	Std. Dev.	0.071	0.035	0.181	0.000	2.930
	Median	1.763	1.835	0.622	0.200	4.900
Short-term Canadian Bond	**Mean**	1.568	1.505	0.532	0.420	2.900
	Std. Dev.	0.062	0.038	0.079	0.000	0.567
	Median	1.575	1.505	0.539	0.420	2.900
High-yield Bond	**Mean**	1.950	2.097	0.589	0.298	4.733
	Std. Dev.	0.086	0.033	0.167	0.000	1.445
	Median	1.965	2.100	0.622	0.240	5.430
All	**Mean**	1.770	1.861	0.626	0.227	6.393
	Std. Dev.	0.073	0.037	0.164	0.000	2.930
	Median	1.773	1.850	0.619	0.200	5.430

Panel E: Annual trailer fee (*TrailerFee*)						
Fund group	**Statistics**	**Mean**	**Median**	**Std. dev.**	**Minimum**	**Maximum**
Canadian Bond	**Mean**	0.340	0.309	0.228	0.000	1.136
	Std. Dev.	0.059	0.037	0.078	0.000	0.490
	Median	0.341	0.300	0.232	0.000	1.150
Short-term Canadian Bond	**Mean**	0.330	0.290	0.191	0.024	0.944
	Std. Dev.	0.067	0.041	0.077	0.000	0.469
	Median	0.337	0.300	0.207	0.000	1.000
High-yield Bond	**Mean**	0.455	0.418	0.268	0.000	1.643
	Std. Dev.	0.063	0.033	0.082	0.000	0.410
	Median	0.461	0.430	0.280	0.000	1.640
All	**Mean**	0.363	0.329	0.236	0.000	1.643
	Std. Dev.	0.062	0.037	0.079	0.000	0.490
	Median	0.367	0.320	0.244	0.000	1.640

Table 4.2. Determinants of individual fund fees by sponsor and fund type based on panel regressions

This table reports the panel regression (1) coefficients and their t-values in parentheses for the 11-year period 2000-2011 for determinants of the management expense ratios (*MER*), management fees (*MgmtFee*) and trailer fees (*TrailerFee*) of the individual Canadian fixed-income funds managed by different fund and sponsor types. S_1, S_2, S_3 and S_4 are dummy variables which take a value of 1 if the fund is sponsored by an independent, bank, insurance company or member-owned or controlled financial entity (Member-Fins), respectively, or zero otherwise. We use demeaned values of the fund size (*FundSize*) to control for its effect. *LnNumFund* and *Flow* are the natural logarithms of number of mutual funds managed by the sponsor and fund flows, respectively. *LnAge* is the natural logarithm of the age of a fund. *PerfRank* is the percentile ranking of each fund's total return or benchmark-adjusted return within each investment objective. The *Public* dummy variable takes a value of 1 for a fund with a public sponsor and 0 otherwise. The *Mutual* dummy variable takes a value of 1 for a fund with a mutually-owned sponsor and 0 otherwise. The standard errors are adjusted for clustering for fund effects as proposed by Petersen (2009). W is the p-value based on the Wald test for the hypothesis that the coefficients of the sponsorship dummy variables (S_1, S_2, S_3 and S_4) are jointly equal to zero. S.R is the saturation ratio defined as the total number of observations divided by the number of parameters to be estimated. The adjusted R-square values are also reported. *, ** and *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

	Undifferentiated			Cdn			Short-term			High-yield		
	MER	**MgmtFee**	**TrailerFee**	**MER**	**MgmtFee**	**TrailerFee**	**MER**	**MgmtFee**	**TrailerFee**	**MER**	**MgmtFee**	**TrailerFee**
S_1	0.2393***	-0.0041	0.1751***	0.2575***	0.0675*	0.1046***	0.2738*	-0.2723	0.1687*	0.1725	0.0796*	0.1370
	(4.15)	(-0.03)	(3.02)	(4.12)	(1.79)	(3.23)	(1.86)	(-0.87)	(1.78)	(1.43)	(1.70)	(1.24)
S_3	0.1867**	0.0222	0.0875	0.3375***	0.0848	0.0943**	0.1440	-0.2794	0.0205	-0.1788	0.1252**	-0.2403*
	(2.09)	(0.18)	(1.29)	(3.43)	(1.59)	(1.99)	(0.92)	(-0.82)	(0.22)	(-1.29)	(2.28)	(-1.87)
S_4	0.0665	-0.1782	0.2079***	0.0753	-0.2427	0.2471***	0.1095	-0.2806	0.0099	0.1081	0.1737	-0.1293
	(0.40)	(-1.13)	(2.75)	(0.39)	(-1.59)	(3.15)	(0.38)	(-0.64)	(0.08)	(0.54)	(1.14)	(-0.62)
FundSize	-0.0000**	0.0000	-0.0000**	-0.0000*	-0.0000	-0.0000	-0.0000	0.0000	-0.0000	-0.0000	0.0000	-0.0000
	(-2.12)	(0.30)	(-2.14)	(-1.72)	(-0.59)	(-1.61)	(-1.02)	(0.42)	(-1.08)	(-0.82)	(1.18)	(-1.42)
LnNumFund	0.0630***	-0.0228	0.0804***	0.0702***	-0.0025	0.0561**	0.0383	-0.1059	0.1184*	0.0631	-0.0145	0.0869**
	(3.71)	(-1.07)	(3.51)	(3.84)	(-0.12)	(2.45)	(0.80)	(-1.26)	(1.81)	(1.21)	(-0.47)	(2.25)
LnAge	-0.0239	0.0226	-0.0464***	-0.0149	-0.0042	-0.0085	-0.0308	0.0934	-0.1275*	-0.0558	0.0395	-0.0975***
	(-1.36)	(1.39)	(-2.81)	(-1.01)	(-0.69)	(-0.66)	(-0.84)	(1.50)	(-1.95)	(-0.75)	(0.76)	(-2.65)
Flow	-0.0003	0.0004	-0.0007	-0.0005	0.0006	-0.0011	-0.0039	0.0008	-0.0048	0.0003	-0.0002	0.0003
	(-0.52)	(0.74)	(-1.13)	(-1.40)	(0.83)	(-1.41)	(-1.11)	(0.32)	(-1.20)	(0.26)	(-0.22)	(0.24)
PerfRank	-0.0068	-0.0048	-0.0016	0.0035	-0.0086	0.0132	-0.0133	0.0100	-0.0196	-0.0370	-0.0206	-0.0191
	(-0.71)	(-0.51)	(-0.12)	(0.29)	(-0.67)	(0.79)	(-0.89)	(0.55)	(-0.88)	(-1.02)	(-0.95)	(-0.75)
Public	0.1390*	0.0473	0.0499	0.0678	0.0418	0.0179	0.3496**	-0.0764	0.0889	0.2535	0.4535**	0.0732
	(1.92)	(0.72)	(0.84)	(0.90)	(0.78)	(0.43)	(2.06)	(-0.40)	(1.07)	(1.28)	(2.31)	(0.15)
Mutual	0.1653	0.0647	0.0471	0.0792	0.0428	0.0128	0.7006***	0.5145*	0.1054	0.3095	0.4934**	0.0906
	(1.62)	(1.05)	(0.84)	(1.06)	(0.84)	(0.30)	(2.96)	(1.74)	(0.82)	(1.53)	(2.44)	(0.19)
Intercept (S_2)	1.9295***	1.5241***	0.4686***	2.0041***	1.6213***	0.4744***	1.5813***	1.7388***	0.3620**	2.4349***	1.4006***	0.8766
	(8.75)	(7.64)	(3.29)	(9.80)	(8.41)	(4.74)	(3.40)	(3.07)	(2.25)	(3.45)	(6.29)	(1.59)
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adj.R^2	0.1580	0.0729	0.0658	0.2302	0.1677	0.1221	0.3147	0.0061	0.2089	0.0628	0.1756	0.0149
S.R	237	237	237	156	156	156	46	46	46	36	36	36

Table 4.3. Summary statistics for the bond indices

This table reports the summary statistics (including unadjusted kurtosis) for the monthly returns of the bond indices and information variables in conditional five-factor models. The factors for the Ayadi and Kryzanowski (2011) model are the DEX Long Term Government Bond Index (DEXLTGOV), the DEX Medium-term Government Bond Index (DEXMTGOV), the DEX Long-term Corporate Bond Index (DEXLTCORP), the DEX Medium-term Corporate Bond Index (DEXMTCORP) and the DEX Mortgage-backed Securities Overall Bond Index (DEXMBS). The information variables are default premium (DEF) and the slope of the term structure (TERM). The data cover the period from January 2000 to December 2011, for a total of 144 monthly observations.

Factors and information variables	Average	Std. dev.	Min	Max	Skewness	Kurtosis
DEXLTCORP	0.74812	2.07748	-8.61028	6.96130	-0.57263	5.44375
DEXMTCORP	0.62781	1.23522	-3.70054	3.48991	-0.37310	3.36754
DEXLTGOV	0.70668	1.92592	-3.64388	5.19922	-0.18763	2.43290
DEXMTGOV	0.57755	1.41538	-3.87330	4.74895	-0.14869	3.30564
DEXMBS	0.47640	0.68786	-1.14278	2.68809	0.13834	2.99172
Detrended DEF	0.00001	0.00019	-0.00250	0.00175	-1.24678	13.04840
Detrended Term	-0.00000	0.00029	-0.00331	0.00318	0.89701	9.61680

Table 4.4. Summary statistics for benchmark-adjusted returns for individual funds

This table reports summary cross-sectional statistics (mean, std. dev. and median) in the rows for the monthly unconditional benchmark-adjusted returns based on the time-series statistics for each individual Canadian fixed-income fund (not) differentiated by fund type over the 144-month period 2000-2011. The cross-sectional summary statistics for benchmark-adjusted gross, quasi-gross and net returns, which are reported in Panels A, B and C, respectively, are calculated by subtracting gross (net returns plus 1/12th of a fund's annual *MER*), quasi-gross (net returns plus 1/12th of a fund's annual trailer fee) and net returns from their expected returns based on the unconditional five-factor model used by Ayadi and Kryzanowski (2011).

Panel A: Benchmark-adjusted monthly gross returns						
Fund group	**Statistics**	**Mean**	**Median**	**Std. dev.**	**Minimum**	**Maximum**
Canadian Bond	**Mean**	-0.000	0.000	0.002	-0.008	0.006
	Std. Dev.	0.006	0.005	0.003	0.002	0.031
	Median	0.000**	0.000	0.002	-0.007	0.006
Short-term Canadian Bond	**Mean**	0.000	0.000	0.001	-0.002	0.004
	Std. Dev.	0.003	0.002	0.001	0.000	0.010
	Median	0.000	0.000	0.001	-0.003	0.003
High-yield Bond	**Mean**	0.002***	0.002	0.003	-0.004	0.009
	Std. Dev.	0.018	0.017	0.007	0.009	0.041
	Median	0.003***	0.003	0.003	-0.004	0.007
All	**Mean**	0.000**	0.000	0.002	-0.008	0.009
	Std. Dev.	0.007	0.005	0.006	0.000	0.041
	Median	0.001***	0.000	0.002	-0.007	0.007

Panel B: Benchmark-adjusted monthly quasi-gross returns						
Fund group	**Statistics**	**Mean**	**Median**	**Std. dev.**	**Minimum**	**Maximum**
Canadian Bond	**Mean**	-0.001***	-0.001	0.002	-0.010	0.005
	Std. Dev.	0.005	0.005	0.003	0.002	0.031
	Median	-0.001***	-0.001	0.002	-0.007	0.005
Short-term Canadian Bond	**Mean**	-0.001***	-0.001	0.001	-0.003	0.003
	Std. Dev.	0.002	0.002	0.002	0.000	0.015
	Median	-0.001***	-0.001	0.001	-0.004	0.002
High-yield Bond	**Mean**	0.001*	0.001	0.002	-0.005	0.008
	Std. Dev.	0.016	0.017	0.006	0.009	0.043
	Median	0.001***	0.002	0.003	-0.005	0.006
All	**Mean**	-0.001***	-0.001	0.002	-0.009	0.009
	Std. Dev.	0.007	0.005	0.006	0.000	0.041
	Median	-0.001***	-0.001	0.002	-0.007	0.006

Panel C: Benchmark-adjusted monthly net returns						
Fund group	**Statistics**	**Mean**	**Median**	**Std. dev.**	**Minimum**	**Maximum**
Canadian Bond	**Mean**	-0.002***	-0.002	0.002	-0.010	0.005
	Std. Dev.	0.006	0.005	0.003	0.002	0.031
	Median	-0.001***	-0.001	0.002	-0.010	0.005
Short-term Canadian Bond	**Mean**	-0.001***	-0.001	0.001	-0.004	0.002
	Std. Dev.	0.003	0.002	0.001	0.000	0.010
	Median	-0.001***	-0.001	0.001	-0.005	0.002
High-yield Bond	**Mean**	0.000	0.000	0.003	-0.006	0.008
	Std. Dev.	0.018	0.017	0.007	0.009	0.041
	Median	0.001***	0.001	0.003	-0.005	0.005
All	**Mean**	-0.001***	-0.001	0.002	-0.010	0.008
	Std. Dev.	0.007	0.005	0.006	0.000	0.041
	Median	-0.001***	-0.001	0.002	-0.010	0.005

Table 4.5. Determinants of monthly unconditional benchmark-adjusted returns by sponsor and fund type based on panel regressions

This table reports the coefficient estimates for panel regression (4) and their t-values in parentheses over the 144-month period 2000-2011 for all available Canadian fixed-income funds for various combinations of sponsor and fund types. The dependent variable *FundRTN* is the benchmark-adjusted gross (net return plus 1/12th of a fund's annual expense ratio) or quasi-gross (net return plus 1/12th of a fund's annual trailer fee) or net return for month *t* using the unconditional five-factor model used by Ayadi and Kryzanowski (2011). S_1, S_2, S_3 and S_4 are dummy variables which take a value of 1 if the fund sponsor belongs to the Independent, Bank, Insurer, or member-owned or controlled financial entity category (Member-Fins), respectively, and 0 otherwise. *MER* controls for the effect of the management expense ratios on the after-controls benchmark-adjusted returns of the individual funds. We use the demeaned value of the fund size (*FundSize*) to control for its effect. *LnNumFund* is the natural logarithm of number of mutual funds managed by the sponsor. Other control variables include the natural logarithm of the age of a fund (*LnAge*) and fund flows (*Flow*). The *Public* dummy variable takes a value of 1 for public sponsors and 0 otherwise. The *Mutua*l dummy variable takes a value of 1 for a fund with a mutually-owned sponsor and 0 otherwise. The standard errors are adjusted for clustering for fund effects as proposed by Petersen (2009). W is the p-value based on the Wald test for the hypothesis that the coefficients of the sponsorship dummy variables (S_1, S_2, S_3 and S_4) are jointly equal to zero. S.R is the saturation ratio defined as the total number of observations divided by the number of parameters to be estimated. The adjusted R-square values are also reported. *, ** and *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

	Undifferentiated			**Cdn**			**Short-term**			**High-yield**		
	Net	**Gross**	**Quasi-gross**	**Net**	**Gross**	**Quasi-gross**	**Net**	**Gross**	**Quasi-gross**	**Net**	**Gross**	**Quasi-gross**
S_1	-0.0004* (-1.85)	0.0000 (0.13)	-0.0003* (-1.67)	-0.0003* (-1.69)	0.0003 (1.53)	-0.0002 (-1.09)	-0.0005* (-1.76)	-0.0001 (-0.40)	-0.0004 (-1.29)	0.0000 (0.03)	0.0002 (0.14)	0.0002 (0.16)
S_3	-0.0010*** (-4.49)	-0.0005** (-2.02)	-0.0010*** (-4.32)	-0.0007*** (-3.83)	-0.0000 (-0.11)	-0.0006*** (-3.63)	-0.0002 (-0.43)	0.0002 (0.54)	-0.0002 (-0.51)	-0.0024* (-1.81)	-0.0022 (-1.62)	-0.0025* (-1.82)
S_4	-0.0009* (-1.75)	-0.0006 (-1.07)	-0.0007* (-1.71)	-0.0009*** (-2.89)	-0.0004 (-1.46)	-0.0007** (-2.12)	0.0010 (0.79)	0.0010 (0.83)	0.0009 (0.74)	-0.0032* (-1.91)	-0.0032* (-1.88)	-0.0030* (-1.74)
MER	-0.0183 (-0.47)	0.0544 (1.40)	0.0351 (0.89)	-0.0503 (-1.16)	0.0541 (1.50)	-0.0020 (-0.05)	-0.0579** (-2.29)	0.0117 (0.46)	-0.0074 (-0.31)	0.1662 (0.61)	0.2367 (0.87)	0.2045 (0.76)
FundSize	-0.0000* (-1.84)	-0.0000** (-1.97)	-0.0000* (-1.96)	-0.0000** (-2.18)	-0.0000*** (-3.15)	-0.0000** (-2.40)	-0.0000*** (-3.16)	-0.0000*** (-3.23)	-0.0000*** (-4.27)	0.0000 (0.09)	0.0000 (0.09)	0.0000 (0.06)
LnNumFund	-0.0003 (-0.99)	-0.0003 (-0.86)	-0.0003 (-0.91)	-0.0003 (-1.46)	-0.0002 (-1.26)	-0.0002 (-1.41)	0.0001 (0.46)	0.0002 (0.75)	0.0002 (1.23)	-0.0018 (-0.71)	-0.0018 (-0.71)	-0.0018 (-0.70)
LnAge	0.0015*** (3.87)	0.0015*** (3.89)	0.0016*** (3.95)	0.0008*** (2.60)	0.0008** (2.49)	0.0008*** (2.64)	0.0002 (0.79)	0.0002 (0.82)	0.0003 (1.49)	0.0077*** (4.28)	0.0076*** (4.29)	0.0076*** (4.26)
Flow	0.0497 (1.25)	0.0494 (1.25)	0.0587 (0.96)	0.0115 (0.50)	0.0129 (0.58)	0.0113 (0.50)	0.0316*** (12.14)	0.0314*** (11.32)	0.1676 (1.58)	2.2728*** (2.75)	2.2906*** (2.77)	2.2635*** (2.76)
Public	-0.0009** (-2.33)	-0.0006 (-1.61)	-0.0009** (-2.31)	-0.0006** (-2.43)	-0.0003 (-1.55)	-0.0006** (-2.52)	-0.0006 (-1.09)	-0.0004 (-0.72)	-0.0007 (-1.36)	0.0004 (0.19)	0.0002 (0.09)	-0.0008 (-0.36)
Mutual	0.0003 (0.85)	0.0006 (1.61)	0.0003 (0.81)	0.0001 (0.37)	0.0003 (1.55)	0.0001 (0.38)	-0.0014* (-1.83)	-0.0008 (-1.26)	-0.0014* (-1.69)	0.0089*** (4.72)	0.0089*** (4.60)	0.0079*** (4.12)
Intercept (S_2)	-0.0033*** (-4.43)	-0.0025*** (-3.54)	-0.0030*** (-4.04)	-0.0025*** (-3.85)	-0.0019*** (-3.27)	-0.0022*** (-3.52)	-0.0011 (-1.31)	-0.0007 (-0.95)	-0.0011 (-1.33)	-0.0123* (-1.67)	-0.0112 (-1.54)	-0.0113 (-1.53)
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adj.R^2	0.0423	0.0266	0.0410	0.1374	0.1767	0.1558	0.1802	0.1373	0.1686	0.1462	0.1270	0.134
S.R	1949	1949	1949	1298	1298	1298	428	428	428	223	223	223

Table 4.6. Determinants of monthly conditional benchmark-adjusted returns by sponsor and fund type based on panel regressions

This table reports the coefficient estimates for panel regression (4) and their t-values in parentheses over the 144-month period 2000-2011 for all available Canadian fixed-income funds for various combinations of sponsor and fund types. The dependent variable *FundRTN* is the benchmark-adjusted gross (net return plus 1/12th of a fund's annual expense ratio) or quasi-gross (net return plus 1/12th of a fund's annual trailer fee) or net return for month *t* using the conditional five-factor model used by Ayadi and Kryzanowski (2011). S_1, S_2, S_3 and S_4 are dummy variables which take a value of 1 if the fund sponsor belongs to the Independent, Bank, Insurer, or member-owned or controlled financial entity category (Member-Fins), respectively, and 0 otherwise. *MER* controls for the effect of the management expense ratios on the benchmark-adjusted returns of the individual funds. Demeaned values of fund size (*FundSize*) are used to control for its effect. *LnNumFund* is the natural logarithm of number of mutual funds managed by the sponsor. Other control variables include the natural logarithm of the age of a fund (*LnAge*) and fund flows (*Flow*). The *Public* dummy variable takes a value of 1 for public sponsors and 0 otherwise. The *Mutua*l dummy variable takes a value of 1 for a fund with a mutually-owned sponsor and 0 otherwise. The standard errors are adjusted for clustering for fund effects as proposed by Petersen (2009). W is the p-value based on the Wald test for the hypothesis that the coefficients of the sponsorship dummy variables (S_1, S_2, S_3 and S_4) are jointly equal to zero. S.R is the saturation ratio defined as the total number of observations divided by the number of parameters to be estimated. The adjusted R-square values are also reported. *, ** and *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

	Undifferentiated			Cdn			Short-term			High-yield		
	Net	**Gross**	**Quasi-gross**	**Net**	**Gross**	**Quasi-gross**	**Net**	**Gross**	**Quasi-gross**	**Net**	**Gross**	**Quasi-gross**
S_1	-0.0006**	-0.0001	-0.0005**	-0.0004**	0.0001	-0.0003*	-0.0005	-0.0001	-0.0003	-0.0012	-0.0008	-0.0009
	(-2.44)	(-0.61)	(-2.08)	(-2.12)	(0.79)	(-1.67)	(-1.58)	(-0.38)	(-1.07)	(-0.88)	(-0.64)	(-0.67)
S_3	-0.0013***	-0.0007***	-0.0013***	-0.0009***	-0.0003	-0.0009***	-0.0002	0.0002	-0.0002	-0.0028***	-0.0026**	-0.0029***
	(-5.49)	(-3.08)	(-5.31)	(-5.18)	(-1.55)	(-4.92)	(-0.51)	(0.41)	(-0.55)	(-2.63)	(-2.50)	(-2.67)
S_4	-0.0014**	-0.0011*	-0.0012**	-0.0012***	-0.0006**	-0.0010***	0.0008	0.0009	0.0008	-0.0059***	-0.0056***	-0.0055***
	(-2.38)	(-1.88)	(-2.14)	(-3.47)	(-2.21)	(-2.76)	(0.67)	(0.72)	(0.66)	(-4.24)	(-3.82)	(-3.74)
MER	-0.0443	0.0213	0.0034	-0.0473	0.0456	-0.0009	-0.0416*	0.0191	0.0024	0.0692	0.1850	0.1684
	(-1.20)	(0.58)	(0.09)	(-1.16)	(1.20)	(-0.02)	(-1.70)	(0.77)	(0.10)	(0.27)	(0.66)	(0.61)
FundSize	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000**	-0.0000	-0.0000***	-0.0000***	-0.0000***	0.0000	0.0000	0.0000
	(-0.45)	(-0.70)	(-0.78)	(-0.96)	(-2.17)	(-1.22)	(-2.70)	(-2.73)	(-3.63)	(1.03)	(0.89)	(0.94)
LnNumFund	-0.0001	-0.0001	-0.0001	-0.0002	-0.0002	-0.0002	0.0003	0.0004	0.0004**	-0.0006	-0.0006	-0.0006
	(-0.45)	(-0.20)	(-0.24)	(-1.22)	(-1.02)	(-1.03)	(1.36)	(1.58)	(2.40)	(-0.21)	(-0.22)	(-0.22)
LnAge	0.0018***	0.0018***	0.0018***	0.0009***	0.0009***	0.0009***	0.0004	0.0004	0.0004	0.0077***	0.0080***	0.0079***
	(4.13)	(4.13)	(4.17)	(2.89)	(2.78)	(2.84)	(1.27)	(1.32)	(1.55)	(4.78)	(4.79)	(4.79)
Flow	0.0385**	0.0386*	0.0524	0.0205**	0.0213**	0.0207**	0.0106***	0.0104***	0.2280**	1.3660***	1.5522***	1.5220***
	(1.96)	(1.95)	(1.47)	(2.00)	(2.13)	(2.01)	(3.77)	(3.99)	(2.13)	(2.78)	(3.07)	(3.04)
Public	-0.0011***	-0.0009***	-0.0012***	-0.0007***	-0.0004*	-0.0007***	-0.0014***	-0.0011**	-0.0014***	0.0026	0.0024	0.0016
	(-3.30)	(-2.64)	(-3.34)	(-2.59)	(-1.73)	(-2.72)	(-2.80)	(-2.29)	(-3.18)	(1.35)	(1.34)	(0.87)
Mutual	0.0005	0.0008*	0.0005	0.0003	0.0005*	0.0003	-0.0019***	-0.0013**	-0.0019**	0.0109***	0.0109***	0.0098***
	(1.04)	(1.77)	(1.06)	(1.00)	(1.89)	(1.12)	(-2.84)	(-2.37)	(-2.56)	(6.95)	(6.91)	(6.30)
Intercept (S_2)	-0.0032***	-0.0024***	-0.0029***	-0.0025***	-0.0019***	-0.0023***	-0.0013	-0.0008	-0.0013	-0.0135**	-0.0131**	-0.0133**
	(-4.30)	(-3.42)	(-3.93)	(-3.88)	(-3.20)	(-3.62)	(-1.34)	(-0.99)	(-1.36)	(-2.06)	(-2.19)	(-2.20)
W	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Adj.R^2	0.0600	0.0322	0.0483	0.1636	0.1673	0.1727	0.1801	0.1348	0.1561	0.1666	0.1374	0.1420
S.R	1949	1949	1949	1298	1298	1298	428	428	428	223	223	223

Table 4.7. Determinants of individual fund fees and returns based on panel regressions and accounting for Member-Prof sponsors

This table reports the coefficient estimates for panel regressions (1) and (4) and their t-values in parentheses over the 144-month period 2000-2011 for funds with a Canadian Bond objective whose sponsors are private. Panel A reports the results for the determinants of the management expense ratios (*MER*), management fees (*MgmtFee*) and trailer fees (*TrailerFee*) for funds sponsored by Member-Prof (all private and mutual) versus private (mixed share/mutual) Independent (Private_S_1) excluding Member-Prof, private (all mutual) Insurers (Private_S_3) and Member-Fins (all private and mutual) (S_4) for funds with a Canadian bond investment objective. Member-Prof is a dummy variable which takes a value of 1 if the fund sponsor belongs to a professional member-owned or controlled non-financial entity category and 0 otherwise. Panel B reports the results for the determinants of the dependent variable *FundRTN*, which is the conditional benchmark-adjusted gross, quasi-gross or net return for month t using the five-factor model of Ayadi and Kryzanowski (2011). *MER* as an independent variable controls for the effect of the management expense ratio on the benchmark-adjusted returns of the individual funds. The demeaned values of the fund size (*FundSize*) are used to control for its effect. *LnNumFund* is the natural logarithm of the number of mutual funds managed by the sponsor. Other control variables include the natural logarithm of the age of a fund (*LnAge*) and fund flows (*Flow*). *PerfRank* is the percentile ranking of each fund's total return or benchmark-adjusted return within each investment objective.The *Mutual* dummy variable takes a value of 1 for mutually-owned sponsors and 0 otherwise. The standard errors are adjusted for clustering for fund effects as proposed by Petersen (2009). S.R is the saturation ratio defined as the total number of observations divided by the number of parameters to be estimated. The adjusted R-square values are also reported. *, ** and *** indicate statistical significance at the 0.10, 0.05 and 0.01 levels, respectively.

Panel A	Independent variables											
	Intercept	Private_S_1	Private_S_3	S_4	FundSize	LnNumFund	LnAge	Flow	PerfRank	Mutual	Adj.R^2	S.R.
MER	1.8726*** (4.87)	0.4491** (2.41)	0.2465 (0.93)	0.0163 (0.06)	-0.0000** (-2.33)	0.0978*** (3.09)	0.0213 (0.55)	-0.0005 (-0.95)	-0.0064 (-0.24)	0.6003*** (3.61)	0.1804	55
MgmtFee	1.2261*** (3.27)	0.5115*** (2.63)	0.3080 (1.20)	-0.1517 (-0.61)	-0.0000 (-0.57)	0.0339 (1.56)	-0.0010 (-0.05)	-0.0001 (-0.65)	0.0065 (0.70)	0.5769*** (3.95)	0.2257	55
TrailerFee	0.6407*** (2.85)	-0.0616 (-0.49)	-0.0592 (-0.42)	0.1714 (1.15)	-0.0000** (-2.21)	0.0631** (2.05)	0.0226 (0.77)	-0.0004 (-0.90)	-0.0124 (-0.48)	0.0216 (0.38)	0.1709	55

Panel B	Independent variables											
	Intercept	Private_S_1	Private_S_3	S_4	MER	FundSize	LnNumFund	LnAge	Flow	Mutual	Adj.R^2	S.R.
Gross	-0.0011 (-1.17)	-0.0004 (-1.27)	-0.0014* (-1.85)	-0.0018** (-2.34)	0.0970 (1.33)	0.0000 (0.17)	0.0001 (0.47)	0.0002 (0.36)	0.1070 (0.99)	0.0011 (1.61)	0.0131	409
Quasi-gross	-0.0021** (-2.00)	-0.0008** (-2.29)	-0.0017** (-2.01)	-0.0018** (-2.04)	0.0313 (0.41)	-0.0000 (-0.26)	0.0001 (0.24)	0.0003 (0.51)	0.0949 (0.86)	0.0008 (1.02)	0.0144	409
Net	-0.0028*** (-2.73)	-0.0007** (-2.04)	-0.0017* (-1.92)	-0.0020** (-2.20)	-0.0256 (-0.32)	-0.0000 (-0.04)	0.0000 (0.11)	0.0003 (0.48)	0.1011 (0.90)	0.0009 (1.05)	0.0162	409

Appendix

Variable	Definition	Data Source
$\#\boldsymbol{Advisors}$	The number of advisors and sub-advisors providing service in a CEF (item 8 A and B of NSAR form)	NSAR form
$\Delta\#\boldsymbol{Advisors}$	The difference between current value of $\#Advisors$ and its value in previous NSAR filing	NSAR form
$\boldsymbol{AveIndDirCompFnd}$	The average dollar value of compensation received by board from a CEF	DEF-14A SEC form
$\boldsymbol{AveIndDirCompFam}$	The average dollar value of compensation received by board from a CEF family	DEF-14A SEC form
$\boldsymbol{AveTenIndDirFnd}$	The average number of years independent directors sit on a CEF board	DEF-14A SEC form
$\boldsymbol{3Y\Delta AveTenIndDirFn}$	The difference between current value $AveTenIndDirFnd$ and three-year lagged value of this variable	DEF-14A SEC form
$\boldsymbol{BdSize}$	The total number of directors on a CEF board	DEF-14A SEC form
$\boldsymbol{1Y\Delta BdSize}$	The difference between current value of $\boldsymbol{BdSize}$ and one-year lagged value of this variable	DEF-14A SEC form
$\boldsymbol{3Y\Delta BdSize}$	The difference between current value of $\boldsymbol{BdSize}$ and three-year lagged value of this variable	DEF-14A SEC form
$\#\boldsymbol{BoardMtngFnd}$	The number of meetings (regular and special) that a CEF holds for a given year	DEF-14A SEC form
$\boldsymbol{ChgType}$	A variable which takes values of -1, 0 and 1 if the fund decreases, does not change and increases its advisory rate, respectively	NSAR form
$\%\boldsymbol{DirFemaleFnd}$	The percentage of female directors on a CEF board	Public online sources
$\boldsymbol{3Y\Delta\%DirFemaleFnd}$	The difference between current value $\%DirFemaleFnd$ and three-year lagged value of this variable	DEF-14A SEC form
$\boldsymbol{DivYield}$	Dividend amount (Item 73-A1 of NSAR form) as a percentage of CEF share price (Item 76 of NSAR form)	NSAR form

$\boldsymbol{ExpenseRatio}$	CEF's annual expense ratios	Morningstar Direct
$\boldsymbol{FamStar}$	A dummy variable which take one if the CEF family has at least one other star CEF within the complex sample in a given period.	Calculated
$\boldsymbol{FamMrktShr}$	Calculated as the NAV of CEF family divided by sum of all NAVs in the market	Calculated
$\boldsymbol{FixedIncome}$	A dummy variable which takes value of one for CEFs with bond and municipal bond fund type and zero otherwise.	Morningstar Direct
$\boldsymbol{Flow}$	The net of all cash inflows and outflows in and out of various financial assets for a fund as proposed by Sirri and Tufano (1998)	Calculated
$\boldsymbol{FndTurnover}$	The lesser of purchases (item 71A of form NSAR) or sales (item 71B of form NSAR) divided by average monthly net assets (item 71C of form NSAR)	NSAR form
$\boldsymbol{\Delta FndTurnover}$	The difference between current value of $FndTurnover$ and the value of this variable in previous NSAR filing	Calculated
$\boldsymbol{Foreign}$	A dummy variable which takes value of one if CEF being registered outside the U.S. (Item 68-B)	NSAR form
$\boldsymbol{FundSize}$	Demeaned value of fund size	Morningstar Direct
$\boldsymbol{FundRTN}$	Benchmark-adjusted return based on equation (4.2) as proposed by Brennan *et al.* (1998)	Calculated
Gross Return	Net return plus 1/12th of a fund's annual expense ratio	Calcualted
$\boldsymbol{GrowthFam}$	The difference between CEF family NAV of current and previous NSAR filing	Calculated
$\boldsymbol{GrowthFnd}$	The difference between CEF NAV of current and previous NSAR filing	Calculated
$\boldsymbol{HighAdvRt}$	A dummy variable equals to one if the advisory rate ($Margrt$) is higher than sample median advisory rate in a given period.	Calculated
$\boldsymbol{HighDivYield}$	A dummy variable which equals one if the CEF $DividendYield$ is above the sample median dividend yield in a given period.	Calculated
$\boldsymbol{HighGrwthFam}$	A dummy variable which takes value of one if the CEF family growth ($GrowthFamily$) is on top decile of the sample given the period.	Calculated
$\boldsymbol{HighGrwthFnd}$	A dummy variable which takes value of one if the CEF growth ($GrowthFnd$) is on top decile of the sample for a given the fund type and period.	Calculated
$\boldsymbol{HighLeverage}$	A dummy variable which equals one if the CEF $Leverage$ is above the sample median leverage in a given period.	Calculated
$\boldsymbol{HighPremium}$	A dummy variable which equals one if the CEF $Premium$ is above the sample median	Calculated

	premium in a given period.	
$\%IndDirFnd$	The percentage of independent directors in CEF boards	DEF-14A SEC form
$1Y\Delta\%IndDirFnd$	The difference between current value of $\%IndDirFnd$ and one-year lagged value of this variable	DEF-14A SEC form
$3Y\Delta\%IndDirFnd$	The difference between current value of $\%IndDirFnd$ and three-year lagged value of this variable	DEF-14A SEC form
$\%IndDirOwn > 50K$	The percentage of independent directors who hold more than $50,000 worth of funds shares	DEF-14A SEC form
$3Y\Delta\%IndDirOwn > 50K$	The difference between current value of $\%IndDirOwn > 50K$ and three-year lagged value of this variable	DEF-14A SEC form
$\%IndDirOwn\_1$	The percentage of independent directors who hold zero dollars of fund assets	DEF-14A SEC form
$\%IndDirOwn\_2$	The percentage of independent directors who hold $1 to $10,000 of fund assets	DEF-14A SEC form
$\%IndDirOwn\_3$	The percentage of independent directors who hold $10,001 to $50,000 of fund assets	DEF-14A SEC form
$\%IndDirOwn\_4$	The percentage of independent directors who hold $50,001 to $100,000 of fund assets	DEF-14A SEC form
$\%IndDirOwn\_5$	The percentage of independent directors who hold more than $100,000 of fund assets	DEF-14A SEC form
$\%IndDirOwn > 50K$	The percentage of independent directors who hold more than $50,000 worth of fund shares	DEF-14A SEC form
$Leverage$	The ratio of non-common equity (Item 74-N minus Item 74-F) to CEF total assets (Item 74-N of NSAR form).	NSAR form
$LnAge$	Natural logarithm of fund's age as given by the fund launch date	Morningstar Direct
$LnAveIndDirAgeFnd$	The logarithm of average age of independent directors (years) on the CEF board	DEF-14A SEC form
$3Y\Delta LnAveIndDirAge$	The difference between current value of $LnAveIndDirAgeFnd$ and three-year lagged value of this variable	DEF-14A SEC form
$LnFamSize$	The natural logarithm of family's total net assets in CEFs	NSAR form

LnFndAge	The natural logarithm of fund's age as given by the fund launch date	Morningstar Direct
LnFndSize	The natural logarithm of the fund's total net assets (Item 74-U01*74-U01)	NSAR form
$1Y\Delta LnFndSize$	The difference between current value of $LnFndSize$ and one-year lagged value of this variable	Calculated
LnFndTurnover	The natural logarithm of the lesser of purchases (item 71A of form NSAR) or sales (item 71A of form NSAR) divided by average monthly net assets (item 71C of form NSAR)	NSAR form
LnNumFund	The natural logarithm of the number of funds that the fund management company manages	Calculated
MarketCap	CEF market capital (item 76 times item 74U1 of form NSAR)	NSAR form
Margrt	The advisor marginal rate of compensation (advisory rate). For linear contracts, we use the item 48 of NSAR forms. For concave contracts, this rate depends on the NAV of the CEFs.	NSAR form
$\Delta Margrt$	The change of marginal rate or advisory rate from previous NSAR filings. Following Warner and Wu (2011), we use the same NAV for current and previous NSAR filings to remove the mechanical effect of asset growth on the concave contracts.	NSAR form
MER	Mutual fund's annual expense ratio	Morningstar Direct
MrktShr	Calculated as the CEF NAV divided by sum of all NAVs in the market	Calculated
Mutual	Dummy variable which takes a value of 1 if the fund sponsor has mutual ownership and 0 otherwise (i.e., 0 for stock ownership)	Websites of Mutual funds
NAVPSReturn	Annualized returns net of fees	Morningstar Direct
Outsourced	A dummy variable which takes value of one if the CEF is outsourced. Following Chen et al., (2013), we define if a CEF is outsourced if the CEF has at least one advisor which is not affiliated to the fund family complex.	NSAR form
#OtherBoardsIndDirFam	The number of other boards an independent director serves on as a director with a fund family	DEF-14A SEC form
PerfRank	Percentile ranking of each fund's benchmark-adjusted return within each investment objective	Calculated
Public	Dummy variable which takes a value of 1 if the fund sponsor is publicly traded and 0 otherwise	Websites of Mutual funds
Premium	(share price - NAVPS)/NAVPS (item 74V1 and 76 of form NSAR for NAVPS and share price)	NSAR form

Quasi-gross Return	Net return plus 1/12th of a fund's annual trailer fee (TrailerFee)	Calculated
ReturnAlpha	We obtain the *ReturnAlpha* following Chen et al. (2013), Ferreira et al. (2013). Specifically: $$ReturnAlpha_{it} = ShareReturn_{it} - (\sum_{k=1}^{K} \hat{\beta}_{ikt} I_{kt})$$ Where $ReturnAlpha_{it}$ is the benchmark-adjusted share return of fund *i* at time *t*, $ShareReturn_{it}$ is the realized share return of fund *i* at time *t*, *K* is the number of factors in the benchmark model, I_{kt} is the realized return for benchmark factor *k* at time *t*, and $\hat{\beta}_{ikt}$ are the estimated factor betas of fund *i* at time *t* obtained by regressing the previous 36 months of realized share returns against the corresponding realized benchmark factor returns. The benchmark-adjusted share return performances for funds with an investment objective of equity, international equity and specialty are calculated using a 5-factor model. The factors are the monthly excess returns on the CRSP value-weighted index, the differences in returns between small and large stock portfolios, the differences in returns between high and low book-to-market stock portfolios, the Carhart (1997) momentum factor, and the Pastor and Stambaugh (2003) liquidity factor. The factor data are collected from Wharton Research Data Services (WRDS). For the bond and municipal bond CEFs, we use a 7-factor model that includes the Barclays Aggregate Bond Index, Barclays U.S. Treasury Long, Barclays U.S. Treasury Intermediate, Barclays U.S. Mortgage Backed Securities, Barclays U.S. Corp Investment Grade, Barclays Municipal Bond and Barclays U.S. Corp High Yield Bond, which is consistent with the models used in Blake, Elton, and Gruber (1993) and Chen *et al.* (2013). For the allocation CEFs, we use a 12-factor model that includes the 5 factors used for the equity CEFs and the 7 factors used for the bond CEFs. CEFs are included in the samples for the tests of benchmark-adjusted return performances only if they have at least 36 non-missing monthly return observations. The monthly benchmark-adjusted returns are compounded to annualize them.	Calculated
S_1	Sponsorship dummy which takes a value of 1 if the fund sponsor belongs to Independents (if not in the other three categories), otherwise zero	Calculated
S_2	Sponsorship dummy which takes a value of 1 if the fund sponsor belongs to Banks (all public), otherwise zero	Calculated
S_3	Sponsorship dummy which takes a value of 1 if the fund sponsor belongs to Insurers, otherwise zero	Calculated

S_4	Sponsorship dummy which takes a value of 1 if the fund sponsor belongs to Member-Fins, which are member-owned or controlled financial entities (all private), otherwise zero	Calculated
$\#Services$	The number of services provided by advisors (item 54 A through O of NSAR form)	NSAR form
$\Delta\#Services$	The difference between current value of $\#Services$ and the value of this variable in previous NSAR filing	Calculated
$ShareReturn$	CEF holding period return	Morningstar Direct
$StdNAV$	Residual standard deviation of CEF's NAV return as explained in section 7	Calculated
$Star$	A dummy variable which take one if the CEF share return was on the top 5% of the sample in a given the fund type and period.	Calculated
$TopFamMrktShr$	A dummy variable which equals one if CEF family market share ($FamMrktShr$) is on top decile of the sample market shares in a given period.	Calculated
$TopFndMrktShr$	A dummy variable which equals one if CEF market share ($MrktShr$) is on top decile of the sample market shares in a given period.	Calculated
$TrailerFee$	The difference between the MER and the management fees ratio	Calculated
$UnexpCompIndDir$	Average residual obtained (in millions of dollars) from annually regressing the total compensation of a director from fund family on the number of boards that the director serves on and the total assets overseen by that director, as in Tufano and Sevick (1997)	Calculated
$3Y\Delta UnexpCompIndD$	The difference between current value of $UnexpCompIndDir$ and three-year lagged value of this variable	Calculated